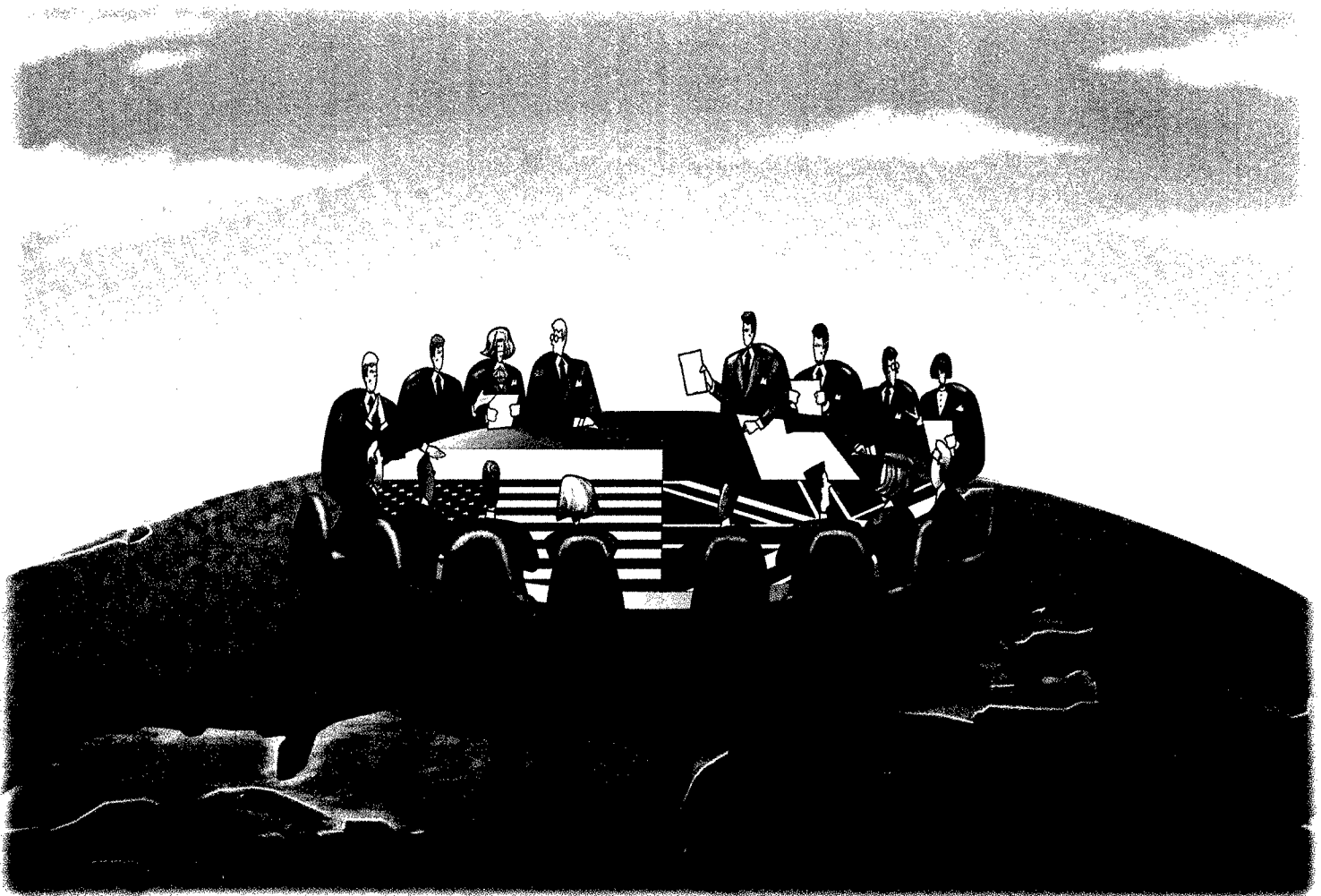




# A Comparison of the Defense Acquisition Systems of France, Great Britain, Germany and the United States



Tony Kausal, Editor;

**DMIC QUALITY INSPECTED**

**DISTRIBUTION STATEMENT A** Arthur Humily, Trevor Taylor and Peter Roller

Approved for Public Release  
Distribution Unlimited

DEFENSE SYSTEMS MANAGEMENT COLLEGE PRESS  
Fort Belvoir, Virginia

19991029 095

# REPORT DOCUMENTATION PAGE

*Form Approved*  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY <i>(Leave blank)</i>	2. REPORT DATE <b>September 1999</b>	3. REPORT TYPE AND DATES COVERED	
4. TITLE AND SUBTITLE <b>A Comparison of the Defense Acquisition Systems of France, Great Britain, Germany and the United States</b>		5. FUNDING NUMBERS	
6. AUTHOR(S) <b>Mr. Tony Kausal                      Peter Roller Gertrud Humily Trevor Taylor</b>		8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Defense Systems Management College Attn Tony Kausal 9820 Belvoir Road Ste 3 Ft. Belvoir VA 22060-5565</b>		10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)  <b>same as 7.</b>		11. SUPPLEMENTARY NOTES	
12a. DISTRIBUTION / AVAILABILITY STATEMENT  <b>Approved for public release; distribution unlimited.</b>		12b. DISTRIBUTION CODE	
13. ABSTRACT <i>(Maximum 200 words)</i>  <b>This book provides insights that should help those working on international armament issues and provide, in particular, a source of reference for those working with their colleagues from France, Germany, the United Kingdom, and the United States. The reader will find the overall background and the introduction to the acquisition organizations, functions, and processes useful in developing acquisition strategies and implementing successful programs.</b>			
14. SUBJECT TERMS <b>United Kingdom; United States; France; Germany; Acquisition Systems.</b>			15. NUMBER OF PAGES <b>302</b>
17. SECURITY CLASSIFICATION OF REPORT <b>Unclassified</b>			16. PRICE CODE
18. SECURITY CLASSIFICATION OF THIS PAGE <b>Unclassified</b>	19. SECURITY CLASSIFICATION OF ABSTRACT <b>Unclassified</b>	20. LIMITATION OF ABSTRACT  <b>Unlimited</b>	

**DEFENSE SYSTEMS MANAGEMENT COLLEGE**

**A COMPARISON  
OF  
THE DEFENSE  
ACQUISITION SYSTEMS  
OF  
FRANCE, UNITED KINGDOM,  
GERMANY AND  
THE UNITED STATES**

**Tony Kausal, Editor  
Gertrud Humily  
Trevor Taylor  
Peter Roller**

**September 1999**

**PUBLISHED BY THE  
DEFENSE SYSTEMS MANAGEMENT COLLEGE PRESS  
FORT BELVOIR, VIRGINIA 22060-5565**

For additional information contact:

Defense Systems Management College Press

(Tel) 703.805.2248

(Fax) 703.805.2917

DSN 655-2248

ISBN 1-893833-01-1

---

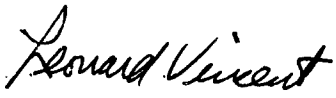
## ENDORSEMENT


Every year thousands of military and civilian members of our four International Defense Educational Arrangement (IDEA) acquisition organizations attend courses and read articles and books about acquisition techniques and issues. As part of our continuing education efforts, the four IDEA schools commissioned the writing and publishing of this book to provide acquisition students with an introduction to the acquisition systems of the IDEA nations.

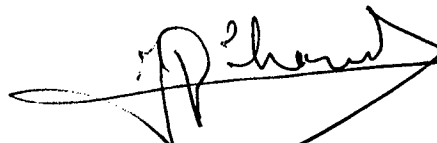
As we enter the next millennium, our defense forces continue to need reliable and effective weapon systems that are affordable in an environment of increasing operations and level or declining defense budgets. Our coalition forces will often be called upon to respond to incidents that threaten world peace and international security as part of the North Atlantic Treaty Organization or the United Nations. One approach to solving defense affordability problems and serving the need for interoperability of our forces in coalition warfare is the cooperative development and production of weapon systems.

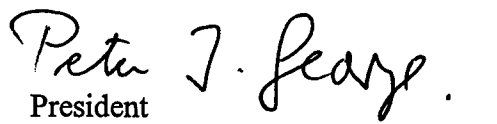
People working on international cooperative programs quickly discover that different budget cycles, political issues, and cultural perspectives can exacerbate small problems and, in some cases, create larger ones. This book provides insights that should help those working on international armament issues and provide, in particular, a source of reference for those working with their colleagues from France, Germany, the United Kingdom, and the United States. The history and culture of each nation is reflected in its approach to armaments development. The reader will find the overall background and the introduction to the acquisition organizations, functions, and processes useful in developing acquisition strategies and implementing successful programs. The reader needs to keep in mind that this introduction to acquisition captures a point in time in these four countries, where organizations, processes and personnel are always changing.

An educated workforce will continue to be a critical factor in our successful cooperation. The IDEA Board of Directors is pleased to provide another tool to contribute to the education of the workforce.

  
Commandant  
Defense Systems  
Management College

  
Deputy Commandant  
Royal Military College  
Of Science

  
Deputy Commandant  
Centre des Hautes Etudes  
de l'Armement

  
President  
Bundesakademie für  
Wehrverwaltung und Wehrtechnik

# TABLE OF CONTENTS

**ACKNOWLEDGMENTS** ..... vii

**INTRODUCTION** ..... ix

## **PART 1 – FRANCE**

Chapter 1	History and Traditions .....	1-3
Chapter 2	The Government of France .....	1-11
Chapter 3	Defense .....	1-17
Chapter 4	DGA: Role and Organization .....	1-23
Chapter 5	Defense Acquisition .....	1-29
Chapter 6	The Procurement System .....	1-39
Chapter 7	Defense Acquisition Programs – Structure and Organization .....	1-41
Chapter 8	Acquisition Program Management .....	1-43
Chapter 9	Tests Processing, Assessment and Experiments .....	1-52
Chapter 10	Acquisition Education .....	1-56
Chapter 11	French Legislation, Practice and Control Mechanisms Governing the Transfer of Conventional Armaments .....	1-60
Chapter 12	Intellectual Property Rights .....	1-63
Chapter 13	The Industrial Base .....	1-68
Chapter 14	Future Trends .....	1-73
Chapter 15	Principles for a Renewed Transatlantic Cooperation .....	1-76
	Further Readings .....	1-78
	Endnotes .....	1-79
	Glossary .....	1-81

## **PART 2 – GERMANY**

Chapter 1	The German Acquisition System .....	2-3
Chapter 2	The Government of Germany .....	2-5
Chapter 3	The Federal Ministry of Defense .....	2-10
Chapter 4	The Defense Acquisition System .....	2-15
Chapter 5	The Planning, Programing, Budgeting Systems .....	2-19
Chapter 6	The Acquisition Management Process .....	2-21

Chapter 7	Defense Armaments Workforce .....	2-25
Chapter 8	The Procurement Process .....	2-26
Chapter 9	Trials and Operational Suitability .....	2-28
Chapter 10	Multinational Armaments and Armament Sales .....	2-29
Chapter 11	The Defense Industrial Base .....	2-31
Chapter 12	Future of Defense Armaments .....	2-33
Further Readings	.....	2-34
Endnotes	.....	2-35
Glossary	.....	2-36

### **PART 3 – UNITED KINGDOM**

Chapter 1	History and Traditions .....	3-3
Chapter 2	The Military of The UK – Organisation .....	3-7
Chapter 3	The Staffs .....	3-12
Chapter 4	Acquisition – Introduction .....	3-22
Chapter 5	The New Acquisition Cycle – Key Features .....	3-24
Chapter 6	The Approvals Process .....	3-29
Chapter 7	Smart Requirements .....	3-30
Chapter 8	The Integrated Project Team (IPT) .....	3-35
Chapter 9	The Role of Industry .....	3-38
Chapter 10	Customer Supplier Relationship Between the Capability Manager and the IPT .....	3-40
Chapter 11	Incremental Acquisition .....	3-42
Chapter 12	Support Management .....	3-44
Chapter 13	Personnel .....	3-46
Chapter 14	British Defense Industry .....	3-47
Chapter 15	Future Trends .....	3-50
Further Readings	.....	3-51
Endnotes	.....	3-52
Glossary	.....	3-53

### **PART 4 – THE UNITED STATES**

Chapter 1	History and Traditions .....	4-3
Chapter 2	Congressional Involvement in Acquisition .....	4-9
Chapter 3	The Cabinet .....	4-13
Chapter 4	Department of Defense .....	4-15

Chapter 5	Defense Acquisition Structure .....	4-22
Chapter 6	Service Acquisition Organizaitons .....	4-26
Chapter 7	The Defense Acquisition System .....	4-35
Chapter 8	Defense Acquisition and Technology Workforce .....	4-46
Chapter 9	Test and Evaluation of Weapon Systems .....	4-49
Chapter 10	Cooperative Acquisition and Foreign Military Sales (FMS) .....	4-54
Chapter 11	The Industrial Base .....	4-59
Chapter 12	My Crystal Ball .....	4-63
	Further Readings .....	4-66
	Endnotes .....	4-67
	Glossary .....	4-70

## **PART 5 – A COMPARISON OF THE ACQUISITION SYSTEMS**

Chapter 1	A Comparison of the Acquisition Systems of France, Germany, the United Kingdom, and the United States .....	5-3
Chapter 2	The Impact of National Political Systems .....	5-13
Chapter 3	Conclusion .....	5-15
	Endnotes .....	5-18

## **APPENDIX**

Appendix A	Armed Forces of the Four Idea Nations .....	A-3
Appendix B	List of Acquisition and Related Organizations .....	A-4
Appendix C	DoD Depots/Government Owned, Government Operated (GOGOS)/ Government Owned, Contractor Operated (GOCOS) .....	A-12
	Bibliography .....	A-15



# ACKNOWLEDGMENTS

Out of the need to educate program managers working in an international environment grew the International Defense Education Arrangement (IDEA). In 1988, the Centre des Hautes Etudes de l'Armement (CHEAR), the Federal Academy of Defence Administration and Technology (BAKWVT), the Royal Military College of Science (RMCS) and the Defense Systems Management College formed IDEA to provide a forum for international cooperative education. The annual IDEA conference was born to provide a better understanding of other nations' acquisition environment, structure and processes and to share lessons learned from those involved with international defense cooperation programs. This book is an outgrowth of the annual IDEA conference. At the 10<sup>th</sup> annual conference in Paris France the IDEA Board of Director's approved development of a book to compare the Defense Acquisition Systems of the four nations. The final product was delivered to the Board at the 11<sup>th</sup> annual conference at the Defense System Management College, Fort Belvoir, 30 July 1999, and was given final approval by the Board of Directors for publication.

This book is the work of several people from four countries. Each of the authors received extraordinary help from colleagues and friends in developing the individual country chapters.

**France:** I would like to thank all my colleagues at DGA and its environment who gracefully helped me to put together the French chapter. I really can't name them all personally, as there are many people who contributed their ideas and time to this effort. We are hoping that this book will make it easier to understand the French way to organize our defense system and perhaps also,

to have a better understanding of our armament culture.

**Germany:** I greatly appreciate all Federal Ministry of Defence and BWB members who contributed their advice and knowledge to the effort. Again, many people contributed both thoughts and provided reviews of each draft. Finally, a special thanks to Hermann O. Pfrengle for his time and efforts and overall contribution to the book.

**United Kingdom:** Our contribution to the book is a team effort and I want thank both Wg. Cdr. Chris Hockley and Lt. Col. Chris Bristow for the long hours and effort they put into preparing their chapter. This was all accomplished while performing their normal duties.

**United States:** I am indebted to many people who contributed their ideas and time to this effort. A special thanks to Faye Dufer for her tireless efforts correcting my grammar and computer errors, and providing the final editing of my chapters. All the members of the DSMC Executive Institute—Ed Hirsch, Tom Dolan, Ron Register, Joann Langston, Frank Swofford — who for over a year responded to my requests for information and reviewed my drafts, I owe a debt of gratitude. I also owe a debt of thanks to Lt. Col. Bob Faulk, Chuck Cochrane, Major Chuck Frizzelle, DPA, Lt. Col. Roberta Tomisine and many other DSMC faculty who helped provide insight into areas where they are the real experts. Mr. Chuck Houston is also owed special thanks for his efforts in structuring and developing the Comparative Acquisition efforts that have been an integral part of the IDEA annual conference. His pioneering efforts are the

genesis of this book. On a personal note, my wife Mellie spent hours at home reading my esoteric material and providing me a civilian's perspective on our complicated acquisition system. And finally, to an old friend, whose editorial efforts are always a help in providing insight into my writings — Bruce Robinson — a special thanks.

Many of our colleagues have contributed their insight into our approach to this book to make it a useful document to the readers. The views expressed in this book are those of the authors, and do not necessarily reflect the opinions of all those who supported this project.

June 1999

**– PROJECT MANAGERS/AUTHORS –**

**Professor Tony Kausal**

*Air Force Chair, DSMC*

**Dr. Gertrud Humily**

*Executive Director International Education  
DGA/DCI*

**Professor Trevor Taylor**

*Head of Department  
Cranfield University, RMCS*

**Mr. Peter Roller**

*Ltd. Wiss Director  
The Federal Academy of Defence  
Administration and Technology*

# INTRODUCTION

*“It is clear to me that we will have to leverage the technology and industrial base of all our nations to modernize the equipment of our defense forces at an affordable cost and in the end obtain “best value for the money.”*

— Dr. Paul Kaminsky,  
Former Under Secretary of Defense  
For Acquisition and Technology.

Since the 1970s, cooperative armament projects have offered the hope of leveraging national resources. Atlantic Alliance members have sought cooperation with their friends and allies. “These (cooperative) programs help strengthen the connective tissue, the military and industrial relationships that bind our nations in a strong security relationship. The political dimension of armaments cooperation is becoming increasingly important in an uncertain international security environment.<sup>1”</sup>

This book is about the national armament systems of four nations. It provides an introduction to the political environment, the acquisition organizations, systems and processes of France, Germany, the United Kingdom and the United States. All four nations are NATO members. These countries for more than a quarter century have been partners in cooperative programs. Their concerted efforts have fielded such systems as the North Atlantic Treaty Organization (NATO) Airborne Warning and Control Aircraft (AWACs), the Navy’s RIM-7M, Sea Sparrow, and the AV8B Harrier GR7. Their cooperation in armaments activities has enhanced the mutual security of the alliance and become even more important with the increased emphasis on coalition warfare.

Armaments cooperation happens for a range of reasons. Nations anticipate cost saving or desire access to better technology and agree to the development of a new weapon system. However, having the will to cooperate does not mean managing an international armament cooperative program is an easy task. National culture and traditions complicate the job. Different time zones, different currencies, and different fiscal years add to the difficulty. Communicating complex issues through the fog of language, either verbally or in writing, offers a challenging problem for both the program manager and the multinational team members.

Working effectively in the international environment requires knowledge of the people, organizations and cultures of each country. As its primary purpose, this book looks at the major political and military acquisition characteristics of the four countries, and provides an overview of their organizations and processes. A useful starting point for understanding an organization is to look at its organizational structure. An organizational structure indicates where activities take place, how the management system operates, and indicates where authority and responsibility rest. The managerial system, which includes the formalized policies and

procedures, guides the activities of the acquisition organizations and provides an understanding of how the system operates.

This book was written for several audiences. For the acquisition practitioners, this introduction should provide a basic understanding of the other countries' system and their approach to armaments development. This basic understanding will help him or her to more effectively and efficiently perform their assignment in the international environment.

There are several secondary purposes. Every year the United States assigns large numbers of military personnel overseas to Security Assistance Organizations (SAO). These "SAOs" perform a key role in the interface between the military of our government and the host country. One of their many tasks is to work with the other country's acquisition system. This book will be a "good read" for them as they attempt to understand and work with these organizations. It will also provide them an introduction to the United States acquisition system.

For students of comparative politics, governments, and public administration, this book provides a structured approach to understanding organizations and finding approaches to manage the acquisition and development of weapons systems.

"Change has few friends" goes the old saying. While change has few friends, the political, bureaucratic system seems to find change irresistible. Change is a constant feature of the acquisition systems of these countries. New initiatives, new organizations, old and new approaches will solve the complex problems of weapons development and compliment the changing political philosophies of administrations. This book offers another perspective, i.e., a "snapshot in time," which will provide future readers a historical perspective on the acquisition systems of these countries.

"Looking at another system helps illuminate our own."<sup>2</sup> Understanding other countries helps us to better understand ourselves. Ideally, by comparing countries to one another, we can get a "feel" for the diversity of approaches to acquisition, understand in part how these systems have evolved, and draw our own conclusions as to the relative merits and weaknesses of different forms of political, military and bureaucratic organizations. As we look at the different ways other countries organize, manage, and develop weapon systems, we are offered a unique understanding of our own system. Readers should look beyond similarities and differences to discern underlying principles and their political consequences in the different countries.

While reading this book and evaluating the systems in these countries, the reader should understand each country's historical political environment, the organizations responsible for acquisition, and the processes used to develop a system. Their political systems, defense and security needs, economic resources, and cultures have all evolved over time. To provide a comparative basis, the structures, the functions and the processes are presented in each section of the chapters. Also, where appropriate, each section is introduced with a short historical background to provide a setting for the current organization and its processes.

Montesquieu said "that at the birth of political societies, it is the leaders of the republic who shape the institutions but that afterward it is the institutions which shape the leaders of the republic."<sup>3</sup> Organizations mold behavior, but the organizations were created for a variety of reasons to include ideology, cultural constraints and history. What is the effect of political and bureaucratic institutions on the acquisition system? What special problems arise from public accountability and political control? The view of the acquisition environment shown in this book will provide insight for those interested in

understanding how the systems in each of these countries operate.

The first four parts are organized around a specific country and cover four general topics—the political environment, the military and the requirements process, the acquisition system, and the defense industrial base. The political environment is described to include the legislatures, the elected politicians and the roles they play in acquisition. This provides the backdrop for how the system operates.

The second section looks at the overall military organization as it relates to acquisition and modernization of the military forces. What is the role of the military in the development of requirements?

The third section looks at the acquisition organization and its structure. It tries to answer these questions: What are the military and civilian roles? What type of education and training do they provide their acquisition personnel? How does each country manage a major program? What are their approaches? What are the different budgeting and planning systems? How is the procurement process structured? What is the role of competition? How do they approach source selection? What types of contracts do they use? What type of oversight do they perform on their contractors? How do they test new equipment?

The fourth section looks at the defense industrial base. The fall of the Berlin Wall symbolizes the changes brought about by a changing world. The worldwide sale of defense equipment has dropped and national defense budgets have eroded, yet threats still exist and the need for a

strong defense capability still exists. The four nations have seen changes in their defense industrial base as a result of the changing world. Consolidation and the creation of large defense contractors, such as Lockheed-Martin, and discussions of the creation of equally competitive firms in Europe are just some of the initiatives undertaken to respond to the changed environment. How have each of these nations responded in the past to the need to build defense equipment? What is the role of private enterprise? What is the public armory role? How has the relationship between industry and government been maintained? What type of industrial base does each country have?

Part 5 provides a comparison of the four systems.

This book can be read several different ways. For those with an interest in a specific country, the individual country part will provide insight into how they do business. For those interested in a comparative analysis, Part 5 takes a look at all four countries and compares and contrasts the approaches to delivery of weapons system and how the system operates.

Recognizing the limitations of this work, the authors have added a recommended reading list to each country's part to provide further insight into the culture, the political system and the military acquisition system.

Finally, a caveat in reading this book. Our intent is not to provide an analysis of which system is best, but rather insight into the national practices and approaches to facilitate successful collaboration among our nations.

## ENDNOTES

1. Address of Under Secretary of Defense for Acquisition and Technology, Honorable Paul G. Kaminski to ComDef '96 Conference Omni Shoreham Hotel, Washington, D.C., April 1, 1996.
2. Richard Neustadt, 1980.
3. Jean-Jacques Rousseau, *The Social Contract*, translated by Maurice Cranstron (Harmondsworth: Penguin Books, 1968), page 87.

**PART 1**

**FRANCE**





## Chapter 1

# HISTORY AND TRADITIONS

*“Old France, weighed down by history, bruised by wars and revolutions, going back and forth without respite from greatness to decline, but recovering, from century to century, through the genius of renewal.” — Charles de Gaulle*

### FROM THE FRENCH REVOLUTION TO 1945 (1789-1945)

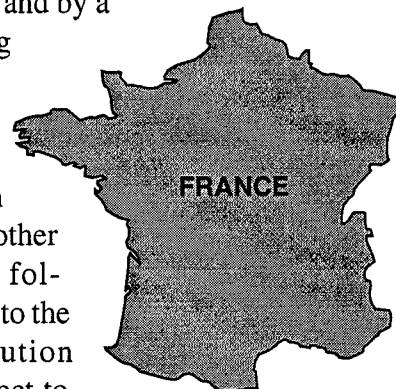
#### Founding Ideas and Values of the Revolution

France asserted its identity as a nation with the Revolution of 1789. On 14 July 1790, a year after the fall of the Bastille, delegates from all parts of the country flocked to Paris to celebrate the Fête de la Fédération and proclaim their allegiance to one national community. This was the first example of a people expressing their right to self-determination, a right the French claimed for themselves and then offered as a model to all the other nations of Europe and the world. This display of national unity was deliberately organized on the first anniversary of the fall of the Bastille, the first revolutionary act by the people against the arbitrary power of the royalty, an act that stamps France as one of the cradles of liberty.

Another outgrowth of this concept of a “nation open to all” who define themselves as “free men” was the Declaration of the Rights of Man and the Citizen (26 August 1789), which claimed to be universal in application.

### The Legacy of the Revolution

Once freedom was won, it had to be codified. Jurists, inspired both by the philosophy of the Enlightenment and by a long-standing French legalist tradition, gave France its first constitution in 1791. Fifteen other constitutions followed, leading to the 1958 Constitution which is in effect today. Beneath this apparent constitutional instability lies a genuine concern for the state and for the idea of public service, defended by an administration recruited on the egalitarian basis of merit. From the start the French constitutions were founded on a new principle, the principle of national sovereignty, as opposed to royal pleasure.



The King’s vacillation, his flight to Varennes, and the appeal to foreign forces to intervene against the nation led to the downfall of the constitutional monarchy. After the attack on the Tuileries Palace, on 10 August 1792, the First Republic was proclaimed on 22 September 1792 and lasted seven years. After this period of

instability, Bonaparte, one of the Republic's most brilliant generals, became First Consul, then Consul for Life before finally, in 1804, being crowned Napoleon I, "Emperor of the French." The Consulate retained a Republican model of government, but the First Empire restored such monarchical forms as authority vested in the person of the ruler, and it set up a new nobility. Still, the most important part of Napoleon's legacy was inspired by the heritage of the Revolution, which Napoleon consolidated in many areas; for example he promulgated the Civil Code in 1804, and set up the prefectural system, the Council of State, the Bank of France, the Ecole Polytechnique and the Ecole Normale Supérieure—all institutions which survive to our day.

After Napoleon's defeat at Waterloo in 1815, France once again became a monarchy when Louis XVIII was called to the throne; he was succeeded by Charles X and then, after the Revolution of July 1830, Louis-Philippe. The Restoration was followed by the Second Republic (1848-1851) and the Second Empire (1852-1870). In 1875 a republic was proclaimed for the third time; France has been a republic ever since. The Third Republic enshrined in French political tradition the seven-year presidential term, still the rule today.

The powerful aspiration to equality, inherited from the Enlightenment philosophy of Rousseau, stands out as the most resonant principle of the revolutionary movement. This is the most original characteristic of the French Revolution within the great sweep toward freedom that radiated from the shores of the United States.

The aspiration to equality has been decisive in determining French behavior and attitudes since 1789. The concern for civic and social justice inspired the radical movement, a typically French political current, and has long been expressed in the egalitarian, individualist and

liberal aspirations of the middle classes, equally hostile to the privileges of the favoured few and the collectivism of the masses.

### **The Dreyfus Affair and the Army**

At the turn of the 20<sup>th</sup> century the Dreyfus Affair made a profound impact on French society. Alfred Dreyfus, an Alsacian officer of Jewish origin, was stripped of his rank and sentenced to penal servitude for treason; his conviction by a military court, inspired by the prevailing anti-Semitism, was upheld for reasons of state. The fight for truth and for the release of Captain Dreyfus spread, thanks to the commitment of the intellectuals and of the novelist Emile Zola, whose article "J'accuse" was published in the newspaper *L'Aurore*. Dreyfusards and Anti-Dreyfusards clashed. Finally Dreyfus was rehabilitated. Supporters of the republic had triumphed over their monarchist and clerical adversaries; the key republican principle of supremacy of civilian authorities over the military had been recognized.

At the same time, the government committed the army to the conquest of a vast colonial empire, an undertaking designed to demonstrate that despite the defeat in 1870, France still had a role to play in the world. Military service became compulsory, and French patriotism yearning for a return to the nation of the lost provinces (Alsace and a part of Lorraine) was nurtured starting in the school years.

### **From World War I to World War II**

The defeat of 1870 prompted France to break out of the diplomatic isolation that had left it facing Prussia alone. France moved closer to the United Kingdom (the Entente Cordiale, signed in 1904), to Russia (alliance signed in 1893), and to the Balkan states hostile to Austria-Hungary (Serbia, Montenegro). These efforts led to the formation of a diplomatic and military bloc

(the Triple Entente) in opposition to the Triple Alliance (Triplice) made up of the German and Austro-Hungarian Empires and the Kingdom of Italy, later joined by the Ottoman Empire. When the heir to the Austro-Hungarian throne died on 28 June 1914 in a hail of bullets from a Bosnian Serb in Sarajevo—then under Austrian domination—the system of alliances went into action and set off World War I.

On 3 August 1914 France went to war against Germany and Austria-Hungary, joining forces with England and Russia; these allies were later reinforced by Italy and the United States. In every town and village of France, monuments dedicated to those who died during the “Great War” stand as a reminder of the bloodiest episode in the history of France. The massive decimation of young men dealt a lasting blow to the demographic growth of France. The economic effects were no less serious, for material losses were heavy; they have been estimated at a quarter of the national wealth.

Yet the Third Republic emerged strengthened by the victory of the union sacrée of a wide range of political parties united in the sacred cause of defending the nation. Raymond Poincaré’s National Union dominated political life in the 1920s. Only the Socialist left was excluded; this force had been split in two since the founding of the Communist Party in December 1920.

After the victory of the Socialists in 1936, the new Premier, Edouard Daladier, initially believed concessions to Hitler at Munich in 1938 would make it possible to avoid hostilities; but on 3 September 1939 he committed France to World War II alongside the British.

### **Dark Years for the French State**

With the invasion of France, the Third Republic collapsed. On 10 July 1940 Parliament gave full powers to Pétain, who set up a new regime at

Vichy, the provisional capital. The new French State (État français) was personal, authoritarian, corporatist, and discriminated against Jews, who were subject to a special statute.

### **The Resistance and the Honor of France**

As early as 1940 a small number of resistance movements began to spring up. General Charles de Gaulle, speaking from London on 18 June 1940, issued a call to the French to continue the fight on the Allied side. He became the focus of a resistance movement outside France, comprising the Free French Forces (FFL) and a French National Committee, to which some colonial territories rallied. In France itself, isolated individuals sabotaged Nazi installations and fought against the occupant and the Vichy regime. This internal resistance grew and developed into movements and networks winning the support of an ever-larger part of the population. With the final crushing of the Third Reich in 1945 the war ended.

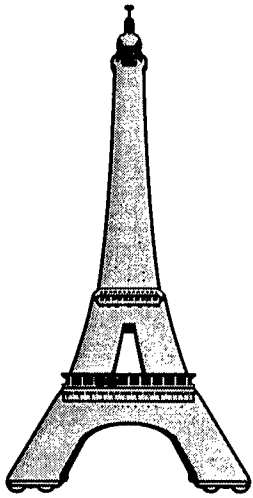
## **POST 1945**

### **Reconstruction**

Twice France had to rebuild, but in conditions and a world situation which differed greatly following victory in 1918 and liberation in 1944. The lessons the country drew from the two wars and the intervening depression that had weighed on it after 1929 led to radical changes in its political, economic and social structures. The economic results began to show in the 1950s, the period which has since become known as “the thirty glorious years” (1945-1975). The role of the state, traditionally important in France, emerged stronger than ever. Significant evidence of the nation’s new buoyancy can be seen in the demographic renewal of the postwar period, with a birth rate which started to rise sharply after 1943.

## France Since the Fourth Republic (1945)

After the Liberation the political forces that had emerged from the Resistance (Communists, Socialists and Christian-Democrats) and had supported General de Gaulle's provisional government quickly diverged, disagreeing especially



The Eiffel Tower

on constitutional issues. The former leader of Free France left the government in January 1946. It took two constituent assemblies elected by universal suffrage—women having been given the vote in 1944—and three referendums before the constitution of the Fourth Republic was finally adopted on 13 October 1946 and then promulgated on 27 October of the same year. The first

president, Vincent Auriol, was elected in January 1947 by Parliament, and he had only limited powers. Nevertheless, important measures were taken during this period: reconstruction, generalized health insurance, labour-management committees, nationalization of key sectors of the economy, economic planning (Monnet Plan), establishment of the Atomic Energy Commissariat (CEA).

## The New Republic and the Atlantic Bloc

Divisions resulting from the Cold War and decolonization were soon grafted onto the internal divisions. France accepted the financial aid offer of the Marshall Plan, introduced by United States Secretary of State George Marshall on 5 June 1947 to support the reconstruction effort in Europe, aid that was refused by the Soviet Union and in its wake the countries of Eastern Europe. France joined the European Organization for Economic Cooperation

(EOEC), set up in April 1948 to distribute the American funds. In April 1949 the nation became a member of the Atlantic Alliance. It also dropped its policy of demanding reparations from Germany and its goal of seeking to keep that country economically weak. Instead it opted for a policy of entente with a West Germany integrated into a united and democratic Europe. Jean Monnet and Robert Schuman, in agreement with Chancellor Konrad Adenauer, were instrumental in launching the construction of Europe, laying the foundations for it with the European Coal and Steel Treaty (ECSC) in 1951.

However, France rejected the treaty to establish a European defense community (EDC); both the Communists and the Gaullists opposed the proposal. On the other hand, the treaties setting up the European Economic Community (Common Market) and Euratom (European Atomic Energy Community) were signed in Rome on 25 March 1957.

## General de Gaulle Returns

*"Difficulty attracts the man of character, because it is by embracing it that he realizes himself."*

— Charles de Gaulle

By this time decolonization led to a serious crisis that brought the Fourth Republic close to collapse. Decolonization had started in Indochina, from which France retreated after eight years of a difficult war. Pierre Mendès France, president of the council, ended the conflict within an international framework with adoption of the Geneva Accords of 20 July 1954. Mendès France, followed by Edgar Faure and Guy Mollet, recognized the independence of Morocco and Tunisia (1956), while in sub-Saharan Africa a peaceful process of decolonization had gotten underway. But the French army, using young conscripts, became involved in Algeria in a conflict that broke out in 1954 and lasted until 1962.

In 13 May 1958 Algiers was the scene of riots by the French of Algeria that brought down the last government of the Fourth Republic. General de Gaulle was called out of retirement at Colombey-les-Deux-Eglises by President René Coty, and on 1 June 1958 he was invested by the deputies to take over the reins of government. He began to implement the political concepts for which he had not been able to win acceptance in the past. On 28 September 1958 the Constitution of the Fifth Republic was adopted by referendum. It applied not only to metropolitan France but also to the overseas possessions, which were invited to join with France in the "Community." All the countries of French Africa (except Guinea) voted in favour of the new constitution, but they gained complete independence after 1960, although they continued to retain special ties with France. The Constitution of 4 October 1958 gives the foremost role to the President of the Republic. On 21 December 1958 de Gaulle was invested with the highest office by a college of deputies, senators and local elected officials.

De Gaulle later called a referendum that approved election of the head of state by direct universal suffrage (28 October 1962). He was himself elected president by this system in the second round of voting on 19 December 1965, running against François Mitterrand, the candidate of the left.

### **Asserting France's World Role**

The "balance of terror" and the relative détente between the two blocs favoured the development of a special role for France. De Gaulle organized a meeting in Paris between Khrushchev and the Western allies in May 1960 (it failed in the wake of the U2 affair). He undertook many overseas visits and delivered many speeches, some of which had wide impact, for example in Cambodia in August 1966 and Quebec in July 1967. In 1964 France became the first Western

state to establish diplomatic relations with the People's Republic of China. The new institutions and a lasting and disciplined majority of Gaullist members of parliament ensured a long period of stability for the government. Economic prosperity and a newly stabilized monetary situation, symbolized by the introduction of the "new franc" in 1960, allowed de Gaulle to pursue a very active foreign policy. His goal was to assert France's independence and its role on the world stage. In support of this policy he set about building the country's nuclear capacity. On 13 February 1960 France exploded its first atomic bomb at the Reggane base in the Sahara. France went on to acquire thermonuclear arms (first test in 1968), and nuclear-armed aircraft, missiles and submarines. Like its British and American allies and like the Soviet Union, France became a nuclear power. Because of the U.S. refusal to let France take part in the collective decision on use of nuclear weapons in NATO, de Gaulle decided on 1 April 1967 to withdraw the French army from NATO's integrated military command, but France remained a member of the Atlantic Alliance.

### **Towards European Unity**

*"Europe would have the best possible organization if all the nations contained in it...would recognize the supremacy of a general parliament placed above all the national governments and invested with the power to decide their disputes."*

— Saint-Simon, 'Reorganization of Society'

France pursued a two-pronged European policy. On one prong, it worked toward what de Gaulle called "détente, entente and cooperation" with the Soviet bloc in an effort to end the Cold War, and lay the foundations for a Europe stretching "from the Atlantic to the Urals;" on the other prong, it sought to implement the Rome Treaty while firmly defending the sovereignty and basic interests of the states. For this reason, for six months in 1965 France refused

to participate in the European Community institutions because it judged that the European Commission had exceeded its powers (the so-called "empty chair" policy). This crisis led to the Luxembourg compromise providing that when a member state believes its fundamental interests are threatened, a decision in the matter must be reached by unanimous agreement. In other areas, France's proposals for political union failed (Fouchet Plan), and de Gaulle twice opposed Britain's entry in the EEC, which he considered entry premature.

However, the most important legacy of these years remains the establishment of close cooperation between France and Germany, a development due to the personal relations between Chancellor Adenauer and General de Gaulle. The Chancellor's official visit to France and the General's to Germany, the founding of the Franco-German youth office and finally the signature of the Elysée Treaty in 1963 set the seal on this rapprochement. The Franco-German tandem became the engine for European construction.

### **The Watershed Year of 1968 and the Succession to de Gaulle**

*"Tomorrow will not be like yesterday. It will be new and it will depend on us. It is less to be discovered than to be invented."*

— Gaston Berger

During the 1960s, profound changes in the French economy aroused concern and led to new social aspirations which the proliferation of new media (transistors, television) helped air throughout the nation. The events of May-June 1968 became their catalyst.

The student uprisings occurring in many industrialized countries reached France, where the universities were ill-prepared to handle the growing numbers of young people seeking higher

education. Clashes with the police took place, especially in Paris in May 1968, and the government was jeopardized by a wave of strikes on a scale not seen since 1936. After a firm speech by de Gaulle, his supporters rallied; following dissolution of the National Assembly and new elections the situation was restored in June 1968. Less than a year later, however, on 28 April 1969, de Gaulle left office permanently when the nation rejected a referendum on regional autonomy and reform of the Senate. One of his former prime ministers, Georges Pompidou, succeeded him in the elections of 15 June 1969; after Pompidou's premature death Valéry Giscard d'Estaing, his finance minister, was elected president on 19 May 1974.

At home two political proposals were opened to debate: the plan for a "new society" put forth by Prime Minister Jacques Chaban-Delmas (1969-1972) and President Valéry Giscard d'Estaing's "advanced liberal society" (1974 – 1981), an attempt to reconcile market-economy and social-democratic principles and build a broad social consensus.

### **The Left Comes to Power**

The Socialist Party, which under the impetus of François Mitterrand had emerged reorganized from its congress at Epinay in June 1971, along with the Communist Party and the *Radicaux de gauche* (Radicals of the Left) formed the *Union de la Gauche* (Union of the Left) before the 1973 legislative elections and adopted a common program for government. Despite muted tensions, momentary ruptures and then abandonment of the common program in 1978, the union was resuscitated for the presidential election of April-May 1981 and François Mitterrand was elected against incumbent President Valéry Giscard d'Estaing.

## 1981–1995: Changes in Government

For the first time in the history of the Fifth Republic, the left had come to power—an alternation in the governing parties that demonstrated the stability of the institutions. This stability was further confirmed between 1986 and 1988, a period of “cohabitation” of a conservative prime minister, Jacques Chirac, and a Socialist president; and again when François Mitterrand, re-elected in 1988, appointed the Liberal Edouard Balladur as his prime minister after the March 1993 legislative elections were won by the conservatives.

Between 1986 and 1988 the government of Jacques Chirac, in keeping with its policies of economic liberalism, privatized a part of the public sector (the television channel TF1, for example) and deregulated some areas of the economy. After François Mitterrand was re-elected, the National Assembly was dissolved and new legislative elections held which gave the Socialist party only a relative majority. The succeeding Socialist government of Michel Rocard did not go back on the privatizations. However, as unemployment persisted the governments of both left and right tried to address the problems through “social policies” by setting up on-the-job training programmes, public works projects partially financed by the state and, after 1988, a “minimum insertion revenue” (RMI) paid by the state to persons over the age of 25 who were not otherwise provided with a minimum level of resources. This situation resulted in certain disenchantment on the part of voters.

The Socialists suffered a crushing defeat in the March 1993 legislative elections. Conservative groups dominated in the National Assembly; Philippe Séguin (RPR) became president of this body while Edouard Balladur was appointed prime minister. His government met with some success in economic areas but was soon put to

the test by political and financial scandals, student unrest and the government’s inability to make any real inroads on unemployment. Dominated by the confrontation between Jacques Chirac and Edouard Balladur, two candidates from the same political group (RPR), the climate of the campaign for the presidential elections of April-May 1995 was oppressive. Finally the second-round run-off election pitted Mr Chirac against the candidate of the left, the Socialist Lionel Jospin. Despite his unexpectedly strong showing in the first round, Mr Jospin was defeated and Jacques Chirac became the fifth president of the Fifth Republic. Alain Juppé was appointed to the post of prime minister.

## Foreign Policy and the European Anchor

When he stood before the Bundestag in January 1983, President Mitterrand spoke out in support of the presence of American Pershing II missiles in Europe, a deployment which was then opposed by a powerful pacifist movement in Germany. At other times, however, the French President did not hesitate to distance himself from his American ally in domains such as aid to development, which Mitterrand defended in his speech in Cancun, Mexico, in 1981, debt cancellation for the least-developed countries (a position France favoured), policy in the Middle East (France upheld the right of the Palestinians to a state of their own) and in the international trade negotiations (Uruguay Round of GATT talks). France remained true to its own path but at the same time joined in “United Nations-authorized” military operations after Iraq invaded Kuwait (1990) and the primarily humanitarian interventions in Somalia and the former Yugoslavia.

France’s commitment to European union has been unwavering. France has consistently supported the European Monetary System, the single market which went into effect on 1 January 1993, political and diplomatic cooperation, and

the decision to elect the European Parliament by universal suffrage. These efforts culminated in the signing of the Treaty on European Union at Maastricht (Netherlands) on 7 February 1992. Among other things, this treaty provides for introducing a common currency and for increased cooperation in the social, cultural, foreign policy and security areas.

The vigorous debate in France over this treaty and the close results in the referendum on 20 September 1992 which authorized ratification by a margin of 51.04 percent to 48.95 percent

revealed doubts among the public about the means chosen to pursue European policy, often perceived as technocratic and remote.

Despite these internal debates—proof that France's tradition of a lively political scene continues to thrive—the French remain by and large strongly attached to the special role their country plays in the harmonious unification of the European continent. They believe it is important for their nation to contribute to the search for peaceful solutions to the troubles arising in the world.



## Chapter 2

# THE GOVERNMENT OF FRANCE

### THE EXECUTIVE BRANCH

#### A Strong Power, Shared Responsibilities

The Fifth Republic, established by the Constitution of 1958, has provided France with institutional stability unequalled in the two preceding centuries, although it has not yet lasted as long as the Third Republic. Its chief merit has been to overcome the inefficiency of earlier institutions while at the same time developing a consensus of acceptance for them within the nation. It is important to emphasize that Gaullism, whose principles inspired the Constitution, is not an ideology but rather a means to work toward clearly defined objectives: the greatness of the nation, the predominance of the nation's interest over ideologies, a strong role for the state, sovereignty of the people and the identification of a leader. This last point led General de Gaulle to propose a key institutional reform, the election of the President of the Republic by direct universal suffrage, which was introduced by constitutional amendment in 1962.

#### The President of the Republic— Predominant Power

The Constitution of 4 October 1958 provided for the election of the President of the Republic by indirect universal suffrage by an electoral college comprised of members of Parliament and various representatives of local elected officials. General de Gaulle was chosen president under this system in 1958 before being re-elected by direct universal suffrage in 1965. The new electoral procedure broke with a tradition more

than a century old, which in order to ensure that Parliament would be the supreme organ of government, provided that the head of state should not be elected directly by the people. The 1962 amendment helped strengthen the power of the executive, conceived from the outset in 1958, as the cornerstone of the new institutions. And constitutional practice, reinforced by General de Gaulle's personality, strengthened the dominant role of the executive.

The Constitution defines the powers of the President as follows: The President is elected for seven years—the longest term in any parliamentary system—and may be re-elected an indefinite number of times. The President is commander-in-chief of the armed forces and presides over the Higher National Defense councils and committees (article 15). He also plays a key role in foreign policy, although he shares responsibility with the government in this area. The President "shall see that the Constitution is respected. He shall ensure, by his arbitration, the proper functioning of the public authorities and the continuity of the state" (article 5). He appoints the prime minister and chairs cabinet meetings. The President promulgates laws (article 10) and signs the ordinances and decrees decided upon by the Council of Ministers (article 13). The President is the guarantor of the independence of the judicial branch (article 64); he presides over the High Council of the Judiciary that makes proposals or advises on the appointment of judges.

The President makes appointments to the highest civilian and military posts (article 13). He has the right to grant pardons (article 17) and may

be invested with special emergency powers (article 16). On the proposal of the government or the assemblies he may call a referendum on certain bills. After consulting with the government and the presidents of the assemblies he may dissolve the National Assembly. Like the Prime Minister, the presidents of the assemblies or sixty deputies or senators, he may refer legislation to the Constitutional Council, (the highest legal authority in France, composed by high level civil servants appointed by the President of the Republic, the President of the Senate and the President of the National Assembly), for review of its constitutionality before it is promulgated (see below).

The Constitution specifies the powers that are exercised personally by the President and those he shares with the Prime Minister. Thanks to this balance, the Constitution has enabled France's institutions to work during periods of "cohabitation" when the President and the Prime Minister represent different political tendencies.

### **The Prime Minister and the Government**

The government consists of the Prime Minister and the ministers of the departments. It determines and directs the policy of the nation and oversees the civil service and the armed force. It is answerable to Parliament (article 20). The Prime Minister, who is appointed by the President of the Republic, is the "Head of the Government" and is responsible for national defence. He ensures implementation of the law (article 21). Within the limits imposed by the Constitution, he has regulatory powers (article 21). This is a fundamental point; while laws are passed by Parliament, regulations (decrees and ministerial orders) emanate from the government, that is, the Prime Minister and the other ministers. The 1958 Constitution introduces an important innovation in this respect by making a clear distinction between the domain of the law, defined within strict limits in article 34, and

the domain of government regulations which includes all matters other than those that fall within the legislative sphere (article 37). In exceptional circumstances regulatory power may be expanded if Parliament authorizes the government to take through ordinances, for a limited period of time, decisions that are normally within the legislative sphere (article 38). This procedure has been used to modify the law regarding labor regulations.

Apart from its regulatory power, and in common with other parliamentary systems, the government shares with members of Parliament the power to introduce legislation. But the government enjoys an unquestionable advantage over Parliament because it can set the agenda in the assemblies (article 48) and may call for a vote bloqué, a procedure which allows the government to pledge its responsibility on the vote of a bill. Last but not least, the Prime Minister can decide to pledge the government's responsibility before the assembly either on its programme, on a statement of general policy, or on the vote of a bill (article 49, paragraph 3). The text is deemed to be adopted unless a motion of censure is filed in the National Assembly and wins a majority of the deputies' votes. If this happens, the Prime Minister must tender the resignation of the government to the President. This procedure, unique in Western Europe, reflects the determination of the framers of the 1958 Constitution to give the government stability and enable it to govern without obstruction from Parliament.

Thus in France the Prime Minister is answerable to Parliament, as is the rule in all parliamentary democracies, but in practice he also has to have the confidence of the President of the Republic. So the French system combines elements of both parliamentary and presidential systems and cannot be categorized as belonging fully to either one. As the head of government, the Prime Minister has greater authority than

the other members of government, who are appointed by the President upon the Prime Minister's proposal. This role, together with the powers conferred on him in article 21 (see above), gives him considerable latitude for action. He also has access to special administrative facilities such as the *Secrétariat général du gouvernement*, the permanent staff of his office.

### **The Cabinet**

The number of cabinet members varies according to political priorities and balances of each government. Cabinet ministers take part in setting the government's policies in cabinet meetings. They must countersign government acts in their areas of competence. They are also required to defend the policies of their ministries before Parliament. Finally, they are responsible for seeing that the administrative services under their direction carry out governmental decisions effectively.

Cabinet ministers may not sit in Parliament and are also forbidden from holding civil service employment or a job in the private sector. However, they may occupy elected positions at the local level up to a maximum of two, such as regional councilor or Paris municipal councilor. Cabinet ministers are individually answerable to the Prime Minister and the President. Resignation may be spontaneous (for personal reasons), automatic (collective resignation of the cabinet) or provoked (disagreement with the Prime Minister or the President).

The makeup of the staff that assists every minister—the “cabinet ministériel”—is specific to France. Staff members are chosen by the minister and are usually drawn from the ranks of senior civil servants. In carrying out their duties, they rely heavily on the central administration and on the decentralized services of the state in the departments, regions and sometimes in foreign countries.

## **THE LEGISLATIVE BRANCH**

### **Parliamentary Powers**

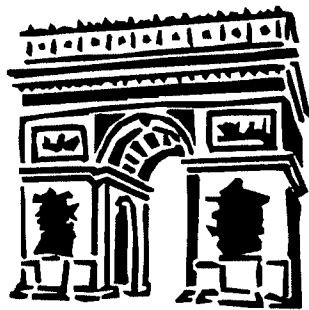
It might seem that Parliament lacks powers in the face of such a strong executive, but this is not the case—although it is not as influential as the British House of Commons, the German Bundestag or the United States Congress. The National Assembly, formally known as the Chamber of Deputies (which meets in the *Palais Bourbon*) and the Senate (sitting in the *Palais du Luxembourg*) share the traditional role of parliaments in all countries.

The 1958 Constitution assigns an important role to Parliament in its dual capacity as a check on government and as a legislative body. In its legislative role, article 34 of the Constitution defines its area of action, which includes finance laws (the budget) and the so-called “program laws” setting goals for the state's economic and social action. Before program laws are brought up for debate, the government consults the Economic and Social Council, a body composed of men and women representing a broad range of social and professional categories. In addition the government often turns to the Economic and Social Council for studies of a particular issue in order to have the views of a wide spectrum of the citizenry.

When laws are drawn up, bills introduced by the government (called *projets de loi*) are first submitted to the Council of State (see below) for consultation and then are discussed by the cabinet before going to one of the two houses for debate. In order to be adopted, both government-sponsored bills and those introduced by Parliament (*propositions de loi*) shuttle back and forth between the two assemblies until they are passed in identical terms by both. If the two houses cannot agree on a text, there are procedures to work out the differences. If these fail, the National Assembly has the last word (article 45).

The way constitutional practice has evolved is a source of unending debate on the real role of members of Parliament. During the 1988-1993 legislature, 455 laws were passed of which 60 were introduced by members of Parliament. The trend toward an increasing number of laws is common to all democracies as they strive to respond to the complexities of an ever-changing society.

In the defense arena, Parliament makes laws to define how defense is organized, constraints imposed on citizens



**Arc de Triomphe**

(e.g. the national service), finance laws (annual budget for the armed forces), military programming laws in which it periodically makes statements about the main orientation of France's military policy (equipment for the armed forces over several years). As an example, Parliament approved the program law in 1996 which set out the main decisions for the defense posture through 2015 and includes both operating costs and capital expenditures. It will receive an annual progress report on the ministry's progress. The yearly program authorizations and payment clearances are set within this overall guidance and the annual budget.

### **The Chambers – The National Assembly**

The National Assembly is made up of 577 deputies elected by direct universal suffrage, voting for one candidate in two rounds; they represent districts of varying sizes with one deputy representing approximately 100,000 inhabitants. Each legislature is elected for a period of five years, which may be abridged if the President of the Republic decides to dissolve the Assembly. The Constitution originally

provided for two ordinary sessions each year: the fall session, opening on 2 October and lasting for 80 days, devoted mainly to the discussion of the finance bill, and the spring session, opening on 2 April and lasting for a maximum of 90 days.

However, the Constitution was amended in the summer of 1995 and mandates a single nine-month session each year. In addition, the president may call special sessions he opens and closes by decree. National Assembly sessions are generally open to the public and are reported in the press; debates are published in full in the *Journal officiel*.

Once a week, on Wednesdays, a question period is held when deputies may put questions to members of the Cabinet. These sessions are broadcast on television.

Deputies usually belong to one of the Assembly's political groups, within which they take part in the proceedings of the specialized committees. Each deputy also belongs to one of the National Assembly's six standing committees: cultural, social and family affairs; foreign affairs; national defense and the armed forces; finance, general economy and planning; legal matters; production and trade.

Unlike the Senate, the National Assembly has the power to force the government to resign; it may do so by passing a motion of censure. Another distinction between the two houses is that finance bills must be submitted to the National Assembly first (article 39).

### **The Senate**

The Senate comprises 321 members who are elected for a nine-year term. Senators are chosen by indirect universal suffrage by an Electoral College, in each department, formed of deputies, regional councilors, general councilors and

representatives of the municipal councils. One-third of the senators is elected every three years; they include a high proportion of locally elected officials.

Like the deputies, senators are first and foremost legislators. However, their legislative power is essentially expressed through the right to make amendments. Bills are debated in the Senate just as they are in the National Assembly, that is to say, initially in one of the six standing committees (cultural affairs; economic affairs; foreign affairs; defense and the armed forces; social affairs; finance and legal matters) and then in public session.

Except for the vote of a motion of censure, senators and deputies have identical powers in providing a check on the government. They may submit written questions to the ministers (from 5,000 to 6,000 each year), debate statements of general policy, carry out fact-finding missions and form investigative committees.

In addition to voting the law and keeping a check on the government, the 1958 Constitution calls on the Senate to represent the territorial units of France, that is the municipalities, departments, regions and overseas territories. French citizens living abroad are also represented in the Senate.

The voting procedure and the senators' long term of office promote political stability, which is reinforced by the fact that the Senate cannot be dissolved. The Senate's permanency is the reason why the Constitution confers on its president the task of temporarily standing in for the President of the Republic in the event the office is vacated. This has happened on two occasions: in 1969 after General de Gaulle resigned, and again in 1974 when President Pompidou died in office. The Senate thus acts as an anchor guaranteeing the stability of the country's institutions, for it ensures continuity in government operations and thus of the state as a whole.

## The Civil Service

Civil servants in France have a very special social position, due to the traditionally very important role of public activities in the country. They always enter the administration through a nationwide competition, sometimes also open to other EU (European Union) member citizens. The great diversity of positions offered and the difficult job market in France make these examinations very attractive. In the strictest sense, public service "la fonction publique" covers a wide variety of sectors.

The public administration, "l'administration publique" directly administered by the State, which covers tax collecting, defense, police, justice. More than two million employees work for it; employees in the military and judicial branches have a special status.

The territorial administration, "la fonction publique territoriale" works on a local level in the regions, departments and townships. National Education, the public school and university system, employs more than 1.3 million people and is growing as fast as the local civil service, with the devolution of central power to local administration, called "décentralisation."

The medical public service, "fonction publique hospitalière," in charge of hospitals, retirement homes, etc., employs 830,000 nurses and administrators.

Additionally, employees in the following sectors have civil servant status: public services operators (like the National Railroad Company), public utilities, the national mail service, France Telecom (the recently privatized telecommunication company), and France Television (the French public television); public administrations (like the health, social security and welfare system), Sécurité sociale; public establishments,

“Etablissements publics” (like the National Employment Agency), ANPE; some airports, and public research institutions (like CNRS), INSERM (Medical Research), INRA (Agriculture Research), IFREMER (Oceanography) or CEA (Atomic Research).

Every year, more than 40 000 people are hired through this competitive process and admitted through three main categories of exams: the “A category” exam is open to candidates with the

minimum level of a university level degree to work in the public corporations as engineers, professors or police officers; the “B category” exam is open to candidates with a minimum Baccalaureate (the equivalent of two years of college) to recruit mid-level workers, like secretaries, laboratories technicians, etc.; and the “C category” exam, is often open to candidates with no degree to recruit workers and administrative agents.

## *Chapter 3*

# **DEFENSE**

### **DEFENSE POLICY, STRATEGY, ORGANIZATION**

#### **The Purpose of Defense**

France is a peaceful nation. It does not have any expansionist ambitions and has no declared enemies. All its actions are designed for peacekeeping, but it does have interests to defend, responsibilities to shoulder, and a world role to play. The first objective of France's defense policy is to be able to defend its vital interests, alone if necessary, against any threat from any source. As much as ever, it is difficult to foresee where the boundary between vital interests and strategic interests will be in the future. Both must be defended with determination. Essentially, the strategic interests lie in peacekeeping within Europe and adjacent areas (Mediterranean, Middle East) and in areas essential to economic activity and freedom of trade. Beyond that, France has interests corresponding to its international responsibilities and to its position in the world which, as for all countries, results from a combination of historical, political, strategic and military factors, as well as economic, scientific and cultural factors. The security of these interests cannot be guaranteed without suitable defense.

The second objective of French policy is to ensure European and international stability. The ability to maintain France's position in the world will be closely related to its ability to influence the European construction and future developments in Europe. This European option is necessary for strategic and economic reasons. The gradual restructuring of Europe is leading to the definition of a political identity, which would

be incomplete, if it were not also expressed in the context of defense.

Restoring political, historical and cultural dimensions in Europe imposes the obligation of asserting a European defense identity in accordance with the objectives defined by the European Union within a renovated North Atlantic Alliance. Moreover, although France remains free to evaluate conditions for its security and to choose its means, it recognizes that the North Atlantic Alliance is the essential link between Europeans and Americans, including for missions on behalf of the UN (United Nations) and the Organization for Security and Cooperation in Europe (OSCE). Thus the capacities of a renovated North Atlantic Alliance—in which responsibilities are better shared between the United States and Europe—can be put at the service of peacekeeping or crisis resolution missions.

France is founding member of the Western European Union (WEU), created in 1954 by the agreement of Paris, modifying the Treaty of Brussels of 1948. WEU is considered as being the European framework within which security and defense matters should be dealt with. The role of WEU has been defined in the declaration of Maastricht (1991) annexed to the Treaty of the European Union.

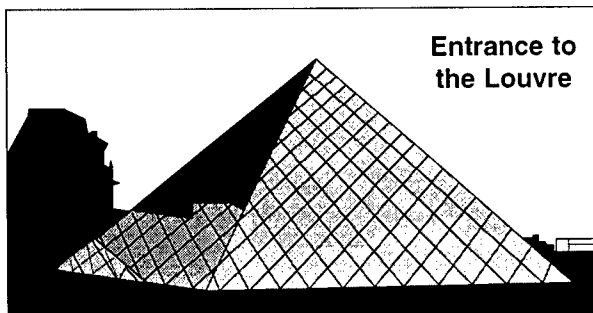
During the summit of Cologne in June 1999, defense ministers declared that WEU would have finished its mission by the end of the year 2000, and some of its functions could be transferred into the European Union. With 10 full members, five observers, three associate members and

nine associate partner countries, WEU is one of the largest European fora.

Finally, the third objective is to implement a comprehensive defense policy, which is not limited to military and strategic aspects. More than ever, defense must cover all of the country's activities and form a permanent part of national life.

### **Comprehensive Deterrence**

French defense policy is guided by two principles: independence—France alone makes decisions concerning its future; solidarity—France is ready to help its neighbors, it allies with whom it acts jointly, and to meet its commitments in Europe and in the rest of the world.



Its military strategy has been strictly defensive for the last forty years. It relies on both nuclear forces and conventional forces, the roles of the two being mutually complementary. Today, the main threat to the survival of the French nation has disappeared, probably for a long time. However, the risks related to proliferation and dispersal of weapons of mass destruction have multiplied and they weigh diffusely and insidiously on France's strategic environment. In this uncertain context, the object is still to deter an aggressor from attacking vital interests by retaining nuclear capabilities that are sufficient to inflict much more damage on such an aggressor than the gains it could hope to obtain from its aggression.

At the same time the number of crises endangering the vital interests of the French nation have increased considerably. If such crises are not properly kept under control they could sooner or later lead to major conflicts with serious consequences. Under these conditions the future of the country cannot rely on nuclear deterrent alone. Conventional forces that are gradually becoming fully professional and are ready to undertake prevention, "projection," i.e., expeditionary action and protective missions now play a specific strategic role that is essential to France's defense and the interests of peace throughout the world.

### **Aspects of Defense Strategy**

#### *Deterrence*

Deterrence remains at the heart of France's defense strategy. It constitutes the ultimate guarantee against any threat to her vital interests, regardless of the origin and type of threat, in a world where vigilance continues to be the order of the day. Deterrence doctrine must, however, be adapted to suit the new strategic environment. In accordance with the strategy directions set by the President of the republic, it relies on two reduced and modernized components: a submarine component, constituted by four nuclear submarines capable of launching new-generation missiles and equipped with ballistic missiles; an air component, implementing improved medium-range air-to-surface missiles launched from air force or navy aircraft.

#### *Missions and Organization of the Forces*

Organized, equipped and trained to face contingencies that are much more numerous and varied than in the past, the armed forces must develop or acquire the necessary operational and logistic capabilities to carry out the four main categories of mission assigned to them.



1. They must protect the vital interests of France against all forms of aggression, guarantee France's territorial integrity.
2. They must contribute to the security and defense of Europe and the Mediterranean, with the prospect of a common European defense policy ultimately being implemented, and within the North Atlantic Alliance in the event of aggression.
3. They must contribute to actions conducive to peace and the respect of international law, under the auspices of the United Nations or other competent international organizations.
4. They must carry out public service tasks, to include civil defense, search and lifesaving operations and other similar activities.

The capabilities required of the armed forces are the result of engagement hypotheses and the objectives that are set in each of these hypotheses.

### *The Men and Women behind Defense*

In 1997 the Ministry of Defense still relies on national service in its military form to provide a relatively large proportion of its manpower requirements. However, under the 1997-2002 programming law these mixed armed forces are entering a phase of profound change, which is to transform them into professional armed forces. With France no longer having a direct military threat at its land borders, Defense no longer requires large numbers of personnel. Moreover, the conditions under which armed forces based on a high proportion of draftees can be used are less and less compatible with the needs resulting from the nature of new crises.

### *Territorial Organization*

The current territorial organization is defined in the "Armed Forces 2000" plan which came

into application a few years ago. The home country of France is subdivided into three specific defense regions, identical for the Army, Air Force and Gendarmerie. The Paris area has a special military command structure: the Atlantic Region, Northeast Region and the Mediterranean Region. These Military Defense Regions (RMD) are themselves subdivided into eight Military Defense Districts (CMD) that form the basic units of the military territorial organization in times of crisis and wartime.

For the Navy, the defense of coastline installations and ports, and territorial maritime defense is organized into two maritime regions: the Atlantic Maritime Region, with headquarters in Brest, itself subdivided into three maritime areas—Cherbourg, Brest and Lorient.

The defense of the national airspace is centralized at the Air Force Air Defense Command, with headquarters in Taverny.

The defense of the French overseas territories is entrusted to five joint services high commands, each having a specific zone of responsibility—West Indies, Guyana, French Polynesia, New Caledonia, South Indian Ocean.

The organization of the armed forces, their professionalization and the significant reduction in the number of training programs on the national territory require a re-examination of the territorial organization set up by the "Armed Forces 2000" plan. Studies are under way, and, in the coming years, they would result in our territorial system being better adapted to the new strategic environment.

### *France's Defense Effort*

France's defense effort can be measured through some financial and physical indicators. The first financial indicator is the budget. At 184.7 thousand million francs (excluding pensions)

(approximately \$30.8B), the Defense budget represented 11.6 percent of the State budget in 1998—approximately 2.19 percent of the Gross Domestic Product. Two significant points—the amount of investment is high (4.8 percent) compared with operating expenses (56.1 percent), and the share of the budget earmarked for nuclear forces is decreasing, currently at 9.0 percent of the Defense budget.

The second financial indicator can be drawn from the military programming law. This law, enacted on July 2, 1996, constitutes the first legislative expression of the objectives set for the armed forces by the President of the Republic on February 22, 1996. For the 1997-2002 period it provides the means for planning efforts to be made for modernizing France's defense resources, and for professionalizing the armed forces, while participating in the effort to reduce the budget deficit. This law earmarks 86 thousand million francs (in real terms, based on the 1995 value) to equipping the French armed forces, and 99 thousand million francs to operating costs. It organizes the changeover to professional armed forces by defining the changes in staffing levels, it tailors equipment to fit the new format, it instigates the re-structuring of industrial resources, and it specifies the social and economic support measures that are to be implemented.

The characteristic physical indicators are represented by peacetime staffing levels and major equipment in service. The staffing levels, including the Gendarmerie, were at about 548,280 civilian and military personnel in 1998, which represents less than 1 percent of the population. They are to decrease constantly to reach the target set at 440,000 in 2002. The major equipment in service on December 31, 1997 included 786 tanks for the Army, 107 ships and 4 missile-launching submarines (SNLE) for the Navy, and 380 combat aircraft for the Air Force.

The Délégation Générale pour l'Armement (Delegation General for Armaments – DGA) manages 80 percent of the defense equipment budget, representing more than 10 billion Euros per year (1 EURO = \$1.04 and 6,55957 FF). Industrial activities still employ 21,000 people (17,600 for DCN and 3400 for SMA).

### **Organization of National Defense**

The risks that France has to face are very diverse and cover a wide range of intensity. Thus its defense must be comprehensive and permanent, even in peacetime.

The general organization of defense depends on four principles: comprehensiveness—it concerns the entire population and all sectors of French life; permanence—it is organized and prepared even in peacetime; unity—it is directed and coordinated by the government; decentralization—there is an authority responsible for each part of the country.

The main defense decisions are made by the President of the Republic in councils chaired by him (Council of Ministers, Council of Defense, Restricted Defense Committee).

The Prime Minister, responsible for national defense for global aspects, controls how these measures are implemented; he does this through the SGDN (Secretariat-General for National Defense). The Minister of Defense is responsible for the preparation and execution of defense measures to be carried out by his department; a senior defense civil servant assists him in this.

The Minister of Defense implements the military defense policy (organization and training of the armed forces, recruitment and management of personnel, armaments and infrastructure procurement). He is assisted by the Joint Armed Forces Chief of Staff (CEMA)(preparing for the future, international military relations), the DGA, General Delegate for Armament,

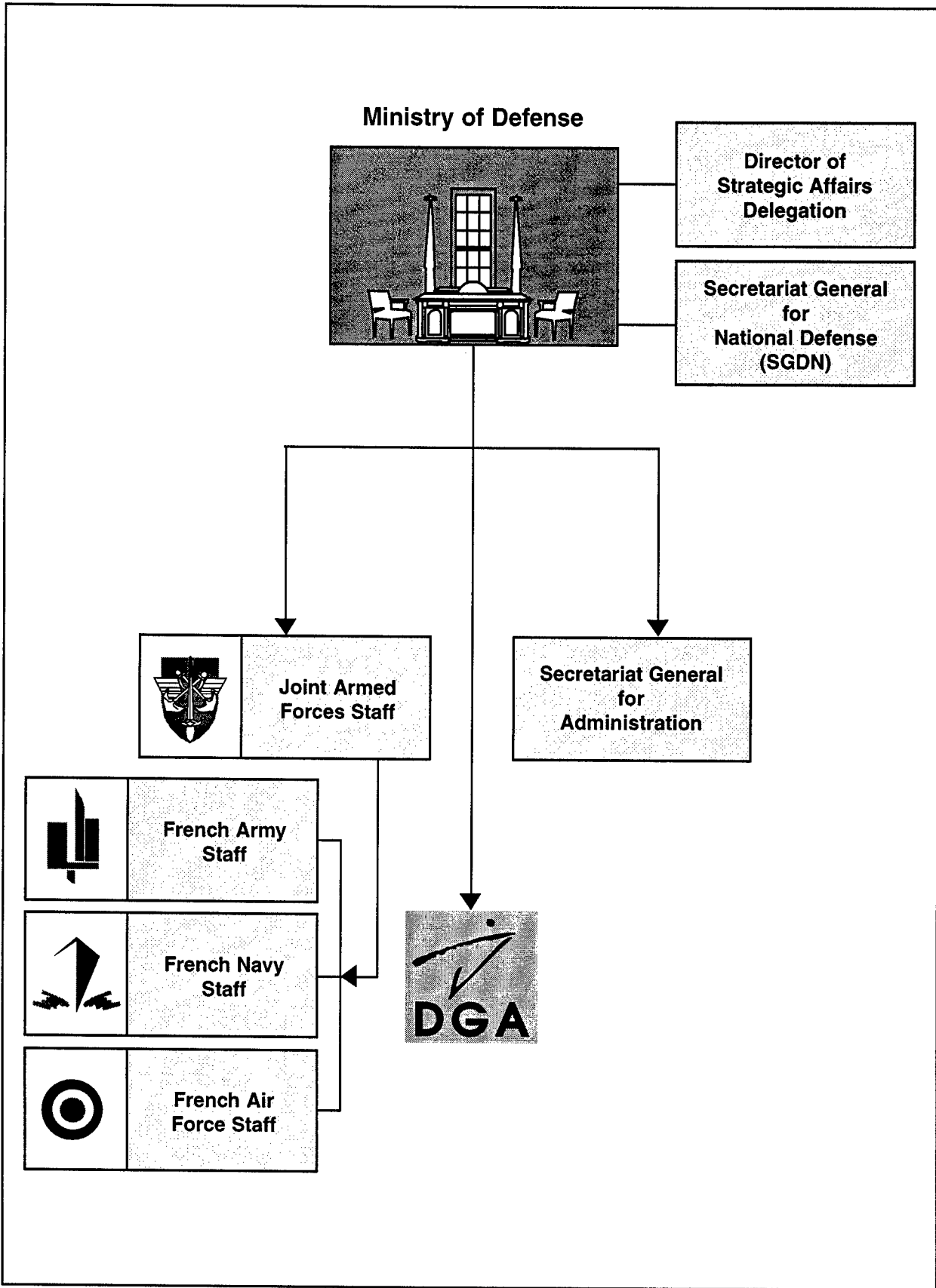


Figure 1. Organization of National Defense

(studies, research and production), the secretary-general for administration (DAF – financial services directorate, DFP – personnel function directorate, DAJ – juridical affairs directorate), the chiefs-of-staff for the Army, Navy and Air Force, the director of the ‘Gendarmerie

Nationale,’ and the director responsible for strategic affairs. The Joint Armed Forces Chief of Staff (CEMA) reports directly to the Prime Minister and the President in case of conduction of operations. (See Figure 1.)

## Chapter 4

# DGA: ROLE AND ORGANIZATION

*"The future will be the sole judge of quality of our work. Immense energy, imagination and talent is being employed to identify, from amongst the multitude on offer, the right directions to take to give us the defense system that is best adapted to the conditions that will pertain tomorrow and the day after; this shows clearly the priority we give to preparing for the future."*

— J. Y. Helmer, DGA

Created on April 5, 1961 under the name "Délégation Ministérielle pour l'Armement," DGA (Délégation Générale pour l'Armement) is intended to provide the French armed forces with the necessary equipment at the best cost and in due time (see Figure 2). Its activities cover:

- the management of armaments programs,
- the procurement of armaments equipment,
- the technical and scientific expertise related to the outfitting forces,
- trials and evaluations, and
- overall training and support.

### **Three Directorates in Charge of the Programs**

The Forces Systems and Prospective Directorate (DSP) monitors the research activities, conducts the common technological development and prepares the programs. It ensures the technical consistency within the forces systems. It assumes responsibility for the strategic deterrence

programs as well as those dealing with observation, information and telecommunications.

The Armament Systems Directorate (DSA) is in charge of the design and achievement of the land-based naval, aeronautical and tactical missiles programs. The Program Managers belong to this Directorate; they are fully responsible for all aspects of program and receive support from a "program integrated team" which includes specialization such as procurement and quality control.

The Program Management, Acquisition Methods and Quality Control Directorate (DPM) has responsibility for funds management, to include budget preparation. It is also responsible for procurement, quality and logistics support of including maintenance for the operational forces. It make its specialists available to program managers.

### **Two Directorates in Charge of International Activities**

The Cooperation and Industrial Business Directorate (DCI) has responsibility for bringing efficiency and modernization to the existing European structures and promotes the economic dimension. It develops the abilities and qualifications necessary for working issues of European cooperation. It favours and accompanies the consolidation of the defense industry. It exerts the public sector tutorship of the aeronautic and defense industry and the conduct of support and development actions for the small business. (See Figure 3.)

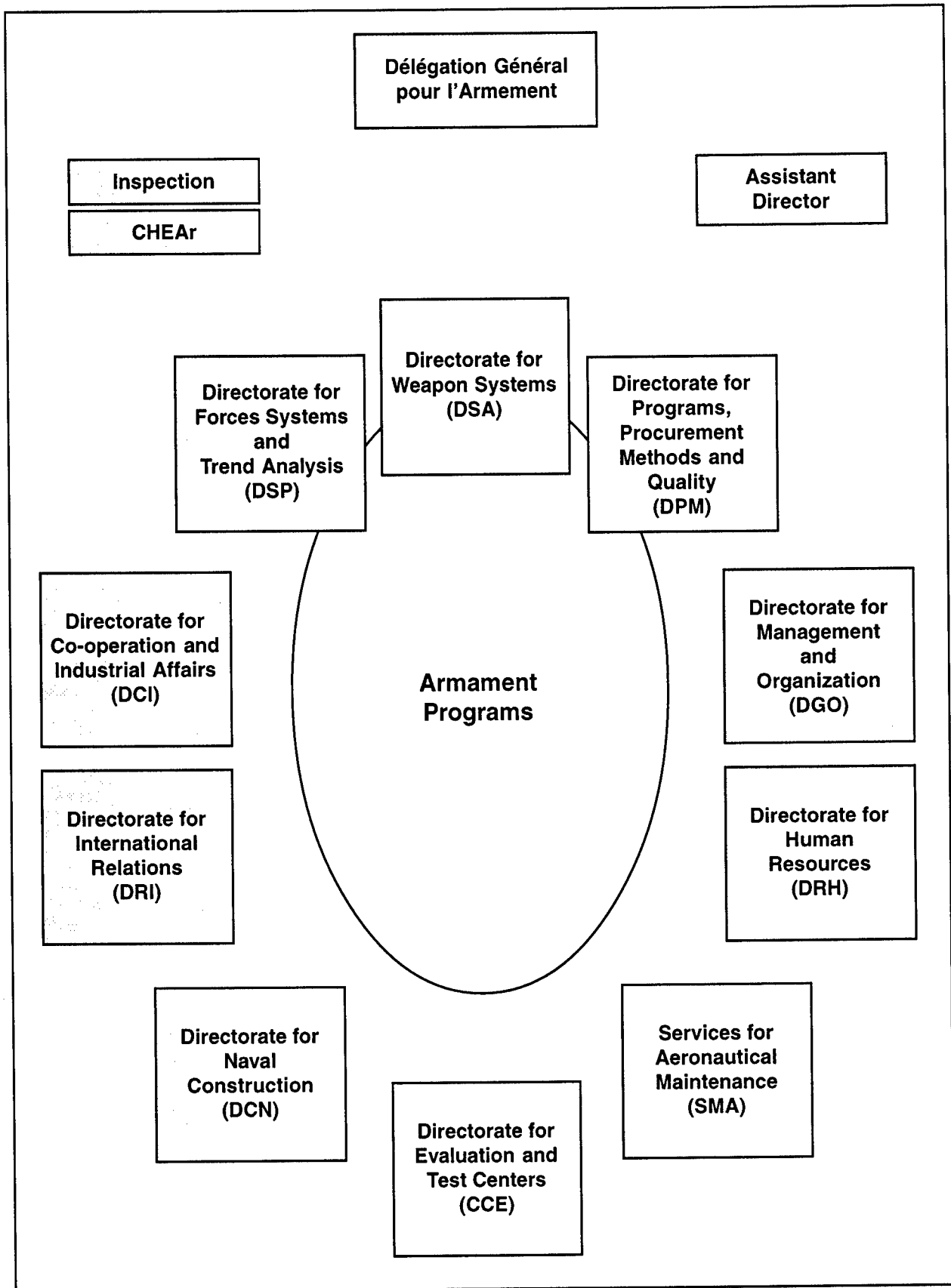


Figure 2. Delegation General for Armaments Organization

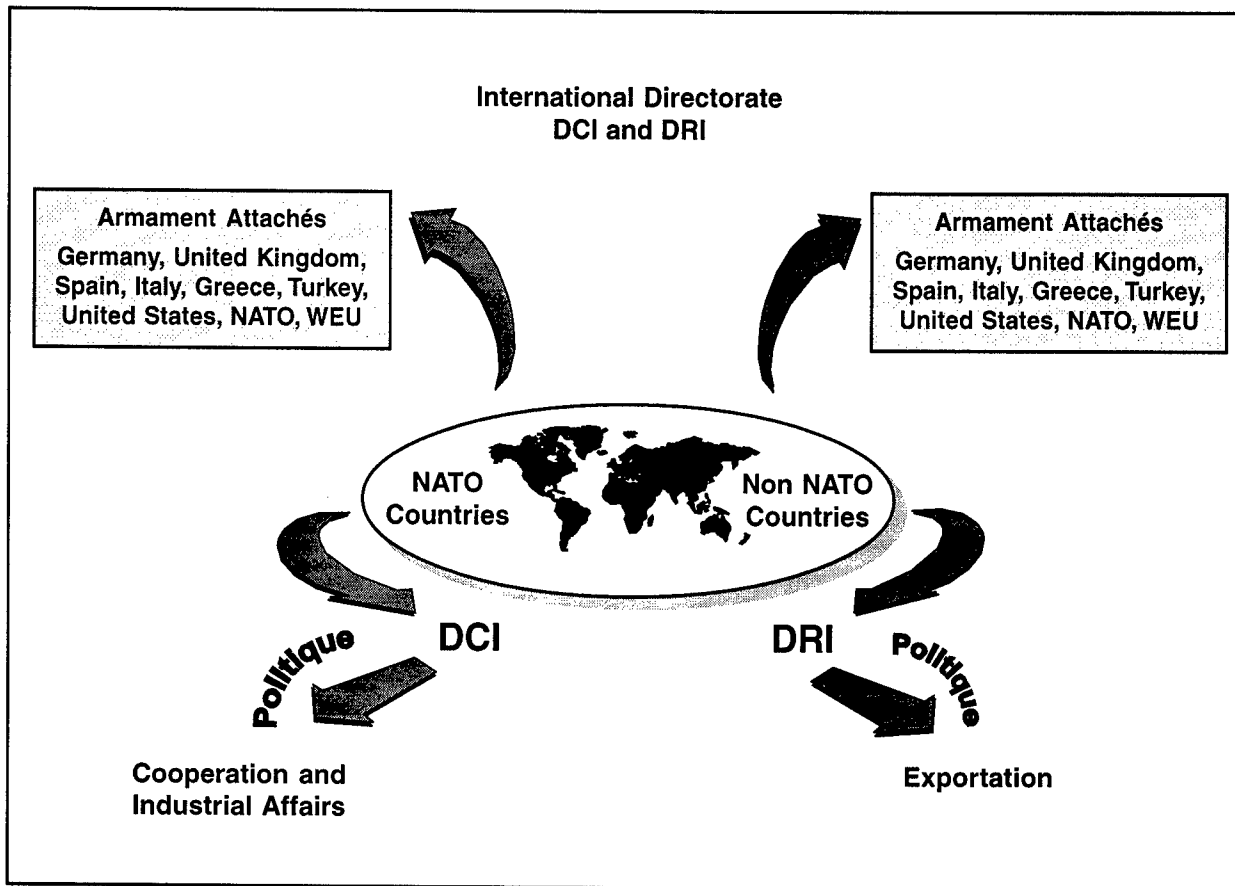


Figure 3. International Directorate – DCI and DRI

The International Relations Directorate (DRI) has responsibility for DGA activities promoting the exports of French armament equipment to foreign markets and the control of the exports. It coordinates the development and implementation of export strategy.

#### One Directorate in Charge of Survey and Trials

The Directorate for Expertise and Test Centers (DCE) has responsibility for providing the technical expertise and skills needed by program managers and other DGA departments for the testing of equipment and systems. It will also provide support for external customers (industry, foreign government and companies). DCE manages all of DGAs technical and Test Centers

(See Appendix B for listing of technical and test centers).

#### Two Directorates in Charge of Industrial Activities

The Directorate for Navy Shipbuilding (DCN) has responsibility for designing, constructing and maintaining both French Navy and exported ships and equipment. It also plays a significant role in the export of Naval equipment (also see industrial base discussion of DCN). (See industrial base discussion of DCN and Figure 4.)

The Service for Aeronautical Maintenance, "Service de la Maintenance Aéronautique" (SMA), is responsible for aircraft maintenance and maintenance of the industrial facilities.

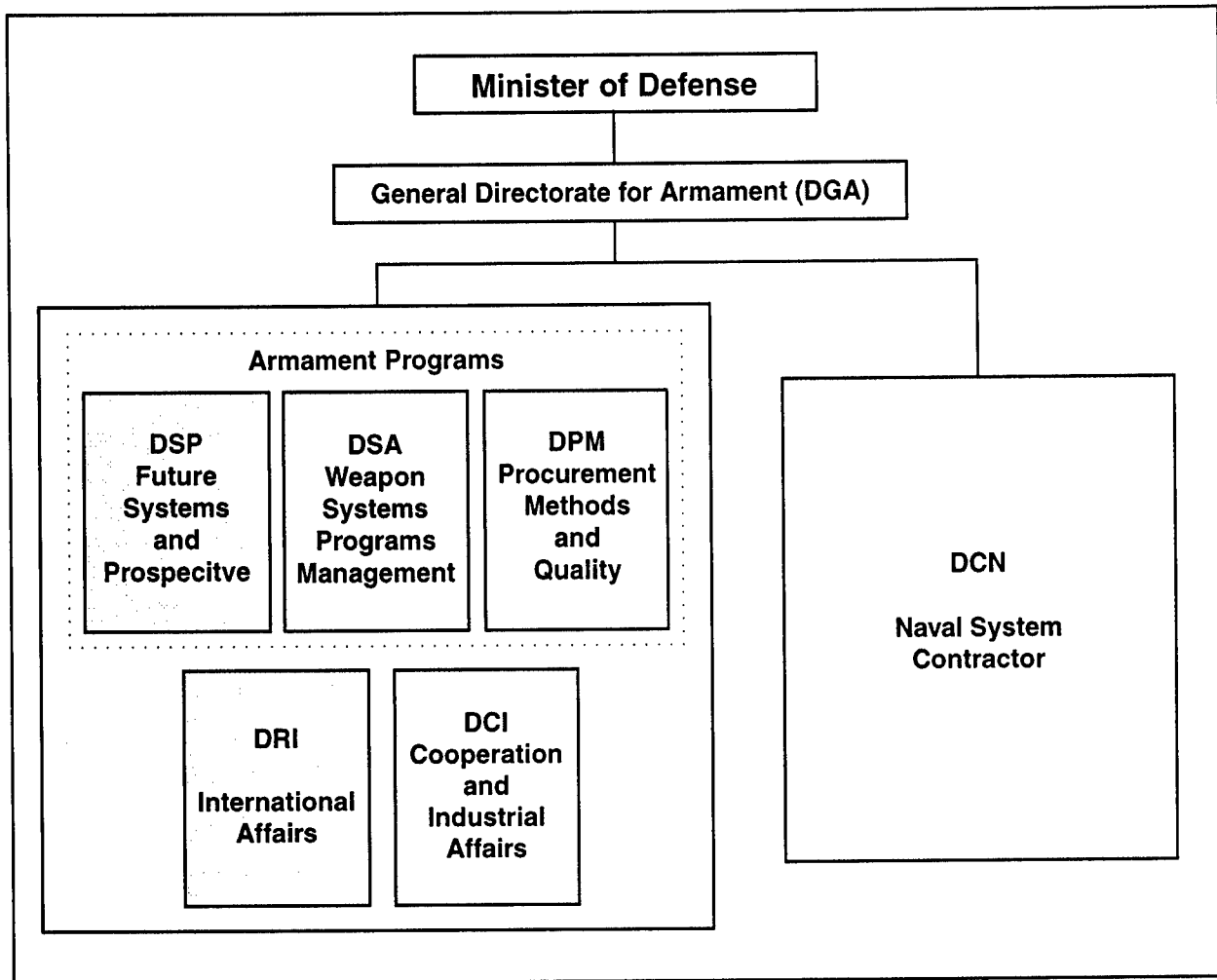


Figure 3. International Directorate – DCI and DRI

### Two Directorates in Charge of Management and Human Resources

The Management and Organization Directorate's (DGO) main missions are the management control, the improvement of the internal working and notably the information systems, the management of operating credits and the implementation of the investment policy, the coordination of support actions.

The Human Resources Directorate (DRH) manages the career and the training policy so as ensure the acquisition of the necessary experience and qualification of the personnels appointed to the DGA for the execution of the mission.

### The Center of High Studies in Armament (CHEAr)

Created to emphasize the reorganization of the DGA. The CHEAr trains the high level workforce of armament personnel, delivers the specialized information and promotes research on strategy and general management.

### Latest Developments: The Reorganization of the DGA

Reorganized since the beginning of 1997, the DGA is initiating a thorough reform of its operation and working modes. Its purpose is to reduce significantly the cost of armaments



programs and timescales so as to enable France to preserve a consistent and credible defense system. The DGA itself must reduce its operating costs, focus on its core activities, change its structures and methods of operation and reform the procurement process.

### **The New Armament Policy**

This new armament policy is meant reinforce France's commitment to increase European cooperation both at the program level and through collaborative structures such as the Joint Armament Cooperation Office (OCCAR). Part of the new armament policy includes the restructuring of defense industry in Europe, leading to the creation of national focus and prefigures the emergence of European groups. This policy also includes development of a strategic plan with a view to refining export policy and to improve the competitiveness of military exports.

### **Procurement Reform**

The renovation of the program management process and procurement reform, inspired by improvements carried out by civilian industry, will lead to a stronger integration of program work teams based on a matrix organization. Besides being responsible for the operation capabilities, the program work teams will be given objectives in terms of costs, delays, quality and in-service support of equipment. The IPT members will be trained to use modern program management tools and methods. They will be responsible for achievement of their objectives. This new policy which focuses on costs and delay reductions, promotes the systematic use of competition at prime or subcontractor level to achieve these objectives. It also covers the participation of industry in funding for research and the demand for productivity improvements equivalent to those realized in civilian activities. Plus industry has responsibility for providing quality products and designing lower in-service costs of equipment.

### **The New DGA**

To adapt France's defense system to the new geo-strategic environment and to budget reductions, a wide-scale reform process was launched in February, 1996. This process involves the armed forces, whose size is being reduced as they shift from a conscript to a professional personnel structure, as well as the defense industry, which is presently engaged in a restructuring process at both national and European level. The reform also involves DGA, whose assigned objective is to operate drastic cuts in the cost and time delays of armament programs.

To reach this goal, DGA gave itself a new structure in January, 1997. The previous organisation based on operational environments (land, air, sea and space) has been replaced by a structure which reflects areas of activities (program management, industrial activities, tests and evaluation, and so on ) as well as specific skills (technical know-how, purchase, quality control, management control, and so on). The idea behind this new organisation is to facilitate the introduction of new methods and policies all oriented towards the development of high-performance equipment at the lowest possible cost. In parallel, within the overall framework of the restructuring of the defense industrial sector, a new purchasing policy is being implemented to reinforce the competitiveness of the defense industries.

DGA will also pursue an active co-operation policy within European, and see that French equipment is interoperable and fully compliant with NATO standards.

Therefore, the new DGA, to prepare for the future, has combined program management and technical policy. It will also have a proactive role in the field of industrial restructuring, cooperation development and export sales promotion. This ambitious reform rests on the the successful

efforts of DGA personnel and the DGA's improved management system, now based on responsibility and setting and fulfilling

objectives. It will profoundly change relations with staff, with industry and internal operating procedures.

## Chapter 5

# DEFENSE ACQUISITION

The application of an armaments policy adapted to the new constraints of procurement reform calls for a renewal of acquisition procedures, to obtain even greater reductions in costs and delays. The conduct of armaments programs is a complex operation. The challenges are inherent and varied. They include defining and mastering specifications for new, technologically ambitious and varied systems, controlling rigorous testing and validation methods, dealing with multiple contracting partners and schedules.

In France responsibility for organizing and managing programs, shared out among the various chiefs of staff and the DGA, has been progressively refined over time. The distribution of tasks is similar to what exists in industry. It involves recognizing on the one hand the special features of the specific requirements of the Armed Forces and their user expertise in defining their needs. On the other hand, the specific role of the DGA is to satisfy these needs under best technical and financial conditions. More generally, the Ministry of Defense is divided into three, equally balanced groups—the Armed Forces Staffs, the General Secretariat for Administration, and the DGA—with different attributions and responsibilities. This organization ensures maximum efficiency in dealing with ministerial affairs while preserving the overview and decision making powers that belong to the Minister of Defense.

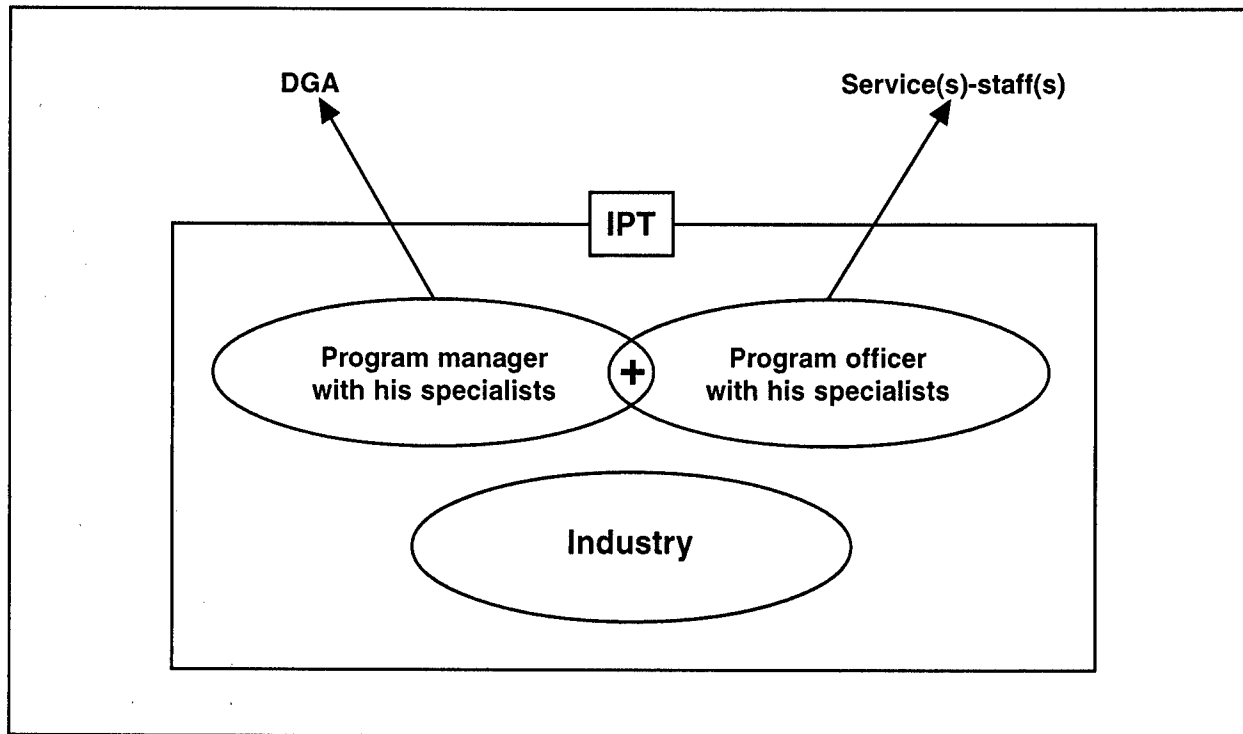
The defense sector has played a pioneering role in developing methods for managing complex projects that include many technologies, require a high level of expertise and impose rigorous management and quality assurance criteria. Civil

industry has taken a cue from these methods to manage its own development projects of comparable complexity. Moreover, under the pressure of competition, it has improved on these methods. It has tended towards highly integrated program teams, reducing costs and time even more, improving quality, and refining purchasing policies for more efficiency.

### **Highly-integrated, Cross-disciplinary Program Teams**

The core of armament program management is an integrated, cross-disciplinary team. It is entirely responsible for achieving the goals that have been set for it, possesses the full range of competence, uses modern methods and tools and makes progress reports on the results obtained.

Thus program management in the DGA is formalized, with a program director and his direct assistants. The rest of the team is composed of contributing technical and management specialists, called the *field specialists*, and, along with the representatives of the Armed Forces staffs and the industrialists, form *the integrated program team*. This team must indeed be integrated, as each member, whether from the Armed Forces staffs or the DGA, considers himself responsible for reaching the assigned objectives. Thus engineers and officers work in mutual confidence, with the same determination to reach a common goal. The industrialists can also join the team when needed, and participate actively to realize the program goals. Typically a team will be composed of 10-15 core team members with the specialist called upon as necessary (see Figure 5).



**Figure 5. Integrated Program Team**

The principle of integration is opposed to the purely sequential model, according to which the general staff would first define the need, then the DGA would specify the hardware, and finally industry would propose technical solutions and manufacture the equipment or systems. This approach is not favorable for obtaining optimal technical and financial conditions. On the contrary, the requirements, the specifications and the technical solutions must be regarded as a whole and optimized, and this can only be realized by a team of equally responsible actors, working together. There is no question of abdicating individual responsibilities, but of exercising them while entirely aware of the consequences that one's actions and decisions will have on common costs and objectives.

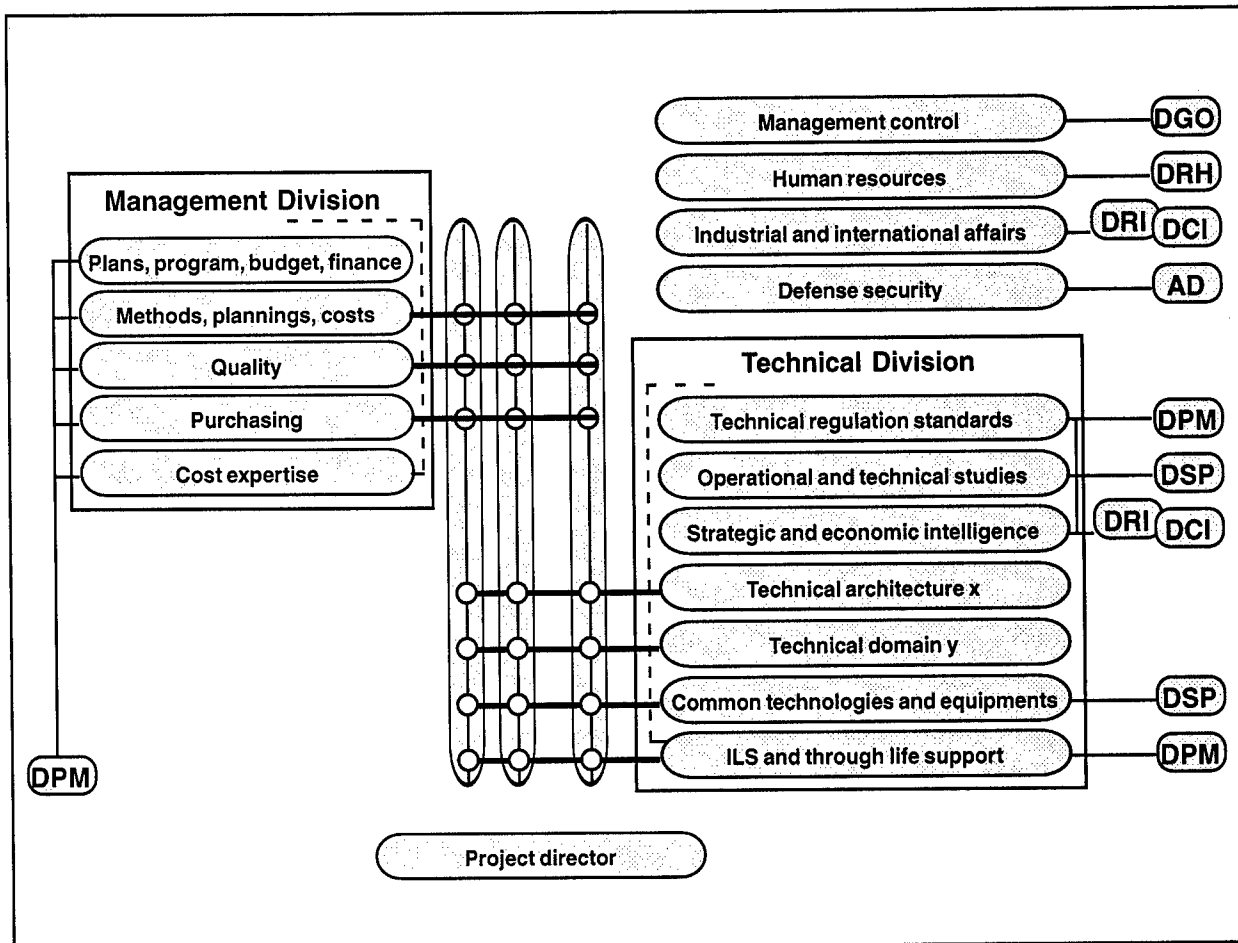
### **Reinforced Competence**

The team meets either permanently or at critical phases, depending on the program. The members, notably the director, the ranking officer and

the industrial managers of the program, receive wide delegation from the hierarchy. Their assignment to the program must last long enough to ensure its continuity.

DGA staff who contributes to the program in the following functional areas also assists the program director: cost, planning, project management methods, quality, purchasing, risk management. This system is designed to provide the program directors with the technical and functional specialists in complementary fields of action, skills and training (see Figure 6). Depending on the importance of a program, the management teams may be full-time or part-time. The personnel preserve their links with their original employers (the functional organization), but their job performance assessments take into account their program directors' assessment.

Thanks to their technical know-how, their capacity for cost analysis and their varied



**Figure 6. A Matrix-like Organization to Manage Programs**

professional skills, the management teams are very well prepared to negotiate defense contracts effectively.

The program teams are trained in the use of modern methods and tools of program management: improved cost assessment capacity (cost effectiveness studies, technical-operational studies, functional analysis, value analysis, logistic support analysis), and design quality (forecast reliability studies, project analysis, risk analysis, failure mode analysis, functional security).

### **A Process Reoriented on Cost and Delay Reduction**

Present day procedures, with their Feasibility and Definition Phases, followed by development

and production, are being modified as part of changes in acquisition in two directions—reducing costs and delays and introducing greater flexibility.

Now the life of an armaments acquisition program is divided into stages and phases characterized by the types of work involved as follows:

- Preparation Stage;
- Design Stage (Feasibility Phase and Definition Phase);
- Realization Stage (Development/Industrialization Phase and a Production Phase); and
- Utilization Stage.

The purpose behind the changes are: first, the Feasibility Phase of a program is preceded by an improved definition of the operational requirements, an exploration of the various main options involved, a justification of the armament systems envisaged by the relevant technical-operational studies, an appreciation of the cost-effectiveness report and the assurance that its characteristics (requirements) are compatible with the existing or planned systems within which it will be included—"the Preparation Stage." Second, the development and industrialization operations are merged and the time reduced. This merger is part of a concurrent engineering process, whereby the product, the range of production and the industrial means are designed in parallel for optimal, interactive results. Reduced delays allow the two merged phases to take place at the latest when funding can be considered practically assured. Disturbing and costly decisions that spread the costs over time become more difficult. Thus requests for modifications, as well as obsolescence resulting from premature technical choices are more easily avoided, and global negotiations for contracts, that cover both development and industrialization, and possibly even a significant part of production can be made, so that industry can also optimize organization and reduce costs.

On the other hand, reduced delays impose greater care during the preceding phases of feasibility and choice validation, to limit technical and financial risks. They can also induce

uneven use of engineering and design capacity in industry by concentrating the most intense development activities over short periods. Industry must adapt to this situation with structural and economic solutions similar to other sectors that also have to live with long renewal cycles for their products. It is only under these conditions that the all-important factor of lower costs that result from reduced development delays can be introduced.

Thus the procedure breaks down into four stages (see Figure 7): Preparation; Design (Feasibility and Definition), Realization (Development/Production), and Utilization Stage.

### The Preparation Stage

The "Thirty-year Prospective Plan" (see Figure 8) calls for identifying predictable needs in new armaments programs. This plan is a "top down" approach to providing recommendations on thrusts for the research and technology programs of the Ministry of Defense. In the Preparation Stage operational needs are first defined: available resources for the program are assessed; the various solutions are examined by looking at all the possible responses, from renovating or updating existing materials, to the development of new equipment, to purchasing off the shelf. At this stage preliminary operation, technical and financial studies are made; research and development programs are launched, in advance of the new technologies that would be needed. Cost

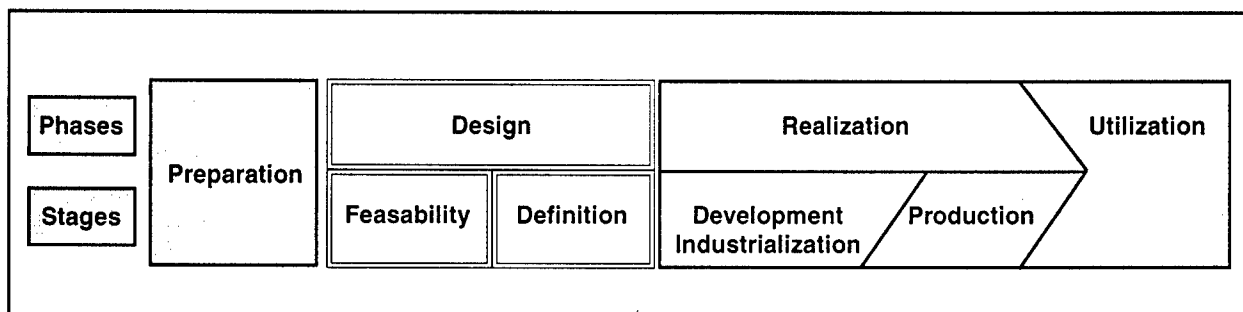
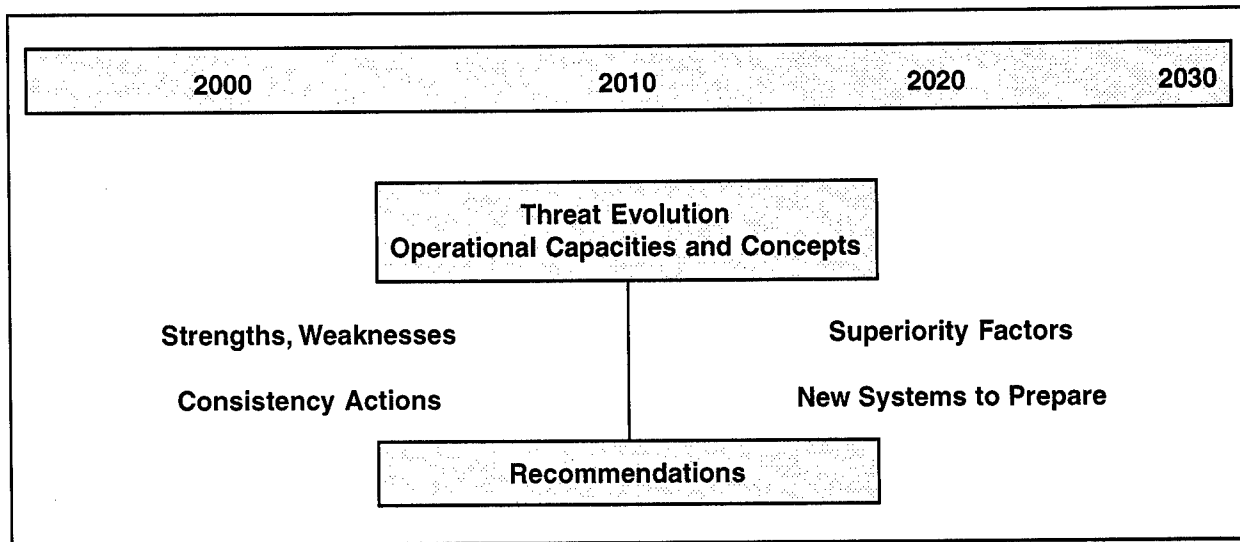


Figure 7. A New Acquisition Process



**Figure 8. The 30-Year Prospective Plan**

assessment models are used to obtain preliminary figures and realize the first cost-effectiveness studies.

At the end of the preparation stage the outlines of the operational requirements are refined. The major technical options that have been retained are defined, the resources necessary for the program are determined, preliminary cost objectives are set. Acquisition principles are sketched out, notably the choice of one or more industrial partners, possibly bidding in competition for the contract at a later date. A preliminary risk evaluation is made, and possibilities for cooperation and export are examined.

### **The Design Stage (Feasibility and Definition Phases)**

At this point the decision will be taken, based on the above elements, to begin the Feasibility and Definition Phases. A program is launched with the start of the Feasibility Phase. This results from a decision by the Minister of Defense, upon proposal by the Permanent Executive Committee (PEC) whose membership includes the Armaments Secretary General, the piloting (military service) chief of staff, with

the recommendation of the Armed Forces Chief of Staff and Secretary General for Administration. These members of the PEC will have examined the feasibility file containing the results of the preparation stage. If the decision to go ahead, taken jointly by the DGA and the general staff involved, is made, the program director and the program officer are appointed, and the interdisciplinary program management and the integrated program team are gradually formed.

At this stage the essential part of the work is related to cost, since about 80 percent of the costs for the equipment will be determined during this phase, while the 20 percent remaining costs will serve to adjust the product during the development/industrialization stage. The members of industry associated with this work will be able to contribute proposals with their own knowledge of the thresholds where performance requirements would impose the use of more sophisticated technologies or more complex designs would drive cost increases. At the same time, work proceeds to validate the new technologies to be used.

The design stage culminates with a proposal for optimized use and performance of the

equipment, which could include changes from the original functions of the item, or of the established cost objective. The operational and technical specifications are determined. The industrial partners are chosen, whenever possible after competitive bidding and their agreement to the objectives of the program are obtained.

### **The Realization (Development/Industrialization and Production) Stage**

The next decision to take is whether or not to continue the program and begin the development/industrialization stage. The commitments here are more formal since the development phase constitutes a significant commitment of government resources and commitment to the industrial partners who were selected in accordance with the defined cost objectives.

Based on a technical development plan, negotiated with industry, regarding the various functions or characteristics of the product, this stage is marked by periodic reviews of projects, formalized to validate specified criteria for performances, quality levels, reliability and maintainability. Schedules for development and validation procedures are regularly checked with external references whenever possible, so as to benefit from any new solutions which might shorten the time. The nature, sequencing, content and duration of development tests performed, first by industry and then by the DGA, as well as by the general staffs, are defined in such a way as to avoid any redundancy. Very rigorous procedures for managing these points are introduced at the very start of the development/industrialization stage to ensure the qualification of the product.

If not provided for in the original development contract, a new contract for production is launched to fill several years of orders. Thus firm commitment from the government is necessary

for the contracted companies to organize and invest in production at lower cost.

### **Utilization Stage**

The primary purpose and ultimate justification of conducting armaments programs is the operational use of the systems. Thus the Utilization Stage cannot be regarded solely as just another stage in a program, it is rather the stage where the users can finally, assess the quality of the products.

The Utilization Stage begins when the chief of staff (Army and Air Force) pronounces the "Launching of Operational Service (Mise en Service Opérationnel – MSO) or the Admission to Active Service (ASA), for naval vessels. To achieve these certifications a sufficient number of systems must have been produced, accepted by the DGA, as a result of successful trials and that there is sufficient operational and maintenance equipment and trained personnel. (If the support equipment has not been supplied the decision to put into service can still be taken on condition that the DGA ensures, maintenance, or has it ensured, until the general staff can progressively take over as means are made available.)

The DGA provides the general staffs with the systems and services necessary to attain the system objectives throughout the Utilization Stage stage. In liaison with the general staffs, the DGA manages the configuration of the system and prepares the necessary modifications to the equipment. It is kept informed by the general staffs of the system's behavior in view of possible corrective measures.

Utilization, security and availability parameters of the systems are to be examined together with the implementation of the support, in accordance with the concepts that were defined when the equipment or system was acquired. As industrial



technology advances, the system is continually assessed for technological updating. The military's feedback during the Utilization Stage provides information on the level of support material needed. Systems engineering by the DGA is a continual part of this phase. These measures will often result in engineering changes to the equipment over its life cycle.

The Utilization Stage ends when the General Staffs decide to retire the system from service.

### **A Prospective Approach and the Coherence of the Military Instruments and Tools**

A "prospective approach," a forward look, permits the identification of "Systems of Forces," whose effectiveness is mutually linked to the coherence of the whole. The requirements of the Services, expressed by their general staffs, originate from the simple necessity of renewing systems whose obsolescence is predictable and from adaptations necessitated by changing threats and ways of using the armed forces. These requirements are expressed within a framework of overall, medium and short-term plans and programs and are based, over the long term, on analyses of possible future scenarios.

This entire process is called the prospective approach. It is at the heart of prospective technological planning a major means of directing upstream studies<sup>1</sup>, operational and technical-operational-type studies.

### **Coherence**

The Joint Armed Forces Chief of Staff (Chef d'Etat-Major des Armées—CEMA), the Services General Staffs (Army, Navy, Air Force, Gendarmerie) and the DGA are each responsible for the overall coherence of the military arm. Coherence of the military arm means avoiding duplication of effort and increasing the

synergy of effective warfighting. Coherence must flow throughout all aspects of the military arm, from operations, to organic, to schedule and funding, technology and finally global coherence. Coherence must be constructed with the following in mind: operational aspects must respond to doctrinal imperatives, in terms of capacities dedicated to a main final purpose; organic aspects condition the capacity, to use the organization, training and human management that implement the armaments systems; technical aspects refer to equipment and thus to the technology that defines it, as well as to the industrial tools that allow it to be realized.

The purpose of coherence among the Services and the allies is to orient the "Systems of Forces" at the source in order to include them in the joint Army and joint allied environment of future engagements and have them respond to the objectives of defense policy. These objectives are converted into "missions of force employment." The CEMA is responsible for this coherence.

Operational coherence implies not only complementary systems but also the five components of a "System of Forces," namely doctrine, manpower, equipment, organization and training. The CEMA and the Services General Staffs (EMM for NAVY; EMAT for ARMY; EMAA for Air Force; DGGN for Gendarmerie, see Glossary) are each responsible for operational coherence. Organic coherence allows expressed needs to be fulfilled in terms of the employment of forces and the specific roles of each branch of the armed forces. The CEMA is responsible for organic coherence.

Coherence of timetable and funding primarily concerns the running of armaments programs and allows the acquisition and use of equipment to be coordinated through the management of programs. Each Services Chief of Staff and the CEMA share this responsibility, with the cooperation of the DGA. *Technical coherence*

specifically concerns the acquisition process and is meant to avoid technological duplication and favor technical synergy among weapons systems within the same “System of Forces” and also among all the “System of Forces.”

The DGA, jointly with the CEMA, is responsible for the global coherence.

Concerning equipment, the Architecture of Systems of Forces (to be discussed later) must allow the Armed Forces to optimize the availability of the best possible weapons systems with regard to available technology resources. This involves close coordination between the General Staffs and their representative—the Officer of Operational Coherence (OCO) and the Corresponding Coherence Service Officers of the General Staff (OCEM) and the DGA.

The Architecture of Systems of Forces ensures overall coherence by means of an analytical grid that breaks military weaponry into eight systems, based on the logic of major operational procedures, aiming at clearly identified military objectives and allowing major armament programs to be classified. However, some programs with major contributing operational capacities, related to different systems of forces, can be found in more than one system.

### **“System of Forces”**

Armaments programs are associated within “Systems of Forces.” This instruction defines the roles of the systems architects (ASF), appointed by the DGA, the roles of the OCOs and the OCEMs, appointed by the general staffs, and the roles and attributions of the Systems of Forces Architecture Committee.

This organization aims at improving the preparation of the programs and at ensuring their coherence. Notably it is meant to optimize the overall functions to be realized, ensure the relative

phasing of the programs involved and prepare coherently any future changes in the systems.

The “eight systems” are: Deterrence (DIS); Command, Conduct, Communication, Information (C3R); Strategic and Tactical Mobility (PROJ); Long Range Strike Capacity (PROF); Land and Air Control (TER); Sea and Air Control (MER); Air and Space Control (AIR); Preparation and Maintenance of Operational Capacity (PREP).

An Architect of System of Forces (ASF) from the DGA is assigned to each “System of Forces.” The mission of the ASF can be summarized as follows: contribute to the drafting of a prospective plan to determine the overall framework of their action; conduct the work of the preparation stages and pilot the Feasibility Phase of new programs, either alone for programs relevant to their “System of Forces,” or jointly in other cases, with one or more Operational Coherence Officers (OCO); ensure technical coherence and contribute to the coherence of the timetable and funding within their “System of Forces;” ensure technical coherence among the systems of forces; propose the necessary research for contributing equipment to their “System of Forces.”

### **The OCO and OCEM**

The OCO is a member of the Joint Armed Forces General Staff (EMA). There are Corresponding Coherence Services Officers of the General Staffs of each Service (OCEM for Navy, Air Force, Army and Gendarmerie, see Glossary) who are responsible for everything within their jurisdiction regarding the definition and monitoring of their “Systems of Forces.”

An OCO is appointed for each “System of Forces.” The EMA appoints them for joint services “Systems of Forces”—Deterrence, C3R<sup>2</sup>, Strategic and Tactical Mobility, Deep Strike and Readiness. Each Service’s general staff for

service specific systems—land, sea and air. For each “System of Forces” an officer is appointed OCEM within each Services general staff. In the EMA three OCEM’s are appointed for the systems specific to each service (see Figure 9).

The OCO’s and the OCEM’s are key actors in a cooperative enterprise. As such they are in constant touch with each other in the accomplishment of their role, and must constantly anticipate different points of view in order to keep the process flowing smoothly. They must ensure overall coherence of military weaponry within and between the “System of Forces.” The former is the collective work of all the OCO’s in cooperation with the OCEM’s, and, whenever needed, with the ASF’s. The latter is the goal of the OCO and OCEM in charge of the “System of Forces,” in liaison with the ASF involved. The priority for the OCO’s and the OCEM’s is to prepare for the future, where the range of possibilities is the widest. But their activities extend to all the components of the “Systems of Forces,” and they also rely on feedback from the systems once in operational use.

The mission of the OCO is to be the counterpart of the Architect of the System of Forces.<sup>7</sup> As such the OCO:

- contributes to the “prospective approach” by: participating in the analysis of the politico-strategic and socio-economic conditions, as well as the technological possibilities; drafting proposals to the general staffs regarding concepts, doctrine and capacity; participating in defining the conditions for coherence of the weapons systems; proposing research projects;
- jointly with the ASF, for possible new programs, helps draft the general staff’s objectives which triggers the Preparation Stage. Drafts the Exploratory Military Characteristics File (FCME) and the Feasibility File (DF), which trigger the Feasibility Phase and oversees the work of the Feasibility Phase, which is conducted under the responsibility of the program director and program officer; and






System of Forces	DGA 	EMA 	EMAT 	EMAA 	EMM 
Deterrence	ASF	OCO	OCEM	OCEM	OCEM
C3I	ASF	OCO	OCEM	OCEM	OCEM
Mobility	ASF	OCO	OCEM	OCEM	OCEM
Deep strike	ASF	OCO	OCEM	OCEM	OCEM
Readiness	ASF	OCO	OCEM	OCEM	OCEM
Land	ASF	OCEM	OCO		
Air	ASF	OCEM		OCO	
Sea	ASF	OCEM			OCO

Figure 9. To Improve Inter-Programs Consistency—The Force Systems

- jointly with the ASF, monitors the timetable and funding within his “System of Forces” and has the authority to inform the Chiefs of Staff of changes he feels are necessary to attain program objectives.

The mission of the OCEM is to take charge of those tasks that are entrusted to his Service chief of staff. The mission of OCO’s will differ according to whether they belong to the EMA or the Services’ General Staffs. The OCEM’s of the services general staffs cooperate closely with the OCO’s of the EMA. The OCEM’s of the EMA ensure permanent liaison between the Services and the EMA and collectively monitor the coherence of the “Systems of Forces” among the Services and with the allies. Within their field of responsibility, and as participants in all the work accomplished by the OCO’s and ASF’s, the OCEM’s of the Services staffs and EMA contribute specifically to:

- the development of the prospective approach;
- the work accomplished in view of respecting the overall coherence of the systems of forces that concern them;

- the definition of the systems of forces;
- the preparation of the programs and in particular the development of the general staff objectives;
- the drafting of the Exploratory Military Characteristics File (FCME) and the Feasibility File;
- the supervision of the Feasibility Phase of the programs; and
- the identification of the necessary research.

In summary, this section of the chapter has provided a look at the “prospective approach”—long range planning, the coherence of military instruments and tools—the orderly and continuous relationship between various elements, the “Systems of Forces”—mission areas, and the three key players—ASF, OCO and the OCEM, that are part of the early planning for the development of weapon systems.

## Chapter 6

# THE PROCUREMENT SYSTEM

The DGA spent over a 64.5 billion francs (>9.84 billion Euro) in Fiscal Year 1998. The products and services they buy cover a range of items to include research and development (R&D), basic and detailed design, modeling, testing, production, support in-service and other items. The number of supplier for military equipment is low, yet there is a need for advanced technology to meet future military needs.

In the last two years the DGA has launched a “procurement reform” effort. The procurement organization has been revised with creation of a new position, the Procurement Executive, who will have overall responsibility for procurement and negotiating policy, national regulations, law affairs and settlements of disputes, price and cost analysis and quality assurance (see Figure 10). As part of this effort, individuals who had per-

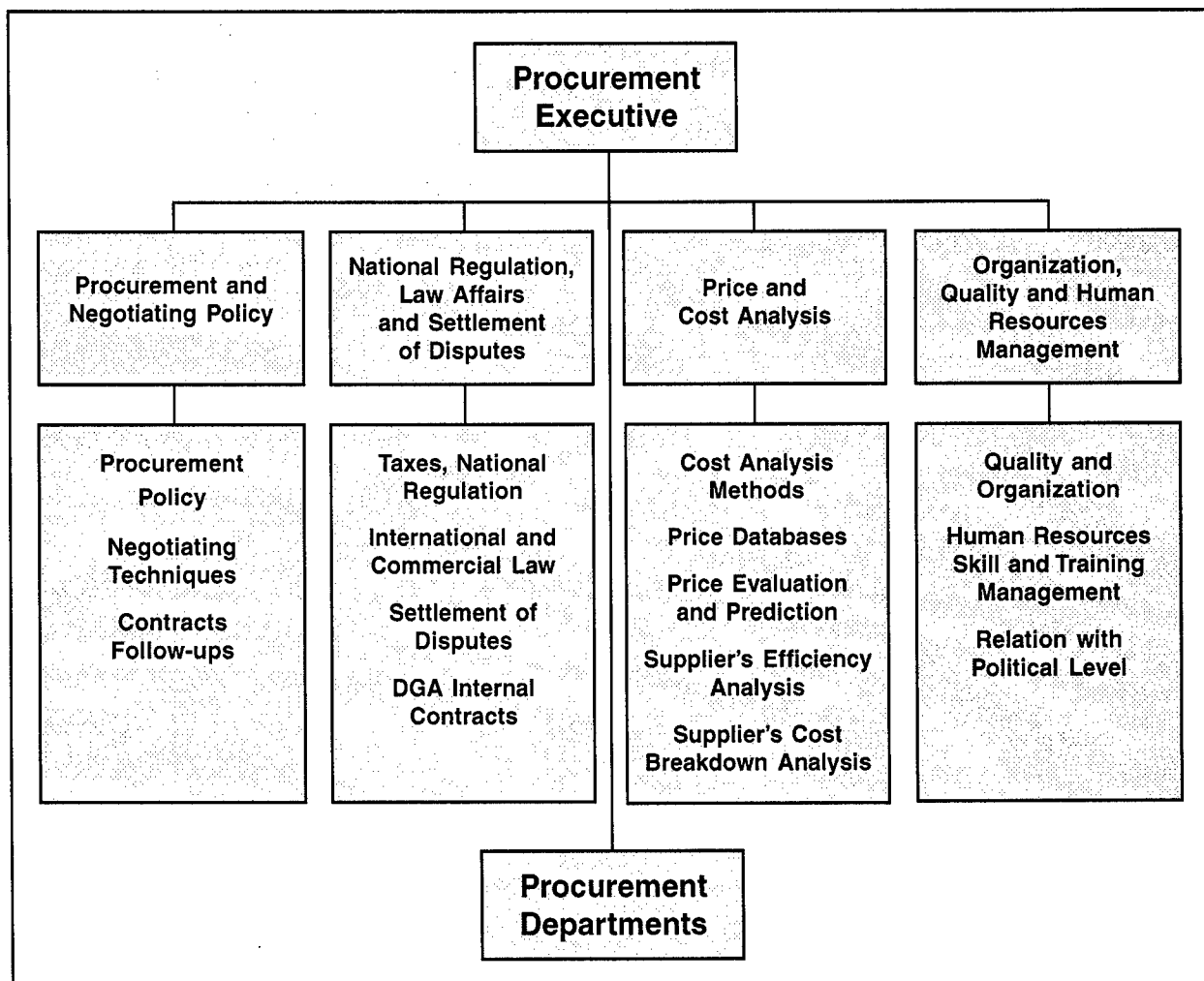


Figure 10. DGA Procurement Reform—Procurement Organization

formed as procurement specialist on an ad hoc basis will now become full time procurement specialists. They will bring their specialty knowledge to the “program integrated team.”

Competition is the general rule at the prime contractor level, each time it is reasonable. Competition shall be maintained as long as economical profitable at least up to achieving a firm long-term commitment on price. When competition is not possible at the prime level, it shall be ensured at the sub-contractor’s level. To ensure that competition at the contract level is fair for subcontractors and small business, the DGA working with small business experts, has issued rules for fair competition. Acquisition plans will be required for each important contract and the competition process will be designed to ensure transparency at the contracting level.

The general policy for pricing contracts is that for a contract with a duration of less than three years then prices shall be firm. If a contract exceeds three years the following options apply:

- for contracts with increased risk such as some research and development efforts, firm prices will be used but with a price escalation formula based on standard escalation rates for engineering and manufacturing activities;
- for contract with greater risks the DGA will use a cost escalation formula with a threshold. The role of the prime contractor will change. He shall be made fully responsible for overall system characteristics (technical,

price, support in-service). As part of his responsibility for “global system performance” he will be required to make a contractual commitment for design, industrialization and the first set of production articles. Also included will be initial logistics support. The prime contractor will also be challenged to look for alternative solutions for cost reduction.

A variety of new policies and strategies will be piloted. Some examples are:

- the use of procurement plans for larger contracts to improve planning;
- the issuance of global (multi-year) procurement contracts which will cover several years for the design, production and support of a system;
- the harmonization of several program on one contact which will reduce the number of contracts; and
- the use of pilot contracts to demonstrate the acceptability of each of the new approaches.

The basis for contracting in France is based upon the written judicial base in the traditions of the old Roman Law and the Napoleonic Code. The civil law is codified, unlike the more common practice in the U.S. and the United Kingdom, of judicially-created law. Thus the regulations governing acquisition are relatively few in numbers and not subject to a great deal of interpretation.

## Chapter 7

# DEFENSE ACQUISITION PROGRAMS – STRUCTURE AND ORGANIZATION

Beforehand, we have explained the political purpose of defense acquisition. In the following part we cover the structure and organization of defense acquisition. As mentioned earlier the life of an armaments acquisition program is divided into several stages and phases characterized by the types of work involved. They are: Preparation Stage, Design Stage, (Feasibility Phase and Definition Phase), Realization Stage (Development/Industrialization Phase, Production Phase), and Utilization Stage.

There are five major principles or orientations that governed this structure: They are:

- a) Prior to the commitment to the Feasibility Phase, a preparation stage will outline operational requirements, envisage the various possible solutions that will satisfy the requirements, begin cost/efficiency ratio studies for solutions extending over the life of the product and ensure the coherence of the program's characteristics with the system concerned.
- b) From the beginning optimizing the overall "cost of possession<sup>3</sup>," especially by means of an integrated logistics support methodology, which considers not only the designing and production of the main system but simultaneously the support system.
- c) Limit technical and economic risks by making sure the feasibility of the choices involving characteristics and techniques have been studied with sufficient care and time during

the design stage, and launch the realization stage only after these choices have been validated.

- d) Reduce Realization times to avoid obsolete technical choices and make it possible to negotiate global contracts, i.e., contracts covering both development and industrialization, and, if possible, a significant part of production and even of support, to optimize industrial organization and thus reduce costs.
- e) Allow for better oversight and possible reorientation or partial or total review of the program while it is being undertaken, by formally introducing decision pauses along the way.

The annual list of armaments programs, which can be nuclear, space, conventional or other, is prepared by the Permanent Executive Committee looking at the following criteria: military interest, technical innovation, financial burden, industrial fallout, and international aspects. The list is then submitted by the DGA, after endorsement by the CEMA and the SGA for the approval of the Minister of Defense. For each armament program the DGA appoints a service to conduct it. When a program concerns more than one Service,<sup>9</sup> the CEMA appoints one, or exceptionally several chiefs of staff to pilot it, including the Service Chief of Staff. He may also assign the coordination to a staff division. Each armaments program is meant to satisfy a requirement, first expressed in terms of a staff objective, then in a military characteristics sheet.

To obtain the successful completion of an armaments program in terms of performance, calendar and cost, all the implications of its requirements must be considered, as well as all the political, industrial, economic, financial, international, logistic and other constraints which have an effect on its accomplishment. Operational requirements can change in the course of the program. The impact of these changes on costs, calendar and performances must be analyzed before any decisions are made to take this into account.

Its realization must benefit from the assistance of the competent Services,<sup>4</sup> especially for operational and technical-operational studies, tests, and the preparation of support and training.

### **Major Programs**

During all or a part of their implementation some programs are classified 'major' in view of their importance. They undergo special decision procedures and their classification is mentioned in the list of armaments programs.

### **Armament Programs and Systems of Forces**

Armaments programs are associated within "Systems of Forces." An instruction to this effect

is signed jointly by the DGA and the CEMA. This instruction defines the roles of each of the key staff players—the ASF, appointed by the DGA, the OCO and the OCEM, appointed by the general staffs, and the roles and attributions of the Systems of Forces Architecture Committee (CASF).

This organization aims at improving the preparation of the programs and at ensuring their coherence. Notably, it is meant to optimize the overall functions, ensure the relative phasing of the programs involved and coherently prepare any future changes in the systems.

### **Overall Programs**

If several simultaneous or successive armaments programs can contribute to satisfying the same complex military requirement they may be combined into one program. If justified by the importance of the operation, an infrastructure program can be created to accompany it. In this case the organization set up to help define and harmonize the military requirements results from special orders defining its composition, its role and its ambitions, signed either by the Minister of Defense or by the CEMA. The list of the overall programs is part of the armaments program list.



## Chapter 8

# ACQUISITION PROGRAM MANAGEMENT

### Architect of System of Forces (ASF), Operational Coherence Officer (OCO), Corresponding Coherence Services Officer (OCEM)

As discussed above, there are three key individuals involved early in the management of acquisition programs. They are the ASF, the OCO and the OCEM. The ASF are DGA "Armament Engineers" at the senior colonel or one-star level, with responsibility for oversight of a variety of programs through the preparation stage (see Figure 11) for depiction of role by stage). OCO's are appointed either by the Services Chief of Staff for joint armed forces appointments, or by CEMA for specific military service. OCEM's are appointed from each Services general staffs in the case of systems

that are not specific to one service, and OCEM's are appointed from a general staff for systems specific to one service.

When a general staff has identified an objective a "System of Forces" is chosen<sup>5</sup> within which the program will be included to satisfy the operational requirement. This "System of Forces" is the responsibility of a general staff, either the EMA or a general staff, which pilots it.<sup>6</sup>

The ASF and OCO of the "System of Forces" that was chosen and the ASF and OCO of the service related system or systems are appointed by CASF to conduct the work of the preparation stage, with the support of the competent organizations within the armed forces and the

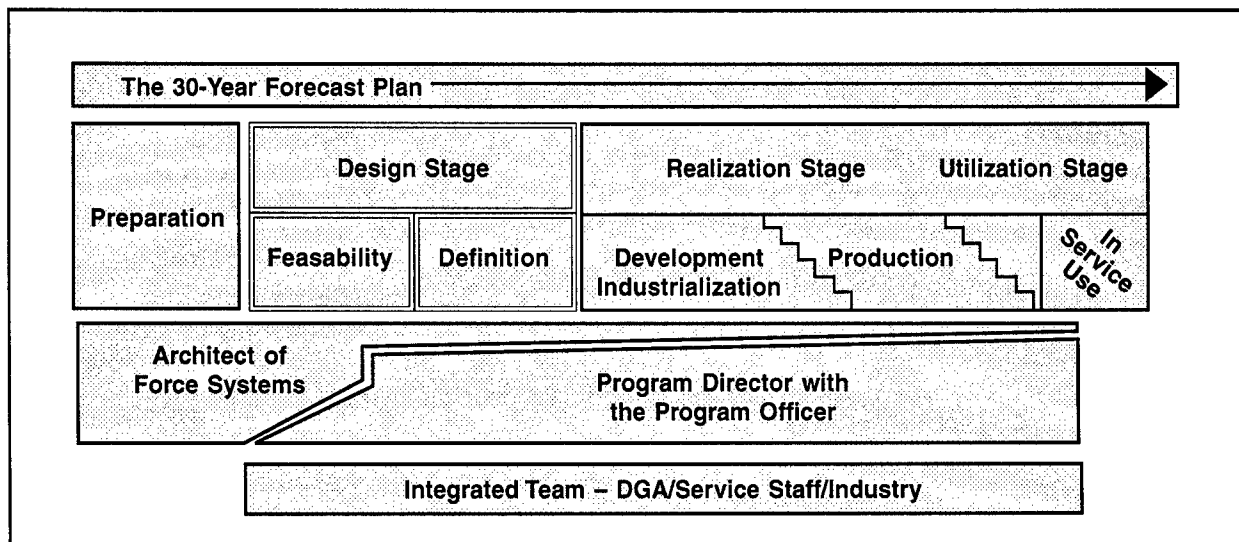


Figure 11. The Acquisition Process

DGA. They supervise the Feasibility Phase of the new program,<sup>14</sup> which is conducted by the integrated program team. From the Definition Phase onward their role is to ensure maintenance of the coherence of the program within the "System of Forces" involved<sup>15</sup>, in terms of operation, technology, scheduling and funding.

Throughout the life cycle of the programs, the ASF and OCO involved with it can propose changes they esteem necessary for obtaining the objectives of the integrated program team. The OCEM's participate in all the work accomplished by the ASF and the OCO of the "System of Forces."

The key role in the conduct of an armaments program reverts to the **Program Director** and **Program Officer** as the program enters into the Definition Phase (see Figure 11). They are entirely responsible for reaching the objectives that have been fixed; they have all the necessary competence, means, methods and tools adapted for successful program execution. Within their own organizations each of the above is charged by the superiors that appointed them, with ensuring the coordination and coherence of the tasks that contribute to the progress of the program. For this purpose, they are endowed with decision-making authority, without otherwise changing previously established chains of command.

**For armaments programs** the DGA appoints the Program Director from within the department that is conducting the program, upon proposal of the director of that department.

The Piloting Chief of Staff appoints the Program Officer from his Services general staff. If the program concerns more than one general staff, i.e., when more than one participates in funding the program or cooperates in expressing operational requirements, the piloting staff is appointed by the CEMA, and the staff involved

can appoint officers to assist with the program. In case the CEMA is piloting the program he can ask one of the general staffs to appoint the program officer. When the armament program involves the realization, i.e., the building of infrastructures, the department concerned with its realization appoints a representatives.

These appointments take place at the beginning of the Feasibility Phase. The names of the program officers are communicated at the beginning of the year by the general staffs to the DGA, which distributes a yearly list indicating the names of the directors and program officers of each program. The directors and the program officers choose the members of the integrated program team, calling in whatever experts they consider necessary for the tasks that are to be accomplished. The directors of the industrial projects join the teams whenever necessary. As soon as it is appointed and throughout the duration of a program, a team is in charge of ensuring the internal coherence of the operational, technological, financial and industrial aspects of a program.

During the Feasibility Phase the appropriate ASF and OCO of the "Systems of Forces" supervise the integrated program teams.

The integrated program team is concerned at all times with optimizing its cost/efficiency ratio by reducing costs without altering its character or compromising its objectives. For this purpose it formally creates a cost reduction file with appropriate input and output. This file is a catalog of all the measures that the team proposes or intends to take, within the limits of its responsibilities, to reduce the overall cost of a program. The file is not static; new measures appear, old ones are eliminated as soon as they have been taken or if they turn out to be unrealizable. The program is managed on a cost objective basis, continually aiming at reduced costs. The cost objective of a program is

determined by the DGA at the design stage, in agreement with the EMA.

### **Composite Programs**

In case of composite programs, the Delegate General for Armament and the Joint Chiefs of Staff<sup>7</sup> appoint a composite program director and a composite program officer.

For some armament programs with significant complexity and importance a steering committee may be formed to oversee program management. Their establishment, chairmanship, composition, role and attributions are contained in specific instructions signed by the Minister of Defense or jointly by the Delegate General for Armaments and the piloting chief of staff or their representatives. The CEMA and the SGA are represented in these committees. A representative of the Armed Forces inspector general attends the steering committee meetings.

To coordinate programs that constitute a composite program, a steering committee, chaired by the Delegate General for Armaments or his representative, is generally created, defined by specific instructions as to its composition, role and attributions, and signed by the Minister of Defense.

A piloting structure can also be created according to service needs<sup>8</sup> at the beginning of the design stage. The service director of the leading program and the piloting chief of staff or their representatives are the joint chairmen. The mission of the piloting committee is to provide a decision forum for the management of the program.

### **Permanent Executive Committee**

The Permanent Executive Committee is the senior committee responsible for preparing and publishing the list of armaments programs. It

also formulates an opinion on the Feasibility Phase files, the orientation files, the launching files, the follow-up files and the final documents of each program as it moves from one phase to the next. It is composed of the following members: a representative of the armaments delegate general, who chairs the committee; a representative of the Secretary General for Administration, vice-chairman; a representative of the Armed Force Chief of Staff; a representative of the Piloting Chief of Staff, and a representative of each of the chiefs of staff or financing entities involved in the program. The Services Supervisory General also participates. The integrated program team, which is present during the sessions when documents concerning the program are examined, answers the questions of the committee members.

The ASF and OCO of the "System of Forces" concerned are present for the examination of the feasibility files. The chairman of the PEC can also ask for their participation when the orientation files, the launching files or the follow-up files are being examined.

### **Acquisition Management**

A program is launched with the start of the Design Stage, Feasibility Phase. This results from a decision by the Minister of Defense, upon proposal by the Permanent Executive Committee, after examination and approval of the feasibility file.

In general, a program will move from the Feasibility Phase through the Definition phase, and then the Realization Stage which includes the Development/Industrialization, and Production Phases (when the latter two have not been dissociated), if it received approval from the PEC. However, the Minister of Defense takes the decision when a major program is concerned, or when the Permanent Executive Committee has not pronounced a recommendation

on the “file” or when the Services have maintained reservations.

The fact that a program has been listed or a phase launched does not at all imply that it will be pursued to the end. Any program can be discontinued at the end of its Feasibility or Definition Phase, or even afterwards, especially if costs are excessive or it is revealed to be inappropriate to the requirements of the armed forces. In matters of costs or delays the DGA has this responsibility. Estimations are given for the later phases but they are not definitive.

### Program Authorizations

The various departments of the Ministry are responsible for budgetary decisions and ensure the necessary financing of programs at the appropriate moments. The decision to launch a new phase frees the corresponding funding for the current fiscal year.<sup>9</sup> For the following years, expenditures authorization for the launched phase<sup>10</sup> is received under the following circumstances:

**The Design Stage** – at the end of the annual review (with certain exceptions or when a decision to the contrary has been taken);

**The Realization Stage** – by approval of the documents for each phase.

For approval purposes the documents are required to contain cost estimation and financial information. However, before taking the decision to launch the production phase of a program, it may be advisable to authorize some funding over a longer term. Special authorization procedures applicable to investment funding not covered by the “present instruction”<sup>11</sup> are necessary.

### The Preparation Stage

Foreseeable needs by the armed services for new armaments programs are mainly based on prospective planning. (See Figure 12.)

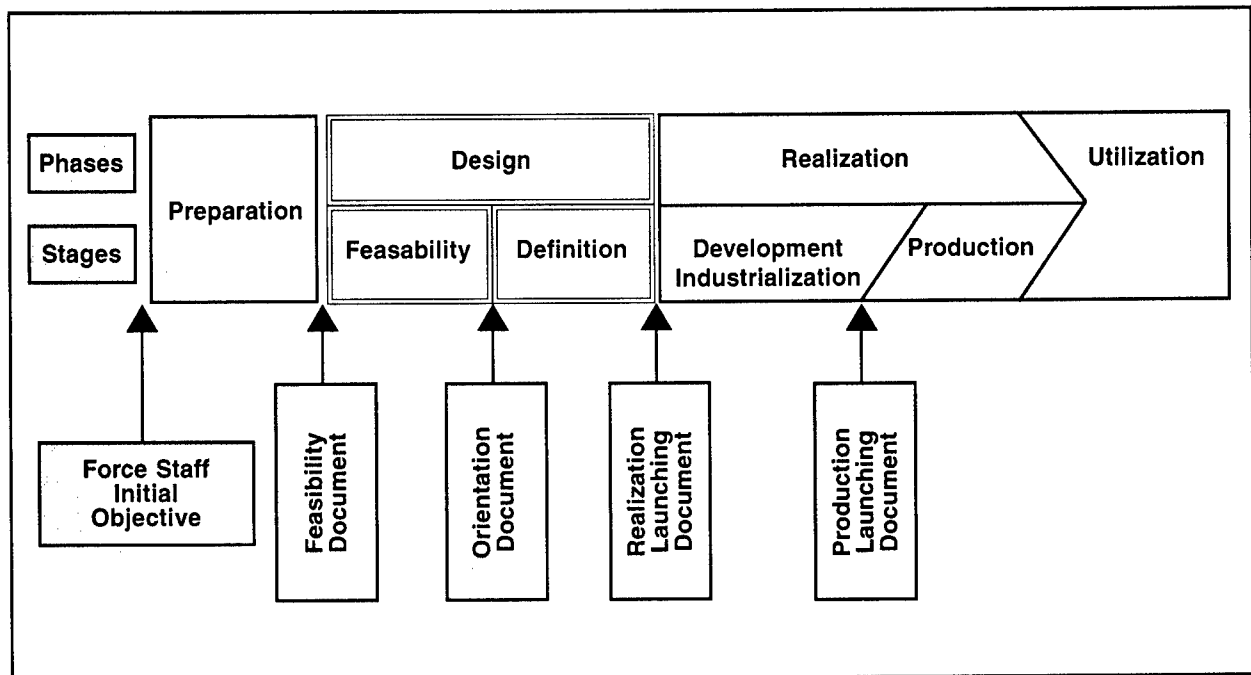


Figure 12. A New Acquisition Process

The preparation stage for a program can begin when a branch of the armed services has expressed its needs. The CASF (Architects of Systems of Forces Council) formulates an opinion on beginning the preparation stage, which is then decided upon by the chief of staff involved.

At this stage, to complement the research and studies that have already been made, preliminary operational or technical-operational studies are made to determine the outlines of a program and identify risks, preliminary functional analyses of requirements are realized and research on the new technologies that are needed for such a program are intensified or reoriented. Cost estimate and effectiveness models are used to obtain preliminary figures.

The results of the preparation stage are included in the feasibility file, which contains two coherent and complementary parts to support a conclusion to proceed to the next stage.

- 1) Under the responsibility of the Joint Armed Forces General Staff, in cooperation with the operational design officers a balance sheet of operational and technical-operational studies is made, spelling out the military requirements and providing a preliminary list of priorities for the operational characteristics that are required. This corresponds to the drafting of the Exploratory Military Characteristics File.
- 2) Under the responsibility of the DGA, a synthesis of the technical and technological studies is presented, the critical risks are evaluated, including technical and technological ones, as are the solutions envisaged to master them; physical and functional architectures are proposed, a preliminary cost framework is given as well as a timetable for the Realization Stage and an estimation of utilization costs. All useful data

for the execution of the Feasibility Phase are provided, notably the interfaces to be envisaged with other programs, what is to be undertaken to ensure coherence, the rendezvous to take with connected programs, industrial and international aspects, essential milestones and a preliminary funding schedule for the ensuing phases, to allow for long term financial feasibility planning in view of reasonably foreseeable financial resources.

The conclusion, drafted jointly by the Joint Armed Force General Staff, the ASF and the operational design officers, formulates proposals for beginning the Feasibility Phase of the program.

The Architect and the operational design officer involved presents the Feasibility File to the Architects of Systems of Forces Council (CASF). In view of this file, validated by the architecture committee and examined by the PEC, the Minister of Defense decides to take the program from the Feasibility Phase to the Design Stage, i.e., to launch the program.

### **The Design Stage**

Before beginning the actual realization of a program it is necessary, within the framework of the objectives established during the preparation stage, to: determine the military needs; review, define and examine possible solutions (off-the-shelf purchase, in France or abroad, manufacture under license, international cooperation or purely national realization); obtain a sufficiently reliable and precise estimation of costs and timetable for the realization of the program according to the various scenarios; collect maximum information to estimate means and costs induced by acquisition of the system—effect on the environment, requirements in infrastructure, personnel, spare parts, fuel, and other items.

Since the choices and decisions made before the realization stage determine the program as a whole, the DGA and the Services chiefs of staff must take great care with this work and allow enough means and time to accomplish it thoroughly. The Design Stage has two Phases—Feasibility and Definition.

### **The Feasibility Phase**

This phase is focused on the search for possible answers and an assessment as to the degree of satisfaction that can be brought to the military requirements. The latter, still expressed in general terms in the exploratory military characteristics file will be refined during this phase.

The results of the Feasibility Phase are combined into an Orientation File, composed of two coherent and complementary parts, supported by the general conclusion.

- 1) Under the responsibility of the Joint Armed Force General Staff, the military requirement is explained in sufficient detail, although still provisionally<sup>12</sup>. It corresponds to the contents of the Provisional Military Characteristics File.
- 2) Under the responsibility of the DGA, the range of possible responses and their implications are described—degree of fulfillment of the requirements, performances, timetable, costs<sup>13</sup>, funding calendar for the realization stage, industrial and international aspects. Notably, all useful information is furnished on any acquisition from foreign sources that could fill a part or all of the requirements. The difficulties and risks of each possible solution, as well as the ways of mastering them are covered.

The conclusion, drafted jointly by the DGA and the Joint Armed Forces General Staff, compares

all these responses and formulates proposals on the choice of the one(s) that will be further investigated during the Definition Phase, including the possible assessment of foreign products. It also proposes what procedures to follow during the following phase<sup>14</sup>.

The Orientation File summarizes the results at this stage in the iterative search for the best compromise between characteristics and costs, notably through value analysis and functional analysis. It indicates the comments on these results by DGA and Joint Armed Force General Staff. At this stage of the draft of the military characteristics file, the Joint Armed Forces General Staff establishes a hierarchy of the operational characteristics and defines the limits of performance, calendar and costs within which the desired requirements could undergo changes.

The competent authority, after having examined the Orientation File, assembled by the integrated program team, validated by the OCO of the “System of Forces” involved, presented by the leading department of the program for endorsement by the piloting headquarters<sup>15</sup>, will provide approval to initiate the Definition Phase.

### **The Definition Phase**

During this phase further definition of the system takes place as well as further refining the military requirements, the support, environmental issues, training, technical specifications, schedules, costs and the industrial conditions for entering the Realization Stage. It is during this phase the program Director, program offices and the integrated program team will provide the information necessary to prepare the Realization Launching Document for the approval of the PEC. The Definition phase concludes with a file for launching the Realization Stage or a file for launching the Development/Industrialization phase.

## The Realization Stage

The Realization Stage can begin when the DGA, based on the solutions that have been chosen, is satisfied that the military characteristics will be met and that the required calendar, development costs, industrialization and production criteria will be fulfilled.

If this commitment to the production phase cannot be made at the start of the Realization Stage, or if it can be made only for a part of that phase—for example, for the first mass production series—in principle only the initiation of the development/industrialization phase is proposed. Nevertheless the DGA must provide sufficiently firm projections of the conditions, as well as the costs involved, in the production phase.

At this stage the materials and their support systems are designed in detail, developed, evaluated, quantified, tested and produced.

The two phases of this stage, the development/industrialization and production phase, can overlap. The development/industrialization phase is where the system and its support system are designed in detail, developed, evaluated, qualified and tested.<sup>16</sup> The means for industrial production are also defined and set up. The production phase includes all the necessary operations for future implementation and use—production, training and support capacity, etc.

If the DGA is in a position to commit itself to the overall performance, the calendar for delivery, the production costs and can furnish a reliable assessment of the overall cost of possession at the end of the Definition phase, the Realization Stage can be launched in its entirety, to avoid costs and delays.

This is especially the case for small quantities of products or when programs consist essentially of acquiring existing material or when overall

contracts covering both development and industrialization and a significant part of production can be negotiated. If these elements are not available at the end of the Definition phase<sup>17</sup> launching the production phase is not proposed until the end of the development/industrialization phase.

Under the responsibility of the Services general staff is the military requirement. Under the responsibility of the DGA the solution(s) investigated during the Definition Phase are compared. All the necessary the technical, industrial, logistic, international and financial data are assembled. The iterative search process for the best compromise between characteristics and costs is reviewed, reached by functional analysis and by objective cost concept.

The conclusion, drafted jointly by the DGA and the Joint Armed Force General Staff, proposes a choice and justifies the conformity of that choice with the military requirement.

After having examined the launching-of-realization, or launching-of-development/industrialization file, assembled by the integrated program team, endorsed by the piloting general staff and examined by the PEC, the competent authority initiates the full realization stage, or only approves starting the development/industrialization phase. This file then serves as a reference for oversight of the realization or development/industrialization of the program (performance, timetable and cost control).

The DGA, in liaison with the various Services general staff and the SGA, examines annually<sup>18</sup> the programs that are at the Design Stage. This is when the 'future program file' is established, composed of brief files (one per program<sup>19</sup>) highlighting the programs.

The competent authority (Minister or DGA), having examined the launching of production file, assembled by the integrated program team,

presented by the leading department of the program for endorsement by the piloting chief of staff and examination by the PEC, initiates the production phase. This file assembles all the operational, technical, logistic, industrial, international and financial data necessary for launching. It then serves as a reference for oversight of production, notably concerning quality assurance, value analysis, observance of calendar and cost control.

During the Realization Stage the integrated program team establishes a yearly 'program oversight document' which reports on execution and points to discrepancies between initial planning in the launching file and the present state of the program. The leading department for the program presents the oversight document for endorsement by the piloting headquarters and examination by the PEC before approval by the appropriate authority.

During the Realization Stage, qualifications of technical standards and means of production, and, if required, of nuclear capacity, as well as assessments and field tests necessary for operational use take place in accordance with existing regulations.

The Realization Stage terminates with delivery, to the Armed Forces headquarters in charge of implementation, of the complete product, along with the support system and training capacity. In principle this date marks the end of the program, although some of the DGA's activities continue long afterwards.

The integrated program team, when the major production risks have been lifted and the delivery essentially made, or when the program has been terminated drafts a document that ends the program. This document follows the same distribution and approval circuits as the oversight documents, establishes a complete balance sheet for the program and underscores the lessons to be derived from it.

## **Utilization Stage**

The stage of complete utilization formally begins after the decision to 'put into operational use.' This decision formalizes the authorization for operational use of the arms system after it has been tested in the context of an operational engagement module.

The Armed Forces headquarters involved and the DGA can decide jointly to maintain a program team and continue total or partial application of the methods used to conduct the program during the Utilization Stage<sup>20</sup> to optimize the technical management of the support materials.

## **Retirement from Service**

The Utilization Stage ends with the decision by the Services Chief of Staff to retire the material from service.

## **SPECIFIC PROGRAM CHARACTERISTICS**

The procedures described above can be applied to technology enhancement programs. This is the case, for example, for files that have been prepared in support of decisions and appointments made by a program director and for the documents established with the purpose of overseeing a program.

### **Programs Conducted in a Joint Ministerial Framework**

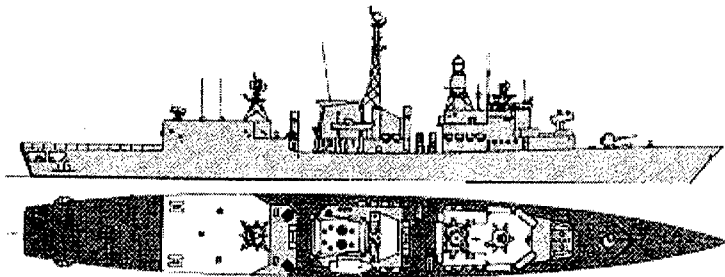
The principles and rules described above can also be applied to armament programs conducted in a joint ministerial framework—except in particular cases where other procedures could be defined by interministerial agreements.



## Programs in International Cooperation

For international cooperative programs, depending upon the circumstances of the program, an ad hoc or permanent organization is set up

among the countries involved. Normally, an executive committee draws up the principles each program will operate under. The program office, in particular the French service, will operate under these protocols.



## Chapter 9

# TESTS PROCESSING, ASSESSMENT AND EXPERIMENTS

### Equipment Tests

In the process of armament programs, tests are needed to check if equipment meets the military requirements regarding technical and military aspects. The coordination of tests is handled by the integrated program team.

The integrated program team must enable:

- the project manager and the industrial companies to perform tests on the equipment as it matures. These tests will ensure at both the subsystem and system level that the equipment meets its technical requirements;
- the DGA, after considering tests results and equipment compatibility with the technical requirements, to pronounce the certification of the equipment; and
- the Service general staff, after considering equipment compatibility with military requirements, to approve equipment for operational use.

In order to minimize costs and delivery time, the integrated program team tries to integrate the tests performed by the DGA, the equipment industrial companies and the Service General Staff in such a manner as to benefit the others, if possible. The use of calculation, simulation and exploitation of existing databases are used to provide cost effective methods of cutting test costs.

### Kind of Tests

#### *Technical Tests*

Technical testing is mainly about:

- definition qualification;
- clearances; and
- quality monitoring.

#### *Tests Under Responsibility of Industrial Companies* (in accordance with the DGA agreements)

Tests at stake here concern manufacturing and design, adjustment and also qualification (in some cases). The Services General staffs support may be required and the DGA will design tests to facilitate Services support.

#### *Tests Under Responsibility of the DGA*

Tests at stake here concern controls on definition qualification. They are designed to assure the quality standard, the clearance and the contractual delivery of studies and equipment and the control of operational features. Some tests are imposed by regulations.

These tests may require Armed Forces support in means and personal resources.

Testing may be accomplished at either the centers of industrial companies or in the DGA

centers (test center, shooting field, labs...). (See Figure 13 for test centers and other DGA facilities.)

During the development process, the technical tests aim at ensuring that the system entirely meets the technical specification. Also, these tests help to define the edge, or limits, of the system (or its operational conditions of use). They all provide for qualification of the system or equipment. The involved armed forces co-monitored for opportunities in order to reduce its own testing session. Some development testing could also include tests in a real operational environment with personal and means provided by the concerned armed force.

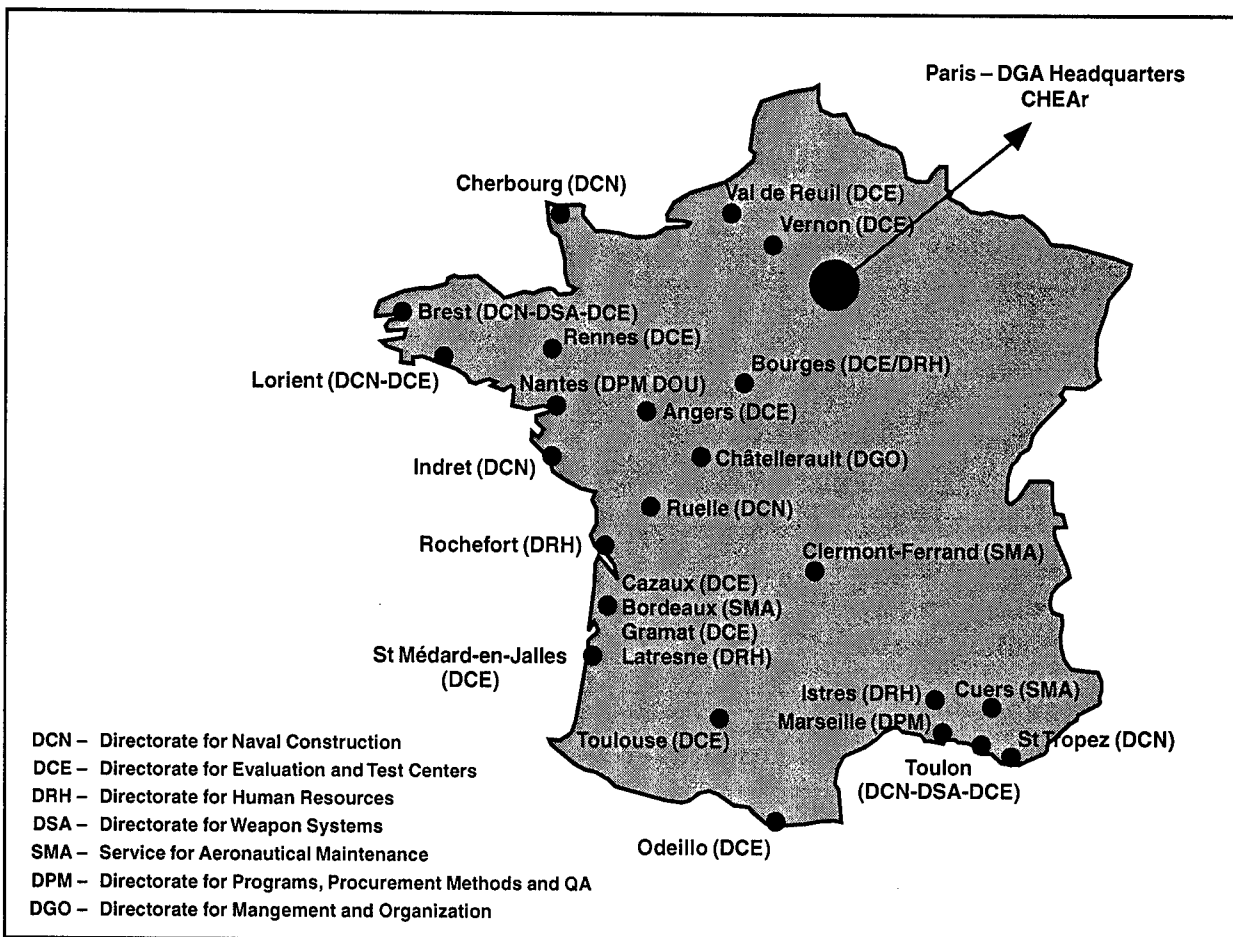
During the production process, the DGA is in charge of the series equipment clearance tests,

although the concerned armed force will be involved. Even after passing its initial clearance test the system can still be modified by the DGA after examination of the first mass-produced units.

### *Tests Under the Services Responsibility*

Tests here concern operational evaluations and experimentation and they take place in accordance with the following process:

- evaluation testing takes place during the design period; and
- experimentation testing is performed on the first mass-produced units.



**Figure 13. Locations of DGA Units**

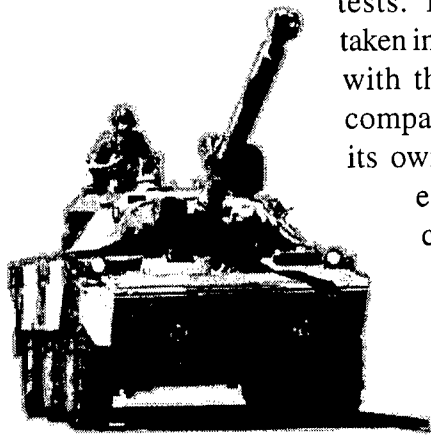
They enable the integrated program staff to test equipment conformity to the military need expressed in the technical characteristic file for operational efficiency. These tests also enable the staff to ensure the integration of the new equipment in the "System of Forces." Operational tests are broad base in order to control all the operational requirements (equipment use, maintenance and instruction). The General Staff accepts the new equipment on the basis of the experimentation results.

### **Test Administration by the Integrated Program Team**

The program test administration is divided in two stages: identification of the needs for testing, and tests processing.

### **Test Preparation and Administration of the Needs**

Concerning the administration of the needs, the integrated program staff makes a general plan for the program tests. This plan is taken in accordance with the industrial companies' needs, its own needs, the evaluations coming from the General Staff, and with all solutions adopted for test



processing and planning. This general plan is used to reduce testing costs. It allows the general staff to emphasize on the main points of evaluations stage. So the DGA can take these requirements into account while preparing all the means dedicated to testing.

The integrated program staff is responsible for the conformity between the requirements of the military characteristics standard and the technical need specification of the standard system.

The IPT also assures the general coordination between all parts of the program (the industrial partners, the DGA and the General Staffs) and the appropriateness of the means required for testing. The IPT has also to provide financial means at the lowest cost if a new need occurs.

The testing optimization is generally the final result of test processing all along the program stage. It supposes the needs for testing have to be defined as early as possible (at the latest in the military characteristics standard file on test evaluation and experimentation).

### **Tests Processing: Organization**

The integrated program team or its representatives must establish a common testing program (PCE) which coordinates all tests and cooperation.

The team has to determine clearly each part's responsibility in the program process. Those responsibilities concern testing definition, realization and control, equipment and means ownership, personal, safety, and financing.

It also has to meet the regulation criteria for testing of each specific equipment or weapon and in accordance with each armed force's procedure. For instance, tests for Marine ships are handled by the Permanent Commission of Testing Programs (CPPE) Marine/DGA.

For very complex testing, an integrated testing staff can be appointed involving representatives from industrial companies, the DGA and the armed forces.

## Validation of the Support System

The validation of the support system requires the same tests and under the same conditions of those of the system. These tests for maintainability and integration of the support system are part of the weapon system common testing program.

This validation is the responsibility of the DGA for qualification, the responsibility of the involved armed force for acceptance and the decision to bring the system into operation.

The precursory results, followed by the confirmed ones, regarding the system reliability and maintainability, enable after analysis to determine and update or revise the initial supply list and all the different means of logistics support.

## T & E European and Transatlantic Trends

Rationalization of T&E community is under way at two levels:

1. International: Several groups have been set up with the aim of reducing the Western European overcapacity, for example the

SGTF (Sub Group for Test Facilities) under the aegis of WEU, the ICU (International Cooperative Use) within the ITOPs (International Test and Operating Procedures) and the MECI (Mise En Commun des Investissements) between France and Germany.

If the progress is somewhat slow, as often in international cooperation, a few results have already been obtained, in particular the signature of an MOU on mutual use of facilities, which France and Germany have already implemented for vehicle tests.

Another important step towards more interdependence is the dialogue established among managers of industrial facilities. Ideas like investment sharing, reciprocal use, reliance on foreign facilities, if not yet implemented, are now considered as good schemes for T&E management.

2. European nations have started restructuring their T&E management through various methods including a reduction in personnel. (Reduction of manpower, e.g. DCE 1200 (1997) – 1000 (1999), closure of facilities (e.g. Chertsey UK – Bretigny F).

## Chapter 10

# ACQUISITION EDUCATION

It is difficult to present armaments education in France without first mentioning human resource management. And since human resource management within the DGA organization is strongly directed towards its essential mission, armaments acquisition, it will be useful first to review a few points concerning the organization of the DGA.

### Two Aspects of DGA Organization

Two aspects will be studied: integrated program teams and areas of competence.

The purpose of integrated program teams is to reduce costs and delays in realizing armaments programs and increase client and user satisfaction. To obtain this all the actors must be assembled and allowed to work at the same time. The areas of competence allow each expert to exercise the skills of his specialty.

Each function exercised by an expert is classed in an area of competence: each area of competence is attached to a department which defines a policy, methods and tools, and which is responsible for updating know-how and competence.

One must distinguish between two types of functional competence; those only concerning the program teams, and the technical ones, in methods, planning and costs.

Experts in this area assist the program director with everything that concerns managing the program—planning, task flowchart, management specifications, risk management—and systems

engineering—functional analysis, value analysis, configuration management.

Experts in purchasing and pricing determine policy and conduct negotiations with industry. Experts in budget and funding planning organize the inclusion in the State budget allocation for the program. Experts in operational maintenance and integrated logistic support start with the design of the products in order to reduce the costs of the tasks required to have them function well once they are in use. Quality engineers are needed for improved risk analysis and greater care from the beginning of the design stage. They also intervene during contract negotiations in order to obtain a greater degree of responsibility from industry.

### Technical Areas

Only a few of the 39 main technical areas established by the DGA will be cited here: telecommunications, electromagnetic detection, steering and navigation, materials for structures, electric, electronic, optronic components, armor, naval combat and information systems, spaceship architecture.

The training organization must adapt to the needs of the DGA. The program director must be capable of leading a team composed of all sorts of experts, who, in turn, must also have reached the highest levels in their specialties.



## HUMAN RESOURCE MANAGEMENT

### Objectives

The purpose of human resources is to acquire staff with the required skills and in sufficient number for each position within the DGA. Special care is devoted to the choice of personnel for positions in the program teams, as well as in the other departments that contribute to the success of the programs—to gain expertise for example at test centers, engineering and ship-building facilities, and aeronautical maintenance centers. Human resource management must also allow for career advancement motivation. Thus expectations and aspirations of the personnel must be reconciled as far as possible with the needs of the DGA.

### Career Training in Areas of Competence

The need to have experts in various areas must be taken into account by human resources management. Thus career training in areas of competence, such as engineering, procurement and program management, has been created. At the head of each career field is a manager who is responsible for the employment, competence, and training of his personnel.

### Professional Experience

The acquisition staff acquires skills by occupying various positions inside or outside the DGA. As an example, engineers who are destined to become program leaders must satisfy the following criteria: their first position must be in a testing department or in an industrial production department to provide them broad knowledge in these two critical areas. In working in these departments, they will rotate between several different positions to provide depth of understanding of the work required. To ensure they gain the necessary experience they will remain in each position from two to four years.

## Types of Personnel Employed by the DGA

Training must be adapted to the different types of personnel in the DGA. There are military personnel, civil servants, employees under contract and skilled workers. The professional status can be that of an engineer, a scientist, technician, administrator, or worker. The status of an engineer in France does not correspond to what is understood in English speaking countries. French engineers continue to specialize for five years after their "Baccalaureat,"<sup>21</sup> in high-level scientific and technological fields.

### Education and Training

#### *Initial Education*

Education begins before personnel take their first position. It varies according to the type of personnel. The following types of education are the most typical ones: armaments engineers (IA = Ingénieurs d'Armement) are scientific military personnel recruited from Ecole Polytechnique. They thus have received a Baccalaureat, plus two/three years of preparatory classes (classes préparatoires) plus two years of Ecole Polytechnique (master's in science degree similar). They also have received one year of military training. They can continue their training for two additional years at ENSTA (Ecole Nationale Supérieure des Techniques Avancées) (specialization in a particular engineering field, such as aeronautics, mechanics or advanced techniques) or at Sup'Aero (Ecole Nationale Supérieure de l'Aéronautique et de l'Espace). Some take additional training in foreign laboratories or prepare a doctoral thesis. This provides six to seven years of advanced training and prepares the personnel for the highest levels of technological, scientific and management positions in the DGA.

The DGA also has two other schools, the ENSIETA (Ecole Nationale Supérieure des

Ingénieurs des Etudes et Techniques d'Armement) and ENSICA (Ecole Nationale Supérieure d'Ingénieurs de Constructions Aéronautiques). Personnel are recruited by entrance examination at the "Bac plus two"<sup>22</sup> year level and take a year of military training followed by three years of high level engineering studies which train them as engineers in armament studies and techniques (IETA = Ingénieurs des Etudes et Techniques d'Armement). Most of the program directors are IA or IETA.

Armed force officers are recruited by entrance exam at the Bac-plus-two level of studies and go to officers' training schools, Saint-Cyr, the Naval Officers or Air Force School. Officers in the technical or administrative corps for armaments (OCTAA = Officier du Corps Technique Administratif de l'Armement) are administrative military personnel, recruited by entrance examination after Bac-plus-two to Bac-plus-four university studies in law, economics or science. They follow officers' training for one year and management training for two years.

Development and production engineers (IEF = Ingénieur d'Etudes et de Fabrication) are civil servants in scientific fields recruited by entrance examination after two to four years of scientific studies in university. They follow a year of training, partly in the DGA and partly in the public education system, focusing on basic sciences and specialized fields in engineering

Advanced technicians in development and production (TSEF = Technicien Supérieur d'Etudes et Fabrication) are civil servants who have studied for two years after the Baccalauréat in a technological university (IUT = Institut Universitaire de Technologie) and one year of training in a school within the DGA.

Engineers under contract (ICT) are civil servants and have already received their degree as lawyers or economists before being recruited. They

compliment the above mentioned engineer personnel with their specialized knowledge and their flexibility. Their number is increasing slightly every year.

### *Continuous Education*

The DGA manages different courses that cover special topics and develop curricula to increase the competence of its staff. The courses focusing on management and management of programs are specially set up for high potential executives.

### *CHEAr (Centre des Hautes Etudes de l'Armement) Training Executives Managers and Program Teams*

There are three types of training involved: educating high potential staff executives, training for program directors and officers integrated teams and specialized training:

High potential engineers are trained for future executives' key positions in a staff course, joint with similar officers and private defense company executives. This course (like Industrial College of the Armed Force—ICAF in the United States) covers openings on worldwide defense and economy concepts and team working.

Engineers with confirmed armament experience in security, expertise or tests are trained (44 days) to become program directors in the Advanced Program Management Course. This course is provided for developing know how on managing integrated program teams and covers procedures within the Ministry of Defense: international issues and cooperation; methods and tools for managing projects and programs; management; cost control and reduction techniques; team leadership; internal and external communication techniques and case studies. The trainees study a real project, write reports and



present their paper to an examining board. The CHEAR awards successful participants a certificate.

The short (10 days) intermediate course is set up for team members (young engineers, military officers, civil servants trained in law and/or economics) to train them how to work in integrated management teams.

Specialized training is providing separate modules in purchasing and cost analysis, for buyers who will be negotiating with industry; human management; functional analysis and value analysis—(excellent tools for reducing costs of armaments programs); negotiation in international contexts (for programs in international cooperation); economic and strategic intelligence and control management (this is only a partial list).

Two courses are to be launched and will be operated by CHEAR: one for newly hired managers and one for confirmed managers. The program for new managers teaches them the basic concepts of management and communication. It is a practical course in communication, leadership, interviewing and negotiation. The program for confirmed managers takes place during the tenth year of employment. It prepares managers for key positions between the strategic and operational level of the DGA. It teaches them to convert strategic orientations into plans for action and methods of implementation. The program for advanced managers prepares them to a certain extent to be actors in armaments programs, since they learn to lead a project, supervise its management and manage human resources.

## Chapter 11

# FRENCH LEGISLATION, PRACTICE AND CONTROL MECHANISMS GOVERNING THE TRANSFER OF CONVENTIONAL ARMAMENTS

The general law applicable since 1939 prohibits the export of armaments. Hence the export of war materials becomes an exception to that principle and is subject to two successive phases of control.

- a) The law requires that before any marketing of the product, negotiation or sale, the French government must provide approval ('preliminary approval,' AP). It is valid for three years at the marketing phase (exploration of general market conditions, excluding the remittance of formal proposals) as well as at the 'negotiation' level (the opening of negotiations up to the drafting of a contract). This authorization is limited to only one year at the 'sale' phase (signing of the contract). The decision is taken by the Prime Minister upon recommendation by the special interministerial commission composed of representatives from the ministries of foreign affairs, defense and finance; and
- b) The actual export of equipment can take place only upon the delivery by customs of an authorization of export of war materials (AEMG), endorsed by the ministries for foreign affairs and defense.

Decisions by the French government in matters of armaments exports are a matter of sovereignty. A case-by-case assessment mainly takes the following criteria into account, in accordance

with the European code of conduct adopted in June 1998:

- a) respect of international agreements of the member states, specifically of sanctions decreed by the Security Council of the United Nations and those adopted by the Community, agreements notably in matters of non-proliferation as well as other international obligations;
- b) the internal situations of the countries of final destination, in case of tensions or armed conflicts;
- c) the preservation of peace, security and regional stability;
- d) the national security of the member states and the territories whose foreign relations are placed under the responsibility of a member state, as well as that of a friendly or allied country;
- e) the behavior of the purchasing state towards the international community, notably its attitude to terrorism, the nature of its alliances and its respect of international law;
- f) the existence of a risk that the equipment will be deviated within the purchasing country and re-exported under undesirable circumstances; and

- g) the compatibility of the exported armaments with the technical and economic capacities of the receiving country, since it is to be hoped that countries answer legitimate defense needs while devoting a minimum amount of human and economic resources to armaments.

A decree contains the list of war and assimilated materials, for which marketing, negotiation, sale and export are subject to preliminary agreement by the French Government. The principles behind this text imply the widest possible interpretation of these materials, and the following:

- a) arms, munitions and their vehicles;
- b) sub-sets and parts of the above, as well as equipment specially designed or modified to produce, accompany or maintain them; and
- c) sensitive materials specifically designed for military use, such as cryptology, important toxic components, important equipment or products under surveillance in the field of missile technology.

France adheres to the principle that the purchasing state must not re-export the acquired equipment. French regulations distinguish between two types of no re-exportation clauses, a 'complete' or 'ordinary' clause and a 'state' clause, for which a written commitment is required from the receiving state.

The "complete" non re-exportation clause requires the buyer to abstain from selling, lending or remitting the equipment, parts or documents in any way or manner.

The "state" non re-exportation clause applies to elements that are to be included in a larger assembly. The buyer can not transfer to a third party these components in their initial state.

The major texts that govern these regulations are decrees and all these texts can be found in a brochure edited by the Direction des Journaux Officiels number 1074, entitled "Matériels de guerre, armes et munitions."

### **The Legislation, National Practice and Control Mechanisms for Transfer of Dual Use Commodities**

The legal basis for French government control over the exportation of most dual use goods dates from March 1<sup>st</sup> 1995 with a system resulting from the adoption of a European rule, Number 3381/94. This rule was included by Council decision Number 94/942/PESC in the framework of Foreign Policy and Security of the European Union Treaty with regard to common control over military exports.

The system presently in force concerns goods, technologies and software that appear on the lists covering the fields of advanced materials and their use; advanced electronics, calculators, telecommunications (including cryptology), sensors and lasers, navigation and avionics, naval techniques and propulsion. The control system also applies to dual usage technologies that contribute to arms of massive destruction. The double usage goods list is an assemblage of several lists –International Nuclear (NSG), Chemical and Biological (Australia Group), Ballistics (MTCR) and conventional weapons (Wassenaar Arrangement). Particular care is taken with the more sensitive products, technologies and software, especially those able to be used to manufacture missiles. These items are dealt with in France according to the procedures that are applicable to war materials.

The French and European control system is fundamentally *erga omnes*, i.e., non-discriminatory, and without selecting any specific countries for specific restrictions, except in case of international embargo. Control is exerted with

the intent to appraise the possibility of contributing to the disturbance of world order, without a priori exclusion.

The products, technologies and software on the control lists must be licensed for export outside the territory of the European Union. In principle the license is granted individually and concerns an exporter of a series of products towards various destinations, for a period of two years.

Licenses can, however, be general in character when they concern an exporter's right to deal with wide categories of goods to groups of destinations.

A license is requested by an exporter, or his representative, from a specialized department in Customs. The Control Office of the Department of Industry delivers it. In case of more complex individual licenses or all global or general licenses, the Office consults the specialized

services of the Foreign Affairs Department, the Ministry of Defense and the General Secretariat of the National Defense. Then the specialized department of Customs delivers the license.

Products not destined for a country in the EU and appearing on the control lists must be identified when passing through customs, and accompanied by the appropriate licenses. For transfers within the EU, only the most sensitive products require licenses.

Has responsibility for coordination and regulation of the French Defense policy. It is directly administered by the Prime Minister but is composed by civil servants from the departments of Foreign Affairs, Defense and industry. Its main mission is to control the exports of armament goods but also to gather information on technological evolution and protect the "points sensibles," i.e. vital sites for the French military research or army.

## Chapter 12

# INTELLECTUAL PROPERTY RIGHTS

### INTELLECTUAL PROPERTY RIGHTS IN FRANCE

Patents in France are ruled by Book VI of the Intellectual Property Code (articles L611.1 and following).

#### Patents

Patents protect inventions and consist in titles delivered by the national state authorities after a documentary inquiry, conferring upon the declarer of the invention a temporary monopoly over its exploitation, for a duration of 20 years from the date that the request was filed. Patents are a tool for economic advancement and an encouragement for research and development.

#### Patentable Inventions

An invention is the creation of a product or process which consists of a new solution to a technical problem. Not all inventions are patentable.

The following elements, taken as such, are not considered patentable:

- a) discoveries that throw light on something that already exists, but of which no one had previous knowledge or possessed;
- b) scientific theories which are abstract principles serving as a basis for a science or explanation of a field of knowledge;
- c) mathematical methods, which are the result

of abstract reasoning meant to arrive at a determined purpose;

- d) aesthetic creations, which are exclusively ornamental. There is no technical effect involved. They are not patentable, unless it is considered that a product has a technical effect that is inseparable from the aesthetic creation, in which case a unique patent is possible (article L511.3 line 2 of CPI);
- e) plans, principles and methods in the exercise of intellectual activity, in games or in the field of economic activities as well as computer programs, which are abstract, imaginary, theoretical creations with no physical effect; and
- f) presentations of information, which are not technical in character.

The law and international conventions expressly refuse all patentability in the following cases:

- a) inventions whose publication or use are contrary to public order or morality (e.g., inventions having to do with the human body);
- b) new plants, that are protected by a specific title, a certificate of plant acquisition (articles L623.1 and following of CPI); and
- c) animal species and essentially biological processes for obtaining plants or animals.

## Criteria for Patentability

A patentable invention must be:

- a) **New** – An invention is new if it is not included in the present state of the art, i.e., it must be situated outside of what is known [le français n'a pas de sens ici, traduction incertaine] (article L611.11 CPI).
- b) **Impley Inventive Activity** – An invention presents inventive activity if, for someone in the field of activity, it does not follow evidently from the state of the art (article L611.14 CPI).
- c) **Adaptable for Industrial Applications** – An invention must be realizable in practice, i.e., manufacturable or usable (article L611.15 and 16 CPI) in any sector of industry. Thus the invention cannot consist of an abstract principle, like, for example, a scientific discovery.

## Procedures for Delivering a Patent

### *Filing a Request*

Protection by a title of industrial property implies that an application to that effect has been filed. Formulated in French (unless translated), it must include various parts, such as an identification of the applicant, a description of the invention, claims to the invention, etc. Any physical or moral person with a home or business address must apply at the Institut National de la Propriété Industrielle (INPI), either directly or via an intermediary. The INPI then ascribes a date and number to the application for a deposit fee.

### *Processing a Request*

All patent applications, while remaining confidential, are brought to the knowledge of the

Ministry of Defense so that he can attribute security status to any whose divulgation could endanger national defense interests. There is a five-month delay for this procedure, counting from the date of application.

The INPI director can reject applications that do not adhere to the prescribed form, as well as those that present an obviously on patentable invention.

### *Establishing a Research Report*

Documentary research on the novelty and inventive activity of the subject allows the applicant to draw conclusions on the existence of precedents to his invention and assess the validity of his application. The applicant can deposit new claims in view of the precedents mentioned in the report or make observations to justify maintaining the initial claims.

This research is accomplished by the European Patent Office at the Hague, which drafts a report at the request of the INPI.

### *Publishing the Patent Application*

Publication takes place automatically or at the applicant's request 18 months at the latest after the date of application or priority—extension to France of a foreign application within 12 months of that application abroad.

At the end of this procedure the patent is delivered. It remains in force in return for the payment of annuities.

### *Patent Rights – Monopoly of Exploitation*

In France a patent confers upon its owner to conduct exclusive activities of exploitation—of manufacture, supply or commercialization of the invention, of utilization, importation and detention to these ends. The owner may concede some

of these activities to third parties, in the form of exclusive or non-exclusive licenses.

Some activities are permissible without the owner's authorization, namely, activities conducted in private, for non-commercial purposes, experimentation on the object of the invention, or previous personal possession. For example, a third party can, in good faith, have realized or possessed the same invention as the one protected by the patent, at the moment the application was filed, in the same territory, without having filed an application. That party may exploit the invention on their own account.

### ***Violating Patent Rights – Duplicates***

For a patent to be violated it must be valid and still in force. The burden is on the alleged duplicator to prove that the patent is not valid.

Duplicates are judged on their resemblance with the original and not on their differences. Duplicating can be the conduct of activities that are exclusively reserved by law to the owner of the patent, and can involve manufacture, etc. Civil and criminal courts have jurisdiction over these activities, independently of any intent on the part of the alleged duplicator.

### ***Defense and Patents – Defense Contracts***

The State can sign public and private contracts, like any moral entity. However, in that case, special rules apply.

### ***Co-ownership with the State***

When the Ministry of Defense and a company jointly realize a patentable invention they can file a joint application with the INPL. In that case there is co-ownership under articles L613.29 to 32 of the industrial property code. This law is very strict with regard to the co-owners, particularly in financial matters, and is

very difficult to manage. Drafting co-ownership regulations as a private contract which can dispense the partners from referring to the law, or complement the law can facilitate it. The Ministry of Ministry of Defense is co-owner of a certain number of patents.

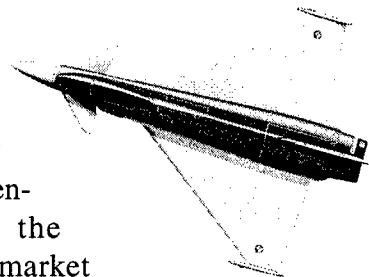
When an invention is the result of a market (notably for option C of CCAG/P or chapter VII of CCAG/M) the patent belongs to the owner of the market. The public entity owns the right of reproduction of the results of this market, including the right to exploit the patent for its own purposes.

When the owner of the market exploits the results outside of this market he reimburses the public entity for the expenses incurred by it (articles C.31 and following of CCAG/P).

Although the CCAG does not mention this, it is legally founded that when a public entity exploits an invention outside the needs of the market and for third parties not designated in the market, it must reimburse the owner of the patent, as the right of reproduction is strictly limited to the market and to its objectives.

The Ministry of Defense can conclude contracts ceding the licensing a patent, whether the patent belongs to it or to a company. The State can be acquirer or licensee.

In case the State cedes a license it recovers the effective sale price of the patent.



In case a license to exploit a patent belonging to the State is conceded, it receives exploitation fees from the licensed company.

In both of the above cases the appropriate department of the Ministry of Finance can veto the financial clauses, since state patents enter the private sector.

The State can also acquire patents from private companies. If the patent is the result of a market the State acquires it free of charge (article C23.2 of CCAG/PI). If the patent is not the result of a market the State must pay a price.

Finally, the State can request the exploitation of a patent from a third party, exclusively or not. It then becomes the licensee and must pay the owner of the patent for the right to exploit it.

### **Miscellaneous Points**

The State is owner of a patent when it has requested one of its employees to realize a given technique (article L611.7 of CPI) or when the employee has taken the initiative to realize an invention while enjoying the benefit of the professional means at his disposal.

Besides, the rights to exploit software realized by agents of the State belong to the State, which can exploit them as it wishes.

### **Defense Prerogatives**

The code protecting intellectual property (L612.8 to 10 and R612.26 to 32 of the Intellectual Property Code) attributes the following prerogatives to the Minister of Defense: It can:

- a) prohibit the revelation and exploitation of inventions contrary to defense interest;
- b) concede licenses on its own initiative, in the interest of defense, with fees determined by

the legal authorities in the absence of an agreement; and

- c) receive favorable treatment when it duplicates the patent of a third party for defense purposes (L615.10 of CPI).

Only the prohibition of revelation and exploitation is commonly used, as well as the measures concerning duplication.

### **Confidential Access to Patent Applications at the National Institute of Industrial Property**

The Intellectual Property Code authorizes the Minister of Defense to “inquire confidentially at the INPI for information about patent applications.”

INPI organizes weekly meetings for delegates from the major departments of the DGA during which its applications are examined.

When the DGA delegates conclude that publishing or exploiting a patent application would not be prejudicial to defense interests they return them to the INPI, which continues its procedures for delivery of the patent. In case of the contrary, or in case of doubt, they submit the application to their directors for further examination.

### **Prohibiting Divulgence and Exploitation**

The law states that inventions for which patent applications have been filed cannot be freely divulged and exploited as long as authorization to do so has not been granted, and that, except for a request to the contrary by the Minister of Defense, authorization is granted automatically five months from the day of application.

The law also states the conditions in which the Minister can require prolongation of the prohibition to divulge and exploit beyond the five-month period:



- a) the request must be made before the end of the five-month period;
- b) the prolongation must be requested for a period one year, renewable each year; and
- c) the prolongation gives the right to indemnities in favor of the applicant.

The prohibition to divulge and exploit, commonly called secrecy, concerns in principle all patent applications filed with the INPI, ends with the processing of the application or at the end of the five month period, or, if the Minister of Defense has not requested prolongation within this period.

Secrecy results in the suspension of the processing of the application. No research for precedents takes place and the owner of the patent is ignorant of the value of his invention.

Moreover all freedom to exploit and divulge it is prohibited, notably the negotiation of agreements to license, expose, publish, and freely extend the patent application abroad. The applicant can ask specific authorizations from the Ministry of Defense (concessions to license a company, cession of the patent, exhibition, etc.), but when authorizations are granted they can be restricted.

### **Exploiting Intentions Committed to Secrecy**

Prohibition to divulge and exploit is an essential prerogative, as some inventions cannot be exploited or divulged without endangering the nation. Expropriation and obligatory licensing for defense (L613.19 and 20 of CPI) allow the following:

- a) depriving the applicant of the ownership of the invention in exchange for payment which is not determined in advance, either out of court or by court decision;

- b) depriving the applicant non exclusively of his right to exploit, to satisfy defense requirements, notably when the applicant has refused to grant a licensing contract out of court to the Ministry of Defense. He is owed payment, determined out of court; or if not, in court.

These two measures have not been enforced for many years because they are cumbersome and costly. The Ministry of Defense cannot be considered a duplicator when it exploits or has patents belonging to third parties exploited. In such cases, although the Ministry of Defense can be identified as duplicating a patent it can continue exploiting the disputed patent by paying penalties in proportion to the interests involved. However, outside defense requirements the Ministry of Defense remains subject to the laws pertaining to duplication and cannot benefit from this measure.

The NATO agreement of 1960 (BO431 volume 2) on the mutual protection of defense inventions allows the extension to the NATO countries of a patent or patent application that has been made secret on the territory of one of the member countries. A similar agreement was signed in 1984 between France and Sweden.

A patent application made secret in France can also be extended to other NATO countries and/or to Sweden if the applicant has obtained the agreement of the Ministry of Defense. The Office of Industrial Property of the Ministry of Defense sends the classified patent application to the defense attachés of the countries involved, which communicate it to their local BPI's and representatives. This procedure is used in the opposite way when a NATO country or Sweden wishes to extend a secret patent or patent application to France.

## *Chapter 13*

# THE INDUSTRIAL BASE

### **RESTRUCTURING THE DEFENSE TECHNOLOGY INDUSTRY BASE**

#### **Review of the Present Situation**

The general decline in the defense budgets of the major industrialized countries, and, more generally, restrictions in the market for weapons have helped to exacerbate international competition in that sector. It is indispensable for French defense policy to adapt to the new environment in the armaments sector. The construction of Europe calls for the reinforcement of the policy of large-scale cooperative programs, already pursued over the last few years. This will continue to develop within the Franco-German framework decided at the Baden-Baden summit on December 7, 1995, and beyond that, with the European Arms Agency, provided for in the European Union Treaty.

A general tendency towards industrial concentration has been taking place over the past few years, in the United States, Germany and Great Britain. Large groups have been formed, capable of taking charge of activities in high technology sectors while supporting the ups and downs of economic cycles thanks to their important financial reserves. The French defense industry is taking the same direction by seeking alliances on a national and European scale.

#### **Industrial Restructuring**

The restructuring implies creating important subsectors capable of supporting arms production industries in the nuclear, aeronautics, space, electronics and electromagnetic fields. This

presupposes a deliberate policy to encourage subcontractors and small and middle sized companies with enough diversity and innovative capacity to maintain a rich and competitive background. Restructuring has begun in the electronics and aeronautics sectors. Thomson CSF has been privatized, with the purpose of supplying it with the necessary space to maneuver in the context of international competition. The aim of the merger between Dassault Aviation and Aerospatiale is to create an industrial base in the civil and military aeronautics and space sectors capable of strengthening European alliances begun in that area, notably with the partnership with the German company DASA.

GIAT industries will regroup and reorganize itself around its main activities. The purpose is to find its balance and ensure its viability. The necessary steps will be taken progressively but with determination, to allow this company to recover its role in the field of terrestrial armaments in Europe and beyond. Similarly the capability of the naval construction sector will be enhanced with improvements in management and a sustained effort in productivity and reconstruction.

#### **Private Enterprise**

##### *French Defense Industry*

The defense industry occupies an important position in the French economy. It generated in 1997 a turnover of Euro 17 billion, among which Euro 6.6 billion for export markets. More than 5,000 companies are involved in this activity which employs about 180,000 people (including

government-owned facilities and M.O.D. procurement services, but not including non-specific subcontractors and service providers which represent an estimated additional 50 percent). Most of the industrial groups which have an activity in defense are also present in civilian high technology activities.

The defense sector covers a large number of complex skills in the design, manufacture and testing of systems that France has developed over the years through numerous programs. In terms of activity as well as of capabilities, the French defense industry ranks in the world just after the U.S. industry and at about the same level as British industry. It offers a thorough range of products, and has the capability to design and manufacture nearly all (more than 90 percent in value) the equipment necessary for the French armed forces. Programs in international cooperation, generally with European partners, represent a growing proportion of the defense activity, from about 20 percent today to an expected 30 percent to 35 percent in 2002.

After years of continuous growth till the mid-1980s and a stabilization till early 1990s, the sector suffered from the structural decrease in defense markets. During the first half of 1990s, in France as well as in the rest of Europe, the future of the aerospace and defense industry was overshadowed by reduction in defense budgets, an intensification of competition in export markets and the creation of industrial giants in the United States. Observers were generally pessimistic about the future of the European defense industry, highly fragmented and handicapped by overcapacity. Its consolidation and rationalization, although unanimously agreed as essential, appeared likely to be extremely difficult to implement, owing to its unique nature and sensitivity.

Today, this industry appears in better condition than what could have been anticipated. French

defense companies, as well as European ones, have made intensive efforts to adapt, especially in terms of workforce. From 1995 onwards, in France, this sector entered into a phase of progressive stabilization due to a rise in export levels, to favourable conditions in the commercial aircraft market and to a situation approaching stability in defense budgets. This resulted in a substantial improvement of the economic situation of most of the major defense companies. Export progressed significantly in 1998, the orders rising by 60 percent at Euro 7.6 billion versus Euro 4.6 billion in 1997.

Large scale structural changes have taken place in the French defense industry 1998-1999. The privatization of Thomson CSF occurred in 1998, the one of Aerospatiale in 1999. Previously a majority shareholder of these companies, the French State concluded shareholder agreements with the private industrial groups Alcatel and Lagardère which acquired significant interests in the new and enlarged Thomson CSF and Aerospatiale Matra, in consideration of the contribution of their aerospace and defense activities to these new companies. Aerospatiale Matra has also become the holder of the interest of 46 percent in the military and business aircraft manufacturer Dassault Aviation previously held by the French State.

### *Aerospace*

In the aerospace sector, the merger between Aerospatiale and Matra Hautes Technologies' activities has created a new entity positioned at the forefront of the consolidating European aerospace and defense industries. Aerospatiale Matra will be present in commercial and military aircraft, helicopters, space (launch systems, ballistic missile systems, and satellites), missile systems, telecommunication and information systems, and will benefit from numerous technological, financial and competitive advantages as well as a greater balance between its civil

and military activities as compared to its predecessors. The new group is the fifth largest aerospace and defense company in the world and the second largest in Europe, with pro forma annual sales of over Euro 12 billion in 1998 and 52,000 employees. Its pro forma backlog at the end of 1998 represented nearly 3 years of current turnover. Its 1998 sales were 75 percent from export markets and 25 percent domestic; 65 percent were from the civil sector and 35 percent from the military sector.

For the aerospace sector as a whole, the years 1998-1999 will appear as a turning point. Airbus Industrie reached nearly half of the world market of commercial aircraft of more than 100 seats with firm orders of about 500 jets in 1998. In space, Ariane 5 is now ready for commercial market after its qualification flight. The total turnover of aerospace industries reached Euro 24.6 billion, with 68 percent for export markets.

### ***Defense Electronics***

In the defense and professional electronics sector, the restructuring of Thomson CSF was achieved by the contribution of the defense and space activities of Alcatel and Dassault Electronique and of the former satellites activities of Aerospatiale to Thomson CSF and to Alcatel Space Industries, a joint venture created between Alcatel and Thomson CSF. This operation rationalizes the French capabilities in the field of military telecommunications by enhancing the synergies with civil applications by the way of a comprehensive technology exchange agreement between Alcatel and Thomson CSF.

### ***Land Systems***

Giat industries, a major French manufacturer in the fields of battle tanks, land weapons and ammunition, continued to adapt its industrial capacities to the depressed market of land equipment.

### ***Toward Further Integration in European Industrial Capacities***

The French defense industry, as well as its counterparts in other European countries and in the western hemisphere, should pursue its effort toward increased cooperation and further integration.

Significant steps have already been reached and others are on the way. This process involves two simultaneous ranges of actions:

- a progressive consolidation of demand, by the way of increased cooperation between customer countries. The new common European procurement agency OCCAR, created in 1996, progressively manages more cooperation programs large scale actions of consolidation of supply, by the way of significant industrial mergers, mainly hitherto in France, Germany, and the United Kingdom, but also elsewhere, by the creation of large scope joint venture companies between two, three or four international partners, as it is already the case in missiles, satellites, equipment. This pragmatic and progressive approach should continue to be patiently implemented, leading to more efficient international companies able to better meet the needs of their customers.

### **Public Enterprise**

#### ***The Naval Shipbuilding Directorate, DCN***

The shipbuilding directorate's main mission lies in designing, working out and maintaining the French navy ships. It is undertaking to improve its competitiveness, cater for its main customer and win on the international markets the size of an industrialist to be referred to in the fields of world military shipbuilding, since it is already qualified, thanks to its capabilities and products.

DCN is organized so as to reach this objective through an enhanced integration of its facilities, an updating of its management control and an increased commercial effort on the export market.

DCN employs some 18 000 persons, mainly assigned to Brest, Toulon, Cherbourg, Indret, Ruelle, Papeete facilities and to "DCN Ingénierie." In 1998, its turnover is 11.3 billion French francs, orders in 1998 for 21.3 billion French francs included exports and diversification for 6.5 billion francs. With orders from the French armed forces in decline and set to decline further, DCN had to reduce its workforce. In addition to the cuts made over the last few years, the workforce will be further reduced by stages until a new equilibrium is reached in 2002.

DCN conducts six major national programs and seven major ones for the export markets.

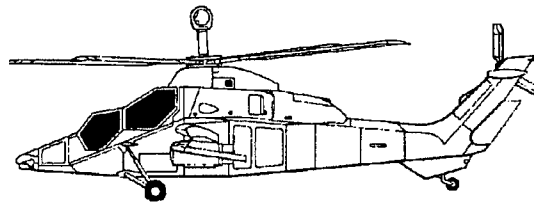
The restructuring now in progress at DCN began in 1996 with a drive to focus exclusively on the French core industrial skills. As part of the broader reorganization of French defense procurement, the DGA set up a new entity—the Weapons Procurement Directorate or DSA — (Direction des Systèmes d'Armes)—to handle weapons procurement.

With these efforts well under way, the Secretary of Defense felt it was time to give new impetus to the DCN modernization drive while reaffirming the move towards greater autonomy. On May 12, 1999, the Secretary announced a new series of measures including the decision to separate DCN from the DGA. This change in administrative status represents an important milestone. Although still part of the Ministry of Defense, DCN gains new independence in the management of human resources, finances and assets. Whereas the DGA was DCN's prime customer while the two entities shared ties of operational dependency, henceforth only the link

as prime customer remains. A review will also be conducted to determine how DCN can best expand its partnerships with other entities through DCN International.

### *The Aeronautical Maintenance Department, SMA*

The Aeronautical Maintenance Department, SMA, unites the aeronautic industrial workshops. It is an entity within the DGA, primarily responsible for conducting industrial maintenance operations on aircraft, engines, equipment and related systems and for providing the cor-



responding support facilities (repair for the air force aircraft in Clermont-Ferrand, for the engines in Bordeaux and the aircraft of the naval aviation in Cuers-Pierrefeu). Their previous experience entitles them to conduct successfully aircraft streamlining and to offer the armed forces an overall maintenance service. The SMA also offers services to foreign clients in partnership with French industrialists of the area. SMA ranks as France's leading military aeronautical maintenance operator.

3,400 persons work for the SMA in its industrial aeronautic workshops. The workshops carry out more than 20,000 inspections and overhauls on more than 120 types of aircraft and are in charge of more than 20,000 engine overhauls.

Turnover in 1998: 1.6 billion French francs  
Orders in 1998: 1.72 billion francs including 80 million francs for exports and diversification

The establishment features sophisticated industrial means (electronic beam welding, electro-erosion, laser cutting, automated scouring chain, etc.) and offers a number of services to industry and the French state: specific tests, expertise, age-studies, technical follow-up, collection of information and drafting of users' manuals with instruction on use, operation limits and repair.

The industrial aeronautical maintenance in France (distribution of military activities) is:

- airframes: SMA 40 percent, industry 60 percent;
- engines: SMA 60 percent, industry 40 percent; and
- equipment: SMA 20 percent, military and industry establishments 80 percent.

## Chapter 14

# FUTURE TRENDS

France's commitment to cooperation programs has been quite strong since the end of World War II. Considering the deeper integration of armaments industry and the growing cost of new material, cooperation programs tend to become more and more numerous; the share of programs financing conducted in cooperation is 16 percent for the time being and will become 34 percent at the end of the period defined by the programming law (2002). Acting jointly on the states' demand and the industrialists supply will result in expected cost sharing and will help people to work together on common projects.

### European Industry

As European industry is facing shrinking defense budgets and increased international competition in armaments, Europe must have a competitive and technologically advanced defense industry that is efficient and adaptable enough to furnish the member states with military equipment at optimum cost efficiency. Thus concrete cooperative projects must lead to the reduction of existing overcapacity and the creation of real industrial and technological complementarity among the partner countries, while guaranteeing supply under all circumstances. In this perspective, despite heavy cuts in defense budgets, choices were made in view of maintaining priority for European programs and respecting France's commitments to its partners. Thus funding for European cooperative programs, notably with Germany, the United Kingdom and Italy will more than double between 1996 and 2002. In preparation for the future, exploratory research and development projects will receive funding slightly higher than 5 percent over Title

V (capital investment) of the defense budget. This effort will have a European dimension. Within this framework special attention will be devoted to maintaining France's technological and industrial competence, along with that of its European partners.

### European Cooperation

The DGA pursues an active cooperation policy at the European level and sees that French equipment is interoperable and fully compliant with NATO standards. Recent successful programs include HELIOS observation satellite, NH-90



or TIGRE Helicopters, COBRA counter-Battery Radar or MISTRAL missile. The FSAF program (Futur System Anti Air Family) has been launched ten years ago between France and Italy, to provide naval and grand European missile systems. The trilateral PAAMS program between France, Italy and the UK will expand this European family to medium range naval missile systems. An important extension of this family's potential is to give to the MSAM grand system (SAMP/T, medium surface-to-Air Missile) an improved site defense capability against theater ballistic missile threat.

## OCCAR

*“To unify it is better to join together specific differences than to efface them for the sake of vain order.” – Saint Exupéry*

### The Creation of OCCAR

Europe’s defense industry is undergoing an unprecedented change. The emergence of industrial alliances within Europe underlines the goal to efficiently meet the new challenges in armament cooperation.

Lack of ambition having led negotiations on the European Armament Agency to a deadlock, France and Germany decided in December, 1995 to go forward together and to apply new co-operation principles—the “Baden-Baden” principles, in the framework of a Franco-German armaments structure. These principles call for: the establishment of a real industrial and technological complementarity; the abandonment of analytical calculations of industrial “just return” for each individual program, in favor of a global balance to be achieved over several programs, and the creation of integrated, trans-national teams at both governmental and industrial levels.

Based on these principles, OCCAR was formally established on 12 November, 1996 by France and Germany, with the UK and Italy joining later. OCCAR is the precursor element for a future European Armament Agency, which remains the goal of the four founding countries as well as other countries that will join when the time comes.

### Organization of OCCAR

OCCAR has its headquarters in Bonn, and is composed of a Board of Oversight (decisional level) and an executive structure (operational level). The Board of Oversight, composed of the four National Armament Directors, fixes the

guidelines and controls the executive structure. The current programmes integrated in OCCAR include the following ones: Milan, Hot, Roland, Brevel, Tigre helicopter and the Cobra counter-battery radar. On the 16<sup>th</sup> of last June, the MoU of integration into OCCAR of the FSAF family of future surface-to-air systems was signed. Furthermore, decisions have been finalised on the eventual integration of other programs, such as the GTK/MRAV/VBCI family of wheeled AFVs, the TRIGAT-LR and –MR anti-tank missiles, and the PAAMS shipborne air defence system.

Program directorates are integrated into OCCAR on the international level (within the executive structure), and on the operational level with the General Staffs. The resulting integrated teams will be based at a single location, and their members will receive large delegations from their authorities and will work in the interest of their programs rather than in view of national directives.

For each program, competition will be organized whenever possible. However, instead of specific and ad hoc groups created for the occasion, truly trans-national industries will be contracted, and these will be responsible for organizing the worksharing between the different participating countries. These integrated companies will work within the integrated trans-national program teams.

For the time being and during a transition period, program directors remain responsible for the management of their programs, until the Convention signed between the ministers of defense in Farnborough on the September 9, 1998 is ratified by the Parliament of all the member states.

### The Goals for the Future

DGA’s primary concern for 1999 is, first of all, to complete the set of rules and procedures that will govern the organization, and, second, to give



the organization a legal personality that would eliminate the constraints stemming from the accumulation of individual state regulations, and would allow it to formulate a real common, coordinated purchasing policy. This legal personality will be acquired once the last parliament has ratified the Convention. So far, OCCAR with legal status is planned to be operational for January 2000.

Nations such as the Netherlands have already shown their interest in being part of the organization. Their accession in the organisation should be finalised by the end of this year. Beyond the management of current programs, the goal is to implement a common approach to the preparation for the future. This involves in particular the coordination and rationalisation

of the evaluation and test centers throughout Europe, as well as the organization of common maintenance structures for the equipment developed and produced under joint programs, the creation of technological interdependence, and the definition of common export strategies for products developed in cooperation.

The creation of OCCAR represents a significant step towards the rationalization of the armaments sector in Europe, in an effort based on the search for economic efficiency, solidarity and mutual dependence. The existence of OCCAR implies that the participating states, their administrative structures and their armed forces are willing and prepared to delegate part of their prerogatives to these new trans-national structures.

## Chapter 15

# PRINCIPLES FOR A RENEWED TRANSATLANTIC COOPERATION

Several bilateral projects have been conducted between European and American companies (GE/SNECMA for example). As the Europeans are trying to consolidate their links on the continent through bi- or multi-lateral projects, a strong initiative has been taken to strengthen the links with the US. In December last year, in Carcassonne, three European acquisition representatives met with their American counterpart to define in a charter the principles for a "renewed transatlantic cooperation," including a basis for solving problems related to technology transfer and exports limitation to third countries.

The undersigned ,

The **Honorable Jacques GANSLER**, Under Secretary of Defense, Acquisition and Technology, USA

Ministerialdirektor **Dr. Martin GUDDAT**,  
Hauptabteilungsleiter Rüstung, Germany

**Sir Robert WALMSLEY**, Chief of Defense Procurement, United Kingdom

**Monsieur Jean-Yves HELMER**, Délégué Général pour l'Armement, France,

share a common vision: to define, develop and build interoperable defense systems. In furtherance to this vision, and in a spirit of mutual understanding and good will, they declare their

intention to improve defense equipment cooperation among their nations through the following principles and declare their commitment to:

- Apply these principles in any relevant agreements or MoUs governing projects among their nations;
- Cooperate at the earliest possible stage with emphasis on the harmonisation of operational requirements;
- Achieve cost-effective acquisition;
- Improve their cooperative defense research effort to facilitate common solutions for their requirements;
- Inform projects participants of any parallel national activity at the earliest opportunity;
- Establish appropriate arrangements to protect freedom of use for defense purposes and security of supply, among participant nations, for cooperatively developed and produced defense systems and equipments;
- Establish a set of management and financing procedures for each project;
- Equitably share the management of the project and the key technologies involved;
- Minimize constraints on the exchange of

- information and products to facilitate industrial teaming and increase efficiency;
- Inform other Allies of progress in the field of collaborative opportunities and, when appropriate, give them the opportunity to participate in individual projects;
  - Establish procedures for the sale or transfer to third countries of cooperatively developed and produced defense systems and equipment; and
  - Give fair consideration to export clearance for national and cooperatively developed systems aimed at the same markets.

## FURTHER READINGS

- Hébert, Jean-Paul, *Stratégie française et industries d'armement*, La documentation française.
- Lacouture, Jean, *Charles de Gaulle, the Rebel, 1890-1944*. Translated by Patrick O'Brien, 1990.
- Carroué, L., *Les industries européennes de l'armement*. Ed. Masson
- Cogan, Charles G., *Charles de Gaulle, a brief biography with documents*. 1996.
- Boucheron, J. M., *Paix et défense*. Ed. Dunod
- Debray, Regis, *Charles de Gaulle: Futurist of the Nation*, translated by John Howe, 1994.
- Chear, A.A., Ed. Addim, *Armement et Sécurité*.
- Weidenfeld, Werner, Wolfgang Wessels, *L'Europe de A à Z*, Office des publications des Communautés Européennes.
- Echange d'information sur la planification de la défense, analyses and références*, Ed. Ministère de le Défense, France 1999.
- Revue *L'armement* (several issues) Ed. CHEAr.

## ENDNOTES

1. The prospective plan is co-signed by CEMA and DGA.
2. Systems of deterrence and C3R each have two OCO's.
3. Overall cost of possession includes cost of acquisition, use and retirement from use.
4. And of the Gendarmerie Nationale.
5. Joint decision taken by EMA and DGA within CASEF.
6. The decision to begin the preparation stage is the responsibility of the piloting headquarters.
7. Or the piloting headquarters if the composite program depends only on one branch.
8. If the program has a steering committee a piloting committee is not indispensable but can be useful, especially to interface with the integrated program team. In this case the co-chairmen of the piloting committee attend the steering committee meetings.
9. For programs in the design stage this clause covers the case where a specific item has been mentioned in the investment catalog, with the understanding that any studies involving defense expenditures remain dependent on the procedures that govern these studies.
10. In case the development/industrialization phase is not dissociated from the production phase these authorizations concern the launched phase, i.e., the realization phase.
11. These procedures appear in the instruction concerning the investment funding catalog and the approval of program authorizations.
12. Nuclear, space and some information and communication programs can be the responsibility of the Armed Forces.
13. Including estimations, possibly by intervals, of the total cost, the optimization criteria for defining the components of acquisition costs, and the defining elements of utilization costs.
14. A step-by-step elimination process can be envisaged.
15. In case of an interarmy program the opinions of the Joint Armed Force General Staff involved will have been previously obtained. This comment is valid throughout the present instructions.
16. Adopted for the army.
17. However, an effort will be made to conduct the definition phase in such a way as to obtain them. The choice between these two options rests on an evaluation of the risks that remain to be mastered in the development/industrialization phase.
18. When it examines the catalog of budgeted investments in operations.
19. These files, established by the leading department for the program in liaison with the piloting headquarters, supplements the catalog of budgeted investments in operations.

20. During the period of overlap between the realization and utilization stages, which can take place, for example, when operational implementation has been decided before the end of the program, the procedures of the present instructions remain in force.
21. The “Baccalauréat” degree in France is not the same as a Bachelors degree in the United States. It is the equivalent of a high school with a more intense specialization in a major area of study, such as sciences, humanities, economics or technology.
22. This means the baccalauréat plus two years of preparatory classes.

## GLOSSARY

<b>AEMG</b>	Autorisation d'exportation de matériel de guerre	Licence for Export of War Materials
<b>AIR</b>	Maîtrise du milieu aérospatial	Air and Space Control
<b>AP</b>	Agrément préalable	Preliminary Approval
<b>ASA</b>	Admission en Service Actif	Admission to Active Service
<b>ASF</b>	Architecte de système de forces	Architect of Systems of Forces
<b>C3R</b>	Commandement-Conduite-communications	Command-conduct-communication-information
<b>CASF</b>	Conseil des architectes de système Forces de forces	Architects of systems of Council
<b>CCAG</b>	Cahiers des clauses administratives Clauses générales	General Administration Specifications
<b>CEMA</b>	Chef d'état major des armées	Joined Armed Forces Chief of Staff
<b>CHEAr</b>	Centre des hautes études d'armement	Center of High Studies in Armament
<b>CIEEMG</b>	Commission interministérielle pour l'étude des exportations de matériels de guerre	Interministerial commission in charge of examining exports of war materials
<b>CPI</b>	Code de la propriété intellectuelle	Intellectual Property Code
<b>CPPE</b>	Commission permanente des programmes et des essais	Permanent Committee for Programs and Tests
<b>DAF</b>	Direction des affaires financières	Financial Services Directorate
<b>DAJ</b>	Direction des affaires juridiques	Juridical Affairs Directorate
<b>DCE</b>	Direction des Centres d'Expertise et d'Essais	Directorate for Expertise and Test Centers

<b>DCI</b>	Direction de la coopération et des affaires industrielles	Cooperation and Industrial Business Directorate
<b>DCN</b>	Direction des constructions navales	Directorate for Navy Shipbuilding
<b>DGA</b>	Délégation Générale pour l'Armement	« The DGA »
<b>DGO</b>	Direction de la gestion et de	Management and Organisation Directorate
<b>DIS</b>	Dissuasion	Deterrence
<b>DPM</b>	Direction des programmes, des méthodes d'acquisition et de la qualité	Program Management, Acquisition Methods and Quality Control Directorate
<b>DRI</b>	Direction des relations internationales	International Relations Directorate
<b>DRH</b>	Direction des ressources humaines	Human Resources Directorate
<b>DSA</b>	Direction des systèmes d'armes	Armament Systems Directorate
<b>DSP</b>	Direction des systèmes de forces et de la prospective	Forces Systems and Prospective Directorate
<b>EMA</b>	Etat major des armées	Joint Armed Forces General Staff
<b>EMAA</b>	Etat major de l'armée de l'air	Air Force General Staff
<b>EMAT</b>	Etat major de l'armée de terre	Army General Staff
<b>EMM</b>	Etat major de la marine	Navy General Staff
<b>ENSICA</b>	Ecole nationale supérieure d'ingénieurs de constructions aéronautiques*)	
<b>ENSIETA</b>	Ecole nationale supérieure d'ingénieurs Des études et constructions aéronautiques*)	
<b>ENSTA</b>	Ecole nationale supérieure des techniques avancées*)	
<b>EP</b>	Ecole Polytechnique	



<b>FCME</b>	Fiche de caractéristiques militaires exploratoires	Exploratory Military Characteristics File
<b>IA</b>	Ingénieur d'armement	Armament Engineer
<b>IEF</b>	Ingénieur d'études et de fabrication	Development and Production Engineer
<b>IETA</b>	Ingénieur des études et techniques d'armement	Engineer in Armament Studies and Techniques
<b>INPI</b>	Institut national de ma propriété Intellectuelle	Intellectual Property National Insitute
<b>IPT</b>	Equipe de programme intégré	Integrated Program Team
<b>IUT</b>	Institut universitaire de technologie	Technological University
<b>MECI</b>	Mise en commun des investissements	Investment Sharing
<b>MER</b>	Maîtrise du milieu aéronautique	Sea and Air Control
<b>MSO</b>	Mise en Service Opérationnel	Launching of Operational Service
<b>OCCAR</b>	Organisme conjoint de coopération en matière d'armement	Joint Armament Cooperation Office
<b>OCEM</b>	Officier correspondant de l'Etat major	Corresponding Coherence Services Officer
<b>OCO</b>	Officier de concept opérationnel	Operational Coherence Officer
<b>OCTAA</b>	Officier du corps technique administratif de l'armement	Officer in the Technical or Administrative Corps for Armament
<b>PROF</b>	Frappe dans la profondeur	Long Range Strike Capacity
<b>PROJ</b>	Mobilité stratégique et tactique	Strategic and Tactical Mobility
<b>SGA</b>	Secrétariat général pour l'Administration	General Administration Secretariat
<b>SGDN</b>	Secrétariat général de la National Défense nationale	General Secretariat for Defense

<b>SMA</b>	Service de la maintenance Aéronautique	Aeronautical Maintenance Department
<b>Sup'Aéro</b>	Ecole nationale supérieure de l'aéronautique et de l'espace*)	
<b>TER</b>	Maîtrise du milieu aéroterrestre	Land and Air Control
<b>TSEF</b>	Technicien supérieur d'études et de fabrication	Advanced Technician in Development and Production

**PART 2**

**GERMANY**



## Chapter 1

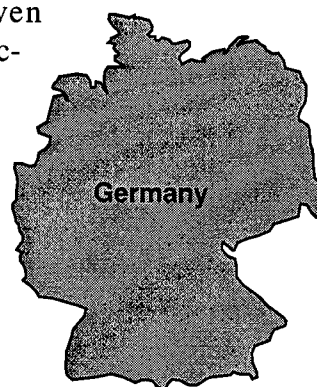
# THE GERMAN ACQUISITION SYSTEM

Spotlights swirled back and forth across the sky highlighting the Brandenburg Gate as hundreds of thousands celebrated the unification of the German Democratic Republic (GDR) with the Federal Republic of Germany. It was 1990, and only the year before the Berlin Wall had fallen and the Brandenburg Gate opened. Berlin has since become the capital of Germany. The shift of ministries from Bonn to Berlin has begun. The remaining ministries will transition over a period of years with Bonn retaining many administrative functions and several ministries. Russian troops have withdrawn from the GDR, the western allies' presence has been greatly reduced in Germany, and the Euro has been introduced as the new currency in much of Europe. It has been a decade of significant changes for the country that this year celebrated its 50<sup>th</sup> anniversary as a Federal Republic on May 23.

The Federal Republic of Germany continues to change with the election of 1998 ushering in a change in government after a 16-year coalition rule by the Christian Democrat Union/Christian Socialist Union/Free Democratic Party. Gerhard Schröder of the Social democratic Party (SPD) and their coalition partner, the Greens, formed the new government. The German Ministry of Defense has also seen significant changes during this decade. The role of the North Atlantic Treaty Organization (NATO) is in transition, German defense industry has been downsizing, and NATO peacekeeping missions continue, all requiring changes in Germany's response. Like most governments around the world, with the collapse of the communist empire, the Ministry

of Defense has seen a decrease in the number of armed forces personnel—490,000 in 1990 to approximately 340,000 today.<sup>1</sup>

The impact is even greater when it is recognized that the unification and integration of the former GDR's armed forces happened at the same time.



The German acquisition system has also seen changes and with it cuts in manpower, defense budgets and organizational changes. The defense budgets have decreased from about 55 billion DM at the height of the Cold War to 46.7 billion DM in Fiscal Year 1998. The defense budget has also decreased as a share of the overall government's budget from 30 percent during the 1980s to 23.7 percent in 1998. About 27 percent of this budget are funds for military technological research, development, procurement and maintenance of material, with procurement representing the largest of this part of the budget at approximately 6.4 billion DM. While the overall budget has gone down, the operating expenditures have remained level since 1990 leaving the investment portion of the budget to bear the brunt of the decrease. The Federal Republic plays a major defense role through NATO and the Western European Union (WEU), and with other allies on cooperative armaments efforts. Germany contributes 28.5 percent of the

Western European Union (WEU) budget and pays 22.8 percent of the NATO budget.

The purpose of this section is to provide an introduction to the German Defense Armaments Organization and the environment in which it operates. It will start with a look at the political environment, the constitutional framework, the

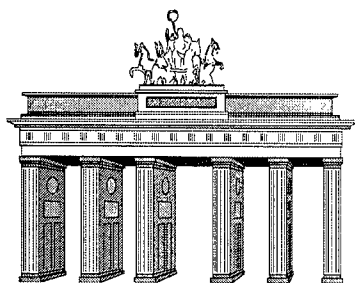
key political entities and the processes involved. The section will then move to the Ministry of Defense, looking at its organizational structure, key players and their responsibilities, and then the operation of the acquisition process. Project management, armaments cooperation and arms sales, defense planning and industrial base issues will also be discussed.

## Chapter 2

# THE GOVERNMENT OF GERMANY

The constitution or "Grundgesetz" (Basic Law) was adopted in May 1949 as the "provisional" law pending Germany reunification. The Basic Law combined the lessons from German experience with the Weimar Republic, the National Socialist State and the intentions of the Western powers. It was the foundation for creating a democratic and social Federal Republic. The name "Federal Republic of Germany" itself denotes the country's federal structure. The Federal Republic consists of sixteen Länder (states) including the City-States of Hamburg, Bremen and Berlin, each with its own powers and each having significant authority reserved to themselves.

The Federal Republic's constitution spells out responsibilities for the three separate branches—legislative, executive and judicial. The legislature consists of a bicameral parliament—the



**Brandenburg Gate**

The Federal Constitutional Court is the highest court in the country with the right to declare unconstitutional an act of the federal or state legislatures. The Court is the guardian of the Basic Law and consists of two panels with eight

judges each. The Bundestag and the Bundesrat elect an equal number of judges. Each judge can only serve one twelve-year term.

### THE FEDERAL PRESIDENT (BUNDESPRÄSIDENT)

The Federal President is Head of State and performs primarily a ceremonial role. The current President is Johannes Rau. He represents Germany in its international relations, concluding treaties, accrediting and receiving envoys. The Federal President is neither a member of the government, nor the Federal and Länder legislatures. He is elected by the Federal Convention (Bundesversammlung)<sup>2</sup> for a five-year term and may run for only one additional term. His primary political role is the appointment and dismissal of the Chancellor, ministers, federal judges, civil servants, officers and non-commissioned officers. He also signs laws, but orders and decrees of the Federal President require, for their validity, the countersignature of the Federal Chancellor or the appropriate Federal Minister.

### THE CHANCELLOR (BUNDESKANZLER)

The Federal Chancellor is head of the German Federal Government<sup>3</sup>. He is elected by a majority vote of the Bundestag and is the head of the majority party (or coalition) in the Bundestag. The Chancellor selects the ministers to form his cabinet and proposes them to the President, who

in turn appoints them. In a coalition government, such as has existed during most of the last 50 years, ministries are agreed upon in forming the coalition. As an example, with the current government the Foreign Affairs Ministry, the Health Ministry and Environmental Affairs Ministry were reserved for the coalition partner—the Greens. The cabinet members are then tasked with managing the ministries, setting policy and ensuring that it is carried out.

The Chancellor plays a dominant role because of his constitutional ability to set the general policy of the government. Not only can he appoint ministers, but has the authority to dismiss them. The Chancellor has two primary roles regarding defense. He sets the general policy for the government on military issues. He also has the constitutional “power of command over the Armed Force.” Article 115(b) of the Basic Law stipulates that upon the declaration of a state of “defense,” national command of the Bundeswehr is transferred from the Federal Minister of Defense to the Federal Chancellor.

### **THE LEGISLATURE OF THE FEDERATION**

The Federal Parliament is bicameral, consisting of an Upper House — the Bundesrat and a Lower House—the Bundestag. The Bundesrat is composed of 68 representatives from the sixteen federal states. Each state is proportionally represented in accordance with their population. In contrast to the senatorial system of the United States the Bundesrat’s members are representatives of the Länder. The Länder governments appoint and can recall Bundesrat members.

All constitutionally relevant laws require the assent of the Bundesrat. This applies especially to bills that concern vital interests of the states, for instance their financial affairs or their

administrative powers. No proposed amendments to the constitution can be adopted without the Bundesrat’s consent (two-thirds majority). Members of the Bundesrat do not vote as individuals, but rather all votes are cast as a Länder block. On a percentage basis more than half of all bills require the formal approval of the Bundesrat.

It is not unusual for the Bundesrat to be controlled by members from the opposite party of the Chancellor. During much of Helmut Kohl’s Chancellorship, the Social Democratic Party (SDP), controlled a significant number of Länder parliaments, thus controlling the Bundesrat. The new German Chancellor, Gerhard Schroeder currently has a similar problem with the Christian Democrats who now control the Bundesrat. However, the Chancellor cannot always rely on Länder governments even when the same party is in power to follow its lead. Each Länder has its own special interests and sometimes takes sides with other Länder irrespective of the party affiliation. This produces fluctuating majorities and compromises have to be made where the parties forming the Federal Government do not have a majority in the Bundesrat.

The Bundestag is composed of 660 seats and is elected every four years unless elections are called earlier. The Bundestag is the parliamentary assembly representing the people of the Federal Republic of Germany. It may only be dissolved prematurely, under exceptional circumstances, with the final decision lying with the Federal President.

The primary role of the parliament as it relates to defense is to pass the yearly defense budget. It also has the requirement under Article 115a of the Basic Law to determine whether or not a state of “defense” exists, i.e., the federal territory is being attacked. This requires a two-thirds majority of the vote’s cast and the consent of the Bundesrat.



## Role of Committees

The primary committees that impact the defense budget are the Committees on Defense and Budget. The committees are structured based upon the relative strengths of the parliamentary groups. It is in these parliamentary committees, particularly in Defense and Budget, that the parliament scrutinizes and controls the activity of the Ministry of Defense. The Parliament's Defense and Budget Committees evaluate the federal armed forces equipment requirements and the suitability of planned measures, the numerical strength, and general organizational structure. However, the parliament's approval of the budget as submitted by the government is the norm. Generally, these meetings are not open to the public. Extensive preparatory work for legislation is done here. It is in these committees that the work of harmonizing political philosophy with the detailed knowledge provided by the experts takes place. The budget committee is of particular importance because it represents parliament's control of the budget. These committees also have the power of investigation although to this point in time they have not investigated any defense issues.

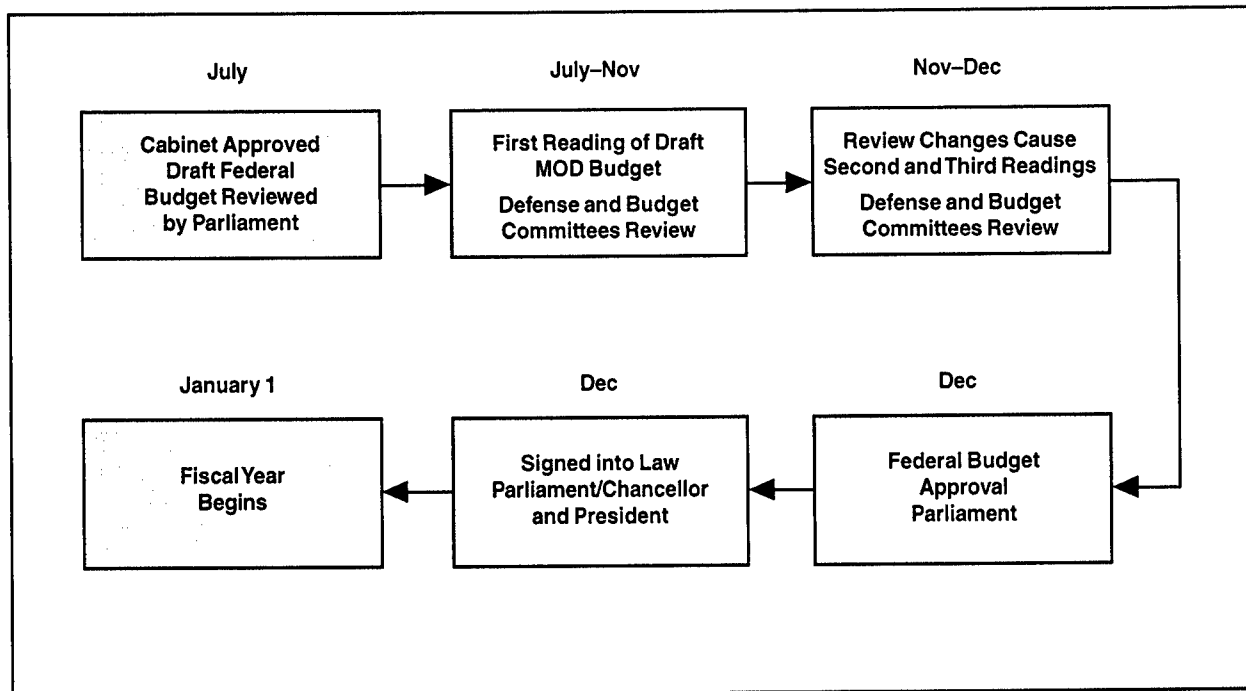
All large contracts over 50M DM (>\$30M U.S., 25M Euro) must be approved by Parliament before contract award. Usually the Director General of Armaments represents the Ministry and presents the case for a contract to the appropriate committees—Budget and Defence. Depending on the committee's degree of scrutiny, such presentations/hearings, may be called repeatedly, until the committee is satisfied with the information it has received to form a decision basis. If the committee approves the contract, then the FMOD will direct the BWB to sign the contract. As an example in the first five months of 1998 the committees approved 20 large-scale projects with a total cost of 7.7B DM. If there is no committee approval then the matter is elevated for reevaluation at the ministerial

level, involving various ministers such as Finance or Economics. In rare cases the decision will be elevated to the Federal Chancellor, as happened in the controversial "Euro Fighter" decision.

## The Budgetary Process

While Bundestag and Bundesrat members may introduce legislation, the Federal Government initiates most bills including the yearly defense budget. Each bill receives three readings in the Bundestag and is usually referred to the appropriate committee—defense or budget. The final vote is taken after the third reading. Upon their adoption, the President of the Bundestag transmits them to the Bundesrat. For many laws the Bundesrat has a veto right, which might be overridden in the Bundestag with a two-thirds majority. While they have the authority to override the defense budget for practical and political reasons this has not happened. Given the German role in European security, its NATO commitments and the Länder interest in work being performed in their state the Bundesrat has not vetoed the defense budget. Figure 1 depicts the budget process.

In a case where the Bundesrat does not agree with a bill it may, within three weeks of the receipt of the adopted bill, demand that a Committee for Joint Consideration (mediation committee, *vermittlungsausschuss*) be convened. This committee will be composed of an equal number of members of the Bundestag and the Bundesrat. While normally the Bundesrat members are required to vote based upon their Länder guidance, once a mediation committee has been formed they are not bound by Länder guidance. If the committee adopts a revised bill, the Bundestag must again vote on the bill. If it is adopted, then the committee's proceedings are finished. If the Bundestag does not concur, then the Joint Committee will continue its work until a bill acceptable to both houses can be drafted.



**Figure 1. Federal Government of Germany – Typical Flow of Budget**

The yearly defense budget must be passed every year by the end of December. The new fiscal year begins on 1 January and parliament normally passes it on time. As part of the yearly defense budget, the Bundestag will provide the ministry of defense with full funding budget authority at the beginning of a program. Unless the budget authority is breached, the FMOD is not required to seek further approval from the Bundestag.

### **The Cabinet**

Articles 62-69 of the Federal Constitution delineate the role of the Federal Ministers. The Federal Ministers are appointed and dismissed by the Federal President upon the proposal of the Federal Chancellor. The chancellor, as chairman of the cabinet, sets the general policy for the government. He also determines the number of ministers and their responsibilities. Within the limits of this general policy, each Federal Minister conducts the business of his department. However, within this general framework

the minister has significant power to act. Article 65 of the constitution states that “each Minister conducts the affairs of his department independently under his own responsibility.” In a coalition government the Chancellor must also take account of agreements reached with the other party in the coalition. Unlike some other countries, the cabinet members are not members of the legislative branch of government. This explains why the German system of government is often referred to as a “Chancellor democracy.” The Chancellor is the only member of the government elected by parliament and he alone is accountable to it.

The Finance Minister plays a key role in deciding budgetary issues—a “first” among equals. He has the power to veto all decisions of financial importance including all legislative proposals with implication for public spending, provided the Chancellor sides with him. The Federal Government decides on differences of opinion between the Federal Ministers.

The German cabinet is currently composed of 16 ministries. They are:

- Minister and Head of the Federal Chancellery
- Minister of Foreign Affairs & Vice-Chancellor of the Federal Republic
- Minister of the Interior
- Minister of Justice
- Minister of Finance
- Minister of Economics and Technology
- Minister of Food, Agriculture and Forestries
- Minister of Defense (Rudolf Scharping)
- Minister of Families, Senior Citizens, Women and Juveniles
- Minister of Health
- Minister of Transport, Construction, and Housing
- Minister for the Environment, Nature Conservation and Reactor Safety
- Minister of Education and Research
- Minister of Economic Cooperation and Development
- Minister of State for the Arts at the Federal Chancellery

## *Chapter 3*

# THE FEDERAL MINISTRY OF DEFENSE

(BUNDESMINISTERIUM DER VERTEIDIGUNG—BMVG)

The Minister of Defense who has responsibility for commanding the armed forces in peacetime leads the Federal Ministry of Defense. Two politically appointed Parliamentary State Secretaries support him. The Parliamentary State Secretary is a member of the Bundestag and is concerned with relations and communications between the defense ministry and the parliament. The Minister of Defense is also supported by two civil servants—State Secretaries—whose primary roles are to provide authority, expertise, leadership and continuity in running the ministry. Each has specific responsibilities. One of the state secretaries is primarily responsible for armament matters.

The State Secretary for Administration has responsibility for personnel, budgets, administrative and legal affairs, infrastructure, social services, including oversight of the Federal Academy of Defense Administration and Technology. The Federal Academy provides armament acquisition and management education to the workforce, especially to the civilian part of the FMOD (Wehrverwaltung des Bundes = Federal Arms Forces Administration according to basic law Articles 87a and b). The State Secretary for Armament and Logistics has responsibility for security and alliance policy, arms control, intelligence and other areas. He is also responsible for armament matters. The Director General of Armaments reports to him.

The Federal Ministry of Defense (FMOD) consists of two elements—the civilian Federal Administrative portion, which includes the armaments organizations and the military, or armed forces (Bundeswehr). This civilian Federal Administrative division was created in 1956 when the basic law was amended to direct that the “The administration of the Federal Defense Forces shall be conducted as a Federal administration with its own administrative substructure. Its function shall be to administer matters pertaining to personnel and to the immediate supply of the material requirements of the Armed Forces.” Thus Article 87b of the Federal Constitution mandated the creation of an administrative substructure to the ministry which would have responsibility for the armaments requirement of the military. Figure 2 depicts the organizational structure of the FMOD.

In 1991 the Defense Ministry adopted a plan—“Reorganization of the Territorial Defence Administration and the Armaments Organization” which reorganized the Armaments Directorate and its subordinate organizations. Its main purpose was to streamline and reduce the size of the organization by the year 2000. This is an ongoing process and changes will be noted throughout the chapter.

### **The Bundeswehr**

The Bundeswehr, the military portion of the Federal Ministry of Defense, was established

in 1955 and integrated into the Western alliance. The constitution of 1949 required the establishment of “the Armed Forces for Defense purposes.” The Bundeswehr senior military leader is the Chief of Staff of the Armed Forces, who is supported by a Deputy Chief of Staff. He is the senior military advisor to the Minister of Defense and the Chancellor. He is also a non-voting member of the Cabinet’s Federal Security Council. He chairs the Federal Armed Forces Defense Council, which consists of the Deputy Chief and the Chiefs of the three services. He exercises “executive authority” over the council.

The Army, Navy and Air Force and the Surgeon General make up the rest of the Bundeswehr. (See Figure 2.) The current strength of the Bundeswehr is about 340,000 military—Army personnel number 233,400, Air Force personnel 77,400, and Navy personnel 27,200. In a state of “defense,” total manpower can rise to 700,000 soldiers. The armed forces, while primarily

defensive, recently were restructured to include a quick reaction force to respond to humanitarian and military situations, such as occurred in Kosovo.

### The Requirements Process

The three military services are similarly organized. Each has a central staff, a C2 Command for operational planning and mission control, a support command and an office for central issues which has the function of a Training, Development and Doctrine Command (TRADOC). For the Army, this office is the Heeresamt (HA); for the Air Force, the Luftwaffenamt; and for the Navy, the Marineamt. The military service staffs determine military equipment requirements, provide logistics support, perform operational tests on new equipment, and maintain the weapons systems. They are involved throughout the acquisition process.

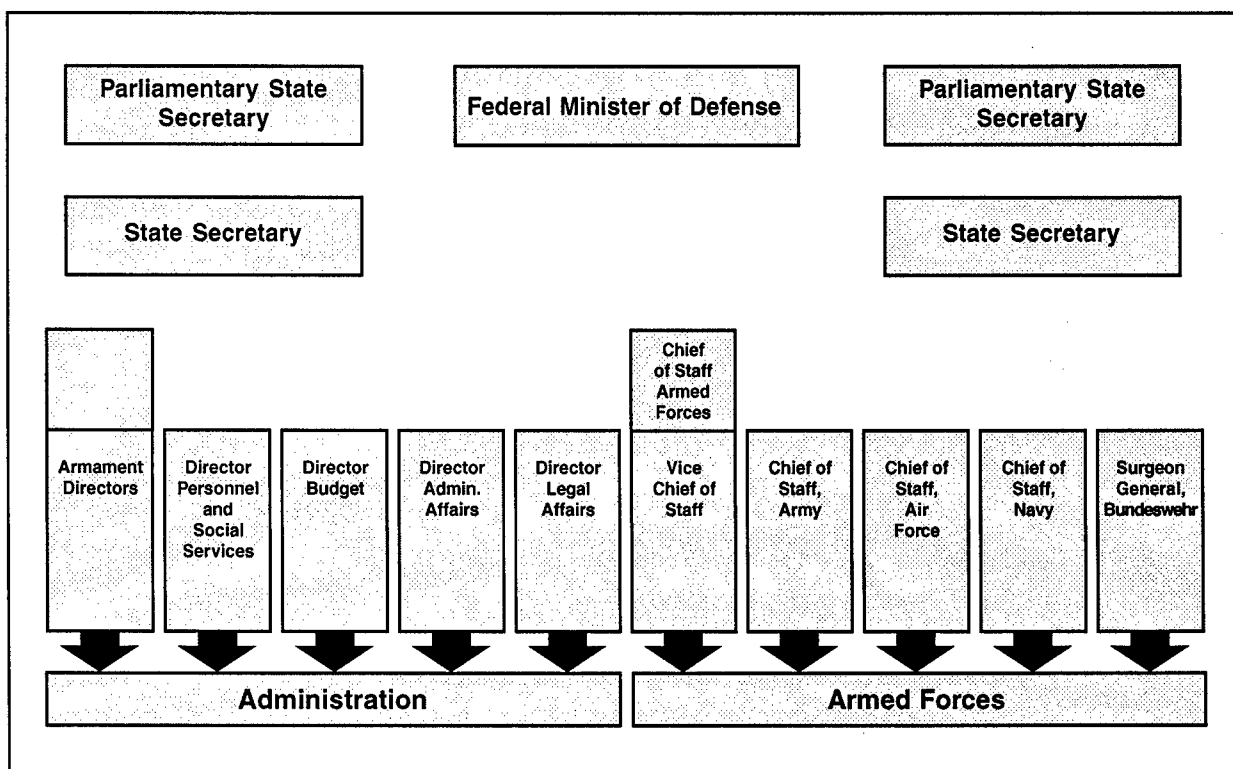


Figure 2. Organization of the Federal Ministry of Defense

The requirements process operates and is roughly organized the same in each Service. In the Army, the troop schools develop the requirements and present them to TRADOC. In the other Services, the user, the “exposed commanders,” develop the requirements and present them to the Support Commands. TRADOC and each of the Service Support Commands have “study groups” that take over at this point. Their role is to check the identified military requirement against the concepts and planning directives of the various staffs and commands and to validate the military need. They will then develop the document—the Staff Requirement—that describes the equipment shortage and the military requirements. These study groups also play a key role during the predefinition phase of working with industry to obtain information to determine availability of technology and at what price. Recently, the Bundeswehr revised the study groups and now the “Standing Joint Study Group” brings together the military services around tactical areas, such as air defense and command, control and reconnaissance. New guidelines also place increased emphasis on evaluating commercial-off-the-shelf equipment.

As indicated above, the Service Staffs are responsible for developing the military requirements.

They work with the Directorate General of Armaments in the selection of possible solutions and, as users, participate in the research and technology concept efforts. The Armed Force Staff performs an oversight role in reviewing requirements and for coordinating matters concerning communications and electronics equipment.

### Army (Heer)

The Training Development and Doctrine Command, also referred to as the Heeresamt, located in Cologne, is the Army’s central point for development of military materiel requirements. Department III in TRADOC, Army Development, is responsible through the 16-school commanders for equipment. Materiel requirements are thoroughly evaluated in the army study groups for the development of defense material.

Department II (Armaments/Deployment) of the Army Staff has the responsibility for representing the Army with the Acquisition Organization (the BWB to be discussed later) and industry. It directs the tactical and technical field evaluations, which are carried out by the troop schools. Upon demonstration of satisfactory performance, Department II signs for the

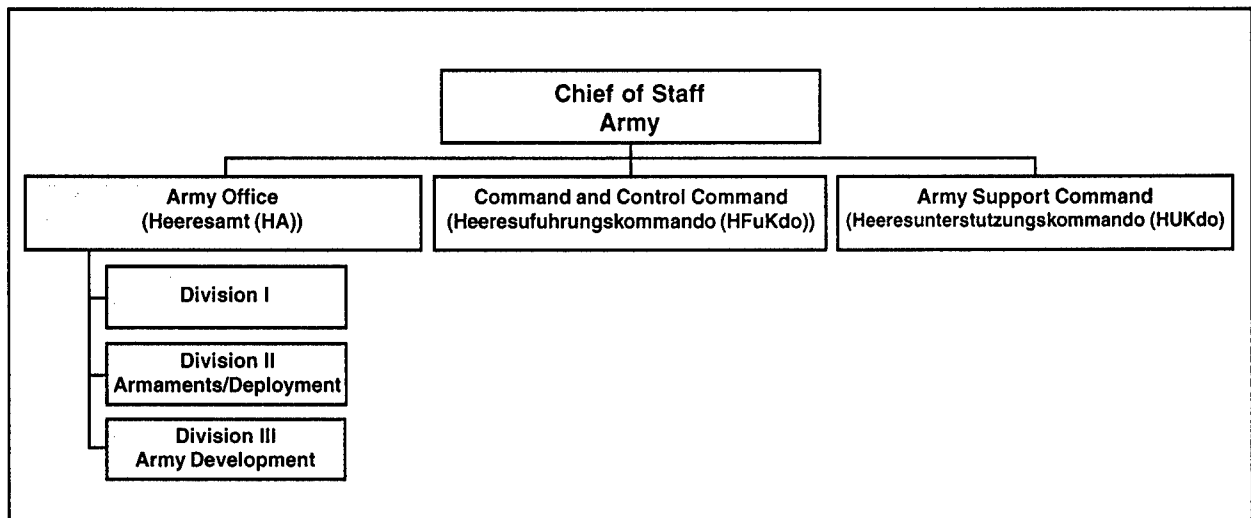


Figure 3. Army (Heer)

acceptance of the equipment as part of the service capability. During the introduction of new materiel into the field, this command will also initiate spare parts procurements with the BWB. They are also responsible for contracting, through the BWB, for industrial maintenance services, mostly for overhaul and technical alterations that are geared toward service life extension of materiel use.

### Navy (Marine)

The Naval Support Command (Marineunterstützungskommando) has responsibility similar to TRADOC for the development of military materiel requirements for new military equipment. In this role, they are not only responsible for validating the requirements and developing the Staff Document, but also for

working with the BWB and industry as new systems are developed. They accept the delivered equipment and perform the tactical and technical field evaluations through a subordinate element, the Naval Service Test Command. The Naval Support Command also is responsible for initiating spare parts procurements and maintenance and contracts for the overhaul of equipment. As equipment is in need of modernization or updates, they will work through the BWB to contract with industry.

### Air Force (Luftwaffe)

The Air Force Support Command (Luftwaffenunterstützungskommando) has a leading role in planning and armaments. Its subordinate structure includes the Air Force Materiel Command and six logistics regiments. The Air Force study

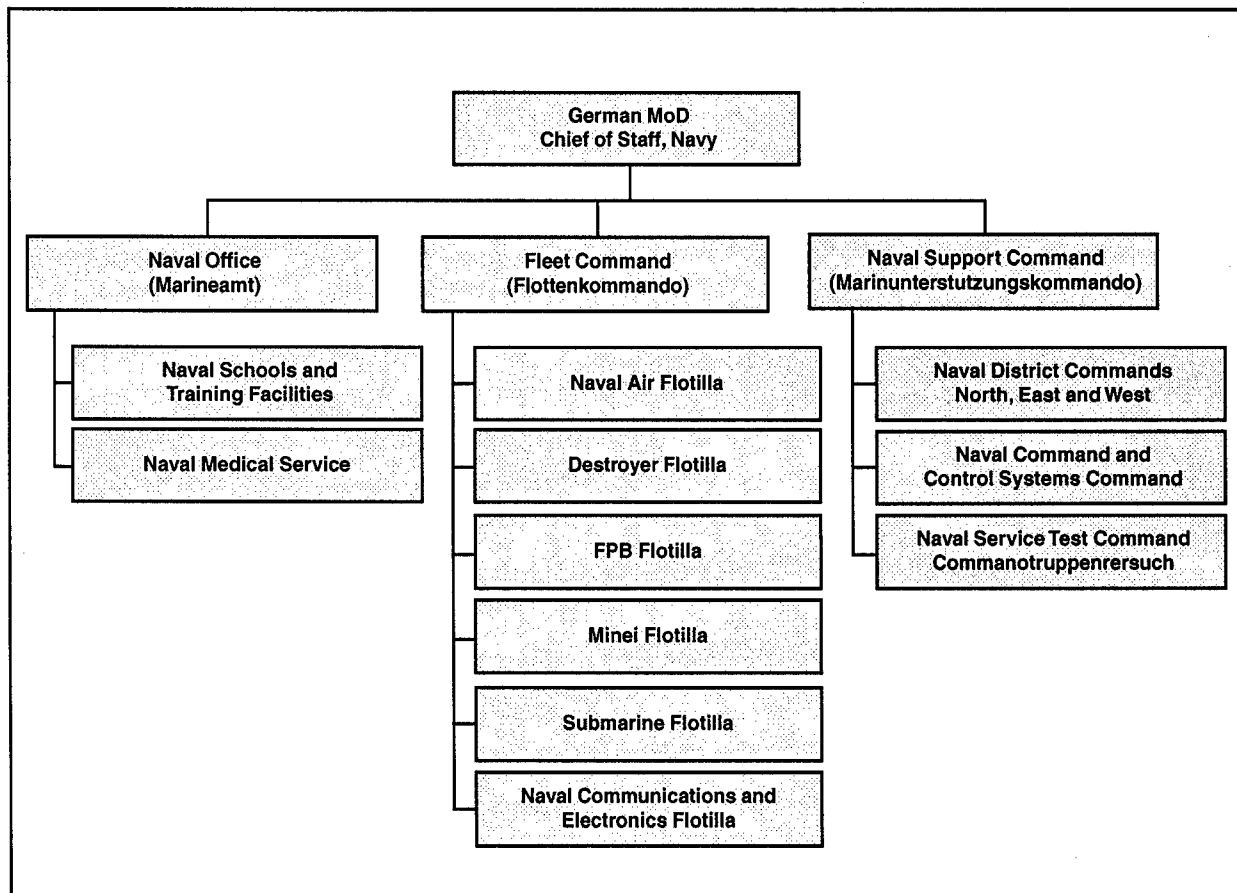


Figure 4. German Navy

groups develop military requirements. The Armaments Department of the Air Force Support Command works with the BWB and industry during development of the equipment. They perform the operational tests for new equipment and, upon successful completion of tests, they

accept the equipment for service use. They are also responsible for initiation of spare parts procurements and the maintenance and overhaul of equipment with the BWB. Modernization and updates will be accomplished by the Air Force Support Command through the BWB.

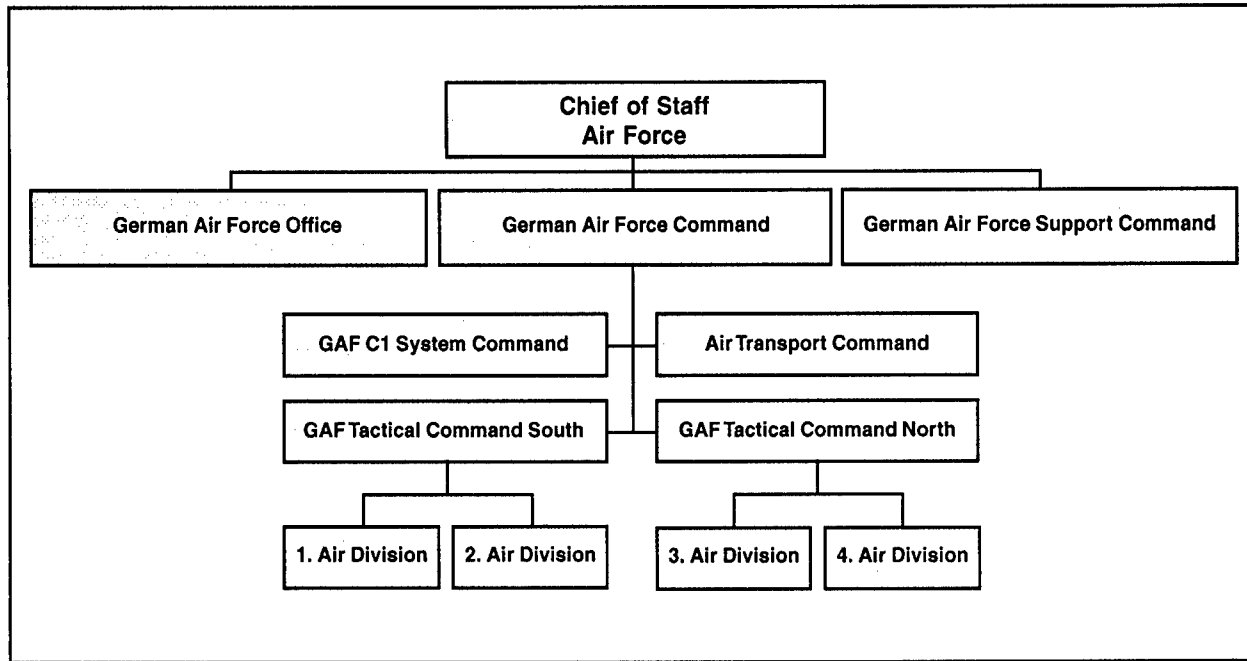


Figure 5. German Air Force



## Chapter 4

# THE DEFENSE ACQUISITION SYSTEM

The Director General of Armaments (DGA) at the Federal Ministry of Defense is the senior civil servant responsible for research and development of new technologies, as well as planning, supervision and control of all Bundeswehr procurement programs. The current DGA is Dr. Jorg Kaempf, who is also the national Armament Director and represents the Bundeswehr armaments perspective in national and international committees.

The Director General is supported by a Director of Armaments Management, a Director of Defence Technology, and eight staff offices with approximately 300 personnel as shown in Figure 6. All eight staff offices have responsibility for oversight, planning and control of their respective functional areas. The Director General has overall responsibility for planning, controlling and supervising defence technology studies and the development and procurement of material.

Three divisions are engaged in general tasks. The Armaments Planning and Control office has responsibility for administrative control of the BWB, personnel, funds management, budgets and finance for the Directorate. The Armaments-Related Economic and Legal Affairs Division has responsibility for economics to include industrial base issues, legal issues, such as, patents and copyrights, and contracts. It also has responsibility for disposal of military equipment to include East German military equipment. The International Armament Affairs office has responsibility for armaments cooperation policy

with NATO, Western European Union and other European countries, plus military aid and military supply to international organizations.

The other five offices are oriented along technical and technological lines. Three are specifically focused on Service needs—land, sea and air materiel—with oversight of the programs managed by the BWB. The Research and Technology, General Defense Technology Office is concerned with scientific and technology trends and basic and applied research for military applications. The technological revolution has impacted military operations with issues of command, control and interoperability. The Equipment and Technology, Intelligence, Command and Control, Communication (C3), Information Technology (IT) Office is responsible for oversight and planning in this area, to include for simulation and Computer Aided Logistics Support (CALs).<sup>4</sup>

### **BWB**

The Federal Office of Military Technology and Procurement, “Bundesamt für Wehrtechnik und Beschaffung” (BWB), located in Koblenz, was created over 40 years ago as a “central” interface between the Bundeswehr and industry. The BWB is under the control of the FMOD, but is a civil, not a military organization and operates independently. For most of its history BWB managed the technical-engineering portion of the program, and the contractual relationship with industry. As a result of the 1991 reorganization plan, the BWB has gone from that role to

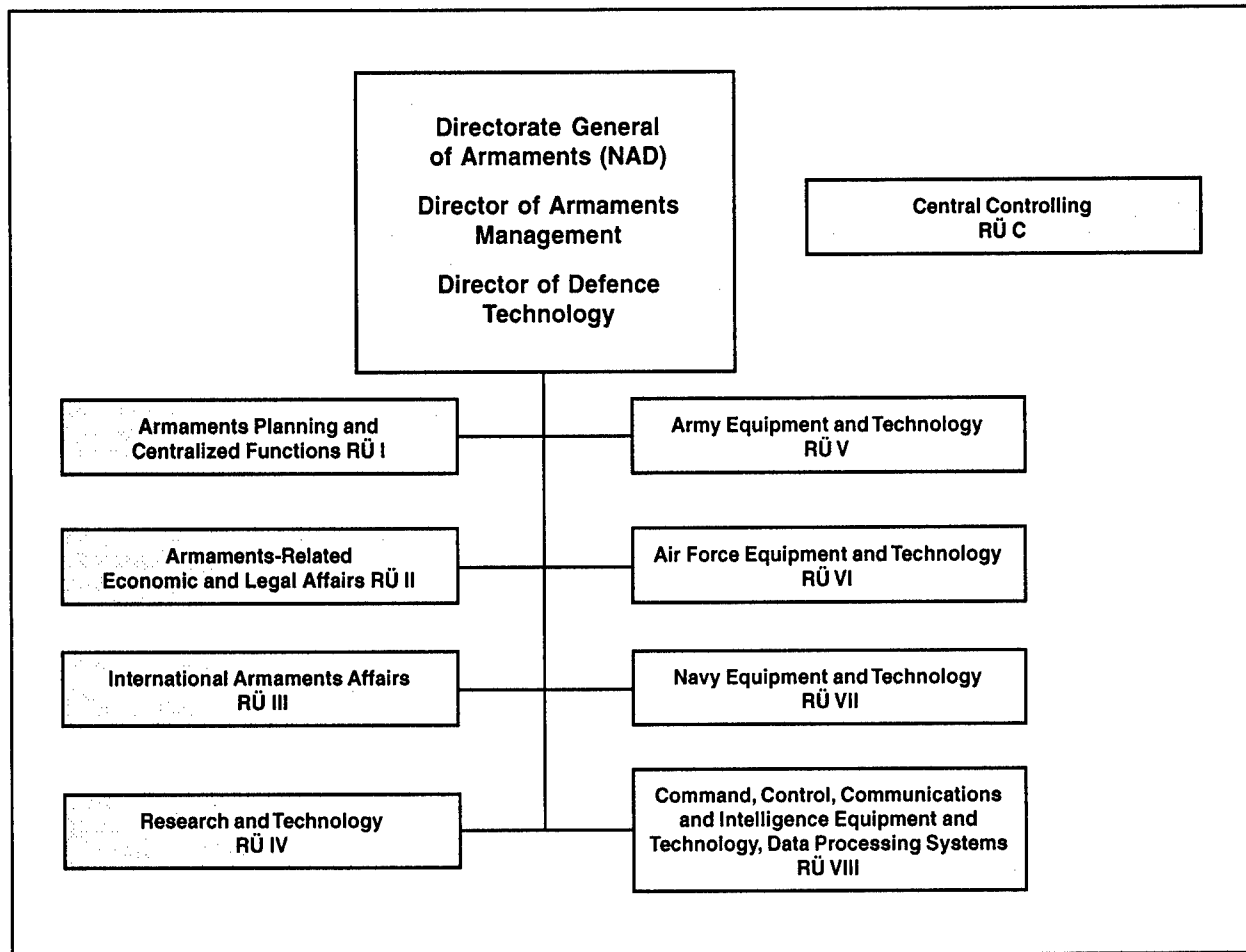


Figure 6. Ministry of Defense – Directorate General of Armaments

the broader role of project management of the weapons systems programs. The BWB is now responsible for the definition, development, engineering, test and evaluation, production and procurement of military weapon systems.

The BWB, headquartered in Koblenz, has locations throughout Germany, and in the United States, France and Sweden. In 1998 they spent approximately 2.5 Billion DM for the development and procurement of new systems and equipment. Currently they employ approximately 16,000 personnel with reduction plans to bring its personnel strength to 14,000. Five thousand are located at its headquarters in Koblenz. The President, currently Herr Dr. Detlev Petry, heads BWB together with two

vice-presidents—one for Technology and one for Economics. It has three administrative divisions. The Central Administrative Affairs Division (ZA) is responsible for human resources, personnel, budget, payment of invoices and general administrative issues. The Central Economic Affairs (AW) Division is responsible for audits, pricing policy, cost audits and policy issues relating to the economy. The Center for Technology Affairs (AT) is responsible for scientific collection of information, international cooperation, government quality assurance, environmental occupation, safety human engineering and technology relate issues. Central controlling has responsibility for internal cost control and oversight and inspection of the acquisition system.

There are seven Technical Divisions responsible for management of weapon systems programs. Organized on the concept of "equipment principle," each division has responsibility based upon the type of equipment, for example, missiles or ships. They acquire, as the division names indicate, motor vehicles, aircraft and aeronautical equipment, naval equipment, communication and electronics equipment, weapons, missiles and information technology. The Petroleum Oil Lubricants and General Equipment Division acquires clothing, commercial procurement, medical supplies, food and nuclear-biological-chemical protection equipment. An example of equipment developed by this division include the NBC Detection Vehicle

"Fox" (manufactured by Henschel Corporation) and used by U.S. Forces in Desert Storm.

These offices are responsible for systems engineering, integration, research and technology, as well as in-service and post-design services. They also, through their contracts divisions, award the development or procurement contracts to industry. It is in these divisions that armament project managers reside. The BWB project managers play a significant role in reviewing requirements and when necessary for cost or schedule reasons, they are vested with authority to revise or eliminate requirements. Most project offices, and PMs, have a variety of programs they are responsible for managing. A typical

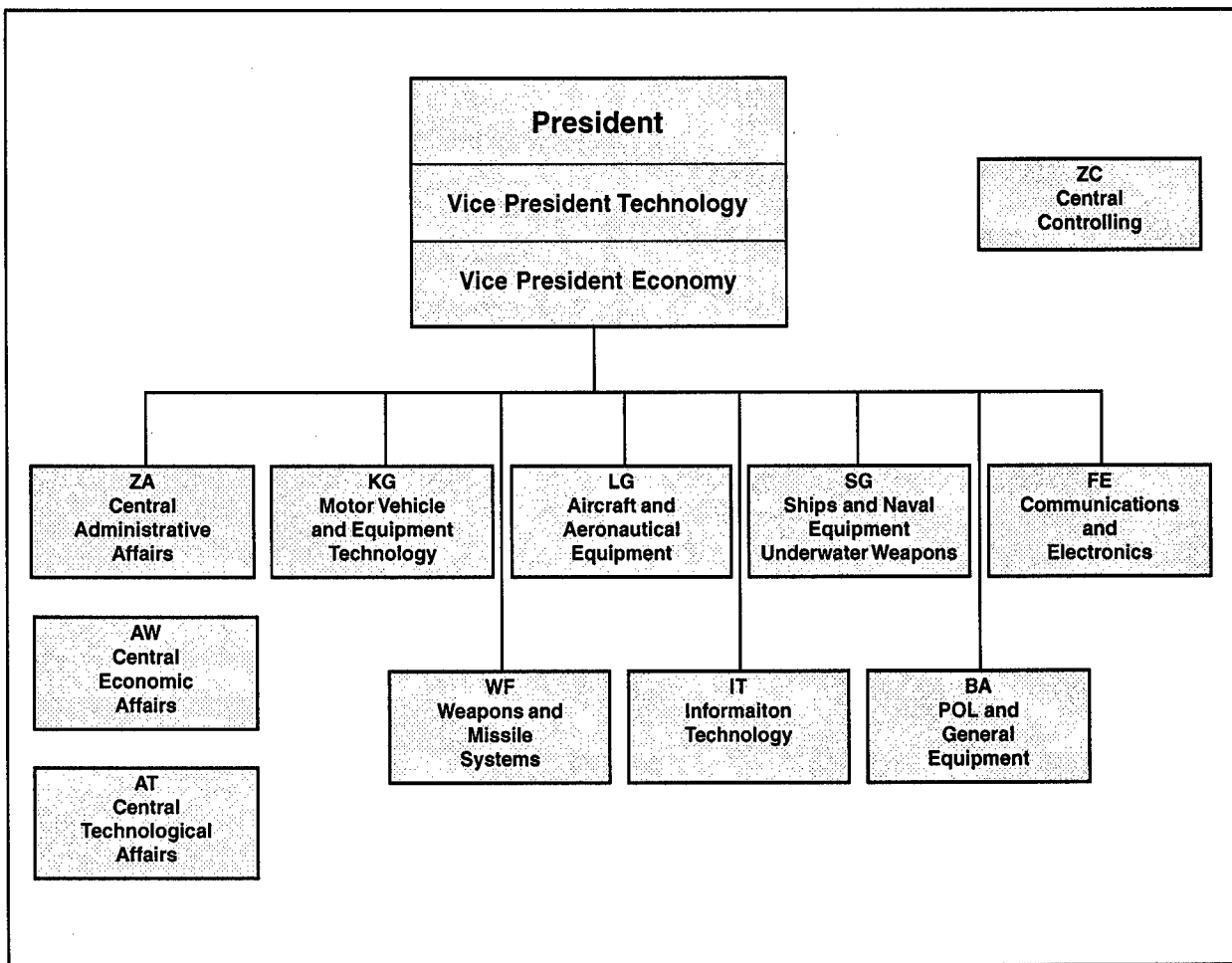


Figure 7. Federal Office for Defense – Technology and Procurement (BWB)

office is staffed with about 20 people, with a much larger matrix staff available for support. For large programs, such as the still politically controversial Euro-fighter—the project office will be dedicated to only one program. Figure 7 shows the organizational structure of the BWB headquarters.

The Bundeswehr Research Institutes and Technical Centers, scattered throughout Germany, and the Naval Arsenal with installations in Wilhmeshaven and Kiel, comprise the rest of the armaments organization. (See Figure 8 for

location of research and test centers.) The Bundeswehr Technical Centers (WTD) main job is the testing of defense materiel and have recently begun performing research tasks. The Bundeswehr Technical Centers (WWD) primarily conduct research in their respective fields of technology and perform testing of defense materiel. The Naval installations perform maintenance and repair of German Navy ships. There is also a German Liaison Office for Defense Materiel, USA/Canada, located in Reston, Virginia, with several sub-offices located throughout the country.

<b>Bundesamt fuer Wehrtechnik und Beschaffung (BWB) Subordinate Agencies</b>		
<b>Defense Engineering Agencies/ Proving Grounds (WTD)</b>	<b>Research Centers/ Scientific Agencies</b>	<b>Naval Arsenal</b>
<p><b>Automotive and Armored Vehicles WTD 41 – Trier</b></p> <p><b>Engineer and General Field Equipment WTD 51 – Koblenz</b></p> <p><b>Explosives and Special Technologies WTD 52 – Oberjetttenberg</b></p> <p><b>Aircraft WTD 61 – Manching</b></p> <p><b>Ships and Naval Weapons WTD 71 – Eckernforde</b></p> <p><b>Communicaitons and Electronics WTD 81 – Greding</b></p> <p><b>Weapons and Ammunition WTD 91 – Meppen</b></p>	<p><b>Institute for Materials Testing MIM – Erding</b></p> <p><b>Institute for Protection Technology NBC</b></p> <p><b>Protection WIS – Munster</b></p> <p><b>Institute for Underwater Sound and Geophysical Research FWG – Kiel</b></p> <p><b>Ships and Naval Weapons WTD 71 – Eckernforde</b></p> <p><b>Communicaitons and Electronics WTD 81 – Greding</b></p> <p><b>Weapons and Ammunition WTD 91 – Meppen</b></p>	<p><b>MArs ArsBetr – Kiel</b></p> <p><b>MArs ArsBetr – Wilhelmshaven</b></p> <p><b>German Liaison Office for Defense Materiel</b></p> <p><b>USA/Canada DtVStRu USA/CA</b></p> <p><b>Berlin Office of BWB</b></p>

**Figure 8. The Bundeswehr Research Institutes and Technical CentersWB)**

## Chapter 5

# THE PLANNING, PROGRAMING, BUDGETING SYSTEMS

Military planning is done in a series of strategic and tactical documents that lay out the armed forces planning for a period of 5 years—mid-term, and 15 years—long-term. The overarching document is the *Defense Policy Guidelines*, (Verteidigungspolitische Richtlinien—VPR). This document describes the current and foreseeable (15 years) political, economic, and military conditions, to include risks and threats. It then describes the defense policy and structure necessary to address these issues. Its goal is to provide defense planners with stable financial and structural strategic assumptions. The Defense Policy Guidelines are prepared by the Planungsstab (Planning Staff) of the BMVg and endorsed by the Federal Minister of Defense.

From this document are derived the *Military Strategic Objectives* (Militärpolitische Zielsetzung) which provide a framework for the development of concepts, mission definitions and a set of goals necessary to accomplish them. The next document is the *Bundeswehr Concept* (Bundeswehr-Konzeption) which prioritizes tasks needed to accomplish the military strategic concepts and the design of the forces necessary to meet mission needs. The *Planning Guideline* then translates the threat-oriented statements

of need into definable requirement. The final plan is the *Bundeswehr Plan* (Bundeswehrplanung), which provides the military needs to include military equipment and weapons systems. A project must be scheduled in the Bundeswehr Plan to become a part of the annual program. This becomes the basis for the annual budget estimate.

The Bundeswehr Plan is prepared in December by the Federal Ministry of Defense. The Ministry of Finance provides the budget guidelines in late December to the cabinet. From December until March, the Armaments Directorate and Services develop the budget needs and prepare a consolidated budget for military systems and equipment. The FMOD Budget Directorate then submits the draft budget to the cabinet. The Ministry of Finance reviews the Draft Defense budget and the Federal Cabinet's coordination is obtained. Finally in July, the cabinet approves the budget and submits it to the Parliament for its review process. The FMOD portion of the budget process takes approximately eight months. (See Figure 9.) This is a relatively stable process with few changes occurring in the budget of the weapon system programs once the government has committed to a program.

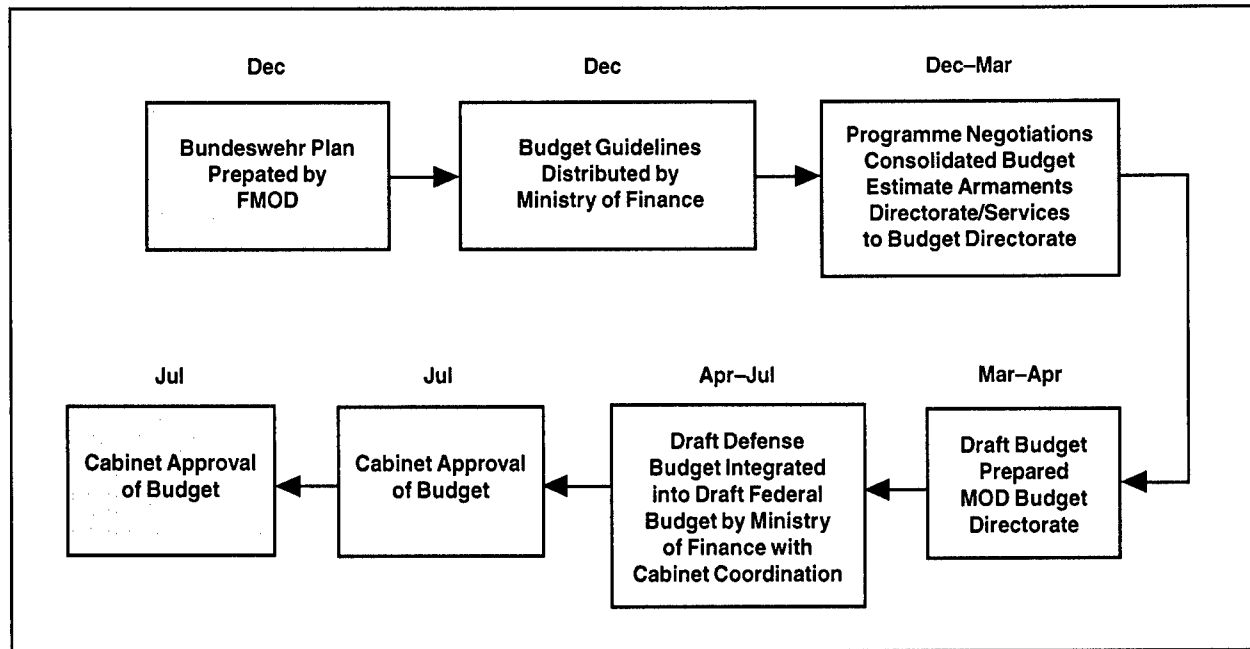


Figure 9. Federal Ministry of Defense – Typical Flow of Budget

## Chapter 6

# THE ACQUISITION MANAGEMENT PROCESS

The basic requirement for new military systems and equipment comes from the military services as described above. The annual program, which is prepared each year as part of the budget process by the Directorate General of Armaments for the Services, provides the program targets

for cost, schedule and performance. The governing document for the development of a program is contained in the "Directive for the Planning, Development, Procurement and, Acceptance of Defence Materiel and Data Processing Projects" (Bestimmungen für die

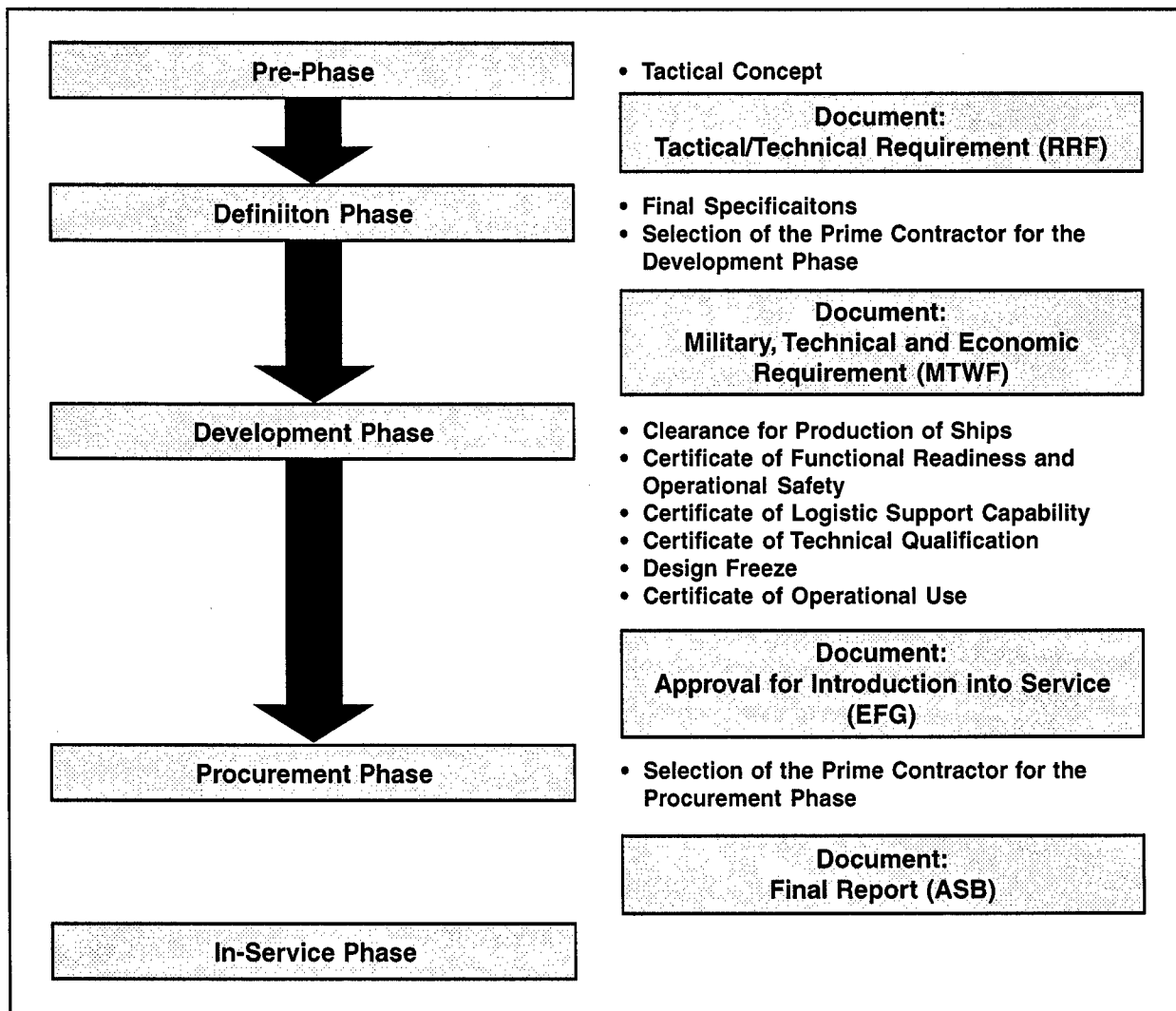


Figure 10. EBMat Weapons Systems Development Process

Planung, Entwicklung und Beschaffung von Wehrmaterial und Datenverarbeitungsvorhaben (EBMat).

Figure 10 depicts the EBMat weapons systems development process. It consists of five phases beginning with the Pre-Definition phase and continuing through the In-service phase. At the end of each phase, and to reduce risks, a decision and approval is required as to whether and how, the program is to be continued.

### Pre-Phase

During the Pre-definition phase the military need is verified by the Services. The Tactical Concept comprehensively describes the equipment shortage and the military requirement. An early market evaluation is performed and national and foreign alternatives are considered as part of this phase. This evaluation is conducted by the FMOD/BWB with both the military and industry participating. In 1998 the EBMat process was revised with new principles for acquiring equipment. The new principles place increased emphasis on the affordability of systems and equipment and for streamlining the process. A priority list of materiel alternatives is given. They are:

- Recommend no action, thus accepting an equipment gap,
- modification and extended use of materiel already in service,
- purchase or integration of available materiel (civilian, commercial and from other armed forces), and
- new development (national or international).

Once the alternatives have been defined and the economic impact estimated, then the Staff Requirement (Tactical/Technical Requirement,

Taktisch/technische Forderung-TTF) is prepared and that phase is concluded with a proposal or the selection of a tactical-technical solution. The Bundeswehr Chief of Staff is the approval authority for Tactical Concepts that have importance for more than one service/international cooperation, and exceed the cost ceiling of 24M DM for development and 50M DM for procurement. For projects that have political or economic importance and exceed 20M DM for development and 50M DM for procurement the FMOD executive group receives an informational notice. For Information Technology (IT) projects the Pre-definitional phase document for completion is called the Organizational Staff Requirement. The Ministry staffs, along with the Armament Division, then review the TTF. Once this is approved the program is introduced in the Bundeswehr Plan.

### Definition Phase

The next phase, the Definition Phase, is the point that project management responsibility is delegated to the BWB. During this phase the final specifications will be completed by the BWB. Industry is usually involved at this point, but care is taken to ensure that activities performed during this phase do not prejudice a subsequent competitive contract award.

It is also during this phase that the project manager and team working groups are established to include all those responsible for technical-engineering issues at the BWB. These working groups are vital partners for cooperation with industry. The military services will assign a project officer from the support command to represent the service branch priorities within the project managers' working groups. Joint project conferences are held for joint decision making and coordination talks between the BWB and the service branch. (See Figure 11.)



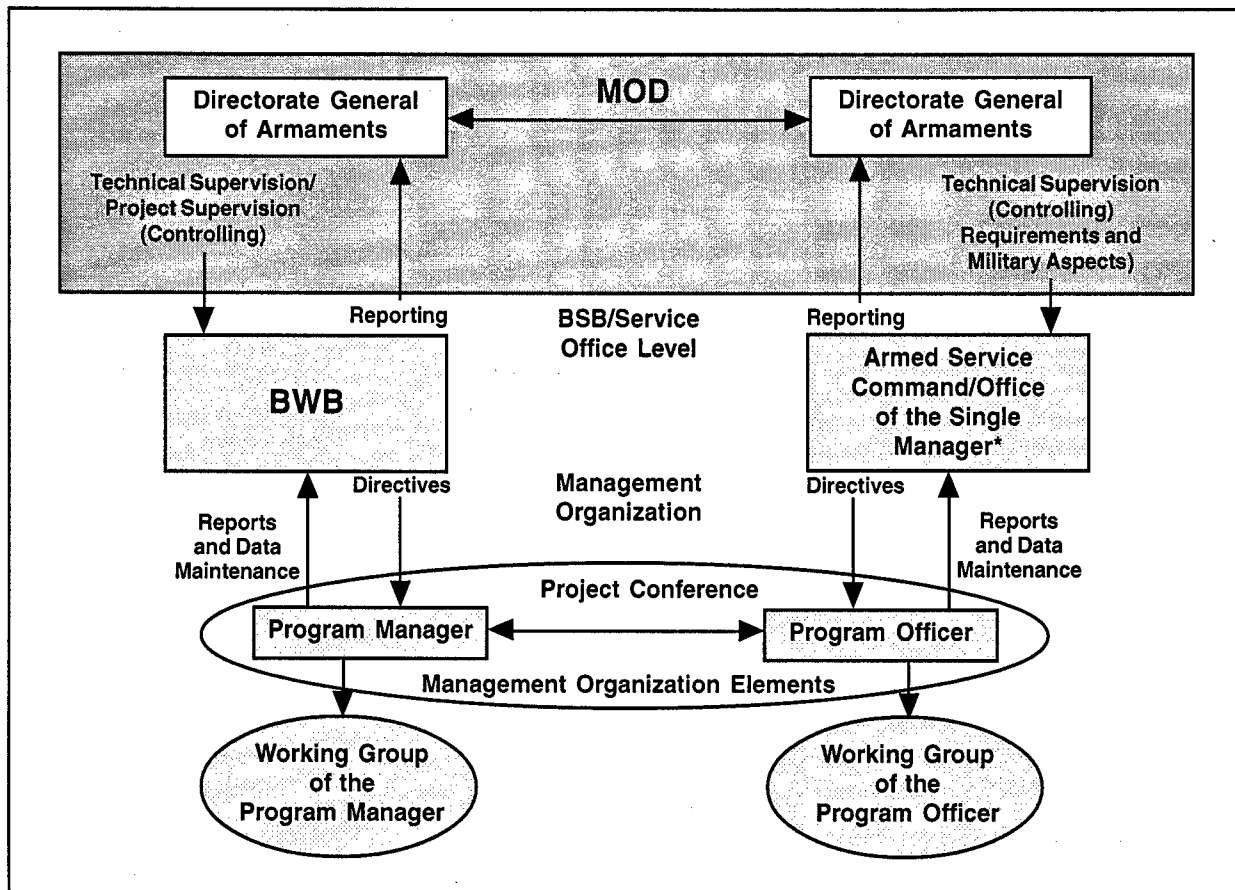


Figure 11. The Definition Phase

The Definition Phase is finished with the completion and approval of the “Development Baseline” (Militarisch-Technisch-Wirtschaftliche Forderung, literally translated as “Military-Technical-Economic Requirement”). For complex programs, or projects of political importance (e.g., cooperative programs), or where the development cost estimate will exceed 20 million DM, or procurement cost will exceed 50 million DM, the executive level FMOD approval is required.

### Development Phase

The next phase is the Development Phase. The selection of the prime contractor occurs during this phase. The development contract will define the contractor’s responsibilities, including the generation of materiel baselines, service and

logistics capability. Its initial operational capability and logistic supportability trials will be performed in this phase. While the BWB will conduct the development efforts, the Armed Services are responsible for certifying to the systems logistics supportability and for the successful completion of operational testing and “Approval for Service Use.” The development phase is concluded with approval of the document “Approval for Production” (Einführungsgenehmigung-EFG).

### Procurement Phase

The next phase is the Procurement Phase, which includes all activities necessary to execute series production, to include selection of the contractor for the procurement phase. It is concluded with the delivery of the production equipment

to the military and preparation of a Final Report by the BWB.

### **In-Service Phase**

With the first delivery of equipment, the In-Service Phase begins. The user now takes responsibility for the equipment, assigning an in-service manager responsible for ensuring the operational capability of the system or equipment. The Services prepare for initial operational capability by setting up at their service schools systems/equipment specific training, maintenance and field operations, and core units of school personnel for the training of field user units' personnel. The service schools are usually the first to receive production equipment. The support and logistics commands go through the sometimes lengthy process of system/equipment documentation (maintenance manuals, spare parts list, etc.) to integrate the new system/equipment into the services' inventory. While primary responsibility rests with the Services, the BWB continues to provide engineering and logistical support. BWB will buy the spare parts, conclude repair contracts and develop and incorporate changes for equipment deficiencies and operational improvements. Of course, in some cases the changes can be significant enough to begin the EBMat process all over again.

The individual phases described above provide a structured approach for producing equipment. Simplification of the process can often occur with overlaps between development and production allowed, when appropriate, if risks remain within acceptable limits. Programs will progress through the various phases at different speeds depending upon the technology and speed of development.

### **Designation of Programs**

There are three categories of systems/equipment: Category 1 includes those systems with a value greater than 20M DM in development and greater than 50M DM in production. These systems require approval by the Bundestag. Category 2 (2-20M DM for development, 5-50M DM for production) receives approval with the Armed Service Command within the military services. Category 3 programs are lower dollar programs for items with a development cost of less than 2M DM and 5M DM for production. Category 1 is considered a major program. The FMOD will designate a complex program or a program, which involves a cooperative effort with other countries as a major program.

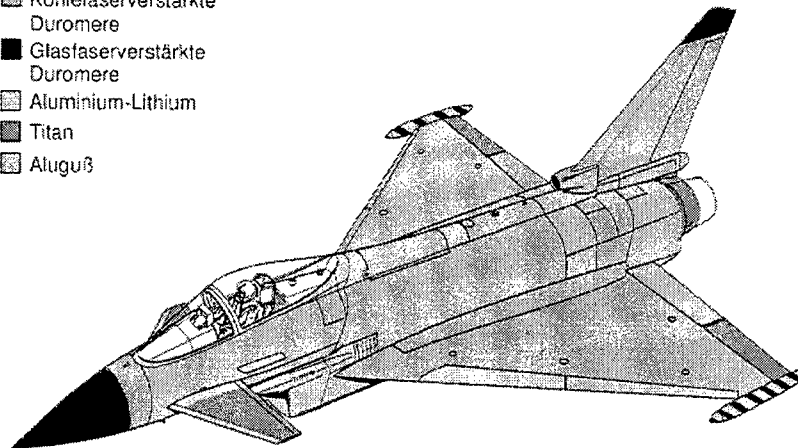
## Chapter 7

# DEFENSE ARMAMENTS WORKFORCE

The program managers come from the BWB. The involved service Support Commands appoint a staff officer as the program officer to work as part of an Integrated Project Team with the BWB. On the side of the Field of Armament (Rue = Armament Division, BWB, Support Commands) basic acquisition education is done at the Federal Academy for Defence Administration and Military Technology located in Mannheim. The basic education for the engineers/technicians is a seven-month program, which is part of an overall two-year post-graduate course of study. Further education—aimed at the various program managers—civilian as well as military—is currently a four-week course entitled “Program Management for the Armament Sector.” Examples of major subjects taught by the Academy are: Program and Project Management; Acquisition Process; Equipment Design and Engineering; Contracting; Procurement; Government-Business Administration;

and International Program Management. Most of the training is performed on-the-job with various short courses or seminars available on special acquisition topics, such as value engineering and earned value. There is a typical acquisition oriented career path for both the military and civilian workforce. Practically every civilian entering this career path already has, as a minimum, the equivalent of a Bachelors degree. For acquisition personnel equivalent to a GS-13 or field grade officer rank on up it is mandatory to have the equivalent of a Master’s degree. The military receive acquisition-related training on-the-job, and at their schools, including the two Bundeswehr Universities in Munich and Hamburg. At least one German civilian university, the Friedrich-Alexander University at Erlangen-Nürnberg, offers course and seminars in defense economics and acquisition topics.

- Kohlefaserverstärkte Duromere
- Glasfaserverstärkte Duromere
- Aluminium-Lithium
- Titan
- Aluguß



## Chapter 8

# THE PROCUREMENT PROCESS

“...with regard to price and performance, your products have to meet Bundeswehr requirements better than those of your competitors.” Friedrich Steinseifer, retired TRADOC Deputy Director, captures the philosophy of the FMOD’s procurement policies. The goal is to achieve the market price for military equipment based on a fair, transparent and open competition. The Armaments-Related Economic and Legal Affairs Division sets the procurement policy for the FMOD. The Bürgerliches Gesetzbuch or civil code is the governing law for all BWB contracts. Based upon Roman Law and the Napoleonic Code, German civil law is codified, unlike the more common practice in the U.S. and the United Kingdom, of judicially-created law. Thus the regulations governing acquisition are relatively few in numbers and not subject to a great deal of interpretation. It is interesting to note that of the approximately 150 contracting officers in the FMOD almost all are lawyers by

education.<sup>5</sup> The “regulations” governing procurement for the BWB is contained in a series of documents, which describes the terms and conditions for the various types of contracts. They are listed in Figure 12.

Procurement of military equipment and technical services is centralized within the BWB for efficiency. Annually, it responds to 40,000 to 60,000 procurement requests to place contracts for research and development, studies, initial and follow-on production of defense material, equipment, fuels and other items. Additionally, the individual services buy the following items most logically procured locally—food, consumables, operations and maintenance of military bases.

There are several types of contracts (or pricing mechanisms) used by the BWB, but the most frequently used are fixed price and cost reimbursement, although the preference is to use

- |  |
|--|
| <b>Vol/A – General Terms for Placing Contracts (VOL/A)<sup>6</sup></b>   |
| <b>Vol/B<sup>7</sup> – Terms and Conditions for Placing Public Contracts, Part B</b>                           |
| <b>ZVB/BMVg – Supplementary Conditions of the Ministry of Defense to Vol/B</b>                                 |
| <b>ABBV – General Terms and Conditions for Procurement Contracts of the Ministry of Defense</b>                |
| <b>ABEI – General Terms and Conditions for Ministry of Defense Development Contracts with Industrial Firms</b> |
| <b>ABR – General Terms and Conditions for Ministry of Defense Research Contracts with Industrial Firms</b>     |
| <b>AAB – General Terms and Conditions for the Delivery of Supplies, Goods and Services</b>                     |

**Figure 12. Types of Procurement Contracts**

fixed price. Fixed price falls into two categories. In the first category where risk is low and a comprehensive calculation of the price is supported by the contractor, the price is set at the beginning. Where risk is higher, such as early in the first production of a new item, the "fixed price" is set as a ceiling. Should the cost be less, then payments will be restricted to the amount spent. For very high risk programs a Cost Plus contract will be used which will cover the development and production costs, but will limit the contractor to a fixed profit.

The BWB, for highly complex decisions, uses a formal, and transparent, evaluation procedure to make the decision on the selection of the winning company. The preferred method of acquisition is through a formal process of Public Competitive Bidding. Since this does not always lend itself to buying weapon systems, other methods are used. For those items where a high level of quality is demanded or for other technical reasons, Restricted Bidding is used. When Restricted Bidding is used, a select number of companies, chosen under formal procedure, will be requested to submit bids. The winning company will be selected based upon its technical competence, efficiency and reliability and economic factors. Finally, in some cases, the BWB will non-competitively select a contractor because of its special expertise or technical capability.

In every case where a sole source approval is required, the Federal Office for Economics (Bundesamt für Wirtschaft) located in Eschborn, will be involved in sole source approval. This office may nominate qualified firms (in coordination with the Contact Advisory Agencies of the Länder). These Advisory Agencies will have conducted market research on behalf of the public customer to determine the availability of sources. The Advisory agencies provide:

- absolute neutrality in selection (thus fair and equal treatment);
- regional economic conditions considered; and
- even distribution of orders

To ensure fair treatment of companies in the selection process, protests of awards will use the European Union procedures, i.e., an independent group will evaluate the merits of the protest. In some cases, the Western European Armaments Group will be used as the forum for the protest. This is an indication of the increasingly important role that European award and information procedures are playing in Germany.

After the contract has been awarded by the BWB to a contractor, the BWB also will manage the contract. For matters of audit the BWB has the authority for aeronautical and naval equipment, as stipulated by contract clause, to audit contractors' records. For other types of equipment the individual Länder will perform the audit.

The Federal government also has designed several socio-economic programs for award of contracts to small businesses, companies in the eastern Länders and for other firms that hire the disabled to include handicapped and the blind. These programs allow acceptance of other than the lowest prices. The guiding principles for placing Bundeswehr contracts further oblige the procurement authorities that for large contracts the selection criteria for the prime contractor will include the involvement of small business firms. This obligation also aims at creating new jobs, economically important in view of the current unemployment rate of over 11 percent.

## *Chapter 9*

# TRIALS AND OPERATIONAL SUITABILITY

The organizational structure for conducting testing within the German system is different among the services. The Army and the Air Force Support Commands conduct tests by creating “test teams” for each new piece of equipment that has passed testing by the BWB. Once the tests are complete the team will be disbanded. The Army Support Command, Office of Armament/In-Service Management Divisions Policy Doctrine and General Activities has responsibility for troop testing. The testing scenarios are agreed to between ASC and BWB during program conferences. The Navy has a stand-alone organization within the Naval Support Command, the *Commandotruppenversuch*, located at Eckerforde in northern Germany, which has responsibility for planning and conducting trials prior to fleet use. This organization will develop a test plan (*truppenversuch plan*) during the development process.

Every weapons system or piece of military equipment acquired by the BWB goes through a series of trials—engineering trials, technical testing, troop trials and logistics trials—to ensure its capable for service use. These trials start with the contractor’s trials as it develops the system. Technical-engineering trials are performed next at the BWB Test Centers under the auspices of

the BWB project manager to ensure contractual requirements are being met. The military service schools and users will conduct the operational capability and logistics supportability trials to ensure the equipment meets the service requirements. The military will establish a test team made up of warfighters and engineers for each system or piece of equipment being procured. They will verify system performance. If all tests are accomplished satisfactorily a “Certification of Operational Use” is provided. A final trial report is also prepared, identifying any deficiencies. This plan will be forwarded to the State Secretary for Armaments. What happens when deficiencies occur? While problems may occur, and have, once the system has met contractual requirements it will be acquired and entered into the inventory. Deficiencies that have been identified will become the service responsibility to budget and plan for future modifications to correct the deficiency during service life extensions.

In the past few years, the trend has been to combine these trials in so-called “integrated trials.” This kind of direct cooperation between contractor, BWB and the military services often results in quicker delivery of equipment at less cost and increased quality.

## Chapter 10

# MULTINATIONAL ARMAMENTS AND ARMAMENT SALES

“Armaments Cooperation also is an integral element of political cooperation and joint military planning. Moreover, armaments cooperation offers the best possible use of economic and technological resources.”<sup>8</sup> Notwithstanding changes in the political and military situation in Europe over the last ten years—the fall of the Berlin Wall, the Warsaw Pact disintegration and the developments in central Europe—cooperative armaments programs continue to be a key part of the Bundeswehr armament planning. Recent budget cuts, smaller quantities of equipment being bought, technological advances and costs all contribute to the need to continue armaments cooperation. By some estimates 70 percent of the major Bundeswehr programs have been cooperative programs.

The export market is also important for the defense industry. For example in the land weapons industry sector the military spends about 5B DM per annum while the international market sales are about ten times the home market.

The Office of International Armaments Affairs in the FMOD Directorate General Of Armaments has overall responsibility for armaments cooperation. In the BWB responsibility for international armaments cooperation is assigned to the BWB project manager. The service staffs will assign their own international armaments affairs office to the project. The major players are the military users, armaments and procurement authorities and industry. With the magnitude of funds involved in armaments cooperation, both the Ministry of Economics and Technology

and the Ministry of Foreign Affairs play a role in the consideration of a cooperative program.

The Armament Organization and the Bundeswehr participate in a variety of bilateral and multinational defense development and procurement activities. Over the years there have been a variety of forums where cooperative programs have been addressed. One of the earliest ones was the FINABEL, founded in 1958 between army chiefs of France, Italy, the Netherlands, Belgium and Luxembourg. Later Germany, Great Britain, Spain and Portugal and Greece joined. The current major NATO armament forums provide Germany with additional opportunities to participate in cooperative programs. The NATO committees are:

- NATO Armaments Committees,
- NATO Naval Armaments Group (NNAG),
- NATO Air Force Armaments Group (NAFAG), and
- NATO Army Armaments Group (NAAG).

Germany is also a key participant in European Armament Committees. These include the Western European Armament Group (WEAG), the Western European Armament Organization (WEAO), and the OCCAR (Organisme Conjoint de Cooperation en Matière d'Armement) Joint Armament Structure. Germany is also a participant in a number of bilateral programs.

The basic German policy on arms sales is that such sales must be in the vital national interests, to include political security considerations. The Government will not approve the sale of equipment where it will contribute to civil war, human rights violations, or contribute to armed conflicts in a region. The political principles covering the arms sales are outlined in the "Political Principles of the Federal Government for the Export of War Weapons and other Military Equipment" issued 28 April 1982. Currently, arms exports to NATO countries are not restricted. This includes countries such as Sweden, Switzerland, Austria, Finland, Japan, and Australia, and New Zealand which are treated as NATO-like. Export to a third category of countries is permitted only in exceptional cases.

The Grundgesetz, Article 26, provides the constitutional foundation for German arms export policy. Article 26 states, "Weapons designed for warfare may be manufactured, transported or marketed only with the permission of the Federal Government. A Federal Law will regulate details." The War Weapons Control Act and the Foreign Trade and Payments Act provide the procedures and policies for arms exports. This Act was passed in 1961 and prohibits nuclear, biological and chemical sales. Conventional weapons sales (production, purchase, and transport) require approval to be obtained from various ministries to include, the Ministry of Defence, the Ministry of Foreign Affairs and the Federal Export Office prior to action. The War Weapons List, an annex to the regulation, includes 62 items, such as, rockets, missiles and tanks. Equipment is included only when it has

gone past the research stage and becomes a prototype.

The Foreign Trade and Payments Act—passed in 1961—covers other equipment, such as, sport and hunting weapons, chemical, certain machine tools and plants for the production of defense equipment and other military equipment. The Federal Export Office (BAFA – Bundesausfuhramt), in coordination with NATO COCOM, maintains an Export Control list for these types of items. This office, part of the Ministry of Economics and Technology, is the licensing authority. BAFA has responsibility for:

- Foreign Trade and Payments Act, Foreign Trade and Payments Regulation, EC-Dual-Use Regulation,
- Control of the export of armaments and dual-use goods (include technology),
- Granting of export licenses (to include nuclear),
- Decision on applications for International Import Certificates, and
- Participation in EU bodies and international export control regimes.

However, if the equipment has a military use, then the Armaments Division will be the approving authority. For political assessment of these export applications the Ministry of Foreign Affairs and the Ministry of Defense will always be involved.



## Chapter 11

# THE DEFENSE INDUSTRIAL BASE

The German defense industry is privately owned and has been from the beginning.<sup>9</sup> For a variety of reasons—political and economic—the German defense industry is not separable from the commercial industry. The economics of the size of the defense budget and the political concern of a highly visible defense industry have contributed to the defense industry remaining part of the overall German industry. The strength of most of these businesses is in their commercial operations and defense production accounts for a limited percentage of their sales revenue. In 1998 over 100,000 (see below) people were employed in these industries<sup>10</sup>. This reflects a decrease of 57 percent from the end of the cold war. The defense industry can be broken down into several different sectors—Land, Naval, Aerospace, Electronics and Software. Each sector has at least two-to-six prime producers. In the land sector, for example, five companies are the leaders in providing systems and equipment. They are:

- Henschel Wehrtechnik GmbH,
- Krauss-Maffei Wehrtechnik GmbH,
- KUKA Wehrtechnik AG,
- Mak System GmbH, and
- Wegmann and Co. GmbH.

The German naval shipyards have depended upon the sale of exports to keep them in business. The German ship industry can be fit into

two categories. Large shipyards owned by two companies—the Thyssen Group with shipyards in Hamburg and Emdenand, and the Preusaag Group with a shipyard in Kiel. Smaller shipyards are located in Lemwerder, Bremen, and Wolgast.

In the Aerospace sector there are five companies that are considered the major suppliers of equipment to the Bundeswehr. They are:

- Alcatel Air Navigation Systems GmbH,
- Allied Signal Aerospace GmbH,
- Bodenseewerk Gerätetechnik GmbH,
- Daimler Chrysler Aerospace, and
- Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR).

The German electronics industry employs over 860,000 people and is one of the largest in the country and the third largest in the world, trailing only the US and Japan. The leading companies in this sector are:

- Siemens AG Defence Electronics Group,
- STN Atlas Electronicsik GmbH,
- ESG Elektroniksystem und Logistic GmbH,
- Diehl GmbH Luftfahrt Elektronik, and
- AEG Elektronische Röhren GmbH.

The German industry has been hit hard by the significant decrease in procurement deutschmarks spent. In 1991, Germany spent 6.1 billion deutschmark. By 1998 this had dropped to 2.3 billion DM. This has led to considerable discussion of mergers and consolidations. Restructuring has primarily occurred in the aerospace sector. In 1995, Deutsche Aerospace became Daimler-Benz Aerospace, which includes about 80 percent of German industrial capabilities in aerospace. At the same time, European governments have taken several initiatives to integrate the defense market, including the formation of two new organizations—Western European

Armaments Organization (WEAO) and the Joint Organization for Cooperation in Matters of Armament (OCCAR)<sup>11</sup>—to improve armament cooperation. Cooperative programs have long been viewed as the impetus for cross-border defense cooperation at the industry level. Several defense firms, however, have initiated cross-border mergers that are not tied to government cooperative programs. While much discussion has taken place, national sovereignty issues and complex ownership structures have inhibited defense industry consolidation across national borders.

## Chapter 12

# FUTURE OF DEFENSE ARMAMENTS

The German military has seen significant changes in the last ten years with its restructuring and downsizing in personnel and budgets. What will be the status of the acquisition system in the year 2005. Change is a certainty. Seeing a need for change the FMOD chartered a commission on "Common Security and the Future of the Bundeswehr" to develop a long range plan for the future of the Bundeswehr. It is expected they will report out in the fall of 1999.

What is the overall political/military environment the commission is looking at? First, the mission has changed. Faced with the Soviet and Warsaw Pact threat the defense of the nation was the primary focus of Bundeswehr for the last 30 year. Now the Bundeswehr must prepare for humanitarian missions and to regional threats, such as Kosovo. The Bundeswehr created the Rapid Reaction Forces to respond to the new mission requirements. But futures equipment needs will need to reflect this change. As an example the need for a rapid transportation of personnel would indicate that a Future Large Aircraft would become a priority for acquisition. Secondly, the Bundeswehr will respond under the auspices of the United Nations, NATO or the Organization for Security and Cooperation in Europe (OSCE). Internally, the general political environment will continue to put pressures on the defense budget. Adequate money will probably not be available to meet the overall modernization needs of the Bundeswehr.

Within this framework the Bundeswehr acquisition system will remain relatively stable. The

BWB will continue to downsize, but slowly, with continual emphasis on the need to work collaboratively with European nations, NATO and the United States. The excess of defense firms in Europe will impact European Union and German efforts at lowering the cost of weapon systems. With defense budgets that will continue to decline, and more than 750 defense contractor in Europe, which is three time the current number in the United States, mergers will continue. Daimler-Chrysler Aerospace is an example of the possible transatlantic mergers. In conjunction with industry efforts six European nations including Germany pledged to support industrial consolidation. German industry will continue its downsizing, with less than 100,000 personnel supporting the defense needs of the Bundeswehr

Internationally, NATO will continue to be a keystone of the German defense framework, along with the Western European and European Unions efforts in structuring a more European security policy and collaboration in the development of defense equipment. A significant step was taken in this direction when the European Nations, as part of the European union, appointed Javier Solana as the Secretary General of the European Union council of Ministers and High Representative for the Common Foreign and Security Policy of the Union. This increases the probability of future cooperative projects being undertaken within the structure of OCCAR and significant European harmonization of security policy.

## **FURTHER READINGS**

See BWB Homepage at:  
<http://www.bwb.org/english/index-e.htm>

See Bundeswehr Homepage at:  
<http://www.bundeswehr.de/>

## ENDNOTES

1. German civilians were 234,000 in 1990. Current plans for 2000 is to be at 141,000.
2. Bundestag members and equally many delegates from the Länder form the Federal Convention.
3. Federal Government consists of the chancellor, cabinet and ministers.
4. As this chapter is being written additional organizational changes are planned but not yet implemented.
5. Kaitz, Dr. Edward and Dr. Kurt R. Jankowsky "The Effects of a Scale-Down In Defense Budgets, Vol II German Industrial Organization," DSMC Press, 1995, Page 6-17.
6. Provides guidance, similar to the Federal Acquisition Regulation in the United States, to the BWB procurement specialist.
7. Verdingungsordnung für Leistungen (VOL/A&B), Zusätzliche Vertragsbedingungen (ZVB).
8. Klaus Bosse and Wolfgang Hermann Directors of Rü III in CPM Forum Series, "Defence Armament and Logistics in Germany," Published by CPM Communication Presse marketing GmbH, Sankt Augustin, Germany 1998, page 24.
9. Some Länder and Städte have become shareholders in shipyards and aviation industry.
10. Statistics office BWB.
11. In French – Organisation Conjointe de Co-operation d'Armeniment (OCCAR).

## GLOSSARY

Aktiengesellschaft	Corporation, Public Limited Company
Allgemeine Bedingungen für Beschaffungsverträge des Bundesministeriums der Verteidigung (ABBV)	General Terms and Conditions for Procurement Contracts of the Ministry of Defense
Allgemeine Bedingungen für Entwicklungsverträge mit Industriefirmen (ABEI)	General Terms and conditions for Ministry of Defence Development Contracts with Industrial Firms
Allgemeine Bedingungen für Forschung mit Industriefirmen (ABR)	General Terms and Conditions For Ministry of Defence Research Contracts with Industrial Firms
Allgemeine Auftragsbedingungen (AAB)	General Terms and Conditions for the Delivery of Supplies, Goods, and Services
Bestimmungen für die Planung, Entwicklung und Beschaffung von Wehrmaterial und Datenverarbeitungsvorhaben, (EBMat)	Directive for the Planning, Development, Procurement and Acceptance of Defence Materiel and Data Processing Projects
Bundesakademie für Wehrverwaltung und Wehrtechnik	Federal Academy of Defence Administration and Technology
Bundesamt für Wehrtechnik und Beschaffung (BWB)	Federal Office for Military Technology and Procurement
Bundesamt für Wirtschaft	Federal Office for Economics
Bundesausfuhramt (BAFA)	Federal Export Office
Bundesministerium der Verteidigung–(BMVg)	Federal Ministry of Defense (FMOD)
Bundeswehr	Federal Armed Forces
Bundeswehr-Konzeption	Bundeswehr Concept
Bundeswehrplanung	Bundeswehr Plan
Bürgerliches Gesetzbuch	Civil Code
Einführungsgenehmigung–EFG	Approval for Production
Gesellschaft mit Beschränkter Haftung (GmbH)	Private Limited Liability Corporation

Grundgesetz	Basic Law/Constitution
Hauptabteilung Rüstung	Directorate General of Armaments
Heer	Army
Heeresamt	Army Office
Heeresfuehrungskommando	Army Support Command
Kommandobehoerde fuer Ausbildungs- und Einsatzgrundsätze	Training, Development and Doctrine Command (TRADOC)
Länder	Federal States
Luftwaffe	Air Force
Luftwaffenamt	Air Force Office
Luftwaffenunterstützungskommando	Air Force Support Command
Marine	Navy
Marineamt	Navy Office
Marineunterstützungskommando	Naval Support Command
Militaerisch-Technisch-Wirtschaftliche Forderung	Military-Technical-Economic Requirement-Development Baseline
Militarpolitische Zielsetzung	Military Strategic Objectives
Planungsstab	Planning Staff
Rüstungsbereich (Rü)	Armament Department
Taktisch/technische Forderung-TTF	Tactical/Technical Requirement
Verdingungsdordnung für Leistungen (Vol/B)	Terms and Conditions for Placing Public Contracts, Part B
Verdingungsdordnung für Leistungen (VOL/A)	Terms and Conditions for Placing Contracts, Part A
Verteidigungspolitische Richtlinien—VPR	Defense Policy Guidelines
Wehrtechnisch Dienststelle (WTD)	Bundeswehr Technical Center
Wehrwissenschaftliche Dienststelle (WWD)	Bundeswehr Research Center/Institute
Zusätzliche Vertragsbedingungen (ZVB/BMVg)	Supplementary Conditions of the Ministry of Defense to Vol/B





**PART 3**  
**UNITED KINGDOM**



## Chapter 1

# HISTORY AND TRADITIONS

For the visiting tourist, the Houses of Parliament are an important stop on the tourist map. Splendid and imposing, the gothic architecture conjures an impression of tradition and maturity. But its workings are far from clear even to the average United Kingdom citizen. The Palace of Westminster, has a long history which stretches back to before the Norman Conquest in 1066, when Edward the Confessor established his palace on the site and it remained the monarch's main residence until Henry VIII (1491-1547). The word "parliament" derives from the French word "parler," to speak or talk and from the Middle Ages monarch's summoned advisers to discuss affairs of state. After the reign of Henry VIII, the monarch moved away from the Palace of Westminster and the buildings were set aside for the needs of the two Houses of Parliament and for the law courts.

While the term "parliament" can be used to describe the buildings, it more importantly describes two key components of the United Kingdom constitution. The first is the House of Commons, an elected body of some 651 people, representing constituents in the United Kingdom. The second is the House of Lords with a membership of Archbishops and Bishops, Hereditary peers, Life peers and Judicial life peers. They represent no one but themselves. The final component is of course the monarch.

### The Monarch

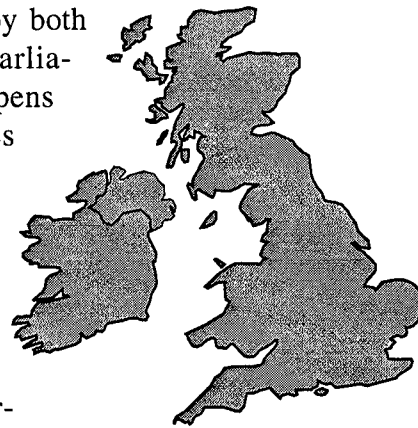
The monarch is an important part of Parliament as we have already mentioned, indeed one of

the three key components in the legislative process. The monarch's role is to sign or give Royal Assent to all legisla-

tion passed by both Houses of Parliament. She opens and dissolves Parliament

and she makes treaties with foreign states, creates peerages and makes

top appointments in the civil service, the armed forces and the judiciary. But all these powers are exercised in name only and she is now constitutionally bound by convention to take advice from the Prime Minister.



Many would argue that the sovereign's position is only ceremonial, and while the government is in office and supported by a majority in the House of Commons, that is essentially correct. However there are situations when, if a general election produced no overall majority, her role would become more significant. This is because one of her constitutional tasks is to appoint the Prime Minister, traditionally the leader of the party with the majority of seats in the House of Commons. Since 1945 this has been a straightforward task, but there is no constitutional convention which lays down what the Queen should do if this is not the case.

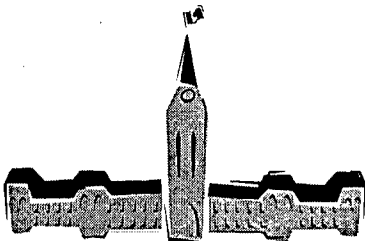
Since the 18th century monarchs have progressively distanced themselves from politics and for many this has allowed the sovereign to remain a key element of the British way of life. Any "meddling" in politics may be deemed unacceptable and threaten the role of the crown in our parliamentary democracy.

### **The Prime Minister**

The Prime Minister is an elected member of the House of Commons and since 1945 has been the leader of the majority party in the same house. He or she is the head of the government. Unlike other countries, the Prime Minister is not the Head of State, nor Commander in Chief of the Armed Forces. Those titles remain with the Sovereign.

### **The House of Commons**

The House of Commons is one of two chambers of Parliament. It is often referred to as the elected House, to distinguish it from the House



of Lords, which is not. Parliamentary elections take place when parliament has been "dissolved" either by Royal Proclamation, or because the

maximum term between elections, 5 years, has expired. On average the time between elections is less than the mandated period, as Prime Minister's and their government often seek political advantage by seeking elections earlier.

The British method of voting at General Elections (Governments seeking re-election) is by a "first past the post" principle on the basis of single member constituents. In this process individuals cast a single vote for a candidate.

The candidate who wins the most number of votes is then elected as the Member of Parliament (MP) for that constituency. For the more recent elections to the Scottish Parliament the Welsh Assembly and the European elections, a form of proportional representation has been used.

Selection of candidates for election is undertaken at local level although increasingly central party control is being strengthened over the process of shortlisting.

The House of Commons has a very important part to play in the law-making process. It is here that most "bills" are introduced, debated and undergo a structured process of "readings" and committee work before they are passed to the House of Lords and then to the Queen for signature. It is at this point that the "Bill" becomes an "Act" and part of statute law. On defence matters, the House of Commons will debate the Annual Statement of Defence Estimates, the formal approval of funds to the defence arena, but will have no formal say on individual acquisition programmes.

### **The House of Lords**

This unelected second chamber consisting of the four main groups of individuals has an important part to play in scrutinising all legislation and has the power to refer contentious legislation back to the House of Commons with amendments. It may also initiate legislation, in which case the bill is then passed to the Commons for scrutiny. In more recent years its role has been questioned, firstly because it is unelected and secondly because historically there are far more individuals in the House who support the Conservative Party than any other political grouping. On the other hand it has a substantial number of members who are not members of any party, known as "cross benchers." While the House of Lords can disrupt and delay the passage

of a bill, the House of Commons does have the power to invoke the Parliament Acts of 1911 and 1949 to ensure that bill passes to the sovereign for final signature, in spite of continuing Lords opposition.

It should be added at this stage that the future of the House of Lords is under much discussion at the moment and a Royal Commission has been established to make proposals for a more representative second chamber, which either way will dispense with the "hereditary peer" principle. Some form of elected or appointed "second chamber" is likely to be introduced.

### **The Committee Structure**

The committee structure in the House of Commons is confusing and complicated. In essence there are three types. The first are Committees of the Whole House, which as their name implies, consist of all members of the House of Commons. They are responsible for examining the text of bills clause by clause and seeing how or where it can be improved. At one time all bills were examined in this way, but more recently only three types of bill have been examined by this particular committee. Firstly, straightforward and uncomplicated bills which can be dealt with very quickly, secondly, bills which are considered to be urgent and need a swift passage, such as the Prevention of Terrorism Act 1974. Finally those which are deemed to be of significant constitutional importance.

The second group of committees are those referred to as Standing Committees. These deal with all routine government and private members bills. They are formed for each new bill and dissolved when their work has been completed.

The last group, the Select Committees, are formed and selected from among the membership of the House of Commons. Each department

will have its assigned permanent Select Committee to examine expenditure, administration and policy. They have powers to send for individuals, papers and records and report formally from time to time having completed their investigations. There are some seventeen in number. One of these is the Defence Select Committee, chaired by an MP from the governing party. They take a keen interest in all defence issues and report and comment on acquisition programmes, particularly when they go wrong. Whilst their reports can be damning, government ministers are in no way obliged to act on any recommendations they may make.

### **The Cabinet**

The cabinet is an essential component of the "Executive" and is responsible for the formulation of all government policy. It traditionally meets every Thursday and it is here that the day-to-day business of government is carried out. The cabinet works on the basis of "collective responsibility." While cabinet allows individual ministers to represent their departments and put their point of view across to other cabinet members, all decisions are taken collectively and articulated as such.

The cabinet has responsibility for the general direction and control of government business and is responsible to Parliament for the performance of the government. It always consists of the Prime Minister who is chairman, the Chancellor of the Exchequer, the Home Secretary, the Foreign Secretary and other ministers that the Prime Minister appoints. While the total figure can vary between different governments, it normally totals around 30 individuals at Secretary of State or Minister level.

This is not the only forum in which decisions are taken and increasingly smaller committees are formed for specific activities. A War cabinet was established during the Falklands and Gulf

Wars with a reduced and more selective group of advisors.

### **The Civil Service**

The roles and responsibilities of the Civil Service have been undergoing some subtle changes over the last decade. Essentially they are the public administrators for national and local government. They are politically impartial and the more senior members of the Civil Service do have a very close relationship with their ministers.



While the traditional view is that Civil Servants are concerned only with advising ministers on policies and executing those policies once ministers and parliament have agreed, they do wield considerable influence. The continuity they provide is seen as a key asset with well established lines of communication to other departments and their Civil Servants. The clear distinction between

“policy” on the one hand and “administration” on the other, is becoming more blurred and it is now recognised that the decisions taken by Civil Servants include an element of policy making within a framework established by Ministers.

### **Parliament and Public Finance**

The term public finance is used to describe the process by which the State raises funds to meet the Government’s planned expenditure programme and the methods to account for the moneys spent by the state. As such, all public

revenue and expenditure is controlled by the Treasury, who can do nothing without the approval of Parliament.

Since 1993, the Chancellor has provided the House of Commons with a “Unified Budget” statement annually in September of each year. This outlines proposals for both raising money and spending it. It provides details of expenditure for the next three years for each government department. (A financial year runs from 1 Apr -31 Mar). Details are published in a series of “White Papers,” one for each Government department, and the figures quoted constitute cash ceilings to which the Government departments must work. Formal announcement takes place on “Budget” day in the House of Commons when the Chancellor makes his statement. This is followed by a series of debates in the House of Commons after which a formal vote is taken, sealing parliamentary approval. There are often many debates about the content of the budget, but rarely will the government be defeated in a vote, although the last Conservative administration was forced to make some changes as a result of an MP rebellion.

Within the Ministry of Defence, the Secretary of State for Defence is responsible to the Government and Parliament for Armed Forces and their expenditure. To assist him he relies upon the Chief of Defence Staff (CDS) a military person, selected on merit from any one of the three Services. There is also a Permanent Under Secretary (PUS), a career civil servant, who is the principal Accounting Officer of the Ministry and responsible for the long term financial planning and budgetary control of the defence programme. This will be covered in more detail in the next section.

## CHAPTER 2

# THE MILITARY OF THE UK – ORGANISATION

### Introduction

There are three separate Armed Services into which individual Servicemen and women are recruited and to which they belong throughout their military careers. Defence, however, is a coherent activity, which is increasingly managed on a Tri-Service basis. The central machinery for achieving this is through the concentration of policy-making in the Ministry of Defence (MOD) Headquarters in Whitehall, with military and civilian staffs working in integrated hierarchies.

### The Defence Council

The formal legal basis for the conduct of defence in the UK rests on a range of powers vested by government statute in the Defence Council under the chairmanship of the Secretary of State for Defence, and on Parliament's voting of public money for defence purposes. Under the Defence Council there is a Board for each Service, the Admiralty, Army and Air Force Boards. These Service Boards exercise a wide range of formal and statutory powers relating to the administration of their Service and its personnel, e.g., flying regulations for the RAF and regimental matters for the Army.

### Ministers and Parliament

The most senior government minister for defence matters is the Secretary of State for Defence who is responsible for the formulation and conduct of defence policy, and for providing

the means by which it is conducted. Under current arrangements he is supported by two Ministers of State, one for the Armed Forces, dealing with operational and policy issues, and one for Defence Procurement. There is also a Parliamentary Under Secretary (PUS) who deals with personnel issues and estate business among other matters.

The Secretary of State and his three Ministerial colleagues are thus at the head of the Ministry of Defence and are accountable to Parliament for all defence matters on a day-to-day basis. Parliament exercises this oversight through debates, departmental Select Committees, namely the House of Commons Defence Committee (HCDC), oral and written questions, and enquiries from individual MPs. The House of Commons Public Accounts Committee holds the Department to account for public money through its Accounting Officers.

### Functions

The MOD's purpose is to enable its Ministers to discharge their responsibilities for Defence. It has three functions:

- As a Department of State it formulates policy of all sorts for Defence matters, directs the implementation of that policy, participates in wider policy-making in Government, and supports ministers in their accountability to Parliament.

- It incorporates the highest level Military Headquarters, which gives military advice upward to the Government, and strategic direction downward to Commands.
- It procures equipment for the Armed Forces.

**Departmental Aim**

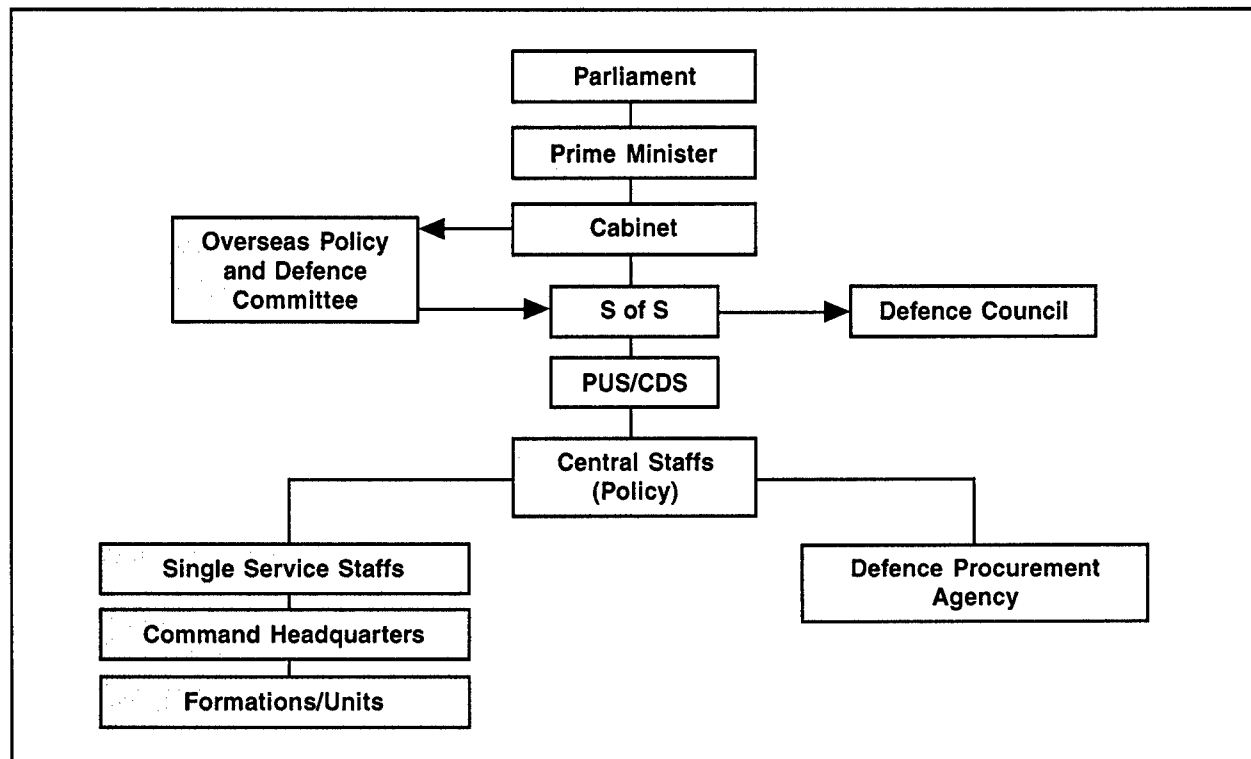
The aim of the MOD is to define the strategy and maximise, within the resources allocated, the defence capability required to:

- Deter any threat to, and if necessary defend, the freedom and integrity of the United Kingdom and its dependent territories, including the provision of support as necessary for the civil authority in countering terrorism.
- Contribute to the promotion of the UK's wider security interests, including the protection and enhancement of freedom and democratic institutions, and the promotion of free trade.

- Promote peace and to help maximise the UK's international prestige and influence.

**Integration**

The MOD produces two different but equally vital sorts of integration. First, it integrates the Political and the Military. It links the roles and missions of the Armed Forces to the Government's wider foreign and security policy. This is sometimes labelled as politico-military or "pol-mil" business. In terms of operations, this means dealing with the grand-strategic and military-strategic levels of planning and direction. In terms of the management of Defence it means translating legislative, financial and public standards and constraints into policy and practice for the equipping and day-to-day running of the Armed Forces. Second, it brings together the three individual Services to work together for common good of Defence, not for individual Service interests.



**Figure 1. The Military Organisation Related to Government**



## Structure

Over the last 10 years significant integration of the three Services at MOD level has produced an organisation which is known as “purple” (representing the colour mix of the Army’s brown, the RAF’s light blue and the Navy’s dark blue). The development of the Department to deliver the defence overview and integration has revolved around:

- Strengthening the integrated Central Staff in relation to previous single-Service arrangements, while streamlining organisations and procedures to minimise duplication of effort.
- The MOD’s “Head Office” concentrating on policy-making, while delegating executive responsibilities and the direct control of resources to Commands which are both geographically and organisationally separate from London.

- Further integration is still taking place particularly with such aspects as logistics and acquisition.

The MOD top level organisation is given in Figure 2 and shows that the Secretary of State has two principal advisers:

- One military, the Chief of the Defence Staff or CDS.
- One civilian, the Permanent Under Secretary of State, or PUS.

Neither of these is subordinate to the other. They share responsibility for much of the Department’s business and reflect the inescapable duality of the civil and military aspects of defence in a democracy.

The CDS is the professional head of the Armed Forces in the United Kingdom and he is selected from any Service and is the “best man for the

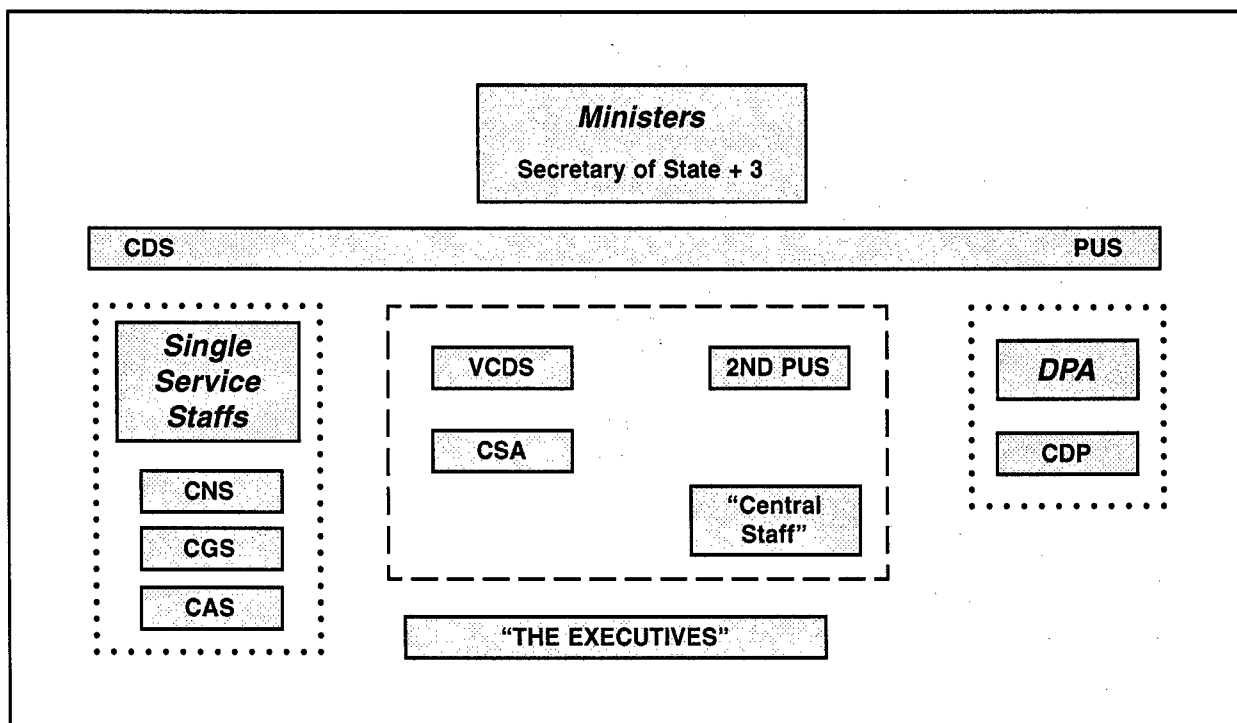


Figure 2. MOD Top Level Organisation

job.” He is the principal military adviser to the Secretary of State and the Government. The chain of command for the planning and conduct of military operations flows from the Cabinet and the Secretary of State to CDS, and from him down to operational commanders at various levels.

The PUS is the Government’s principal civilian adviser on Defence. He has the primary responsibility for policy, finance and administration in the Department and co-ordinates the provision of advice to Ministers. He is the MOD’s Principal Accounting Officer and is thus personally accountable to Parliament for the expenditure of all public money voted for Defence purposes.

### **VCDS and 2ND PUS**

CDS and PUS each have a deputy: the Vice-Chief of the Defence Staff (VCDS) and the 2nd PUS. Together VCDS and 2nd PUS are the joint heads of the Central Staff, which is the heart of the Ministry of Defence. This forms a very strong central axis which is both Tri-Service and military-civilian in character.

### **Single-Service Chiefs of Staff**

Under the CDS, each of the three Services has its own Chief of Staff. The Chief of the Naval Staff (CNS), Chief of the General Staff (CGS), and Chief of the Air Staff (CAS), are the professional heads of the Royal Navy, the Army and the Royal Air Force respectively. (The Royal Marines come under the Royal Navy). While they have (in general) no command responsibilities, they are responsible for their Service’s overall fighting effectiveness, efficiency and morale so that it delivers the military capability which Defence policy requires. At the same time they contribute their wide military experience to the development of policy and management on a Defence-wide basis as members of the Defence Council and other key bodies. The single-

Service staffs, which work directly for the three Chiefs of Staff in London, are relatively small because many areas of expertise have been concentrated in the Central Staff, on which the three Chiefs can draw.

### **Chief of Defence Procurement**

The Chief of Defence Procurement (CDP), is the head and Chief Executive of the Defence Procurement Agency (DPA) formerly known as the Procurement Executive, which is responsible for the development and acquisition of weapons systems. The DPA is the largest purchasing organisation within the Government.

### **Chief Scientific Adviser**

The Chief Scientific Adviser (CSA), is usually a distinguished scientist or engineer brought into the Civil Service on a fixed-term appointment (usually a minimum of five years). His task is to help ensure that scientific and technological considerations are given full weight in decision-making and will have considerable influence on the research work mainly undertaken in the Government owned Defence Evaluation and Research Agency (DERA).

### **Main Committees**

The thirteen posts described so far, Ministers, Civil Servants and Military, form the Defence Council. The nine non-Ministerial members of the Defence Council form the Finance, Planning and Management Group (FPMG) which is now the Department’s corporate board. It is responsible for directing a number of key processes, in particular the annual re-costing of the Defence programme and the Departmental planning process. The PUS chairs the FPMG, although the CDS may take the chair for some business. In 1999 certain re-organisations, largely because of the changes needed to institute new acquisition processes, are making some

changes (mainly to titles) to this top-level structure.

The Chiefs of Staff (COS) Committee is chaired by the CDS and is the main forum in which the collective military advice of the Chiefs is obtained on operational issues and Defence policy. It is the MOD's principal crisis management committee. The PUS attends the COS Committee. A number of other senior committees bring together formally the various strands of Defence business. Those that impact on acquisition are:

- The Equipment Approvals Committee (EAC), chaired by the Chief Scientific Adviser, makes recommendations to Ministers on the procurement of major equipment and itself authorises procurement within financial delegations granted by Ministers. It consists of CSA in the chair, CDP, VCDS, Chief of Defence Logistics and 2nd PUS. This membership reflects the views of the Services as users of the equipment, those of the DPA who will be responsible for acquiring it, and those of the Central Staff, which is responsible for policy and resource allocation.
- The Navy Board, the Executive Committee of the Army Board and the Air Force Board Standing Committee are sub-committees of the Service Boards of the Defence Council. Each is chaired by the Service's Chief of Staff. They deal with the management of their Service and the development of single-Service doctrine.
- The Procurement Policy Board, chaired by one of CDP's executive board members, considers procurement policy on a particular and a general basis. It reviews progress against performance targets on contracts and is the forum through which new policy proposals for procurement are adopted.

## Chapter 3

# THE STAFFS

### THE CENTRAL STAFFS

The Central Staff, headed jointly by the VCDS and the 2nd PUS, is the policy core of the Department. It is over 2,000 strong and located mostly in London. Under Ministers, the Central Staff is responsible for the three fundamental aspects of Defence policy and planning:

- To establish the Government's security and defence aims and what they imply for the missions and tasks of the Armed Forces.
- To establish what sort of military capability and equipment will best achieve these aims.
- To establish what resources are necessary to sustain the Government's policy and how they can best be allocated.

Within the MOD structure civilian and military staff are integrated in single hierarchies wherever this best meets the need. The seven officers and officials in the Central Staff at the three-star or "deputy" level and their staffs work flexibly together in support of the needs of all members of the Defence Council. Of the seven, three are military (Deputy Chiefs of the Defence Staff or DCDS) and four are administrative civil servants, (Deputy Under-Secretaries or DUS). Below them many civilians have military superiors and vice versa. It is this central staff area where, in 1999, that changes, mainly to titles, are taking place to accommodate changes brought in following a major government defence review in 1998. One of the results already implemented was to create a new post, the Chief of Defence Logistics (CDL). Two

things are critical to the success of the Central Staff: one is civil-military integration, the other is the role the military staff officer is expected to play.

### Central Staff Components

The Central Staff is organised into several major blocks or areas. The main one concerned with acquisition is:

- **The Systems area**, under the **DCDS (Systems)**, is responsible for identifying the equipment capabilities needed by the Armed Forces, and for formulating the Operational Requirements, or specifications, for the military equipment. It also manages the Applied Research Programme.

Other areas (using titles current in mid 99 but being changed) which have some connection with the acquisition process are:

- The Resources, Programmes and Service Personnel area formulates policy on service personnel issues and financial systems and regulations, and runs the MOD's resource allocation process, known as the Long Term Costing (LTC). It is led by the DUS (Resources, Programmes and Finance) and the DCDS (Programmes and Personnel).
- In the autumn of 1999 the Systems and Programming area will be merged under a DCDS (Equipment Capability).
- The Policy/Commitments area is responsible for the formulation of Defence policy in the

widest sense, both long and short-term, and for the actual or potential commitment of British forces to crises, operations and exercises. The civilian Policy Director and the military Deputy Chief of the Defence Staff (Commitments) (DCDS[C]) lead this area.

- The Scientific area, under the DUS (Science & Technology), provides scientific advice to the MOD HQ, especially to the Systems area, and manages the Corporate Research Programme. Some posts straddle these areas or operate independently in the Central Staff. The Chief of the Defence Logistics (CDL) provides a single focus for logistics issues, both in relation to the support of operations and on wider value-for-money questions throughout Defence.

### **Civil-Military Integration**

Integration is based on working efficiency and the premise that political-military business needs political-military staff. The MOD's civilians bring to bear policy-making, financial and administrative skills, as well as an understanding built up over many years of political and Parliamentary considerations, which is essential in a Department of State. Military officers are trained, at considerable cost in time and money, to be expert professionals and commanders; they are sent to the Ministry of Defence to provide the essential knowledge and experience, which these military skills bring. Both sets of skills are considered by the UK to be vital to the good management of Defence.

### **The "Purple" Approach**

All military posts in the Central Staff are regarded as Tri-Service or "purple" posts, even if they deal only with business specific to a single Service or are always filled by one Service in particular. When officers join the Central Staff they therefore have to adopt a Defence-wide

perspective. They do not stop belonging to their Service but their job is not to promote its interests in a narrow sense. It is to ensure that the Central Staff is able to reach a balanced overall view on any issue. In many cases their work may be closely focused on single-Service business, for example at working-level in the equipment areas, but more often it is broader.

### **Defence Intelligence Staff**

The Central Staff works very closely with the Defence Intelligence Staff (DIS), which is the most important of the Departmental support services collocated with the MOD HQ. The tasks of the DIS are to give policy-makers and planners throughout Defence and commanders in the field an accurate view of world developments, timely warning of impending crises and informed reporting on areas where British forces are or may be deployed. It analyses material from a variety of sources, including open literature and classified reports. Its assessments range from studies of weapons systems held by potential opponents, to analysis of the influences at work in any part of the world where the United Kingdom has important interests. It thus provides essential inputs to identifying capability shortfalls. The DIS is a mixed organisation of military officers and civilian research staff, scientific staff and linguists, headed by the Chief of Defence Intelligence (CDI).

### **Resources for Defence**

The Government allocates money to the MOD and the Armed Forces each year, as to other Departments, in the process known as the Public Expenditure Survey (PES). In the spring, MOD tells the Treasury the likely cost in cash of the programmes it wishes to carry out over the next three financial years. Detailed discussions take place between officials and the Treasury over several months, and final decisions are taken collectively by Cabinet Ministers. The

Chancellor of the Exchequer announces the results for all departments in his budget statement in late November or early December. The budget set for the first year (the “Estimates Year” starting the following April) is a fixed cash sum. The cash totals for the second and third years are firm plans that form the basis for the following year’s PES round when they are reviewed in the next annual negotiation.

### The Long Term Costing

To provide forces and infrastructure to deliver the required military capability, the MOD constructs a plan and programme. These objectives and targets give expression to Defence Policy, to objectives and force levels, equipment, logistics and personnel support, which can be afforded within the cash, allocated in PES. Each year the previous year’s plan and programme are rolled forward and revised to take account of changes in policy, resources and circumstance. This process of resource allocation within the

MOD is known as the Long Term Costing (LTC) and is shown in Figure 3.

The LTC looks forward four years for operating costs and ten for equipment, rather than the three of PES. The four-year plan is known as the Short Term Plan (STP) and must be costed as accurately as possible identifying any trade-offs and slippages to keep within the resources allocated. It does not start with a blank sheet of paper each year but with the programme, which the Secretary of State approved the previous year. So the costing exercise is essentially a re-costing of the four-year period. The equipment plan merely identifies rough order costs for the longer-term equipment programme and is known as the Equipment Plan (EP). Both the STP and the EP are issued for re-costing in April each year in the form of the Departmental Plan. This is an internal, classified document that sets out a range of management and performance objectives that the MOD must meet, and the force levels and readiness requirements for the

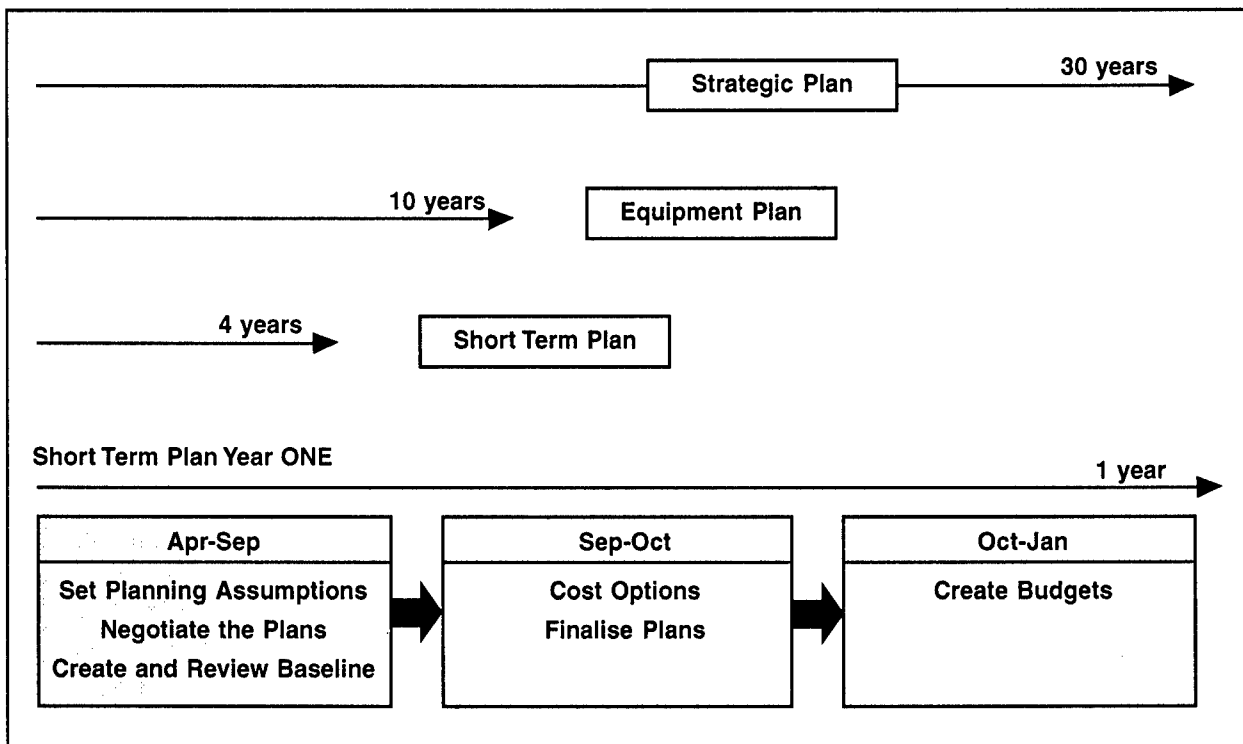


Figure 3. Defence Strategic Planning, Programming and Budget

Military Tasks. It goes to the single-Service Chiefs of Staff and Top-Level Budget (TLB) holders, who in turn have their own management plans which set out in increasing levels of detail the specific outputs required from each Command and management area. In this way, the programme assumptions are passed down the budgetary chain to more than 1,000 individual budget holders and to the project directors of equipment programmes.

The assumptions are then re-costed by budget holders and project directors. At each level, two key issues are addressed:

- First, is the programme tautly costed in a way that maximises value for money? Each budget holder must show how he or she could manage his activities within previously agreed resources. In other words, they must show how any cost growth in particular areas can be offset elsewhere.
- Secondly, the budget holder must illustrate how reductions in his or her budget can be achieved. This identifies how there might be compensation for unavoidable cost growth elsewhere in the programme, creating the headroom for enhancements to be introduced. A key requirement is to identify efficiency savings to contribute towards meeting the Department's efficiency savings targets.

Budget holders are also given the opportunity to propose enhancements, which they would like to see, added in their areas. The costings are progressively aggregated up the budgetary hierarchy and closely scrutinised by each level of management. Minor changes to the programme, both upwards and downwards, are incorporated at this stage. The process also highlights particular problem areas, which need to be studied further. Ultimately, draft plans and re-costed budgets are submitted to 2nd PUS. The relevant Service Chief of Staff is responsible for

ensuring that TLBs' bids for his Service's operating costs are tautly costed and reflect agreed Departmental requirements.

The central assessment of the full re-costing begins in earnest in December each year, following the Chancellor's announcement of the new three-year plans for public expenditure. The new cash plans are used to calculate a ten-year benchmark against which to judge the re-costed programme. The savings measures offered by budget holders and potential enhancements are prioritised against key policy and military objectives in the light of the Government's decisions in PES on the overall resources to be allocated to Defence. This assessment allows a view to be taken across all three Services and all of the MOD. That view will decide the particular areas of concern that need addressing, the particular military capabilities that need enhancing, and the best package of savings measures to provide the headroom to make enhancements and offset cost growth.

The 2nd PUS and VCDS consult the Service Executive Committees and the Procurement Board before the FPMG decides what is to be submitted to Ministers. Final decisions on the content of the programme are taken by the Secretary of State. The result is a long-term plan and costings that set objectives and match policy, commitments and resources. It forms the basis of the request to Parliament to vote Estimates provision for the new financial year; and for the allocation of cash to budget holders and the setting of objectives down the management hierarchy. It also provides the programme assumptions on which the Department bases its next PES bid and LTC cycle.

The LTC process is run by the civilian staff working for the AUS (Programmes) in the Central Staff, in concert with the military staff under the ACDS (Programmes). These include the single-Service Resources & Programmes

branches and their sister military Plans & Programmes directorates. While part of the Central Staff, they support their own Service's Chief of Staff, including the carrying out of his responsibilities for the overall financial management of his Service's TLBs. It is worth repeating that whilst the functions described above are not expected to change post mid-99, the titles and responsibilities of those involved may well do so.

### **THE NON-CENTRAL STAFFS**

The non-central staffs are effectively the users, the Services. Each of the Services has a Command Headquarters that deals with the day-to-day running of the Service. These are broadly operational and support commands and each of the Services has adopted organisations that best fit its needs of providing front-line forces. Each Command HQ will have as its head a Commander in Chief (CinC) who will be a three or four star officer. He is also known as the Principal Administration Officer (PAO)<sup>1</sup> to describe his responsibilities and accountability as budgeting as a TLB for the provision of front line forces and support to those forces. In terms of the acquisition process, such responsibilities have included the provision of in-service support, modifications, upgrades and training as well as providing the funds for the more usual operating costs that would be expected.

The adoption of Integrated Logistic Support (ILS) as a philosophy and a policy for all acquisition has enabled the in-service costs for the PAO to be given due priority during the early phases of the acquisition cycle. The PAO in fact provides both the budget and the manpower to the DPA for the staff in the project team that will deal with ILS.

### **CENTRAL STAFFS RESPONSIBILITIES IN THE ACQUISITION PROCESS**

#### **Responsibility for Equipment Requirements**

Within the framework established by the LTC, the procurement of major equipment proceeds on a step-by-step basis. A replacement equipment must always be justified from basic principles by showing that a gap exists in our capability and demonstrating the military value of filling it in the context of Defence Policy and the planning assumptions about the sort of operations to which British forces might be committed.

Within the Central Staff, the Operational Requirements (OR) branches in the Systems area are responsible for the formal statements which define the characteristics required of new equipment. These staff are currently (in 1999) being reorganised into Capability Management (CM) areas responsible for defining capability gaps within their defined area. They describe these capability gaps in User Requirement Documents (URDs) which express the function and desired performance in broad terms. The URD will have the benefit of the results of feasibility studies, usually involving both the Defence Evaluation and Research Agency (DERA) and industry. The URD is the authoritative statement of the requirements to fill the capability gap.

The OR branches work very closely with colleagues elsewhere in the Central Staff and others outside it. The Services who will operate and maintain the equipment, the DPA's technical and project management experts, DERA and industry, all make important contributions.

#### **Equipment Approvals Committee, Scrutiny and Approval**

The requirement is ultimately the responsibility of the Equipment Approvals Committee (EAC),



which makes recommendations to Ministers on the largest projects (defined as in excess of £400M total procurement cost) and authorises others within its own delegated powers (£100M-£400M). Below this figure the EAC delegates responsibility to two and one-star officers for the remainder.

The scrutiny, whether by EAC or delegated by them, is a careful comparison of the relative cost and operational effectiveness of alternative solutions to the requirement. It will start with the option of doing nothing and look at potential trade-offs such as upgrading an existing system rather than buying a new one, or buying a few relatively expensive systems or more, cheaper ones. Systems are assessed against a wide range of scenarios because of the many possible uses for the Armed Forces in today's uncertain strategic environment. Scrutiny is made of the cost of operating a system through its entire life, which means taking into account reliability, maintainability and the people needed to man, sustain and support the system. This process is known as a Combined Operational Effectiveness and Investment Appraisal (COEIA).

In addition to the COEIA, many other issues are examined. What is the best procurement route, develop a new system, collaboratively or nationally, or buy one "off the shelf?" What risks are attached to each option? What are the implications for British industry? The LTC process addresses whether or not a particular new system is affordable and where it stands in relation to Defence-wide priorities. Normally a project will not proceed unless there is provision for it in the LTC.

The EAC, or its delegated authority, will expect convincing answers to these questions and more, before it decides to allow a project to go on to the next stage. Very recent changes, covered in later sections, mean that the scrutiny process is now reduced to two major approvals. It may need

to establish a consensus among differing views held by the various interests represented and proper trade-off decisions made. For example, it may be necessary to reconcile the desire to have new equipment brought into service as quickly as possible with the need not to cut corners. It is also part of the EAC's process to ensure that lessons learned from experience are applied to all projects and acquisitions.

The Central Staff includes a number of scientists and engineers who provide objective scientific advice in support of policy-making, planning, programming, and equipment procurement. They ensure that the potential of science and technology is recognised and exploited, particularly in support of the equipment programme and operations.

#### **DEFENCE EVALUATION AND RESEARCH AGENCY (DERA)**

DERA provides the majority of the support in the research and evaluation of technology areas for the Central Staff. DERA changed its status and was launched as a trading fund in Apr 95 which means it effectively operates as an independent government business. Although no longer part of the MOD, DERA undertakes research and provides advice on scientific and technical matters to help exploit advanced technology in the defence services. They manage both Applied Research and Corporate Research in packages known therefore as the ARP and the CRP. The latter is the long-term work sometimes known as "blue skies" research where the end result is unclear. The ARP exploits the CRP research and works on applications to specific platforms. This work is funded by the MOD and managed by DERA Science staffs. Some of the research work is further sub-contracted to universities or other research organisations. Increasingly DERA are also exploiting their new-found commercialisation to undertake

research for companies in a wide range of areas. DERA has a turnover of some £1 billion per annum, still overwhelmingly sourced from Ministry of Defence customers, and employ around 8,700 scientists. DERA does not look after any nuclear research however. It has two overseas offices in Brussels and Moscow and operates from 15 different sites throughout the country.

## **DEFENCE PROCUREMENT AGENCY (DPA)**

### **Organization**

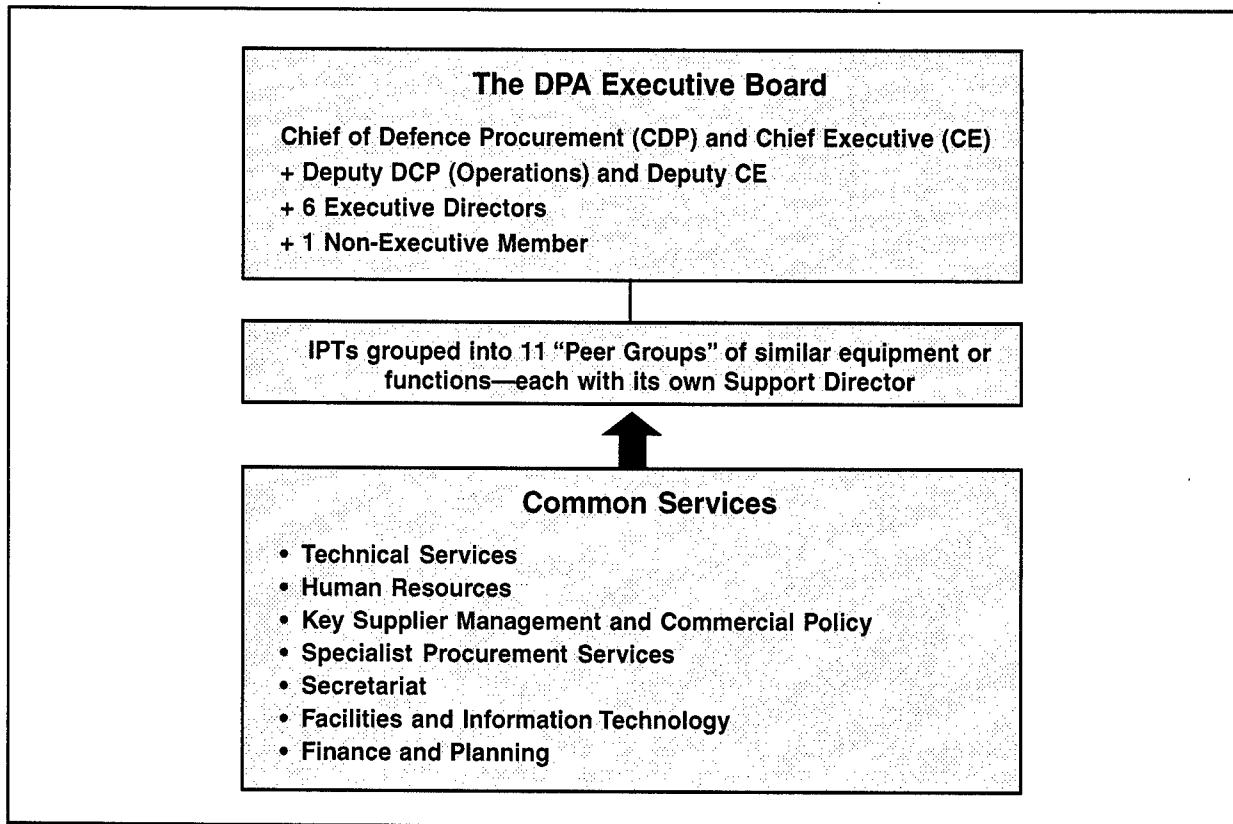
The Defence Procurement Agency is the single biggest purchaser of manufactured goods in the United Kingdom. DPA buys over £5 billion of new systems, equipment and initial logistics support for the Armed Forces each year. It manages more than 13,000 contracts with a staff of approximately 5,500 personnel. These contracts cover the acquisition of a variety of items ranging from the purchase of submarines to small spare parts for a field radio. In 1997 the DPA moved to its current location at Abbey Wood, north Bristol.

Procurement of defence equipment is an important and specialised task. It is the responsibility of the DPA in the MOD and is overseen by the Minister of State for Defence Procurement. The DPA is led by the Chief of Defence Procurement (CDP) who is accountable to Parliament for the spending of the money that has been allocated for equipment procurement and logistic support. This Accounting Officer responsibility covers not only the DPA but also the expenditure of the three single-Service Logistics Commands that procure a wide range of stores and consumables for in-Service equipment. The DPA has recently undergone a series of major organisational changes designed to create a slimmed-down, fully integrated, more efficient

organisation with Agency status, which means they are allowed more autonomy of operation and have to operate as would a commercial business.

The new organizational structure for the DPA stood up on April 1, 1999. The DPA was previously called the "Procurement Executive," and traces its structure and values back to its roots in the Admiralty, War Office and Air Ministry. The Chief of Defence Procurement is also the Chief Executive and has two deputies, a Deputy Chief Executive (DCE) and a Deputy Chief of Defence Procurement (Operations) (DCDP[Ops]). There is an Executive Board consisting of six Executive Directors and the DCE. Each of the Executive Directors has responsibility for managing the procurement of different systems or types of defence equipment and there are 10 Support Directors managing groupings of similar types and ranges of equipment. They are in fact grouped into 11 Peer Groups where similar types and systems are grouped regardless of land, sea and air specialisation. The grouping of projects within peer groups has tried to keep similar operational roles or functions together, hopefully to match a similar re-organisation for the new Capability Groups within the Central Staffs which has yet to be decided. Within each of these Peer Groups, the job of managing procurement projects rests with Project Managers, who head integrated management teams incorporating technical, contracts, finance, quality control and logistic support expertise. Figure 4 shows the DPA organisation.

The Executive Directors deal with all procurement issues, including contractual matters, and technical issues, quality assurance and intellectual property rights. DPA also provides oversight for procurement policy in the military services that buy local and base related items. They do have common services to draw on for human resources, commercial policy, certain technical services, secretariat, facilities and



**Figure 4. The Organisation of the DPA (as of 1 Apr 99)**

information technology and financial planning. The organisation is evolving and will no doubt change as the benefits and challenges of operating as an Agency develop.

### **DEFENCE PROCUREMENT AIMS AND METHODS**

The aim of UK defence procurement is stated as: “to buy equipment for the Armed Forces that meets their requirements and timescales with the best value for money.”

Every year the Ministry of Defence spends around £12 billion on goods and services. No other organization in the United Kingdom spends more on a wide range of acquisitions from military equipment to food, stores and clothing.

Competition is fundamental to achieving value for money and is used wherever possible. MOD does not simply accept the cheapest bid, but that which provides the best overall value for money taking account of all the relevant factors. The entire life of a piece of equipment is considered because support costs over that lifetime can far exceed the cost of its procurement. Competition obtains keen offers but taut contract terms are required to ensure that the value is delivered. Where possible a single prime contractor is selected and, with the aid of clear specifications, made responsible for delivering a complete system that meets the requirement. Firm (i.e., cash) or fixed prices (i.e., varying with inflation or other indices) are used wherever possible to ensure that the contractor carries financial risk. Where competition is either not possible or sensible, MOD policy is “No Acceptable Price – No Contract” (NAPNOC), which is designed to ensure prices are fully agreed before a contract

is let. Where longer contracts need interim payments, they will be made only against the achievement of clearly defined performance milestones or acceptable delivery. Frequently a proportion of the payments will be retained until the equipment has been in service for a period and the MOD can be sure that it has met the specification.

Over recent years, a series of initiatives have been introduced to improve the management of defence procurement. These include improved risk assessment and management, integrated logistic support planning, enhanced consideration of reliability and maintainability, streamlined contractual procedures, improved communications and consultation with suppliers, and more systematic consideration of defence industrial factors.

The DPA is also open to innovative proposals from industry under the Government's Private Finance Initiative, where it can be shown that the introduction of private sector finance and management expertise can yield efficiencies, for example in training and support. Such contracts have been let for simulation training where the contractor provides the complete service from building and equipping the facility, to the provision of training and maintenance staff for a long-term contract, perhaps for 30 years.

### **An International Approach**

Foreign contractors are free to bid for the majority of MOD business, as prime, or as sub-contractors. However, some security considerations, international obligations, and a number of other special factors are taken into account before deciding whether work can be placed overseas. Offsetting some of the value of the contract with reciprocal orders or manufacturing in UK might be a deciding factor in competing bids of equal value. Certainly UK, as do other countries, prefers dealing with UK registered

companies if only to simplify contractual and legal procedures. Many foreign companies therefore set up collaborative consortia and partnerships, registered in the UK, as a way of operating more simply.

The Anglo-French Reciprocal Purchasing Agreement gives a particular focus to cross-Channel purchases. Features of it have been adapted in a wider initiative to open the European defence equipment market; this is now being taken forward under the aegis of the Western European Union Armaments Group (WEAG) within the Western European Union (WEU). The UK is an active participant in WEAG initiatives such as the proposal to develop a European Armaments Agency.

Because defence equipment is increasingly complex and expensive, the needs of the Armed Forces may sometimes be better met through collaborative ventures with other countries. There are many potential advantages in collaboration, including standardisation with allies, increased inter-operability, the sharing of development costs, economies of scale in production and efficient use of national resources. As the cost of developing very advanced defence equipment grows, the pressures on defence budgets throughout the NATO alliance grow too. This is heightening the need for collaboration, particularly in Europe but also in the USA. However, collaboration is not an end in itself, but simply another way of achieving value for money; furthermore, collaborative projects must be managed as effectively as national projects.

### **Defence Export Services Organization (DESO)**

The DESO is a key part of the DPA. Defence exports have a vital role in sustaining the health of the British defence industry and keeping its costs down. They also have an important wider role in maintaining and developing the UK's

international equipment relationships. Under the Head of Defence Export Services, DESO exists to help British companies to market and sell their defence products and services overseas. It mounts defence equipment exhibitions, such as the combined Royal Navy and British Army Equipment Exhibition. DPA project teams work closely with the DESO in considering the export potential of equipment. Government authority

from the Foreign Office must be obtained before defence equipment can be exported to another country. As other countries do, UK has a list of countries to which it forbids export of defence equipment. DESO is effectively an Agency in their own right within the DPA, situated in London. Their actual place in the new DPA organisation is still being determined.

## Chapter 4

# ACQUISITION<sup>2</sup> – INTRODUCTION

A formal division of the acquisition, or procurement cycle, into phases, with a formal decision point between each one, was introduced to the Ministry of Defence following a review of the procurement cycle in the mid-1980s. It became known as the Downey Cycle after the senior civil servant that headed the review. Experience showed that whilst risk was greatly reduced, procurement of major equipment was still often over budget and took far too long, often coming in to service many years late. In 1998, the newly elected Labour Government instituted a major review of defence known as the Strategic Defence Review (SDR). It included a fundamental review of how the MOD procured its equipment and sought proposals on how to do it faster, cheaper and better. The review has become known as the Smart Procurement Initiative (SPI). It included a fundamental review of the acquisition organisation under The Acquisition Organisation Review (AOR). It introduced a modified acquisition cycle<sup>3</sup>, aimed at improved evaluation of risk and at reducing the interruptions to the flow of project work. This is achieved by redefining the phases to increase effort early in the project life cycle whilst reducing the number of phases and formal approval points. Also the associated submissions were to be less bureaucratic than those produced before.

Thus SPI is a major change for UK procurement practice which changes the structure, the process and the procedures. It will be therefore more robust in the face of less predictable threats and tasks, increasingly complex and diverse defence equipment, a rapidly changing industrial structure and new Treasury performance targets for time and cost of defence procurement.

Much of the change is still being developed and it will be several years while the new system settles down.

The AOR report identified certain aspects of the previous system that needed to be changed:

- The arms-length relationships resulting from the separation of requirement definition, research, procurement management and through-life support.
- Under-resourced early project stages.
- Lack of sufficiently flexible strategies within the procurement and logistics organisations.
- Lack of delegated authority in management of projects.
- Ineffective and mutually incompatible incentives between MOD and its contractors and a lack of internal incentives for its staff.

See Figure 5 for the high-level recommendations that were therefore made.

### SMART PROCUREMENT

The Smart Procurement Initiative (SPI) has the following aim—*“To enhance defence capability by acquiring and supporting equipment more effectively in terms of time, cost and performance.”*

It embraces a number of initiatives and builds on the best practice in some existing projects.

<b>Strategy</b> ➡	<b>Processes</b> ➡	<b>Organisation</b> ➡
Clear segmentation of spending	Revised front-end process	Clearly defined customer
	Streamlined approvals and oversight	
More flexible approach	Integrated Project Teams (IPTs)	Restructured acquisition organisation
	More effective positive and negative incentives	

**Figure 5. High-Level Recommendations**

Its key elements are:

- A through-life “systems” approach,
- Improved requirement management trade-offs,
- Partnering arrangements with industry,
- New procurement techniques e.g. incremental acquisition,
- Sharper procurement timescales, and
- Contracts up to five years priced in cash and longer-term contracts to use output price indices.

In order to support these initiatives, an SPI programme has been initiated which is driving changes in the organisation based on these key concepts:

- A single integrated project team bringing together all stakeholders and involving industry except during competition phases,
- A clear customer within the Ministry of Defence for the project, and
- A streamlined approvals process.

## Chapter 5

# THE NEW ACQUISITION CYCLE – KEY FEATURES

### Introduction

The new acquisition cycle reduces the numbers of formal approval points and reduces the number of phases. The most fundamental change, however, was the establishment of Integrated Project Teams (IPTs) where responsibility and accountability were given much greater prominence. The work of an Integrated Project Team has particular focus on the customer and the IPT's activity aims to achieve a seamless flow of responsibility from the start to the finish of the acquisition process.

This section describes the phases of the new acquisition cycle and introduces the principles behind the work to be achieved in each of them. The word acquisition is used to embrace all the activities associated with defining the require-

ment, the procurement and the support of military equipment from concept to disposal. The phases are shown in Figure 6.

### Value For Money

Value for money is a central theme of the Government's approach to procurement of defence equipment in particular. As part of that aim competition continues to be MOD's main tool in achieving value for money in procurement. The integration of Industry into project team activity will vary during the procurement cycle, according to the competitive situation in each phase. Where competition is not a realistic option, and particularly where high value and important projects are being managed, a form of long term partnering<sup>4</sup> is likely to be appropriate.

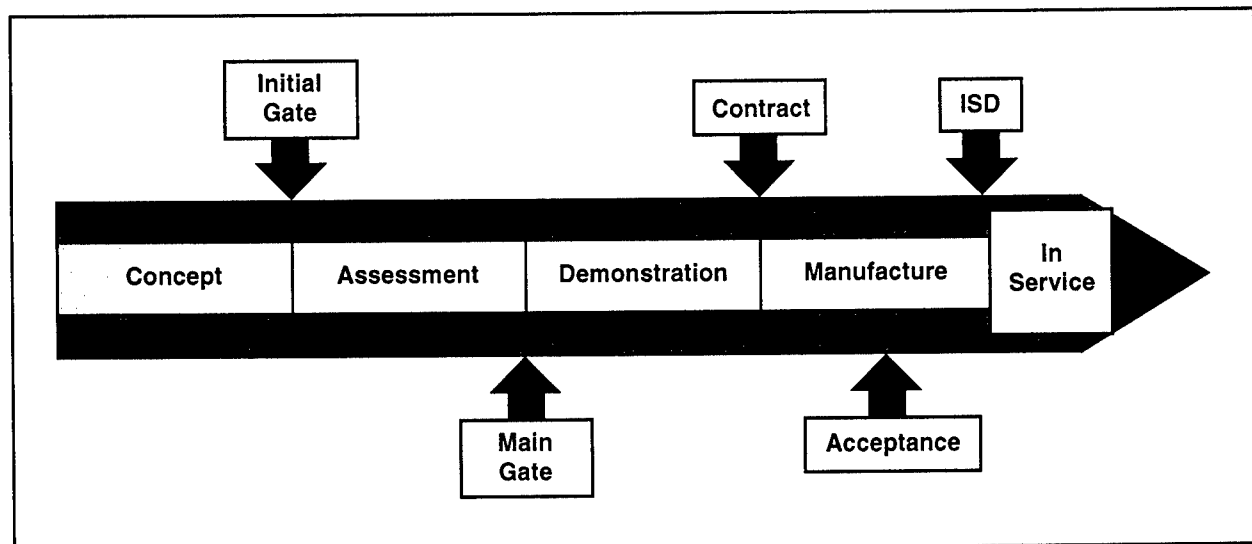


Figure 6. The Procurement Phases



## Concept

The objective of the concept phase is to identify which options for a given mission should be developed further; eliminating those options not worthy of further investigation. Survey and demonstration of technologies is taken from the Applied Research Programme (ARP) along with high level Operational Analysis.

Broad evaluation of the options to meet a capability gap will be carried out by the Capability Working Groups (CWGs) (to be discussed later) formed by the Capability Manager (CM) to oversee the definition of the requirement by applying the principles of Systems Engineering (i.e. an integrated process). As equipment options emerge, an embryonic IPT will be formed to make preliminary through-life costings to go with the draft User Requirement Document (URD) with a shortlist of viable options, for presentation as the case for the first formal approval known as Initial Gate Approval.

## Initial gate

At the Initial Gate, the approving authority, the EAC, approves the resources necessary for Assessment, recognising that the significant expenditure entailed requires formal approval of a mission need and the scale of resources to be consumed. The approving authority also notes the preliminary through-life costing as a reasonable scale of investment for the proposed capability, subject to the verification to be achieved in Assessment.

## Assessment

Operational analysis is completed embracing comparative analysis of alternative options. The objective of the assessment phase is then to down-select to a single technological option for demonstration, with technical risk from sub-systems reduced to acceptable levels. Technologies

for all sub-systems may be demonstrated including those that require integration from the research programme.

Indicative procurement and life cycle costs will have been set at the start of the Assessment phase. During Assessment, operational performance trade-offs are undertaken on an iterative basis to determine the optimal balance between whole-life cost, performance and time. At the end of Assessment, the aim is to identify the best value for money solution and firm costs for acquisition and ownership through its life.

The approval submission then contains the Performance Requirement, consisting of:

- Systems Requirement Document (SRD),
- Key Performance Parameters, and
- Tradable Requirements.

All requirements are linked to mission needs. Only the Key Performance Parameters are absolute, all others are tradable during the later Demonstration phase. Output requirements will be specified, but not the implementation or technical details.

The approvals submission also contains cost and time boundaries, a procurement and through-life support strategy and a plan for managing the remaining risk, all of which are important sub-sets of the developing Through-Life Management Plan (TLMP).

Up to 15 percent of project costs can be spent up to the end of assessment; this will usually allow iterative risk reduction if needed. A key change from previous practice is, that rather than pressing ahead to Full Development to meet a pre-determined in-Service Date (ISD), the IPT will be encouraged to focus on those activities, including, if necessary, main or sub-system

development, which will be key to reaching a position where both MOD and the selected contractor(s) are satisfied that they have a solid basis on which the project can proceed.

### **Main Gate**

The major review point is the Main Gate that determines commitment to an individual project. It is established at the end of the Assessment phase. At this point, the IPT and the customer jointly submit to the approving authorities, recommendations on whether the project should continue to Demonstration and Manufacture. In addition they present recommendations as to the firm parameters which should be established for the project going forward, i.e. a firm Equipment Programme funding line, a firm total cost for any infrastructure and assets and associated equipment whole-life costs, a firm in-service date and a finalised performance-based requirement. At this point, projects not providing an acceptable balance between performance, whole-life cost and time should be cancelled.

Once Main Gate approval has been granted, further reference to the approving authorities post Demonstration should only be needed in exceptional circumstances if:

- the project goes outside the agreed boundaries on performance, cost and time.
- wider affordability or other issues have arisen in the interim that could alter or undermine the original decision.

The approvals process itself aims to be as simple as possible in order to ensure that Main Gate preparation is carried out insofar as possible in parallel with on-going development work during the Assessment phase. In cases where the recommendation is to proceed to Demonstration, the IPT has authority to continue with preparatory work for the Demonstration phase

while waiting for approval; funding for this activity will have been sought at the initial gate (so that the cost of the decision-making period is visible).

### **Demonstration**

The objective of this phase is to down-select to a single contractor and place a contract for remaining development and production. Technical risk from an integrated solution will have been reduced to a level that the contractor is willing to assume and the project manager is willing to transfer.

Further performance trade-offs will be undertaken throughout the Demonstration phase to refine and finalise the solution, and to establish a firm capitalised asset value and best estimates of support costs. Design to cost principles are usually employed—a significant change from previous practice—using requirements management to maximise performance at a fixed cost.

Demonstration of integration capability will be made by physical models, prototypes, computer models or proven contractor ability. Development will be started and some operational trials, in field or synthetic environments, may be carried out.

### **Manufacture**

Manufacture delivers the solution to the military task. The remainder of full development is completed and the production run is carried out.

Throughout the previous phases techniques of working in closer partnership with the industrial supplier will have been used that involve the latter as part of the Integrated Project Team. This will include identifying incentives for identifying and sharing cost reductions that do not prejudice the performance requirements that

have been agreed. Closer partnerships between MOD and industry are difficult to deliver but are seen as key factors in successful delivery of Smart Procurement Initiative (SPI). During the manufacture phase it will become clear whether these arrangements are working, or have worked, successfully. During manufacture, the manufacturer and the user carry out trials of the equipment against acceptance criteria. Equipment acceptance by the customer marks the entry to the in-service phase and the completion of the Capability Manager's role as customer for the equipment as currently defined.

### **In-Service Date**

The date on which the capability is available to the relevant Commander-in-Chief (CinC) is possibly the most significant milestone in the equipment's life. At this point effective support to the front line must be available, and sustainable, as identified and agreed in the equipment support plan.

The appropriate CinC now becomes the IPT's customer for availability and activity levels for the equipment. It should be noted that this customer activity is different from that of the Capability Manager; the latter has to define the requirement and accept the details of the form the capability is taking. Once in service the capability is not only defined but in being, apart from any upgrades or incremental acquisition that the capability manager still requires.

IPT control transfers to the Defence Logistics Organisation (DLO) as soon as development, technical risk-reduction and acceptance into service are complete. This point will vary depending on the type of equipment and the number of units being produced. For example, for a project involving the production of a large number of units (e.g. 500 missiles) it would be entirely feasible to transfer the project to the DLO once a small number have been successfully

produced. However, in the development of a new class of submarine, with production of only three units, transfer will not occur until the last unit had been manufactured and completed in-service acceptance trials. To manage this variability, the point of transfer between the DPA and the CDL will be agreed by the MOD central staffs and the Single Service at the beginning of the Demonstration phase and will then be visible from the earliest stages within the Through-Life Management Plan (TLMP).

### **In-Service**

Equipment support management planning will have been carried out by the IPT and transfers with it as the IPT transfers into the CDL organisation. The designated equipment support branch, which was part of the IPT from the initial concept phase, becomes the IPT lead. The size of an IPT is considerably smaller by this stage than at the peak of procurement activity. A number of equipments may be routinely managed in a group. The initial transfer will be as an IPT, typically led at one-star level for a large project, which will report to the senior level of equipment support management; continuity of management, expertise and personnel will be at a premium for this transfer.

Subsequently IPT activity may reduce, subject to any upgrade activity and the size and responsibility will reduce correspondingly; for certain equipment the CDL may rationalise the smaller team into an existing equipment support management grouping.

The existing IPT will also be responsible for incremental technology acquisition, minor upgrades, and refits according to the project's TLMP and will require additional project management resources with the Defence Procurement Agency (DPA) or elsewhere, as required. For major modifications that significantly change the capability of the equipment,

a parallel IPT with overlapping membership and led by the DPA will be formed for the Concept and Assessment phases. Once a firm decision to proceed has been taken at the end of the Assessment phase, this IPT should be formally integrated into the original IPT.

### **Disposal**

The IPT will be responsible for drawing up and carrying out plans for the disposal phase. Disposal needs to be by the most efficient and effective means and will comply fully with national and international safety and environmental legislation. Disposal may mean onward sale, recycling or destruction of all or part of an equipment.

## Chapter 6

# THE APPROVALS PROCESS

### General

There are two approval points. There is the Initial Gate between the Concept and Assessment phases, and the Main Gate at the end of the Assessment phase (see Figure 7 on page 3-31). The responsibility for preparing approval submissions rests with the Capability Manager (customer) and the IPT team leader (supplier). The requirement and technical scrutineers, while maintaining their independence, are attached to the IPT team at key stages and maintain sufficiently close contact at other times to enable their queries to be raised and resolved in early project phases, rather than in the preparation for Main Gate.

The Capability Manager (for the Central Customer) and the IPT Leader (for the current and future suppliers, Chief of Defence Procurement (CDP) and Chief of Defence Logistics (CDL)) jointly produce a Business Case for approval. Their proposals are subjected to independent requirement and technical scrutiny. The Requirement and Technical Scrutineers (who have delegated responsibility from 2nd PUS and Chief Scientific Adviser (CSA) respectively) review the Business Case to satisfy the following questions:

- Is there an equipment capability need and is it being satisfied by a cost-effective and affordable investment?
- Is this proposal the best way of ensuring that the most cost-effective, whole-life solution will be properly procured and supported in-service?
- At the Initial Gate, have the proposals identified a full range of options, the scope for potential trade-offs, and the necessary risk reduction activities?
- At the Main Gate, has the best option been selected on the basis of cost-effectiveness analysis? Have the whole-life costs, the time and the performance trade-offs been optimised, and has risk been reduced in order to proceed within much narrower parameters?
- Have all the controls and constraints of policy, doctrine, defence resources, industrial issues, etc. been reflected in the plans?

The Business Case format means that the written approval documents required to establish a satisfactory audit trail are quick to produce and easy to gain agreement to at working level

A Business Case has three parts. The first two parts, together representing the case for taking the project further, are a customer focus where the Capability Manager takes the lead, and a supplier focus where the IPT leader takes the lead. For an Initial Gate submission, it might be expected that the customer focus is the more significant part, with the opposite being true at the Main Gate. The third part of the Case is an independent review of the project written by the scrutineers, examining the soundness, cost-effectiveness and affordability of what is being proposed.

## Chapter 7

# SMART REQUIREMENTS

### Introduction

In conjunction with the implementation of the Smart Procurement Initiative (SPI), the MOD is adopting a new method of capturing, engineering and managing requirements based on the principles of System Engineering i.e. an integrated and holistic approach. It is called Smart Requirements. The key objectives are to introduce a through-life, evolutionary requirements process, which will integrate all stakeholders of requirements and facilitate the delivery and sustainment of affordable and effective Defence systems. The staffs that deal with requirements are the CMs and their CWGs.

The key stakeholders, however, are still the Operational Requirements (OR) staffs in each particular Capability area. SPI has involved a major change in the process of defining requirements and seeks to ensure a consistent approach across projects by using a Smart Requirements model.

### Context

The pre-1999 procurement process tended to be solution focused, with early attention paid to the characteristics of the equipment to be procured. Many procurements proceeded purely on the basis of an assumed solution, resulting in a concentration on equipment performance rather than the actual needs of the user. Smart Requirements moves the focus to the needs of the users by defining "what the users of a particular future system will need" to include the requirement for whole systems through-life, rather than just initial procurement.

The intention is to define user requirements for a capability, e.g., air defence, rather than a system, and to allocate those requirements to system options identified by Capability Working Groups (CWGs) and developed by Integrated Project Teams (IPTs), under the direction of Capability Managers. A through-life "system of systems" approach will be followed, and the capabilities of existing systems will be improved in relation to changing user demands.

### Change of Culture

Smart Requirements has involved a change of culture. Instead of writing requirements in descriptive prose and in lengthy documents, the requirements are "atomised" or broken down into their essential constituent parts, to produce a set of user or systems requirements. For example an "atomised" requirement document seeks to list requirements as defined attributes, such as "Locate targets approaching at 50 feet at 250 miles distance."

### Overview

The key features of Smart Requirements, are:

- A complete and consistent Requirement is defined but is split into User and System Requirements Documents (URD and SRD) reflecting user needs in the former and refining requirements on the system to fulfil those needs in the latter.
- The URD is updated as necessary throughout the life of the system to reflect both evolving user needs and changing assumptions.

However, the URD will be baselined as necessary in order to allow project approval to take place. In particular, a baselined version of the URD, known as the Higher Level-URD (HL-URD) will form the Statement of Mission Needs, which will allow the development of equipment options at Initial Gate Approval.

- The SRD will be developed up to second approval stage, Main Gate, where it will be baselined for approval. Thereafter, it will be updated only as a result of trade-off decisions agreed between the Customer and the IPT leader, or later when required as the basis for in-service upgrades.
- At Initial or Main Gate approval, the user and system requirement can be presented in an appropriate depth and scope from the under-

lying information base in a suitable format. Such documentation would be in the nature of a “snapshot” of the instantaneous state of the overall project requirement and would be uniquely defined and configured.

- Each user or system requirement is specified in terms of a single, unique and unambiguous statement or “atomised” requirement. User requirements include a statement of how, in general terms, the requirement will be verified. Each system requirement also includes defined acceptance criteria
- The linkage between “atomised” user and system requirements has to be maintained by the IPT. System requirements are used as the basis of the contract with the supplier, and the supplier and the IPT must maintain the

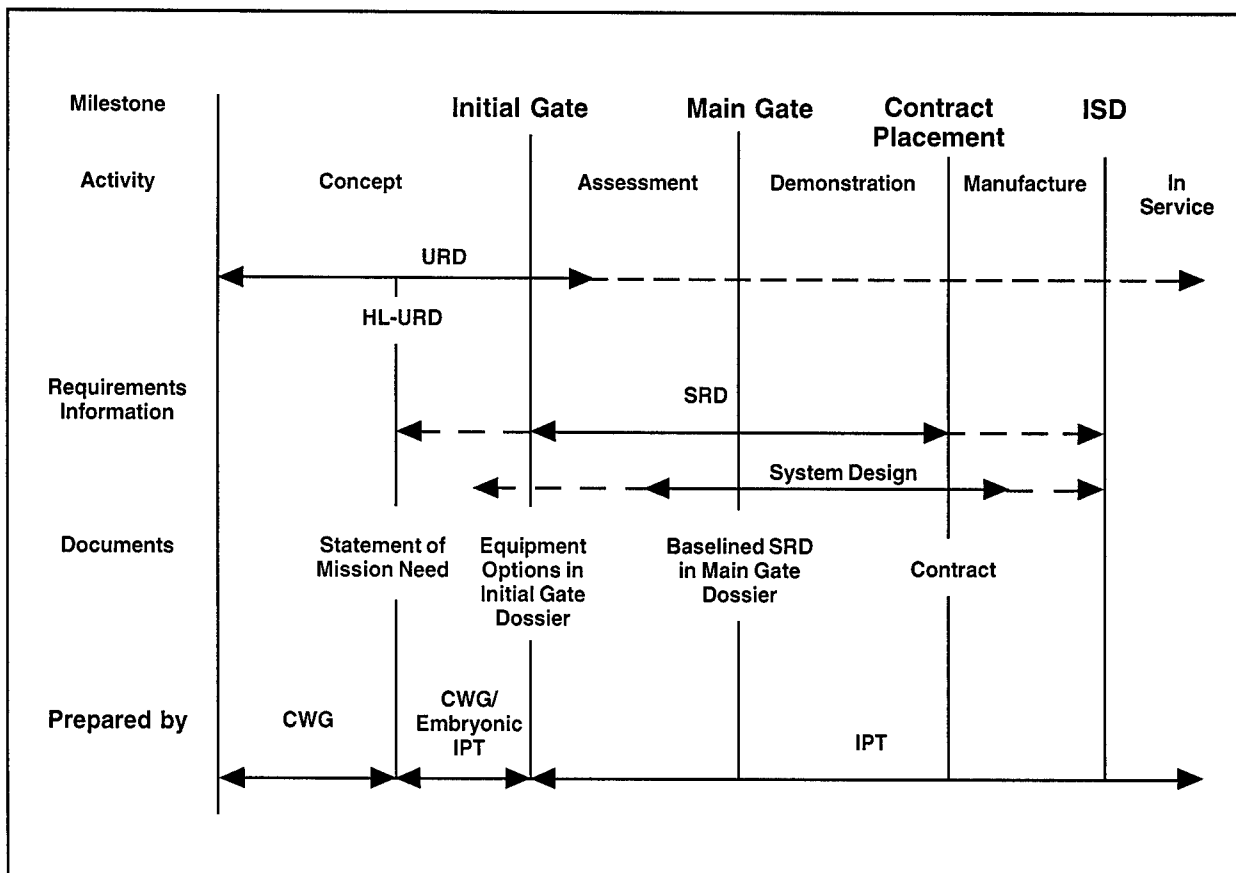


Figure 7. Relationship to Acquisition Phases and Approvals

linkage between the system design. This allows the impact of changes in the user requirement to be traced to the affected system requirements and system design, and to enable trade-offs in system requirements and system design to be traced back to user requirements. Linkages within the URD and SRD also have to be identified, in order that interactions can be monitored.

### Relationship to the Acquisition Process

Figure 7 shows how the URD (including the baselined HL-URD) and SRD fit into the acquisition phases and approval gates and how the production of user and system requirements maps onto the acquisition phases.

Some System Design work may take place at an early stage, based upon the HL-URD, in order that equipment options can be identified and costed for initial Gate Approval. After Main Gate, a potential contractor will bid against the SRD, and the SRD will form the basis of the contract. The prime contractor designs the system and, in conjunction with the IPT, maintains the audit trail back to the SRD and URD. The final product is accepted against the criteria

specified in the SRD. The URD is maintained after the equipment enters service to allow the performance of the system and potential upgrades to be assessed against the evolving user requirement.

### Approvals

The approvals process must interact with Smart Requirements. Initial and Main Gate approvals will be supported by baselines of the URD and SRD which will be submitted as part of the Business Case for the project.

## SUPPORT FOR OTHER EXTERNAL PROCESSES

### General

The Requirement database will support many other external processes: system design, contracting, acceptance, operational evaluation, and others as shown at Figure 8. To ensure a consistent approach, these outputs should be provided from the URD and SRD, following the Continuous Acquisition and Logistic Support (CALs) philosophy of "enter data once, use many times," from a requirements database.

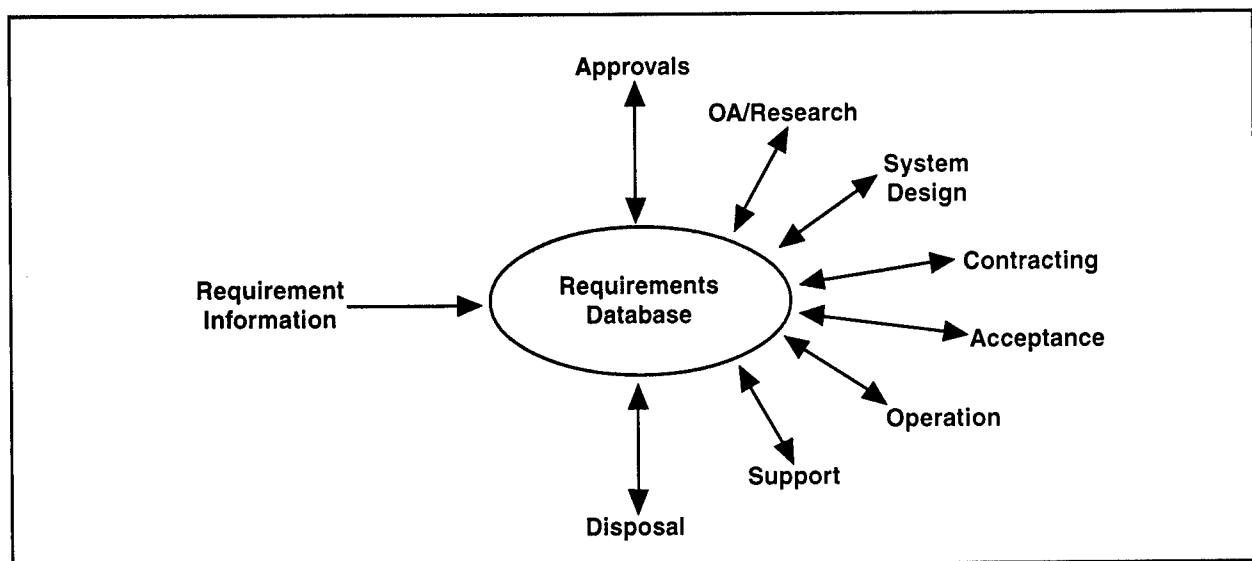


Figure 8. Support for External Processes



## Contract

By Main Gate, the Requirement is fully defined and verified, and able to form the basis for contracting for full system development and production. By this stage the Requirement must include measurable and achievable acceptance criteria against all contracted system requirements. The complete Requirement should form part of the ITT. This allows suppliers to appreciate the context of the requirements and to propose trade-offs. Once agreed, the SRD will be baselined for use as a contractual document and this version not amended further until subsequent implementation phases or system upgrade (though a live version of the Requirement is likely to continue to be amended to reflect changes).

## Integration & Acceptance

Finally as shown by Figure 9, the delivered system will be accepted against the SRD. Acceptance is hierarchical and many of the tests

leading to acceptance may be undertaken at levels beneath the system requirements. Integration into the operational environment and acceptance into service will be conducted against the URD and associated verification criteria. Where it is not possible on the grounds of cost-effectiveness to test every requirement, key requirements and acceptance criteria are identified.

## ORGANIZATION

The Capability Working Group (CWG) provides the forum for requirements capture, review, conflict resolution and achieving a common understanding across stakeholders.

### Requirement Ownership, Change Authority and Management

The CM owns both the URD and the SRD. However, ownership of the latter will be implemented through the Requirements Manager in the IPT.

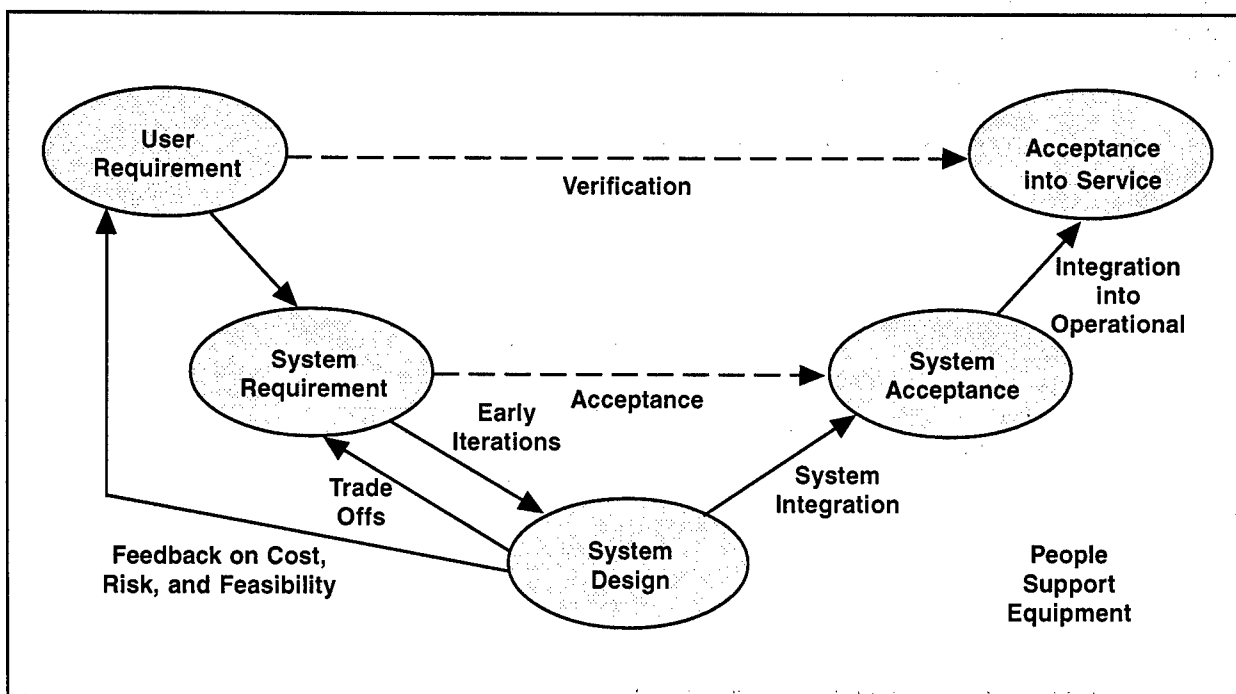


Figure 9. System Design, Contract and Acceptance

The CM's primary responsibility is to represent user needs and he therefore focuses on this element of the requirement. Management of the requirement information can be conducted within the IPT, or contracted out to DERA or industry, but ownership and change authority still rests with the Capability Manager.

## REQUIREMENT INFORMATION

### User Requirement Document

The URD consists of a general description containing background information followed by specific capabilities and constraints.

The URD will be produced and maintained by the CM organisation with reference to the CWG as required. Steps specific to the User

Requirement are shown in Figure 10, although it is iterative and not strictly sequential. The SRD is stated in a series of uniquely numbered, "atomised" text statements with attributes. Requirements are stated in plain text for precision and to ensure that they can be understood.

### Context Documents

On occasions, there is need to place requirements into context in order to aid understanding of them by industry and to support the scrutiny and audit process. Details such as mission profile, operating requirements, quantitative support factors, a description of the equipment being replaced (if any) and the existing support available for the new system may be required. This information is provided in the form of Context Documents.

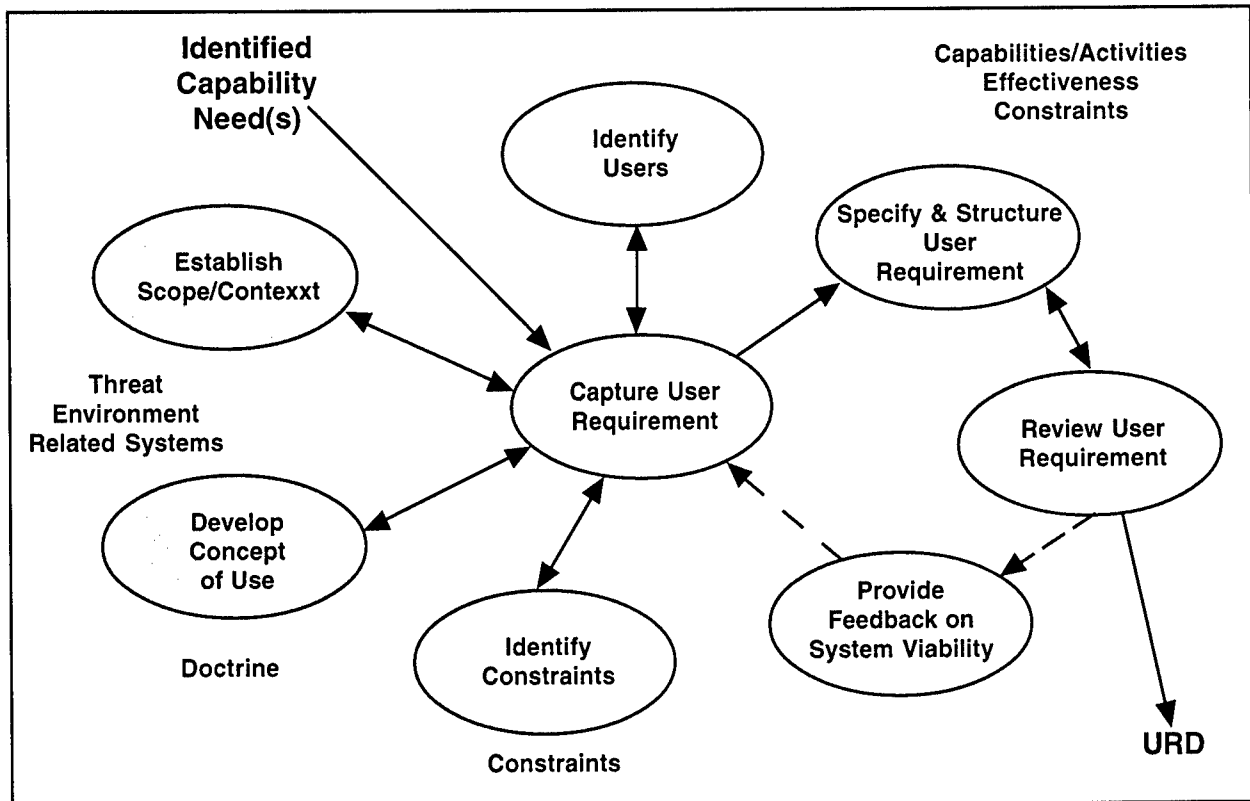


Figure 10. Engineering the User Requirement

## Chapter 8

# THE INTEGRATED PROJECT TEAM (IPT)

### General

The Strategic Defence Review<sup>5</sup> studies identified clearly the need to move from a functionally based management and reporting structure to a project based organisation based on Integrated Project Teams. This project based organisation is founded on IPTs, bringing together all stakeholders and involving Industry (except during competition phases) under a team leader able to balance trade-offs between performance, cost and time within boundaries set by the approving authority. A second major change identified was the need for a clearly defined customer/supplier relationship. Together, these changes allow IPTs to deliver consistency and continuity throughout the project life cycle, and ensure close and effective involvement of all major stakeholders in key decisions.

The key objective of moving from a functional structure to a project based structure is achieved by bringing core members of the IPT under the line management of the IPT Leader. Functional links to policy setting authorities outside the IPT remain, and members draw advice from these authorities, but the Team Leader alone is **answerable** to the Customer for the provision of equipment capability at an agreed cost and performance and delivered on time. Furthermore, the Team Leader is **accountable** to the head of the parent organisation for the propriety of the team's actions and for meeting other Accounting Officer requirements. This is a major change for UK procurement practice and it is

worth emphasising the exact interpretation of the terms answerable and accountable. They are defined as follows:

- **Answerable:** Responsibility to the customer for meeting agreed cost and performance targets and milestones within agreed expenditure resources (as set by the approvals authority) through the provision of equipment acquisition and support functions.
- **Accountable:** Responsibility to the line manager (in the DPA) for propriety and professionalism, efficiency and effectiveness, in the delivery of these functions.

The astute reader will therefore realise that the IPTL has two masters!

### Key Features

There are several key features of the IPTs. Core functions such as project management, commercial management, finance, contracts and logistics, are included in the IPTs in order to ensure an integrated approach at all times. There is only one project team, which starts work as an Embryo Integrated Project Team (EIPT) in the concept phase and which will remain responsible for its project and move from the DPA to CDL with the project.<sup>6</sup> Team leaders will have total accountability and are expected to serve with projects for four to five years or longer to establish continuity.

## **How the IPT Functions**

As a result of SPI, the MOD central staffs assume a more clearly defined role as the “customer” for the defence equipment programme before such equipment enters service. Equipment capabilities are “supplied” by integrated project teams, which operate under procedures and managerial oversight supplied by the DPA until the equipment enters service.

### **IPT Leader**

The Integrated Project Team Leader (IPTL) is expected to have strong leadership and management skills and may be appointed from any of the core membership areas. The appointment will be made sufficiently early to allow the IPTL and his EIPT to be fully engaged in drawing up the estimates and targets to be set or approved at any stage so that he or she can then be answerable and accountable for achieving them. The Customer/Supplier relationship (see Chapter 10) is a key feature of the acquisition process and there must be a high degree of interaction with the Capability Manager through the life of the project. The IPTL will normally be selected by the line management area where the IPT lies and the customer, with other senior stakeholders being consulted as appropriate. Selection considerations will include the nature and particular phase of the project. Continuity and stability of leadership (and membership) of the IPT, particularly across approval gates and key phase changes, will be critical to success. Leaders of IPTs are likely to be competitively selected from a pool of candidates from inside and even occasionally outside MOD.

### **Establishment of an IPT**

Individual IPTs are formed during the Concept phase to pursue a specific solution to a requirement. One of the key functions of IPT during this phase is to work with the Customer

organisation to determine the strategy for, and outputs of, the subsequent Assessment phase and the resources that will be required. This enables estimates of total projected equipment through-life costs to be put forward for “Initial Gate” approval. Operating costs will form a vital component of this submission so the Team Leader will need to develop a clear plan of how the team will be made up and how inputs from the various members will vary over the life of the equipment and agree this with the customer and other key stakeholders.

The IPT Leader will consider the need for collocating the team, as many of the members will be located in different parts of the country and headquarters. Generally, to ensure the close communication essential for effective team working, the IPTL seeks to bring the core members together. However, where elements of the team need to be located at production or evaluation sites, or at times of transfer into service, geographical separation may be necessary; special communication systems are then provided.

### **Membership of an IPT**

The membership of an IPT will be assembled to bring core specialist knowledge and expertise including:

- Requirements management,
- User knowledge,
- Project Programme Management,
- Project Engineering and Technological Expertise,
- Equipment Support Management,
- Commercial Management,

- Finance Management including Secretariat skills, and
- Industrial (in the role of supplier – according to project stage).
- DCDS(S) scientific staff, particularly in support of operational analysis (OA),
- Specialist Procurement Services, such as safety, reliability and maintainability and quality specialists, and

Each of these core functions will not necessarily be provided on a full-time basis, it depends on the needs and size of the IPT. The relative contributions needed in each area will vary during differing phases of acquisition and are tailored according to the type of procurement involved. For example, an incremental enhancement programme will involve concurrent application of procurement and in-service management skills.

Industry is a key stakeholder and provides core membership of the IPT. Arrangements will vary through the equipment cycle. Clearly, commercial confidentiality and impartiality needs to be fully respected and demonstrated at all times. More detail is covered in Chapter 9 – The Role of Industry. DERA also provides significant inputs in the research, assessment, testing and project support areas not usually as member of the IPT but tasked by it to supply specific inputs. The MOD's research programme is a key contributor to the equipment acquisition process, informing the Capability Manager and the IPT of the availability and practicality of specific technologies and research programmes. Facilitating technology pull-through from the Applied Research Programme will be a critical task for the IPT during early phases or incremental enhancement, and input from those staff managing the ARP is essential to achieve this. For example the application of Night Vision Goggle technology into the aircraft cockpit is such a case.

The IPT also needs to draw on more specialist subject matter expertise, either through team membership, perhaps part-time, or as a service. This “associate” membership may therefore include:

- The Service user unit, training unit and trials units, and any in-service specialists such as transport units.

Attached to the IPT on a part time basis, but reporting separately, will be technical (the Chief Scientific Adviser's Scientific staff) and financial scrutineers, providing oversight at IPT level. The scrutineers role is twofold. First, it is to support the project manager in assessing and managing technical risks, and in preparing documentation and analysis for the EAC. Second, it is to provide an additional level of independent oversight which includes alerting the team leader and, with the team leader, the approving authorities to any breach or potential breach of approval.

### **The Scope of the IPT**

IPTs will be grouped in a variety of ways. In some cases it will be by equipment capability, such as a warship with all its systems, or an aircraft type, or by industrial equipment grouping, such as radar or communication equipment. The grouping of small equipment requirements into a single and logically structured IPT is currently presenting the MOD with its greatest challenge. Nevertheless the IPT should ideally have one Capability Manager as the customer for its work.

### **In Service Date (ISD)**

At the ISD date the transfer of the IPT from DPA to the Defence Logistics Organisation (DLO) will occur. ISD is not always well defined and the IPT needs to agree a clear definition with the customer for each project.

## Chapter 9

# THE ROLE OF INDUSTRY

### General

Under SPI there is a fundamental change in how relationships between MOD and Industry are conducted during the equipment acquisition cycle. The key is a change in the openness and interactiveness with which day-to-day dealings are conducted, moving away from the “arms length” approach introduced in the mid 1980s towards joint methods of working, symbolised through Industry’s involvement as members of the IPT. While some of the changes in SPI can be seen as an evolution of the previous practices, the relationship with Industry requires a major culture change on both sides which it remains to be seen whether it can be delivered. It poses a special challenge for the project team since new ways of working are needed, with trust and openness on both sides and the commitment to work for the best interests of each other, but within the constraints of government funding.

The Government has continued to emphasise the need for “partnership without cosiness.” It has drawn attention to three common interests of the MOD and Industry, in competitiveness to meet the following:

- Military threats, particularly those new weapons that British forces could face when deploying into the new scenarios envisaged by the change in defence policy from the SDR,
- The dissatisfaction of the taxpayer and Treasury with cost over-runs and poor value for money,

- The need for UK products to be competitive in world markets.

Of course at the same time there is a continued emphasis on cost reduction, but now accompanied by a readiness to allow Industry an appropriate share of the benefits from the process.

The key elements therefore in the relationship of industry to the acquisition cycle are:

- To involve Industry from the earliest phases of projects, actively encouraging their participation in the trade-offs between time, performance and whole-life costs that are the central activity of the IPT’s role up to the “Main Gate,” either in its own right or supporting the central customer in the concept phase. Also encouraging Industry to come forward with innovative approaches which will save costs in later phases and possibly provide wider benefits such as improved export potential.
- To improve Industry’s understanding of MOD’s needs and constraints and to reduce the number of iterations required to reach a satisfactory proposal from Industry. Similarly to improve MOD’s understanding of the capabilities of Industry and how the procurement process might stimulate improvements in competitiveness in the supply chain.
- To provide other benefits such as reducing risk, introducing teamwork between industry and MOD, more flexibility in approach and in contracting and to ensure value for money.

- To keep in mind the Government's commitment to achieving European industrial integration, while not creating barriers to defence trade and co-operation with the USA.
- To try and speed up the overall procurement cycle time, particularly decision-making, recognising there is ultimately a cost to MOD when companies operate inefficiently while MOD moves through decision phases.
- To continue to recognise Industry's intellectual property and to encourage the generation of new ideas that will assist MOD
- To provide more efficient procedures for collaborative projects.

### **Involvement**

Industry can be involved in an IPT in essentially two ways:

- participation by individuals from potential suppliers (whether primes or sub-contractors), and
- temporary attachment or other involvement of an individual as part of the team, possibly even the team leader, but who is not a potential supplier to the particular project.

The intended style of operation is to be open and interactive, aimed at Industry helping MOD to acquire the optimum performance, whole-life cost and time balance, taking account of technology, know-how and manufacturing processes in prospect within Industry. A Code of Conduct can be drawn up between MOD and Industry summarising the ways in which they will work together to assist the process and help foster a working environment of real co-operation. Such codes of conduct, or "charters," are usually non-binding in the legal sense, but they do provide a useful reference framework for the parties to operate towards one another. To encourage co-operation further down the supply chain, prime contractors are expected to enter into similar arrangements with their principal suppliers. Some situations, however, will require greater formality and the embodiment of partnership arrangements in legally binding agreements. Typically this will be where the parties wish to embody features such as longer-term security of contract, sharing arrangements for efficiency gains/cost reductions and joint management of risk.

## *Chapter 10*

# **CUSTOMER SUPPLIER RELATIONSHIP BETWEEN THE CAPABILITY MANAGER AND THE IPT**

### **General**

One of the central themes identified in the Strategic Defence Review analysis of MOD procurement was the need to achieve greater clarity in internal customer supplier relationships. The successful formulation of a single, central defence customer, the Capability Manager, in MOD headquarters, and the clear definition of the relationship between this central customer and the integrated project team is seen as critical to achieving the full potential of Smart Procurement.

A single MOD Centre customer directs integrated project teams. There are some fundamental principles to this relationship:

- It provides the customer with real control of the acquisition process.
- It aims to ensure that all stakeholders (external as well as internal) are fully and appropriately involved.
- It allows a smooth and seamless progression throughout the project life cycle.

The relationship between the customer (the CM in the Systems Area) and the supplier (the IPTs) is formalised in Customer Supplier Agreements specific to each project and to each phase of the project.

### **Role of Customer in IPTs**

A crucial feature of IPTs is that acquisition staff (Operational Requirements {OR} staff in the “purple” Central Staffs) are included as members of the IPT during Assessment and Demonstration. This is necessary to ensure both continuity of knowledge about the specifics of the capability need and requirement, and the availability of skills within the IPT to develop and deepen the requirement as the project cycle progresses. The role of OR member(s) of the IPT during Assessment and Demonstration is:

- To support the IPT team leader in further developing the initial top level requirements document during Assessment, and in making the necessary performance/cost/time trades as the project develops both in Assessment and Demonstration.
- To provide a working level interface between the IPT and capability area, so that the IPT can access its broader expertise in requirements definition as needed.
- To ensure that the views of the central customer are fully understood within the IPT and that the central customer is kept fully informed of any issues arising as the work of the IPT progresses. This is an informational role only; the basic line of customer/supplier accountability runs from Capability Manager to IPT team leader, and it is for the Capability



Manager to take up any issues directly with the IPT team leader.

- To keep the Capability Manager briefed on the work of the IPT and act as the Capability Managers' desk officers for that project.
- To keep the IPT team leader informed of Concept Developments which may have implications for the project.

The appropriate level of OR membership for any individual IPT depends on its specific circumstances and life-cycle stage, and is agreed between the central customer and the IPT team leader. For larger projects, membership of at least one OR person up to and including Manufacture is desirable. Wherever practical, the OR team member is collocated with the rest of the IPT.

Given the crucial importance of ensuring continuity of knowledge throughout the project life cycle, it is recognised that it is important to ensure that individual OR members of IPTs maintain their involvement for as long as possible, consistent with wider constraints of career moves.

### **Change of Customer**

A significant change occurs at the transition between the Manufacture and In-Service phases. The identity of the customer will change. This means that the relevant Single Service becomes the customer of the IPT, which in itself will have transferred to the Defence Logistic Organisation's (DLOs) control, for all ongoing support activities and for incremental technology acquisitions, minor upgrades and refits according to the project plan. The Capability Manager, however, still acts as the IPT's customer for significant enhancements of capability.

## *Chapter 11*

# INCREMENTAL ACQUISITION

Incremental Acquisition has been accepted as an important feature of the Acquisition Process as a result of SPI. Its objectives are to:

- replace the current MOD acquisition process by one based on acquiring military capability progressively, at lower risk, and with optimisation of trade-offs between military effectiveness, time and whole-life cost.
- cut the time taken for key new technologies to be introduced into the front-line, where needed to secure military advantage and industrial competitiveness.

Incremental Acquisition provides for equipment capability to be upgraded in a planned way, from the initial delivery of a specified minimum acceptable performance (the baseline requirement) to eventual achievement of required performance, thereby:

- reducing the risk inherent in introducing large improvements in capability through a single major technological step.
- allowing systems to be developed and put into service that incorporate evolving technology as it becomes available.
- in the very fast moving technologies, such as software intensive projects, allowing systems to be developed with an open architecture to take maximum advantage of new opportunities; it avoids the need for early commitment to an approach which has often resulted in the delivery of obsolescent equipment.

Whilst Incremental Acquisition should now be considered in formulating the acquisition strategy for all projects, it is particularly beneficial (frequently essential) to the acquisition of Command Information Systems (CIS). The timescale of incremental delivery for CIS is much shorter and the functionality is largely provided by COTS products.

Incremental acquisition, planned from the outset, is quite distinct from the application of Mid-Life Upgrades/Updates (MLUs) to existing equipment. These will continue to be necessary on some equipment and will be dealt with through the normal operation of the new acquisition cycle and arise when it is decided, after examining all available options, that a requirement for additional capability is best satisfied by the upgrading of existing in-service equipment. These activities are planned, approved and conducted as projects in their own right.

The Through-Life Systems Approach to equipment procurement which is central to SPI, recognises that it can be more effective to adopt Incremental Acquisition particularly for rapidly evolving technologies such as software and electronics and for platforms hosting a range of weapons and other systems. Incremental Acquisition is based upon the timely delivery of a baseline requirement followed by planned upgrades to increase capability incrementally through manageable steps, allowing for continuous cost versus benefit evaluation, risk reduction and responsiveness to technology maturation and operational feedback.

The Through-Life Systems Approach also recognises that many future systems should either, be planned for a short replacement cycle or be designed from the outset in a way that will facilitate subsequent upgrading or modification e.g. through modular design, open system architectures and common interface protocols. Therefore even if Incremental Acquisition in its most complete form is not adopted for a project, this aspect needs to be addressed at a very early stage in the project and covered appropriately as the URD and SRD is progressively refined and the project develops its Through Life Management Plan (TLMP).

For some projects, depending upon risk and financial considerations, the acquisition is split into Phases where each Phase may include planned increments within it. The Main Gate approval endorses both acquisition of the baseline capability and the incremental acquisition strategy for the planned subsequent Phase. Authority for increments beyond the baseline requirement are normally delegated by the Approving Authority to the customer and IPT Leader, subject to an overall control on cost and an acceptable, cost-effective, increase in capability at each increment.

As the equipment or system develops through its life cycle, new opportunities or requirements for improvement will occur during the incremental stages. In addition, the connection between the project and relevant ARP work continues after Main Gate in order to ensure early insertion of newly available technologies into the upgrade packages. All of this needs to be assessed in the context of the whole equipment Programme by the Capability Manager, supported if necessary by a Capability Working

Group, and the existing IPT. Only then may a modification to the URD, the SRD and the TLMP be created and approved. This will usually be considered to be an extension of capability and may be approved under delegated powers for the cost concerned. If an existing system is approaching the end of its life cycle, one consideration will be whether to continue to up-grade or move to a new system. This issue will also be dealt with by the Capability Manager but may require the formation of a new IPT.

In an Incremental Acquisition project, it is vital that the perceptions of both the end-user and the supplier are properly managed. The initial standard of equipment to meet the baseline requirement is not in any sense a prototype (unless specifically scheduled as a Technology Demonstrator); it must be robust, supportable and operable. Some, perhaps even most, of the elements of capability will be as demanding as the ultimate build standard. There will be other elements that can and should be delivered quickly utilising currently available technology and updated subsequently. The Capability Manager and the IPT Leader jointly assess the right balance between getting a new technology fielded quickly and achieving normal standards for the "Fightability," reliability and supportability in the baseline equipment.

Incremental Acquisition procedures are still being developed (as at Aug 99) and there are considerable challenges to be addressed particularly during the early phases of Concept and Assessment. For instance the logistic support for different build standards with the right type and standard of spare and in the right quantities, will be very difficult.

## *Chapter 12*

# **SUPPORT MANAGEMENT**

### **Introduction**

The Smart Procurement Initiative (SPI) gives an emphasis to applying effort in the early phases and decisions made on Whole Life Costs (WLC). The 1998 Strategic Defence Review, with its implementation of SPI and the creation of a tri-Service Chief of Defence Logistics, reinforced MOD's commitment to the application of Integrated Logistic Support (ILS) as the Business Process for achieving reductions in Whole Life Costs (WLC).

The commitment that WLC is used as the benchmark for costing a new programme ensures that key investment decisions are based on a total cost of ownership. To reduce the risk associated with those key decisions, improved definition and accuracy of the predicted in-service support costs are needed, drawing on better historic data. The project WLC and procurement timescales must be fixed at the Main Gate approval. Thereafter, any increases identified in predicted WLC during Demonstration, risks a reduction in capability. Similarly, an underestimation, and subsequent under-funding of in-service support costs, leads to a reduction in activity and thereby military capability. Consequently, through-life support costs need to be predicted as accurately as possible throughout the programme requiring emphasis on ILS in the early phases, to provide initial estimates. As the programme develops, the Logistic Support Analysis (LSA) will provide more accurate data but must be updated progressively as better data becomes available.

Defence Standard 00-60, which the IPT is required to tailor to suit the equipment programme, prescribes the application of ILS within the MOD. The application of CALS techniques is expected to benefit the support management activity of CDL in particular.

### **SUPPORT ACTIVITY IN SPECIFIC PHASES**

#### **Concept Phase**

In the Concept phase only indicative costs and support options can be identified. Prior to forming an IPT, CDL will contribute to Concept work to ensure that no opportunities to consider novel support or equipment options are overlooked whilst also ensuring that decisions at this early stage make sensible use of the early WLC estimates.

#### **Initial Gate**

At the Initial Gate, the approving authority, which includes CDL, will note the preliminary through-life costing although at this stage accurate prediction of support costs will be difficult.

#### **Assessment**

At the end of the Assessment phase, ILS work will have contributed to operational performance trade-offs to determine the optimal balance between (through life) cost, time and performance. Through-life costs will have been established and an informed judgement on the solution, together with its support package, can be

made. Affordability of a project will have been determined by the availability of funding to meet the through life support costs.

### **Main Gate**

At Main Gate approval, a firm funding line and through-life costs as well as firm supportability and in-service dates will be presented.

### **Demonstration**

During the Demonstration phase ILS work contributes significantly to the decision on the preferred contractor, as where competitors' solutions prove to be equal in performance, support aspects might then be the deciding factor. At the entry to Demonstration, project timescales and costs are fixed, and subsequently capability is traded. Maintenance policies will emerge, remaining support risk will be managed, and through-life costs will be being refined.

### **Manufacture**

During the Manufacture phase, the first elements of the support package, including training, are delivered. Much of the detail of the ILS programme is finalised during this phase. The success of the procurement and support strategy in relation to expected in-service cost-effectiveness, as well as confidence in the contractor will become clear. Opportunities for closer partnering arrangements with the contractor during in-service support (e.g. Contractor Logistic Support {CLS} arrangements) also become apparent.

### **In-Service Date**

During manufacture, when the majority of the system is still to be delivered, line management of the IPT switches to CDL who provides all subsequent support.

## *Chapter 13*

# PERSONNEL

The acquisition process changes brought about in 1998, recognised the need for major changes in the personnel and training areas. In particular there needed to be considerable investment in people and in their training in order to deliver the new acquisition process. The Integrated Project Team Leader's direct line responsibilities and accountability were going to increase and therefore much improved methods of training in the right skills and processes were needed for them and their team members. In addition there were organisational changes and the management of change to be dealt with to deliver the benefits of SPI.

### **Key Elements**

The key elements in the acquisition process for personnel and training are:

- An Acquisition Management stream is being introduced and developed with long-term sustainability, career paths and an enduring culture of change. As at mid-99 it is unclear how many personnel this will involve and what the career structure will be.
- An Acquisition Capability Framework (i.e. competence set) has been developed and will be introduced.
- IPT Leaders are selected through an approved competitive recruitment, selection and evaluation process.
- The IPT Leader is responsible, taking into account the customer's obligations and instructions, for constructing the IPT and then instituting subsequent changes to its composition to meet the developing needs of the project.
- The IPT Leader is responsible for setting the levels of performance related to rewards for his team within his delegated powers.
- A wide variety of new training opportunities are being made available. The IPT Leader is responsible for ensuring that the IPT as a whole is trained and motivated so that its aims and objectives may be achieved.
- An Acquisition Personnel, Training and Development team is being set up centrally to provide Human Resources, Training and Development support to IPT Leaders.
- Throughout all training there will be a presumption of jointery between the Civil Service, Military and Industry and all training will be competence-based.

## Chapter 14

# BRITISH DEFENSE INDUSTRY

The capabilities of Britain's defense industry can be traced back to the mobilization of the society as a whole for war during the 1939-1945 period. While the UK was a major recipient of U. S. military aid during the Second World War, it also was a major producer of its own aircraft, ships, armored vehicles and munitions. After 1946 the priority became to rebuild civil industry, but the outbreak of the Korean War prompted a further revival of British military development and production sustained in part by American funding. Since then, Britain has maintained a broad base of military industrial capability, including in the nuclear propulsion and weapons areas. Britain has not sought to develop its own ballistic missiles since the late 1950s, but has otherwise sought to keep an across-the-board defense industrial capability. At the end of the Cold War the Government could still claim that Britain imported only about 10 percent of its defense equipment needs. A further 15 percent was procured through collaborative development and production programs such as the Tornado aircraft, with 75 percent coming from indigenous sources.

Since the Conservative regime that came to power in 1979, British governments have believed that the most cost-effective way of sustaining British defense industry has been to place it in private hands and to subject it to competitive forces. Thus previously state-owned firms such as British Aerospace (BAe) and Rolls Royce were launched on to the stock market in the first half of the 1980s. British Shipbuilders was broken up into a series of independent yards, some of which were bought under management buy-outs. The main munitions and guns manufacturer, Royal Ordnance, could not be sold to

the public and was auctioned to existing companies. BAe came up with the winning bid in 1987 and slowly integrated RO into its overall business. The surviving naval dockyards, at Devonport and Rosyth, were initially placed under private management with the government maintaining ownership but in the 1990s both were fully sold off. The only significant Government-owned defense plants in 1999 were the Atomic Weapons Establishments at Burghfield and Aldermaston, with both being managed under contract by a private firm, Hunting Engineering. Britain's major defense electronics company emerged as the General Electronic Company (GEC) with a complex structure of defense subsidiaries.

From 1983, under the leadership of the then Secretary of State Michael Heseltine, Britain emphasized competitive tendering as the central means of awarding contracts. The Government argued that competitive pressures stimulated British firms to become more efficient and competitive on world markets. Certainly the UK tended to hit its export target of orders worth \$8 million a year during the 1990s. Also, undeniable was that individual companies closed plants and restructured workforces in an effort to survive in an era of falling British defense equipment spending. From the late 1980s around 200,000 jobs were cut from British defense industry, leaving about 400,000.

The privatization moves of the government initially brought more defense firms into play but, once the stress on competitive tendering proceeded, the number of British firms in most sectors began to decrease. Even by the 1980s

after earlier consolidation Britain had one combat aircraft company (BAe) and one jet engine firm (Rolls Royce). One shipyard, VSEL at Barrow, emerged as expert in building nuclear submarines. When RO was privatized, it moved out of main battle tank production leaving Vickers as the UK's sole firm for that platform. Government efforts to stimulate Astra as a competitor for RO in ammunition production failed, not least because the government lacked the volume of business to sustain two companies. From the late 1980s the pace of consolidation quickened as firms either went out of business or merged with others. GEC gained a firm grip on shipbuilding by buying the Yarrow and VSEL yards while Harland & Wolf in Belfast, Cammell Laird on Merseyside and Swan Hunter in the northeast did not survive as warship builders. Only Vosper Thornycroft, which enjoyed success as a builder of counter-mine vessels and other smaller naval craft, prevented complete GEC naval domination. In electronics, by the end of the 1990s the number of suppliers had dropped significantly. Ferranti had gone into liquidation early in the decade as a result of a poor investment in the U. S.; Plessey was sold to GEC and Siemens, with the latter selling its share to BAe in 1998. Thorn-EMI sold its defense electronics business to Thomson-CSF and in 1999 there were rumors that Racal would sell its defense businesses having failed to win the Astor contract. Of greatest importance, towards the end of 1998 GEC put its defense businesses up for sale with BAe providing the highest and successful bid. Lockheed Martin and Thomson-CSF were also understood to have been interested in buying but would not match the £7.7 billion that BAe was ready to pay. The BAe takeover of GEC's defense interests will be completed during 1999, once UK regulatory authorities give the green light.

Industrial consolidation in the UK meant that the government, still wanting to use competitive tendering, had more often to encourage foreign

firms to bid for contracts. For Britain's emerging requirement for two aircraft carriers, only Thomson-CSF could be induced to bid against the powerful consortium organized by BAe-GEC.

In the restructuring, the British Government adopted a relatively relaxed attitude with regard to foreign firms buying into UK defense industry. By 1999 Thomson-CSF was the owner of the simulator companies Link Miles and Redifusion, and had a large minority share in Pilkington Optonics. Bombardier of Canada owned Shorts that in turn had joint venture in missiles with Thomson-CSF. Messier-Dowty of France, part of the state-owned SNECMA group, had bought Dowty's undercarriage business with plants in the UK and Canada. Lockheed Martin and Raytheon owned manufacturing facilities in the UK and were treated as British firms by the Defence Industries Council, the industry's body for dialogue with the government. In the latter part of the 1990s, Lucas, with a significant aerospace business in addition to its main automotive components activities, merged with Varity of the US and in 1999 the American firm TRW bought the Lucas-Varity group.

Foreign direct investment into UK defense businesses was balanced by extensive UK links elsewhere. The major British firms BAe-GEC and Rolls Royce recognized their need for overseas capability and links. Shortly before agreeing to sell its defense businesses to BAe, GEC added to its portfolio of US investments by paying over \$800 million for Tracor. Earlier in the 1990s Rolls Royce bought Alison in the US. In Europe, BAe had bought Heckler and Koch in Germany, but joint ventures were more common than outright ownership. Matra-BAe Dynamic (missiles), Matra-Marconi Space, and Thomson-Marconi Sonars were all instances of joint ventures with British participation. In the late 1990s two important links were built with Italy. Westland and Agusta began to establish a joint venture in helicopters reflecting in part their



shared commitment to the EH.101. However, GEC's joint venture in defense missiles, radars and electronics with Alenia of Italy became in need some re-negotiation in the light of the proposed BAe takeover of GEC and the merger in France of Aerospatiale's missile and other businesses with those of Matra. In Sweden in the mid-1990s BAe reinforced its commitment to Saab and the Gripen project by taking a 35 percent share in Saab.

Looking forward, the 'British' character of defense businesses on UK territory is likely to decline further. More businesses in Britain are likely to have continental European or North American owners and British-owned businesses will have more development and manufacturing facilities elsewhere in NATO and in the wider world. This will raise some delicate issues should the UK's Smart Procurement Initiative evolve to the point where the government seeks to build closer relationships with its suppliers at all stages of the acquisition cycle. But the move to transnational defense companies presents a series of challenges, not just to Britain but to European, even NATO governments as a whole.

Six governments of Europe, including the UK, are addressing most of the issues involved in working groups arising from the Letter of Intent of July 1998 on Measures to Facilitate the Restructuring of European Defence Industry. Many surviving British defense businesses are in a strong financial and technological position to contribute to the emergence of a more European defense industrial base. BAe and Rolls Royce, however, are prominent among those that are also keen to maintain and improve their access to the UK market. Other British-based defense firms may appear as tempting purchases for American firms seeking to build a manufacturing and even research presence in Europe.

The six signatories of the Letter of Intent are France, Germany, Italy, Spain, Sweden and the UK. The six areas where they recognize a need for 'common solutions' are security of supply, export procedures, security of information, research and technology, treatment of technical information (intellectual property rights) and the harmonization of military requirements.

## *Chapter 15*

# FUTURE TRENDS

It cannot be emphasised too strongly that the changes brought about in 1998/99 by the Smart Procurement Initiative are major changes in both process and organisation. As at mid-99 much of the detailed procedures have still to be developed. Whilst some changes, such as forming IPTs and changing the requirement process have been instituted quickly, others, such as career structures and the transfer of some civil servants in IPTs between DPA and the DLO, are causing much more difficulty. Organisational changes are another major challenge particularly in the MOD Central Staffs area with the Capability Managers and associated programmes, plans and finance staffs. The formation of the tri-Service DLO is yet another extensive change affecting the whole procurement process. In both these areas the organisation and the procedures are far from clear and at the same time the MOD and Services are making major changes to the whole budget, finance and LTC process. Add to this the change in status of DERA and the DPA to different forms of agency status with the remit to act in a commercial or business orientated way and one can see that there is much scope for continued change in the next five years. The cultural change required within the MOD, the Services and from industry cannot be underestimated. It will take some time to establish fully

whether the short-term financial gains seen so far, can be turned into sustained improvements and the delivery of defence equipment faster, cheaper and with better performance, without at the same time increasing the risks.

Reduction of formal approval points to two, Initial Gate and Main Gate, may well be seen as an increase in the level of risk from the previous Downey procurement system where there were four or more formal approvals, It will only take a few perceived procurement failures of cost overrun or delayed delivery, for more checks and balances or formal approval gates to be instituted.

As the organisational changes begin to take effect, future trends will see a much closer working relationship between the major organisations, the MOD Central Staffs (the CMs in particular) the DPA, the DLO and the final customer, the CinC. In order to achieve the aim of Smart Procurement—faster, cheaper, better—closer working relationships and therefore organisational mergers may well develop. These may occur naturally or be forced on the organisation as a result of the need to reduce the risk of any procurement failures with its perceived wastage of public funds.

## FURTHER READINGS

Defence Procurement Agency homepage [http://  
www.mod.uk/dpa/](http://www.mod.uk/dpa/)

Defence Evaluation and Research Agency [http://  
www.dra.hmg.gb/html/homepage.htm](http://www.dra.hmg.gb/html/homepage.htm)

## ENDNOTES

1. PAO can also refer to the Principal Accounting Officer, of which there is only one, the PUS.
2. In the UK it is more usual to refer to procurement which incorporates requirement + cost + support.
3. The cycle is a development of the previous Downey Cycle that was mandated after the major review by Downey of projects that had gone wrong.
4. In the UK partnering means a close working relationship rather than a partnership which would have legal liabilities to both partners e.g. responsibilities for the debts of each other.
5. The Government's Strategic Defence Review White Paper 1998 – Supporting Essay 10.
6. Previously, parallel project and support teams existed in the DPA and in CDL's organisation to gradually transfer the equipment support functions as the equipment neared entry to service.

## GLOSSARY

<b>ACDS</b>	Assistant Chief of Defence Staff
<b>AOR</b>	Acquisition Organisation Review
<b>ARP</b>	Applied Research Programme
<b>Atomised</b>	Refers to equipment requirements which are written as single statements
<b>AUS</b>	Assistant Under Secretary
<b>Business Case</b>	The documents which together prove the need for the equipment
<b>CALS</b>	Continuous Acquisition and Logistic Support
<b>CAS</b>	Chief of the Air Staff
<b>CDI</b>	Chief of Defence Intelligence
<b>CDL</b>	Chief of Defence Logistics
<b>CDP</b>	Chief of Defence Procurement
<b>CDP &amp; CE</b>	Chief of Defence Procurement and Chief Executive
<b>CDS</b>	Chief of the Defence Staff
<b>Central Customer</b>	The original sponsor of the equipment or shortfall in capability
<b>CGS</b>	Chief of the General Staff (i.e., head of the Army)
<b>CinC</b>	Commander in Chief
<b>CIS</b>	Command Information Systems
<b>CLS</b>	Contractor Logistic Support
<b>CM</b>	Capability Manager
<b>CNS</b>	Chief of the Naval Staff
<b>COEIA</b>	Combined Operational Effectiveness and Investment Appraisal
<b>COS</b>	Chief of Staff
<b>COTS</b>	Commercial off the Shelf
<b>CRP</b>	Corporate Research Programme
<b>CSA</b>	Chief Scientific Adviser

<b>CWG</b>	Capability Working Group
<b>DCD(C)</b>	Deputy Chief of Defence Staff (Commitments)
<b>DCDP(Operations)</b>	Deputy Chief of Defence Procurement (Operations)
<b>DCDS(Sys)</b>	Deputy Chief of Defence Staff (Systems)
<b>DERA</b>	Defence Evaluation and Research Agency
<b>DESO</b>	Defence Export Services Organisation
<b>DIS</b>	Defence Intelligence Staff
<b>DLO</b>	Defence Logistic Organisation
<b>DPA</b>	Defence Procurement Agency
<b>DUS</b>	Deputy under Secretary
<b>EAC</b>	Equipment Approvals Committee
<b>EIPT</b>	Embryo Integrated Project Team
<b>EP</b>	Equipment Plan
<b>FPMG</b>	Finance Planning and Management Group
<b>HCDC</b>	House of Commons Defence Committee
<b>HL-URD</b>	High level-User Requirement Document
<b>ILS</b>	Integrated Logistic Support
<b>Initial Gate</b>	The first formal project approval point
<b>IPT</b>	Integrated Project Team
<b>IPTL</b>	Integrated Project Team Leader
<b>ISD</b>	In-Service date
<b>LSA</b>	Logistic Support Analysis
<b>LTC</b>	Long Term Costing
<b>Main Gate</b>	The second and major project approval point
<b>MLU</b>	Mid-life Upgrade (or update)
<b>MOD</b>	Ministry of Defence
<b>NAPNOC</b>	No acceptable price, no acceptable contract

<b>NATO</b>	North Atlantic Treaty Organization
<b>OA</b>	Operational Analysis
<b>OR</b>	Operational Requirement
<b>PAO</b>	Principal Accounting Officer. The MOD's single accounting officer.
<b>PAO</b>	Principal Administration Officer. The senior responsible officer for a Command
<b>Peer Group</b>	The grouping of Integrated Project Teams within the DPA
<b>PES</b>	Public Expenditure Survey
<b>PFI</b>	Private Finance Initiative
<b>Prime</b>	The contractor who is in overall charge
<b>PUS</b>	Permanent Under Secretary
<b>SDR</b>	Strategic Defence Review
<b>SoN</b>	Statement of (mission) Need
<b>SPI</b>	Smart Procurement Initiative
<b>SRD</b>	System Requirement Document
<b>STP</b>	Short Term Plan
<b>TLB</b>	Top Level Budget (holder)
<b>TLMP</b>	Through Life Management Plan
<b>URD</b>	User Requirement Document
<b>VCDS</b>	Vice Chief of the Defence Staff
<b>WEAG</b>	Western European Union Armaments Group
<b>WEU</b>	Western European Union
<b>WLC</b>	Whole life costs
<b>2<sup>nd</sup> PUS</b>	The second Permanent Under Secretary





**PART 4**

**THE UNITED STATES**



## Chapter 1

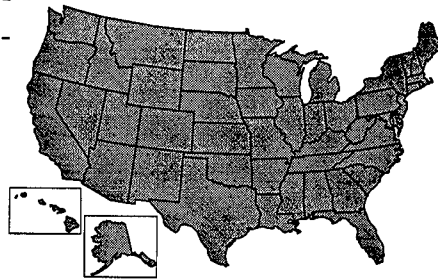
# HISTORY AND TRADITIONS

*“Each jammer created a “strobe,” an opaque wedge shape on the U.S. radar screens, so that they looked like the spokes of a wagon wheel. Since every such spoke was particular to each of the radar transmitters, the controllers were able to compare data, triangulate, and plot the position of the jammers. The Tomcats closed in quickly while the radar-intercept officers in the back seat of each fighter flipped the Phoenix missile seekers to home-on-jam guidance mode. Instead of depending on the aircraft’s own radar for guidance the missiles would seek out the noise transmitted from the badgers.”*

(*Red Storm Rising*, Clancy, page 642.)

It took thousands of years of warfare to move from stones to cannons. It has taken less than 100 years to move from the first airplane used in battle to the technologically sophisticated Tomcats described in Tom Clancy’s *Red Storm Rising*. The last fifty years, from the end of World War II to the present, has seen the development of weapon systems to meet the needs of the warfighters on land, at sea, in the air and beyond. It has consumed billions of dollars, employed millions of people, and led to the development of technological weapons that use sound, bits and bytes, and electrons bouncing around. As weapons have taken on greater complexity, the government’s approach to the development of these systems has evolved its own complexity. In the terminology of the trade—acquisition has become a large, complex, multifaceted business. The 1999 fiscal year budget for the Department of Defense (DoD) is over \$260 billion, of which \$85 billion is for the research, development and production of weapon systems. The 1999 budget represents a 60 percent decrease in the procurement budget since the cold war years of the 1980s. Currently there are 149,000 military and civil servants

involved in this business. There are over 1000 large contractors and small businesses who employ more than two million people to provide the services, equipment and weapon systems needed by the military. How does this system operate?



**THE UNITED STATES**

Who are the players? What management processes have been devised to efficiently produce products and services for the DoD? This chapter is designed to provide an introduction for those new to the business of United States military acquisition.

### **THE GOVERNMENT OF THE UNITED STATES**

“This budget is dead on arrival,” entombed a Senate leader with the submittal of the

Department of Defense budget by President Ronald Reagan in 1982. In most other countries, a budget submitted by the president or prime minister may be discussed or debated, but then it is voted upon and approved with few changes. The United States political system operates differently. In the Fiscal Year 1998 budget, the Office of Management and Budget (OMB) identified a list of 254 programs or projects not requested by the executive branch that were added to the defense budget. The opposite is just as normal where programs are zeroed out of the budget. Unlike the parliamentary systems in which the party in power "runs" the legislature and the governmental agencies, the American presidential system has inherent in its constitution a system of political checks and balances to prevent any one branch of government from gaining too much power. This balance-of-power mechanism is a key differentiator of the American political model. To understand the procurement of weapon systems in the United States' DoD, one must understand not just the workings of the executive branch of government, but the workings of the legislative branch. The following provides an introduction to the framework and workings of the government to aid in understanding the defense acquisition business.

It was more than a decade after the first shot was fired at Concord and Lexington in 1775 before our new democratic form of government was fully developed. From the Declaration of Independence in 1776 through the adoption of the Articles of Confederation in 1779, the ratification of a new Constitution in 1788, and the ultimate creation of a new government in 1789—the nation's leaders grappled with the best way to govern a country. The first set of rules to operate the country were the Articles of Confederation. In protecting the unique interests of each state, the Articles created a weak central government with neither the ability to levy taxes nor to provide for the national defense.

In 1785, delegates assembled from the 13 colonies to "fix" the Articles of Confederation. The result was not a fix, but an entirely new Constitution. Influenced by the ideals of the ancient Roman Republic; the ideas of the philosophers like Rousseau, Montesque, and Locke; and in response to the problems caused by England's attempts to govern the colonies, the Constitutional Convention participants developed a federal system of government. In the words of Thomas Jefferson, "Hear no more of the faith of men but bind them down with the chains of the Constitution." This constitutional "chain" provided for a structural separation of powers among three branches of government—executive, legislative, and judicial. This earliest of written constitutions spelled out the duties and responsibilities of each branch, with each branch serving as a check on the powers of other branches. The constitution also fixed one of the problems of the Articles by providing for strong central government and for the national defense.

### **The President**

Article II of the United States Constitution stipulates that the President is Commander-in-Chief of the armed forces. He also has the dual role of being Head of State and head of the government. As Head of State, the Constitution states, "he shall receive ambassadors and other public ministers." Head of State duties are primarily ceremonial, such as those often captured on television news reports. The image of the military band playing "Hail to the Chief" while the President escorts a world leader to a speaker podium are typical scenes that the title "Head of State" evokes in most Americans' minds. The President is also the Chief Executive; in other words, he is charged with running the government. The Constitution invests the executive power in the president. In the modern state, this power is exercised over a wide range of government organizations and programs, such as those dealing with the environment, military veterans,

labor, foreign affairs, and national defense. To help him in this capacity, the President nominates and appoints, with the advice and consent of the Senate, 13 Cabinet members and over 2000 political appointees to work within the departments and agencies of government.

Although the constitution delegates the power of Commander in Chief of the military to the President, the power to declare war rests solely with the Congress. Further, even though the president is in “charge” of the military, the power to determine the size of the armed forces, the rules that govern the military, and the funding for the military forces and their equipment are vested only in the Congress.

As Chief Executive, the President has, at times, taken specific interest in defense acquisition problems and issues and directed specific changes. Examples of this include the following:

- Executive Order (E.O.) 12353, in 1982, which directed procurement reforms and also created a Federal Acquisition Regulation;
- National Security Decision Directive (NSDD) 219, in 1986, which directed implementation of the Packard Commission’s recommendation on management of defense acquisition; and
- National Security Review (NSR) 11, in 1989, which directed a review of the defense acquisition business and a report outlining the changes as a result of the review.

## The Legislature

*“Congress is so strange. A man gets up to speak and says nothing. Nobody listens—and then everybody disagrees.”*

– Boris Marshalov, a Russian observer after visiting the House of Representatives

*“To retain respect for sausages and laws, one must not watch them in the making.”*

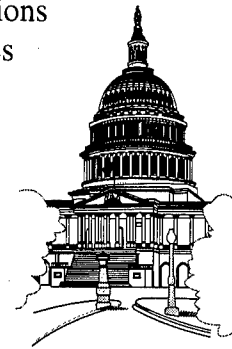
– Otto Von Bismarck

Contentious, confusing, complicated—the workings of the United States Congress can be a mystery to foreign visitors and, in many cases, even to American citizens. During the Constitutional Convention in 1788, the delegates debated the structure of the Congress.

States with large populations were pitted against states with small populations. Each was concerned with the fairness of the representation. Proportional representation would benefit the large states at the expense of the small states, thus putting small states like Rhode Island at the mercy of large

states like Virginia, which by virtue of their larger voter constituency could control the government. Out of this concern came the “Connecticut Compromise” which created a bicameral legislature, or two-house system—the Senate with two representatives from each state and six-year terms; and the House of Representatives with proportional representation and two-year terms.

Because of the nature of its organization, each of the two bodies of Congress has its own character. The House of Representatives was designed to “have an immediate dependence on, and an intimate sympathy with, the people.”<sup>1</sup> Elected every two years, House members campaign for re-election almost constantly. They respond to the constantly changing views of the electorate and are more contentious in debate. The Senate, in which members serve 6-year terms, tends to be more collegial and responds less readily to the popular passion of the moment.



**U.S. CONGRESS**

Congress plays a significant constitutional role in the management of the Department of Defense. The Constitution gives Congress the general power to "...lay and collect taxes, duties, imports, and excises, to pay the debts and *provide for the common defense* and general welfare of the United States..." It also gives Congress other powers, such as the following:

Clause 11 –

*To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water;*

Clause 12 –

*To raise and support armies, but no appropriation of money to that use shall be for a longer term than two years;*

Clause 13 –

*To provide and maintain a navy;  
To make rules for the government and regulation of the land and naval forces;*

The writers of the Constitution were very concerned about the concentration of military power within the executive branch. In the Federalist Papers written by Alexander Hamilton and James Madison, the role of the legislative versus the executive branch is clearly spelled out in the following words: "...the whole power of raising armies [is] lodged in the LEGISLATURE, not in the EXECUTIVE; ...and ... that clause ... forbids the appropriation of money for the support of an army for any longer period than two years a precaution which...will appear to be a great and real security against the keeping up of troops without evident necessity."<sup>2</sup>

The two year restriction for the appropriation of funds for defense indicates the strong concern the representatives had at the Constitutional Convention about the role the legislative body was to play in the management of the military. "The legislature of the United States

will be OBLIGED...once at least in every two years, to deliberate upon the propriety of keeping a military force on foot; to come to a new resolution on the point; and to declare their sense of the matter, by a formal vote in the face of their constituents. They are not AT LIBERTY to vest in the executive department permanent funds for the support of an army..."<sup>3</sup>

Throughout most of its 200-year history, the American political system has been a two-party system—Democrat and Republican. Minor parties have played a very small role. While each party generally has a unique ideological bent, they are not ideology parties in the European sense. Each party includes a wide variety of political opinion—from liberal to conservative. Another difference in a typical parliamentary system is that party loyalty is critical to keeping the government in power. By contrast, party loyalty in the United States is very weak. It is also not uncommon in the U.S. that one or both houses of Congress are controlled by one party and that the White House (the executive branch) is controlled by another party. This is the current case with the Senate and the House controlled the Republicans while President William J. Clinton, a Democrat, is in the White House.

### **Congressional Committees**

*Congress on the floor is Congress in exhibition, Congress in Committee is Congress at work.*

– Woodrow Wilson, 1885

There are 535 members of Congress. To efficiently deal with the multiplicity and complexity of the problems of government, Congress has been organized into a variety of committees that focus on specific areas of responsibility. It is in these committees where the work of Congress takes place. The majority party in each house controls not only that house and its agenda but also the committees that run the chamber. Each committee is chaired by the majority party,

usually a senior member of that party, with the majority party having a majority of the seats on the committee. Additionally, each committee further subdivides the work and assigns it to subcommittees. This is where much of the discussion, hearings, and work takes place in drafting legislation. The structure of a subcommittee parallels that of a full committee, with the majority party chairing the subcommittee and constituting the majority of its members.

The committees that most influence the DoD and the defense budget are as follows:

**Senate:**

**Senate Armed Services Committee (SASC)**

Subcommittees dealing with defense issues

- Emerging Threats and Capabilities
- Air-Land
- Personnel
- Readiness and Management Support
- Seapower
- Strategic

The SASC is responsible for a wide variety of policy and budgetary issues that impact the defense acquisition business—aeronautical and space activities associated with the development of weapon systems or military operations; department organizational structures; maintenance and operations of military research and development; national security aspects of nuclear energy; pay, promotions, and retirement; and strategic and critical materials.

**Senate Appropriations Committee (SAC)**

Subcommittees dealing with defense matters

- Defense
- Foreign Operations, Export Financing and Related Programs
- Military Construction

The SAC provides new spending authority for defense programs, operations, and military

construction. It also writes legislation defining how the monies it has appropriated can be spent.

**House of Representatives:**

**House Armed Services Committee (HASC)**

Subcommittees dealing with defense matters:

- Military Installations and Facilities
- Military Personnel
- Military Procurement
- Military Readiness
- Military Research and Development
- Morale, Welfare and Recreation
- Merchant Marine

The HASC has wide-ranging jurisdiction, including scientific research and development in support of the armed forces and control of the strategic and critical military material. It also oversees international arms control. Of particular interest to those involved in acquisition are the Military Procurement, Readiness and Research and Development subcommittees. Through its Subcommittee on Military Procurement, the annual authorization for the procurement of military weapon systems, equipment and nuclear energy is prepared. The Subcommittee on Military Readiness includes authorization for operations and maintenance (O&M), readiness and preparedness. The HASC's Subcommittee on Military Research and Development has jurisdiction over aeronautical and space activities, military research and development (R&D), the DoD generally, nuclear energy, pay, promotions, and the strategic and critical military material.

**House Appropriations Committee (HAC)**

Subcommittees dealing with defense matters:

- Military Construction
- Defense

The HAC, like the SAC, provides new spending authority for defense programs, operations, and

military construction. It also writes legislation on how the monies it has appropriated can be spent.

There are various other committees, such as the Budget Committees and the Government Reform and Oversight Committee, with Subcommittees—National Security, International

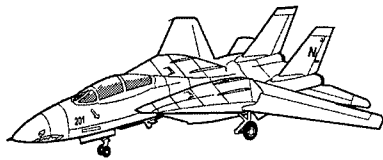
and Criminal Justice, which have legislative oversight of defense and government activities which from time-to-time play a role in crafting acquisition legislation. Two other organizations of Congress, the Congressional Budget Office and the General Accounting Office, also play a role in acquisition, which is discussed later.



## Chapter 2

# CONGRESSIONAL INVOLVEMENT IN ACQUISITION

Congress has always played a significant role in overseeing the DoD and DoD's predecessor organizations. In 1809 Congress issued the first governmentwide procurement statute mandating executive-legislative appointment of what we today call "contracting officers." Congress continued to play a significant role in acquisition throughout the last century, including the methods of procurement—formal advertising, creating advisory boards, and dictating the sizes and speeds of ships. Throughout World War I and World War II for example, Congress passed legislation to prevent unscrupulous contractors



**F-14**

from overcharging the government. The modern era of congressional involvement in acquisition began with the Armed Services

Procurement Act of 1947. The purpose of this law was to standardize contracting methods used by all of the services. As a result, the first joint DoD regulation was created—the Armed Services Procurement Regulation (ASPR). Congress, over the years, has passed other laws whose purpose has been to shape the department's acquisition policies and organizations. In the last twenty years the amount of legislation involving the defense business has increased. Under the Reagan administration, with the significant increase in the defense budget, Congressional oversight increased. Almost every two years, major legislation was passed to change some aspect of the acquisition

system. Figure 1 provides a list of some of the major acts which have changed the organizational structures and policies, increased ethics requirements and mandated education and training requirements for the acquisition workforce. In the last five years, several news laws, such as the Federal Acquisition Streamlining Act, have been passed to remove many of the burdensome laws passed by prior congresses.

As Figure 1 indicates, Congress plays a major role by enacting major legislation for the business of defense acquisition. Also, every year Congress enacts, through its authorization and appropriations legislation, changes in the acquisition system. Some of these changes are minor, but some have included changes that have had a significant impact on the acquisition business.

### Congress and The Budget

"The power of the purse has always resided in Congress: it represents its ultimate weapon in dealing with the executive branch."<sup>4</sup> In February of every year, the administration submits the President's budget to Congress. For the DoD, this budget culminates three years of work to justify the dollars needed for national defense. The budget goes to the House and Senate budget committees which issue a Budget Resolution that provides the top line budget for DoD. The work of drafting the legislation needed to authorize and appropriate defense funds begins in the proper committees and subcommittees. The subcommittees hold hearings and then

<p><b>Office of Federal Procurement Policy Act of 1983</b> Established a central office to define overall government contracting and acquisition policy and to oversee the system, among other things.</p>
<p><b>Competition in Contracting Act (CICA) of 1984</b> Revised government policy to mandate competition and created an advocate for competition, the Competition Advocate General.</p>
<p><b>DOD Procurement Reform Act 1985</b> Defense Procurement Reform Act established a uniform policy for technical data and created a method for resolving disputes.</p>
<p><b>Defense Procurement Improvement Act of 1986</b> Provided policy on the costs contractors submitted to the Government for payment and on conflicts of interest involving former DOD officials.</p>
<p><b>Defense Acquisition Improvement Act of 1986</b> Among other things, created the Under Secretary of Defense (Acquisition &amp; Technology)<sup>1</sup>.</p>
<p><b>DOD Reorganization act of 1986 (commonly referred to as Goldwater-Nichols Act)</b> Among other items, revised the Joint Chiefs of Staff role in acquisition and requirements determination.</p>
<p><b>Ethics Reform Act of 1989</b> As a result of the "Ill-wind" procurement scandal Congress mandated more stringent ethics laws.</p>
<p><b>Defense Acquisition Workforce Improvement Act of 1990</b> Mandated education, training and professional requirements for the defense acquisition corp.</p>
<p><b>Federal Acquisition Streamlining Act (FASA) of 1994</b> Repealed earlier laws on acquisition, such as, the Brooks Act provisions on computer acquisitions.</p>
<p><b>Federal Acquisition Reform Act (FARA) of 1996</b> Revised procurement laws facilitate more efficient competition; included improving debriefings, limiting need for cost/pricing data and emphasizing price versus cost negotiations, among other items.</p>
<p><b>Cohen-Clinger Act of 1996</b> Included changes to competition practices, commercial item acquisition, and included fundamental changes in how information technology equipment is purchased.</p>

**Figure 1. Major Acquisition Acts**

"markup" the bill and send it to the full committee. The full committee will debate, amend and report out the bill to the entire House or Senate for its consideration. After the vote is taken by both houses, a conference committee is established to "iron out" any differences. The bill is then returned to both houses and voted on a second time. If passed, the bill is sent to the

President for his signature or, if he disapproves of the bill, for his veto.

"The exclusive privilege of originating money bills will belong to the House of Representatives."<sup>5</sup> The constitution gives the lower house, the House of Representatives, the authority for funding bills thus—"All bills for raising revenue

shall originate in the House of Representatives; but the Senate may propose or concur with amendments as on other bills.”

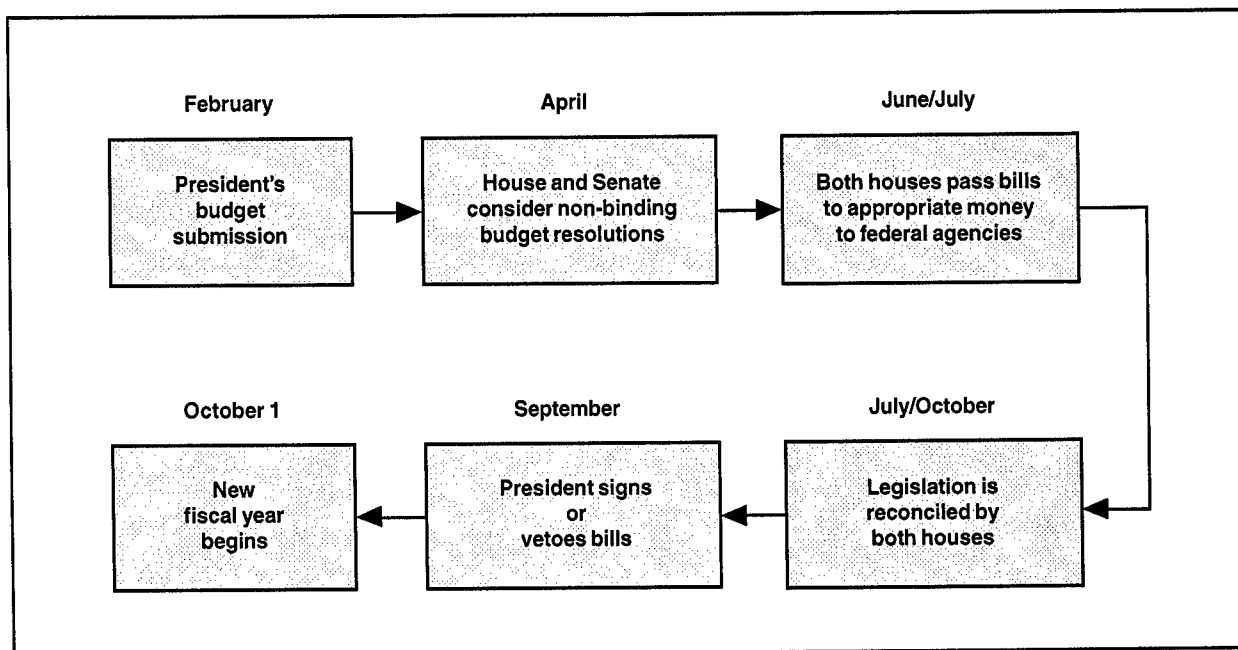
The Congress has established special budget approval procedures for approving budgets for the various departments of government. “Every committee wants a hand in budget making. Hence, Congress has a two-step financial procedure: authorization and appropriations. Congress first passes authorization laws that establish federal agencies and programs and recommend funding them at certain levels. Then it enacts appropriations laws that allow agencies to spend money. An authorization then is like an “IOU” (I owe you) that needs to be validated by an appropriation.”<sup>6</sup> While there are some exceptions to this procedure, the process of approving the next years’ budget includes both appropriation and authorization. The SASC and HASC committees are the authorizers, while the HAC and SAC are the appropriators.

This process, from the President’s budget submittal through approval by Congress and the

final signature by the President takes approximately eight months (see Figure 2). Debates, hearings, and the committee processes, aggravated by the controversial nature of the issues, often delay the passage of bills in Congress. To ensure the smooth operation of government under these conditions, Congress may pass interim legislation, referred to as “continuing resolutions,” that allows government agencies to continue all existing programs, at prior-year amounts. Such interim legislation does not usually allow for the initiation of any new programs. The implementation of an interim budget has become the standard method for operations since 1979.

**Congressional Oversight**

The SASC and HASC conduct their “oversight responsibilities... primarily within the context of the Committee’s consideration of the annual defense authorization bill.”<sup>7</sup> Every spring, key administration personnel, such as the Secretary of Defense and the Secretaries of the Army, Navy and Air Force, along with the senior



**Figure 2. Typical Flow of Budget**

military leaders, are called to testify before the appropriate subcommittees on the President's budget. The subcommittees will also have hearings with other key defense acquisition personnel on the budget, acquisition policy and programs. When Congress has a specific interest or concern, investigative committees will be created. They will have hearings on specific problems or issues which arise, or when Congress is interested in a department's implementation of prior legislation. Again, government acquisition personnel, along with industry or industry-association representatives, may be called to testify.

### ***General Accounting Office (GAO)***

For more than 75 years, the GAO has been the "watch dog" of Congress and a key player involved in overseeing the acquisition system. The GAO is headed by the Comptroller General of the United States, who is appointed by the President and confirmed by the Senate.

As the investigative arm of Congress the GAO is frequently asked by committee chairpersons, ranking minority members, and other members of Congress to review programs or issues of concern<sup>8</sup>. Recent report topics provide an example of the scope of GAO reviews. They are: (1) Acquisition Planning for the Army Medium

Trucks; (2) Defense Industry Restructuring and its savings; (3) Weapons Acquisition Systems Planning, (4) Army Modernization plans, (5) Defense Trade Data issues; and (6) international cooperative programs, such as Medium Extended Air Defense System (MEADS).

The committees often use the GAO studies and recommendations as a basis for hearings on problems in acquisition management and programs. When a committee feels new legislation is necessary to correct problems in the acquisition system, the GAO may be called upon to provide legal advice or review proposed legislation. In fiscal year 1998 the GAO prepared 1573 audits and evaluations for Congress, 1135 reports to congressional committees, presented 181 formal congressional briefings, and 256 congressional testimonies.

The GAO also has a significant role in the procurement/contracting process. It is the bid protest authority for any contractors who may wish to challenge an agency's award. In 1997 the GAO received 1087 bid protests, and ruled in the protesters' favor 26 times, sustaining the department in 97 percent of the cases. It also provides assistance to other government agencies in interpreting the laws governing the expenditure of public funds and adjudicating claims for and against the federal government.

## Chapter 3

# THE CABINET

Unlike the roles of the President and the Congress, the roles of the members of the President's Cabinet are not created by the Constitution. (there is no constitutionally created cabinet). The Constitution recognized the need for ministers and other government officials. They serve as the advisors to the President on policy matters. They also "run" the government by implementing the programs of the Administration. The cabinet members are nominated and appointed by the President with the approval (advice and consent) of the Senate. Members of the United States Cabinet, unlike those in other countries, are responsible to the President rather than the legislature. They serve at the pleasure of the President and can be removed from their jobs by the President for any reason.

Traditionally, cabinet members are from the same party as the President, although, occasionally, individuals from the other party will be selected to fill posts. A good example of this is Secretary of Defense William S. Cohen, who is a member of the Republican Party and was a former Republican Senator from Maine. As is the case in other cabinets around the world, particularly those with coalition governments, individuals are selected for Cabinet posts to satisfy various factions within the President's party—to achieve diversity objectives, to ensure geographic representation, and to reward supporters. In general, however, political appointees are chosen because they share the same political beliefs the President has and can carry out his agenda.

Unlike some other countries, the members of the U.S. Cabinet cannot simultaneously be

members of the legislative branch of government. The constitution specifies that, "No senator or representative shall, during the time for which he was elected, be appointed to any civil office under the authority of the United States, which shall have been created, or the emoluments whereof shall have been increased during such time; and no person holding any office under the United States, shall be a member of either house during his continuance in office."

The US cabinet is currently composed of 14 departments, as follows:

- Department of Agriculture
- Department of Commerce
- Department of Defense**  
(Secretary, William S. Cohen)
- Department of Education
- Department of Energy
- Department of Health and Human Services
- Department of Veterans Affairs
- Department of Housing and Urban  
Development
- Department of the Interior
- Department of Justice
- Department of Labor
- Department of State
- Department of Transportation
- Department of Treasury

From time to time, other positions, such as the White House Chief of Staff to the President, the Director of the Office of Management and Budget (OMB), and the "Drug Czar," have been given cabinet-level rank. There are many other agencies of government, such as the National

Air and Space Administration (NASA), that do not have cabinet rank but nevertheless carry out important national objectives.

To assist the politically-appointed cabinet members, the United States Government has more than 2800 political appointees. In the United States government, political appointees fall into three categories—(1) Presidential Appointments requiring Senate (PAS) Confirmation (650 positions); (2) non-career Senior Executive Service (SES) positions (restricted to 10 percent of the Senior Executive Service, currently 650 positions); and (3) Schedule C appointees

(personnel assistants, secretaries, etc., approximately 1500).<sup>9</sup> In the Department of Defense there are 243 political appointees, of which 48 require senate confirmation.<sup>10</sup> They hold key positions such as Secretary of Defense, Secretaries of the Army, Navy, and Air Force, and key acquisition positions such as the UnderSecretary of Defense (Acquisition and Technology) and Assistant Secretary of the Army (Acquisition, Logistics and Technology), Assistant Secretary of the Navy (Research, Development and Acquisition), and Assistant Secretary of the Air Force (Acquisition).

## *Chapter 4*

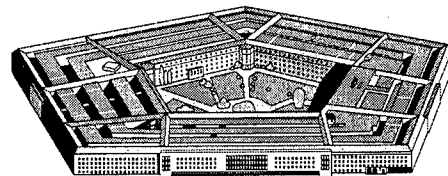
# DEPARTMENT OF DEFENSE

For the first hundred and fifty years, the United States had two separate departments, the War Department and the Department of the Navy, managing the military business. After the end of World War II, a variety of factors led many senior civilian and military leaders to see a need for a more unified structure. Specific problems during the war, such as the allocation of resources between the services, priorities, and command arrangements, were all felt to have had a negative affect on the war effort. In 1947, a single “unified” structure was created with the passage of the National Defense Act of 1947. However, as one observer noted, “Congressmen have traditionally seen their ability to influence defense policy enhanced under a decentralized structure and have feared loss of influence under a more centralized one...America’s defense establishment has reflected the pluralistic and decentralized nature of America’s national government system.” Thus, the three services were still left with a significant amount of authority and responsibility.

There have been changes since then, most strengthening the Secretary of Defense and his office<sup>11</sup> with authority over the services.<sup>12</sup> For the purposes of this chapter, the department can be divided into two elements—the warfighting elements and the acquisition and logistics support elements. Figure 3 depicts an overall view of the department with the warfighting elements being the Unified Commanders for each theater. The three major organizations involved in acquisition within the Department of Defense are the Army, Navy and Air Force. Other defense

agencies play a support role to acquisition, such as the Defense Contracting Management Command (DCMC),

which provides contract administration for the department, and the Defense



**THE PENTAGON**

Contract Audit Agency (DCAA) which provides audit support for the services and defense agencies.

This chapter will primarily focus on the Office of the Secretary of Defense (OSD) and the Services since the primary role of organizing, training and equipping the military rests with each Service. Each service is headed by a political appointee nominated by the president and approved by Congress. Each Service Secretary reports directly to the Secretary of Defense.

OSD is the core staff that provides advice and support to the Secretary. OSD consists of approximately 2,000 personnel that, through the Secretary, sets “general policies and programs” and provides “general direction, authority, and control” of the military departments and defense agencies. As shown in Figure 4, the Secretary is supported by a deputy secretary as well as several undersecretaries that have considerable influence in acquisition. The person charged with responsibility for acquisition matters within the secretary’s office is the Under Secretary of

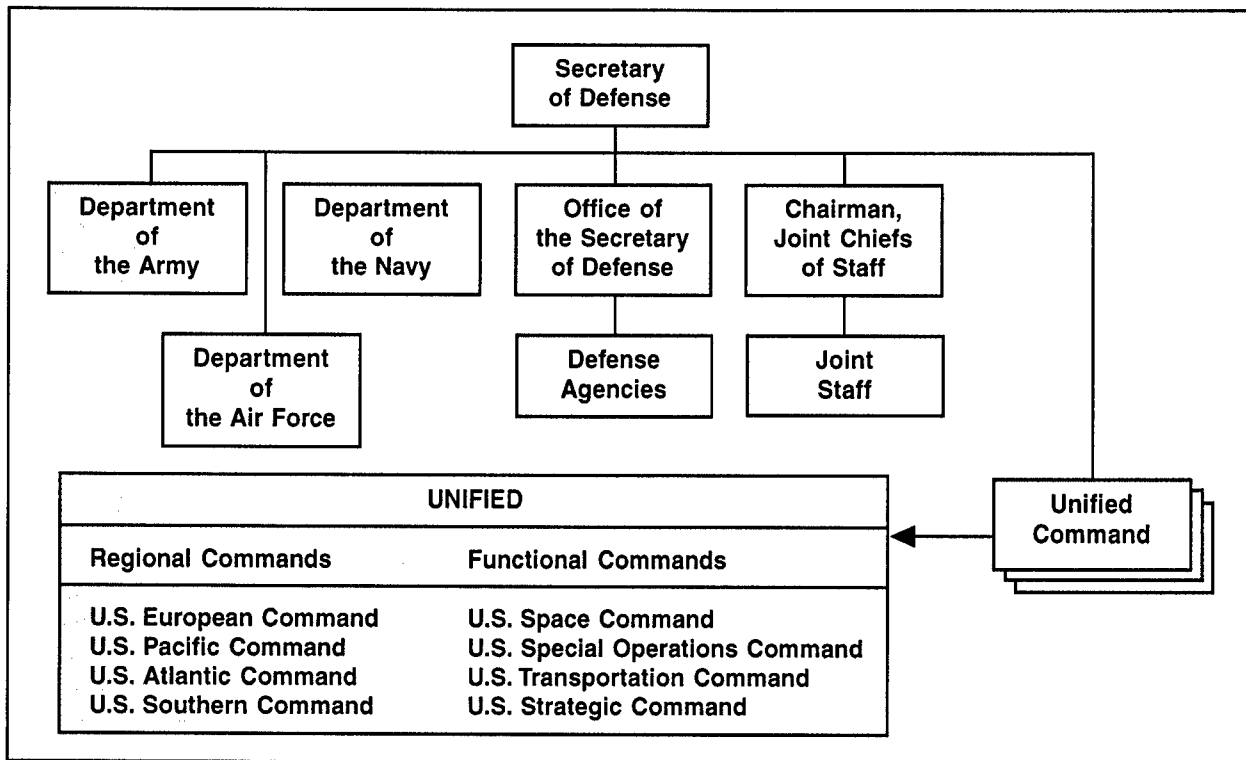


Figure 3. Department of Defense Warfighting Elements

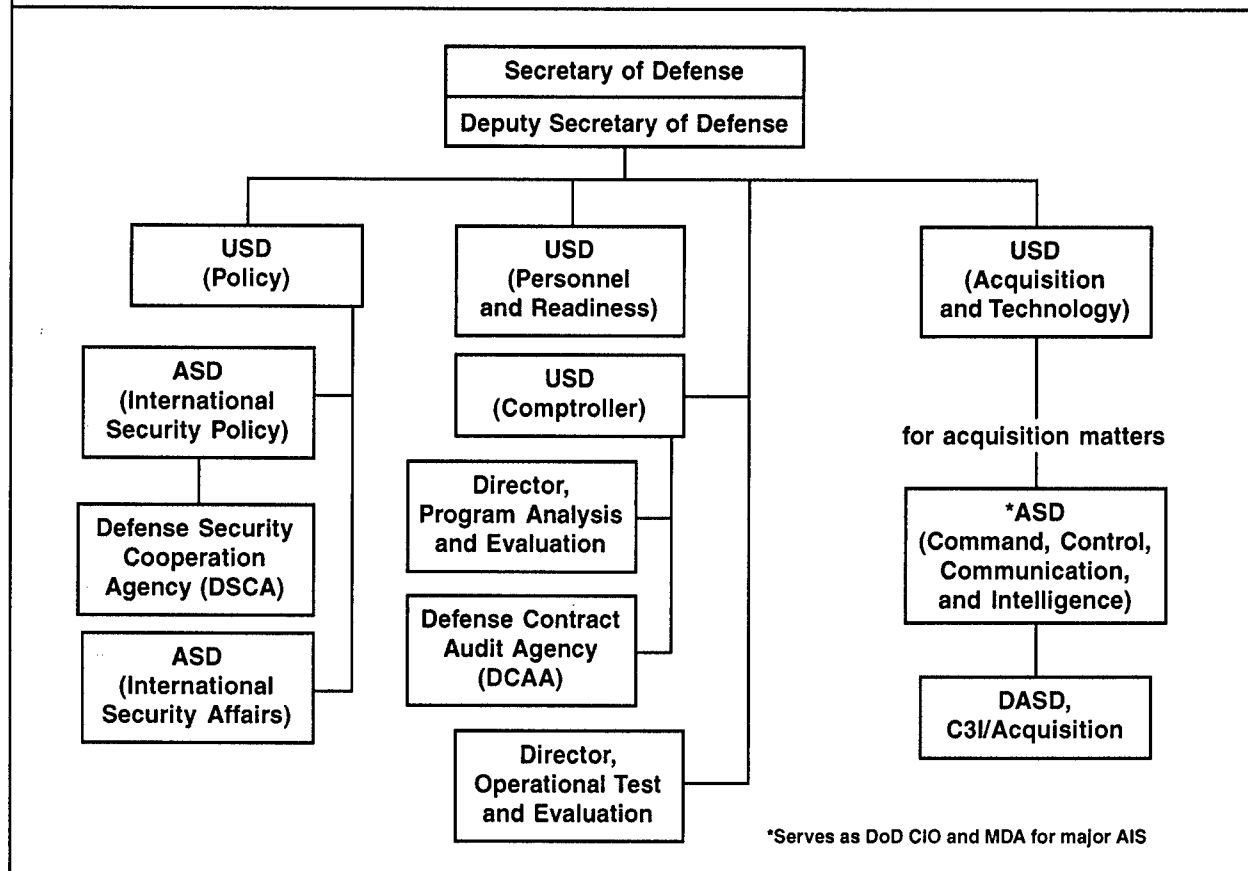


Figure 4. Office of the Secretary of Defense (as of May 1998)



Defense for Acquisition and Technology (USD(A&T)).

### The Development of Military Requirements

As the 21<sup>st</sup> Century approaches, the Department of Defense and the military services strive to maintain air and space superiority, meet rapid mobility requirements, maintain naval superiority and be a force projection army. The process to determine future military needs is referred to as the *Requirements Generation Process*. All acquisition programs must be based on identifiable, documented, and validated mission needs. The Joint Chiefs of Staff (JCS) is the organization responsible in DoD for setting requirements policy. For large dollar programs, referred to as Major Defense Acquisition Programs (MDAP) or Acquisition Category (ACAT) I programs, the JCS is the approval authority for the requirement. For smaller dollar programs, referred to as ACAT II and III programs, the individual services develop their own requirement in coordination with the other services and defense agencies.

To provide approval of a requirement that could result in an ACAT I program, i.e., to validate the mission need, a forum called the Joint Requirement Operational Council (JROC) was created. The Vice-Chairman of the Joint Chiefs chairs the council with the Vice-Chiefs of the military services as voting members (see Figure 5). For programs that fall under the automated management information system programs, the JROC reviews and decides whether to be the validation and approval authority. If the JROC passes, the Assistant Secretary of Defense for Command, Control, Communication and Intelligence (C3I) becomes the approval authority. While the JROC is primarily involved in requirements approval, it also participates in the Defense Acquisition Board (DAB) to ensure that the program is meeting the military needs. The JROC is a change from the historical way of the military services deciding military requirements and the next generation of weapons. The JROC has also opened the capability for the warfighting, unified commanders to play in this process. Prior to the JROC meetings, a lower level board, the JROC Review Board, previews the requirements documentation to work out concerns and to frame matters for the JROC.

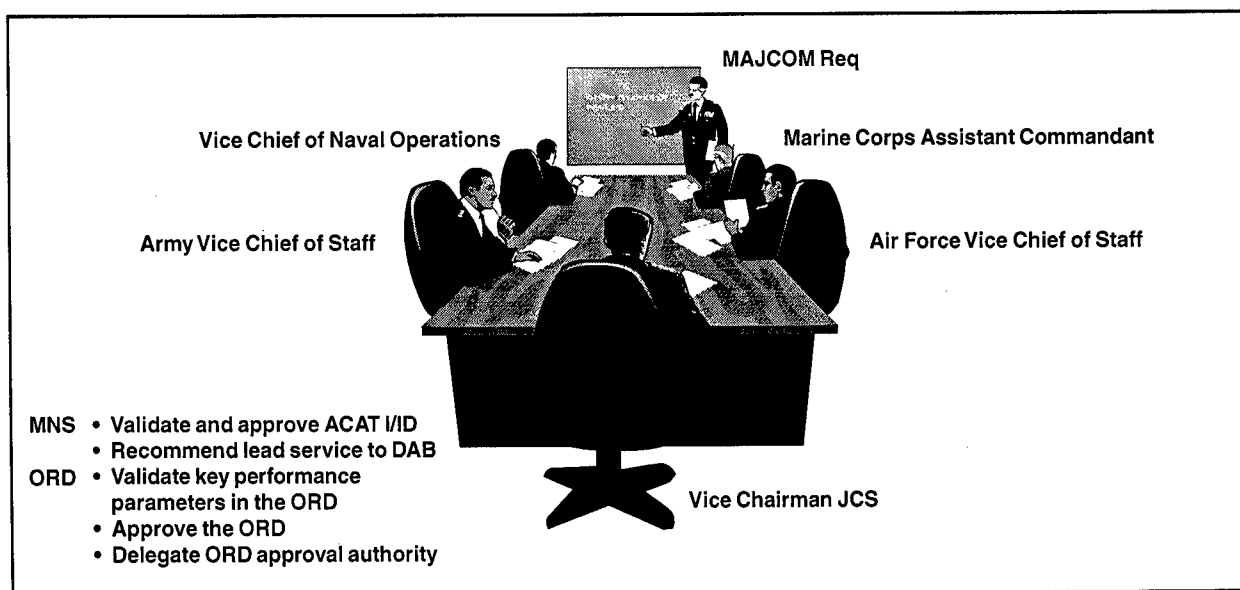


Figure 5. The Joint Requirement Operational Council (JROC)

## The Military Departments Requirements Processes

To develop a weapon system is expensive. A major weapon system will require billions of dollars to develop and field. When the services look at shortfalls in meeting mission requirements, they first will evaluate changing military doctrine or tactics (referred to as non-materiel solutions) as the first choice. If a non-materiel solution does not work, then buying an existing system commercial or non-developmental item (NDI) is the preferred solution. By policy, the last choice for a military service is the development of a new weapon system.

Prior to beginning the requirements generation process, the department develops a series of military planning documents—part of the long term planning process which provides strategic military planning guidance. This is captured in a series of documents beginning with the National Military Strategy (NMS). The development of military requirements, and the planning, programming and budgeting system all reflect a direct linkage with this strategic planning process. The Defense Planning Guidance (DPG), the Chairman of the Joint Chiefs of Staff's "Joint Vision Capabilities Plan," the unified Commanders' "Commanders in Chief Integrated Priority Lists (CINC IPL)," and other joint and service long range plans all provide the framework for the requirements generation process to operate. The Services' long-term technology plans use this guidance for planning their investment of R&D dollars to maximize their effectiveness.

The Requirements Generation Process begins in the services, and each of the military services has taken a different approach to managing this process. The Army and Navy have a centralized process while the Air Force's process is more decentralized. However, each service determines mission needs as a result of ongoing assessments

of current and projected capability. Assessment of identified deficiencies, such as occurred after Desert Storm, has led to the establishment of new requirements and new programs. The Joint Direct Attack Munitions (JDAM) was such a program. During ideal weather conditions, for an air war, it was noted that there were still many days when missions had to be called back because of the lack of a capability to find targets. The JDAM was required to meet that mission hole, i.e., provide all weather, accurate, and low cost capability to attack a broad spectrum of fixed and relocatable targets. In this case an identified deficiency. Besides establishing new operational capability or improving an existing warfighting capability, mission needs can also be used to reduce costs or enhance the logistics performance of systems. Requirement changes can occur in the order of doctrine, training, leader development, organization, soldiers, and materials.

The two main documents used to capture requirements are the Mission Needs Statement (MNS) and the Operational Requirements Document (ORD). The MNS provides, in broad, non-system specific, operational terms, the warfighter's need. The concept is to provide, in a brief document (five pages), the user's need, which will become the basis for a material solution. Once MNS is validated, it starts the acquisition process looking at possible solutions for the MNS. The ORD becomes more specific and provides the operational parameters, such as speed, durability, reliability and precision among other items, to include thresholds (minimums) and objectives (desired outcomes). It is solution-oriented and based upon the best alternative choices. The ORD is a living document and will evolve as a program matures. The ORD is the link between the MNS and the acquisition process.

## Service Requirements Organizations

### Department of the Army<sup>13</sup>

In the Army, the Training and Doctrine Command (TRADOC) has the central responsibility for developing and approving all warfighting requirements. Within TRADOC, this is accomplished both at the headquarters level and through the various branch schools. Besides training, the Army's branch schools have responsibility for doctrine and requirements development. Each school has a combat development division, staffed by representatives of the proponent branches, such as artillery, infantry or ordnance. While requirements may evolve from a variety of organizations, such as major commands, field commanders, TRADOC schools, and others, the Army branch schools, such as the Air Defense Artillery School, Fort Bliss, Tx, will define, document and defend requirements. (See Figure 6.) The schools are responsible for preparing the ORD and the MNS.

The Army uses Integrated Concept Teams (ICT) to improve development of requirements. The ICT is made up of members from TRADOC,

Army Materiel Command (AMC), other Army commands, other military services, academia, industry, and others. The ICT may be a tier-one or tier-two ICT. HQ TRADOC tier-one ICTs are established for requirements documentation where there are multiple proponents, joint service impacts or high management interest/visibility (HQDA, OSD, or Congress).

Tier-two ICTs are established and conducted under the guidance of school commandants or center commanders. These ICTs are used to develop or refine a warfighting concept operation unique to a single proponent, or to determine and document branch or function unique mission needs and requirements. The ICTs are responsible for developing the MNS and the ORD for the branch school. After the ICTs develop the requirements documents (MNS and ORD), they are approved by the commandant of the proponent TRADOC school or center and then forwarded to TRADOC Headquarters for issue resolution and approval by the TRADOC Commanding General.

They are then forwarded to Headquarters Army, Deputy Chief of Staff for Operations and Plans

<b>Air Defense Artillery Center</b>	<b>Air Defense Artillery School</b>
<b>Armor Center</b>	<b>Armor School</b>
<b>Aviation Center</b>	<b>Aviation School</b>
	<b>Aviation Logistics School</b>
<b>Field Artillery Center</b>	<b>Field Artillery School</b>
<b>Chemical and Military Police Centers</b>	<b>Chemical School</b>
	<b>Military Policy School</b>
<b>Infantry Center</b>	<b>Infantry School</b>
	<b>Ordnance School</b>
<b>Combined Arms Center</b>	<b>Combined Arms Center</b>
<b>Transportation Center</b>	<b>Transportation School</b>
<b>Signal Center</b>	<b>Signal School</b>
<b>Engineer Center</b>	<b>Engineer School</b>
<b>Intelligence Center</b>	<b>Intelligence School</b>
	<b>Quartermaster School</b>

**Figure 6. TRADOC Centers/Schools**

(DA DCSOPS) for review and evaluation. The Army level review will focus on issues raised by other services, the joint staff and OSD. Changes are recommended to TRADOC for incorporation. DCSOPS is also responsible for resourcing the approved requirement by means of the Planning, Programming, and Budgeting system, after which the process is transferred to the materiel developers and the acquisition community to develop and field the capabilities.

### Department of the Navy

The Navy has centralized the requirements development process at the headquarters level. The Deputy Chief of Naval Operations (DCNO) for Resources, Warfare Requirements and Assessments (N8) is responsible for the Requirement Validation Process. He also is the validation and approval authority for requirements that

do not require JROC approval. Nicknamed N8, the Chief has several divisions that are the prime organizations responsible for developing the MNS and ORD for their areas of responsibility. They are divided into the different missions of the Navy—Expeditionary Warfare, Surface Warfare, Air Warfare, Submarine Warfare, and Special Programs Division (limited access programs). (See Figure 7.)

Requirements can be generated from a variety of sources, such as the fleet, the shore establishment, or by one of the OPNAV requirement divisions. While the requirement may have come from somewhere else, the N8 OPNAV divisions will become sponsors of the requirement and review/coordinate/develop a MNS. N8 will validate and approve for ACAT II, III and IV MNS. The warfare divisions also have responsibility for reviewing, coordinating and preparing the

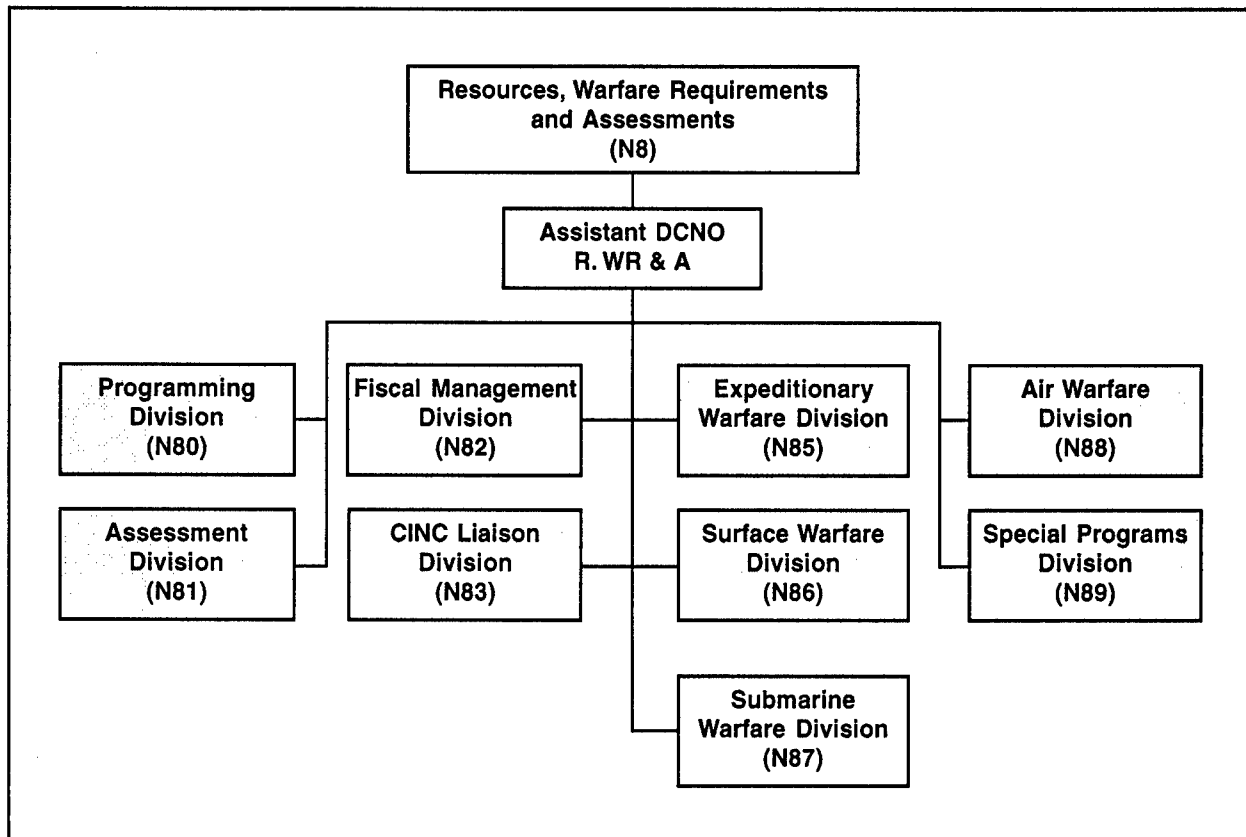


Figure 7. Navy Requirements Organizations

ORD. The CNO validates and approves delegated Major Defense Acquisition Program ORDs. N8 approves all others.<sup>14</sup> The warfare divisions are the program advocates and have a responsibility for providing fiscal sponsorship of the program. The Requirements Officer (RO) is the program sponsor and provides the key interface between OPNAV and the acquisition management structure. Marine Corps requirements are managed through this process and funded by appropriate warfare sponsor.

### Department of the Air Force

In the Air Force, the requirements process is decentralized with the major operational commands, such as the Air Combat Command at Langley AFB, VA, having responsibility for developing requirements (see Figure 8). Each command has a Director of Requirements (DR) who, as part of their modernization reviews, identifies deficiencies, evolving threats or technological opportunities, and generates requirements. The operational command's DR will write the MNS and the ORD, will prioritize programs, and then will advocate within the Air

Force budgeting process for money to fulfill their needs.

In the Headquarters, Air Force, the Deputy Chief of Staff for Air and Space Operations (AF/XO), and specifically the Directorate of Operational Requirements (AF/XOR), reviews and coordinates MNS and ORDS. AF/XOR guides those programs requiring approval and validation through the JROC process. The Chief of Staff is the approval authority for all MNS and ORDs for ACAT II and III programs.

Within the Air Force, a forum similar to the JROC, the Air Force Requirement Operational Council (AFROC), reviews MNS, ORD and other requirements documents for joint issues, validity, interoperability with allies, and other items. The process is designed to emphasize the capability needed to meet Air Force needs, versus a specific design solution. To develop effective requirements documents, it is critical to understand deficiencies across all Air Force mission areas and to consider Joint Warfighting Mission Areas.

<b>Air Combat Command</b>	<b>Air Force Special Operations Command</b>
<b>Air Education and Training</b>	<b>Air Intelligence Agency</b>
<b>Air Force Inspection Agency</b>	<b>Air mobility Command</b>
<b>Air Force Materiel Command</b>	<b>Air National Guard</b>
<b>Air Force Personnel Center</b>	<b>Air University</b>
<b>Air Force Recruiting Service Center</b>	<b>Army and Air Force Exchange Service</b>
<b>Air Force Rescue Coordination</b>	<b>Pacific Air Forces</b>
<b>Air Force Reserve Command</b>	<b>US Air Force Academy</b>
<b>Reserve Officer Training Corps</b>	<b>United States Air Forces in Europe</b>
<b>Air Force Safety Center</b>	<b>Air Force Space Command</b>
<b>Air Force Services Agency</b>	

**Figure 8. Air Force Major Requirements Organizations**

## Chapter 5

# DEFENSE ACQUISITION STRUCTURE

At the beginning of the 1980s, the United States found itself with what some have termed the “hollow military.” To correct the situation, the incoming Reagan administration had, as one of its goals, strengthening national security by increasing the defense budget. As defense budgets increased, so too did Congressional scrutiny. Several scandals, mostly centering on overpaying for spare parts, developing expensive requirements for coffee pots and toilet seats on aircraft, and buying \$450 hammers, created an impression in the American public’s mind of a system out of control.

With increased public concern about the weapons development process and wasted taxpayer dollars, President Reagan tapped former Deputy Secretary of Defense and founder of Hewlett-Packard, David Packard, to chair a Blue Ribbon Commission on Defense Management. The panel issued their report in June 1986 recommending significant changes within the department in the management of acquisition programs. They called for the department to “establish unambiguous authority for overall acquisition policy, clear accountability for acquisition execution, and plain lines of command for those with program management responsibilities.” Included in those plain lines of command were to be “short lines of command.” The President issued National Security Directive 219<sup>15</sup> to implement the panel’s recommendations. Congress followed suit with the passage of the Goldwater-Nichols Act, which created changes in the management of the acquisition business. In 1989 the new Secretary

of Defense, Richard B. Cheney, chartered the Defense Management Review which further refined the acquisition structure to its current arrangement.

### **Under Secretary of Defense (Acquisition and Technology) (USD(A&T))**

Out of the above efforts, the popularly coined “*acquisition czar*” position was created. Officially titled, the Under Secretary of Defense (Acquisition and Technology)<sup>16</sup> or the Defense Acquisition Executive (DAE), the “acquisition czar” was given overall responsibility for the policy and management of the acquisition system. Similar positions were created within the Services. To create the “short lines of command,” the Program Executive Officer (PEO) structure was created with four levels of management. The lines of command between the Service Acquisition Executive and the program manager was limited to two (see Figure 9).

In cases of major defense acquisition programs or programs involving Command Control and Intelligence programs the PM reports through the Head of the Component to USD (A&T) or ASD (C3I) respectively. USD (A&T)’s authority was strengthened when Congress determined that USD (A&T) would take precedence over Service Secretaries in acquisition matters. It also ranks number three within the DoD hierarchy. This, along with the ability to have program funds withheld, provides USD (A&T) with significant leverage over the services.

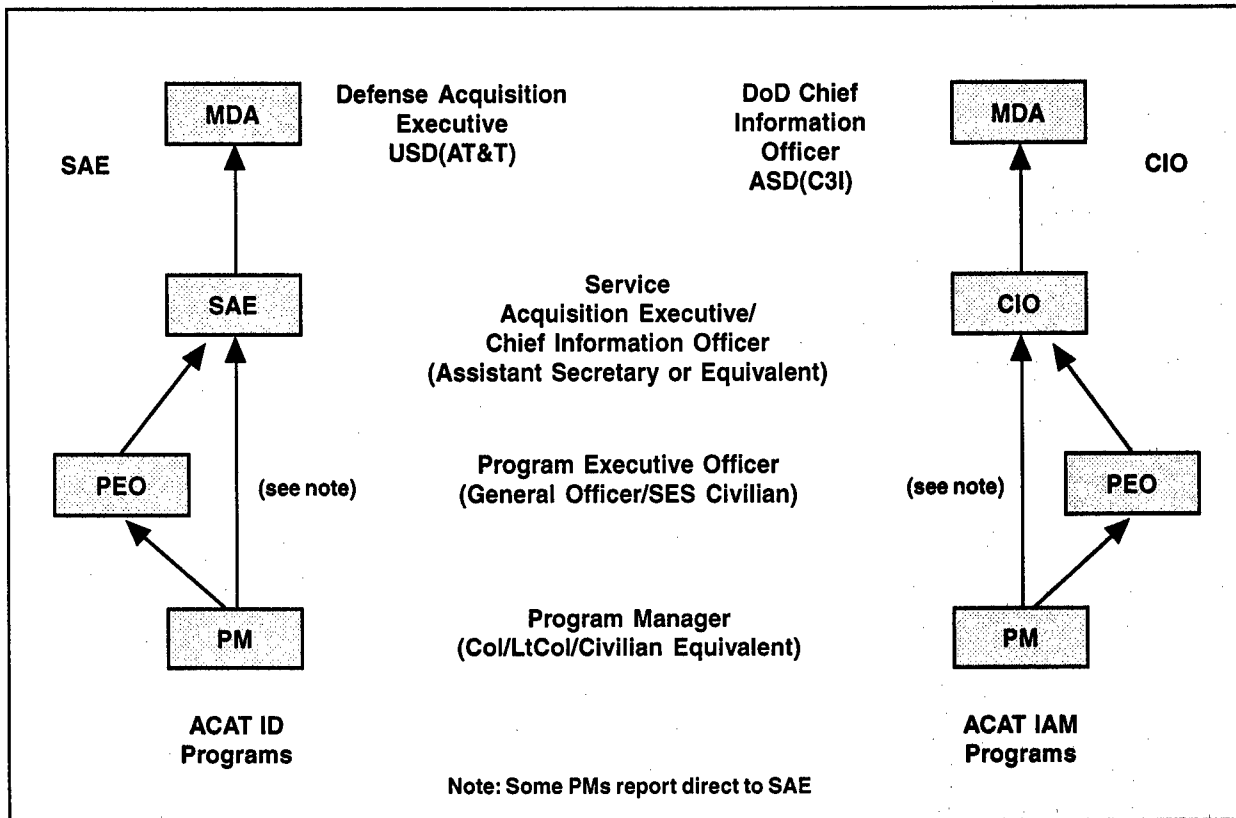


Figure 9. Acquisition Program Reporting

The current USD (A&T) is the Honorable Jacques Gansler. In addition to setting acquisition policy he has a large portfolio of responsibilities. These include responsibility for research and development, advanced technology, test and evaluation, production, logistics, military construction, procurement, international cooperative programs, economic security, and atomic energy. In the international community, he is the equivalent of the Armament Director and represents the department at the Four-Power Conference along with other major international forums. Another important role is that of the Senior Procurement Executive (SPE), responsible for management and direction of the procurement system, including implementation of unique procurement policies, regulation and standards.

**Office of the Under Secretary of Defense (USD) (Acquisition & Technology)**

The staff of the Under Secretary consists of various functional offices which provide advice and assistance on technology, procurement, testing and other areas. Figure 10 depicts the USD (A&T) organization. See Appendix C for a listing of organizational functions. The Assistant Secretary of Defense for Command, Control, Communications and Intelligence (C3I) works with USD (A&T) on acquisition matters for information systems. The office of USD (A&T) is primarily a policy making organization with oversight of the acquisition organizations within the Services and agencies.

**Other OSD organizations involved in acquisition:** USD (A&T) is the primary acquisition organization within OSD. Several other offices,

however, play critical roles in oversight of acquisition, or provide guidance to USD (A&T), or have a key role in determining the resources available for acquisition programs.

**Under Secretary of Defense (Comptroller)** is the principal advisor and assistant to the Secretary and Deputy Secretary of Defense for budgetary and fiscal matters (including budget formulation and execution, and contract audit administration and organization) and administers the planning, programming, and budgeting system. In addition, the USD(C) is the Chief Financial Officer of the Department of Defense.

**Director, Operational Test and Evaluation (DOT&E)** sets the policy and standards for operational testing and analyzes operational test results. DOT&E has oversight responsibility for operational testing within the services.

**DoD Inspector General (IG)** serves as an independent official for conducting audits and investigations relating to programs and operations of the department. The IG is responsible for identifying problems, deficiencies, fraud and abuse in the management of programs and identifying the need for corrective action.

**Assistant Secretary of Defense (C3I)** sets policy for the management of command, control, communication, intelligence and information management systems and software for the department. He is the Department's Chief Information Officer (CIO) and provides oversight

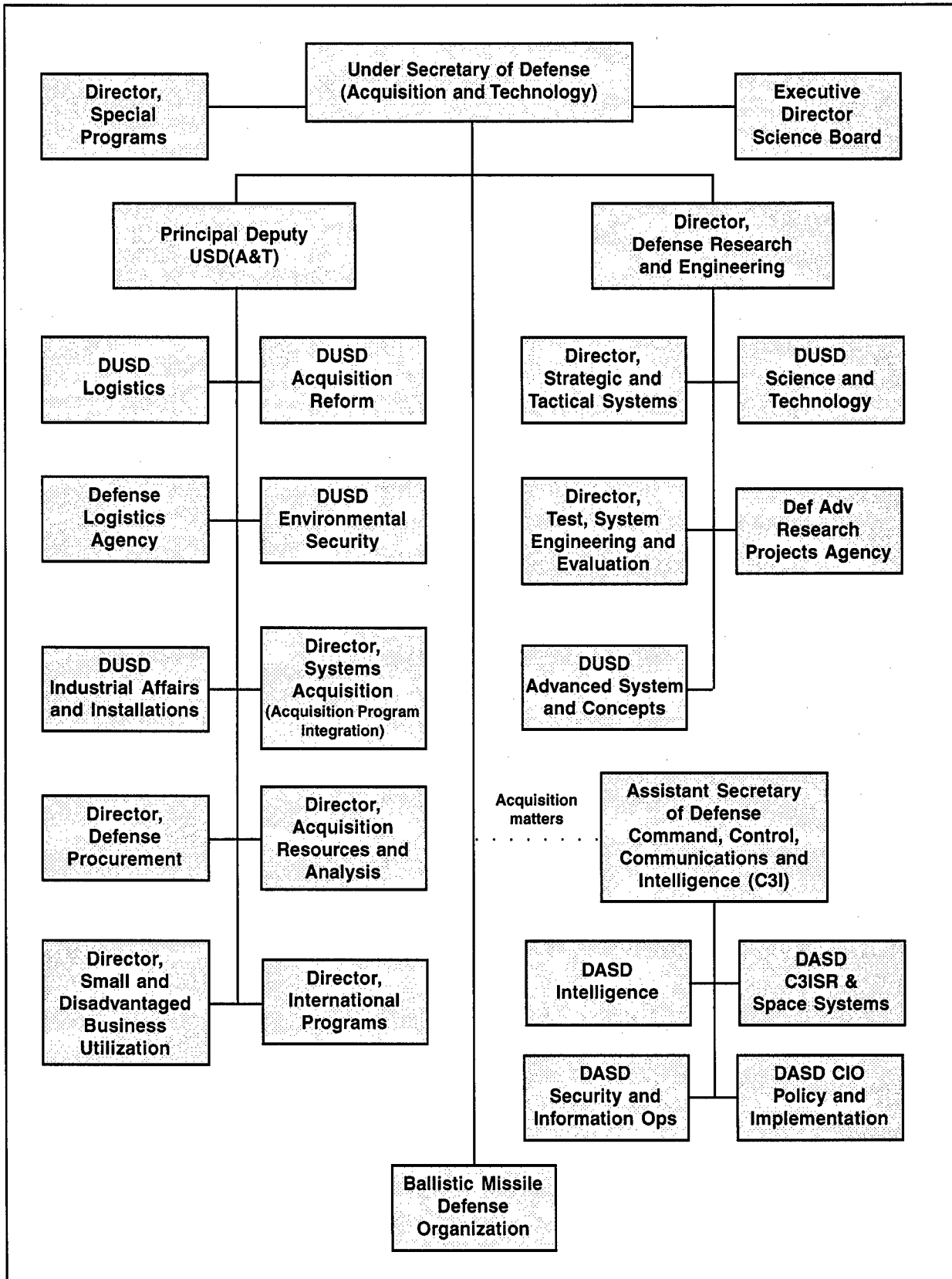
and policy to govern the development, acquisition, and operation of information technology (IT) and information systems. ASD (C3I) chairs the Defense Acquisition Board (DAB) for Major Automated Information Systems.

**General Council** is the chief legal adviser on acquisition issues and legislation. Coordinates on significant legal issues, including litigation involving the DoD. Acts as lead counsel for the Department in all international negotiations conducted by OSD organizations. Maintains the central repository for all international agreements negotiated by DoD personnel.

**Defense Logistics Agency (DLA)** is a central combat support agency for the department. DLA provides worldwide logistics support for the missions of the military departments and the Unified Combatant Commands and other Federal agencies, foreign governments, international organizations, and others as authorized. Provides materiel commodities and items of supply that are common to the military services. Within DLA is the **Defense Contract Management Command**, the single organization responsible for worldwide contract management.

**Defense Contract Audit Agency (DCAA)** performs contract audits and provides accounting and financial advice to DoD procurement organizations and others, such as NASA. These services are provided in connection with negotiation, administration, and settlement of contracts and subcontracts.





**Figure 10.**  
Office of the Under Secretary of Defense (Acquisition & Technology (with OASD(C3I)))

## *Chapter 6*

# **SERVICE ACQUISITION ORGANIZATIONS**

The Services—Army, Navy and Air Force—are separate departments within DoD, required by statute to train, organize, and equip their respective military organizations. Thus, a significant responsibility of each Service is the acquisition of military equipment to meet the needs of the warfighter. Closely allied with the structural division of responsibilities is the department's management philosophy. Since the creation of DoD, the philosophy has been to centralize policy-making at the OSD and Service headquarters level, with decentralized execution of programs at field level organizations. As seen above, OSD is primarily a policy-making organization, although it plays a key role in program management through the PEO structure for Major Defense Acquisition Programs and in its oversight role through the Defense Acquisition Board (DAB).

All three Services have organized based upon OSD direction and congressional mandates. Each Service has a single, full-time Service Acquisition Executive (SAE), an “acquisition czar,” at the Assistant Secretary level.<sup>17</sup> The SAE<sup>18</sup> has responsibility for making acquisition policy and managing the acquisition system within their respective department. Each of the Services has created a streamlined organization required by the 1989 Defense Management Review which includes the Program Manager (PM), the Program Executive Officer (PEO), and the Service Acquisition Executive (SAE)—although each is managed slightly differently.

Within this basic structure, each of the services has organized to meet its management and mission needs. The Army and Air Force have Major Commands, headed by four-star generals, which have acquisition and logistics responsibilities—Army Materiel Command and Air Force Materiel Command. These commands manage the personnel, resources and processes involved in acquisition and logistics support of the operational forces. The Navy eliminated its Materiel Command in the 1980s and has four subordinate Naval Systems Commands, two headed by three-star admirals, with responsibility for the acquisition of systems and providing logistics support to the fleet.

At the service headquarters level, each Service has established offices with responsibility for oversight and direction of the acquisition system, and for providing acquisition and contracting policy, and budget preparation. The role of information technology in weapon system development and management of information within the services is recognized by establishment of Chief Information Officers. In the Air Force the CIO is located within the acquisition organization; while in the Navy and Army it is in a separate organization, but works with the acquisition organization on common issues. The CIOs have responsibility for information technology policies, procedures, standards, to include software policy and practices, and for the development, acquisition and fielding of information technology and systems within their service.

## THE ARMY ACQUISITION ORGANIZATION

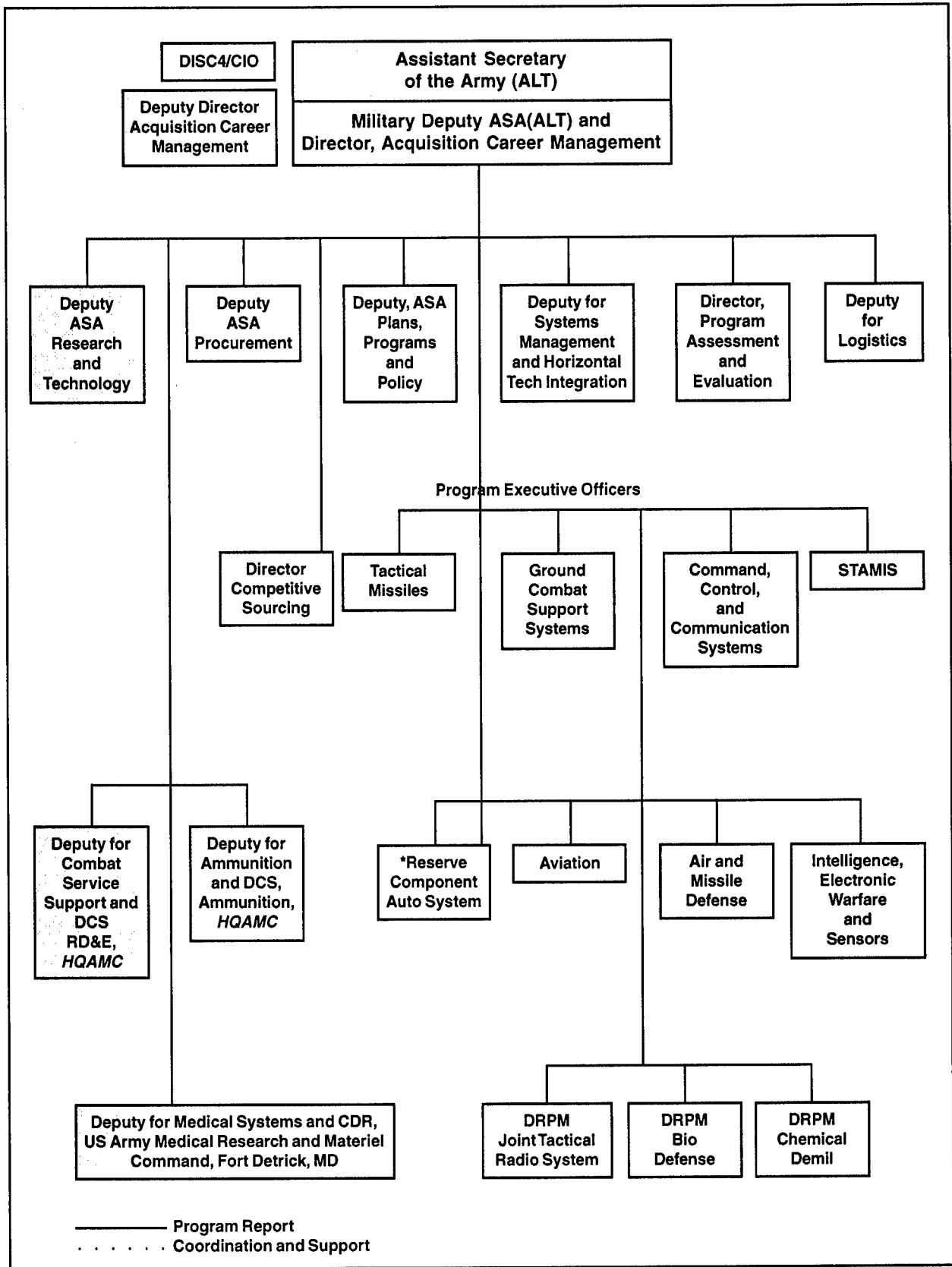
The Army's<sup>19</sup> Acquisition Executive is the Assistant Secretary of the Army, Acquisition, Logistics and Technology (ASA (ALT)). He is responsible for policy and management of both the acquisition and logistics systems. The headquarters' organization consists of six major deputies that provide support and advice to the Assistant Secretary. They include a Principal Military Deputy who is also the Deputy for Acquisition Career Management; Deputies for Logistics; Research and Technology; Procurement; Plans, Programs and Policy; Systems Management and Horizontal Technical Integration; and a Director for Assessment and Evaluation. The acquisition workforce education and training responsibility is assigned to the Deputy Director, Acquisition Career Management, who reports directly to the principle military deputy. With the recent emphasis on privatization, a Director for Competitive Sourcing has been added. The Army's CIO is separate from the ASA (ALT). CIO responsibility is vested in the Director of Information Systems for Command, Control, Communication and Computers who reports directly to the Secretary of the Army. The mission areas of Combat Service Support and Ammunition are assigned to Army Materiel Command for management, but the individuals are dual hatted as the "Deputy for" as part of the ASA (ALT) staff. Medical Systems are not assigned to the Army Materiel Command. They are separately managed by the Army Medical Research and Materiel Command at Fort Detrick, Maryland. The Deputy Assistant Secretary for Chemical Demilitarization oversees the U.S. chemical weapons destruction program. The Army currently has seven Program Executive Officers as a line organization reporting directly to the SAE, covering program areas, such as, missiles, support systems, aviation and others. The Army's PEO organizations range in size from 50 to 100 personnel and are located at

the AMC subordinate commands, such as AMCOM in Huntsville, Alabama. There is also a PEO for Reserve Component Automated Systems. Three Direct Reporting Program Managers (DRPMs) manage the Joint Tactical Radio System, Biological Defense, and Chemical Demilitarization, respectively. Figure 11 shows the ASA (ALT) organizational structure. Appendix C provides a functional description of each office.

### Army Materiel Command

The Army Materiel Command (AMC), a major command, located in Alexandria, Virginia, employs about 65,000 military and civilian employees and is the Army's principal materiel developer. AMC provides management of numerous maintenance depots, inventory control points, arsenals, ammunition plants, laboratories, test facilities, and procurement operations—much of it in general support of the acquisition mission of the department. In addition to its logistics and maintenance responsibilities, AMC headquarters has responsibility for providing the resources for the education and training of the acquisition workforce, ensuring manpower support for program offices and Program Executive Officers, and development and maintenance of acquisition processes. Within the headquarters of AMC there are three offices primarily involved in acquisition: the Deputy Chief of Staff for Research, Development, and Acquisition; the Office for International Programs; and the Deputy Chief of Staff for Security Assistance. AMC is also the executive agent with responsibility to acquire all ammunition for the three Services.

AMC has nine sub-organizations with specific areas of responsibility for acquiring weapon systems not assigned to the PEOs. In these organizations the Program Offices develop the acquisition strategies and approaches, select the contractors to develop or produce the weapon system and manage the contracts. They are:



**Figure 11.**  
**Office of the Under Secretary of the Army (Acquisition, Logistics and Technology)**

Aviation & Missile Command/AMCOM,  
Huntsville, Alabama  
Army Research Laboratory/ARL, Adelphi,  
Maryland  
Communications – Electronics Command /  
CECOM, Ft. Monmouth, New Jersey  
Industrial Operations Command/IOC, Rock  
Island, Illinois  
Soldier, Biological and Chemical Command/  
SBCCOM, Aberdeen, Maryland  
Simulation, Training & Instrumentation  
Command/STRICOM, Orlando, Florida  
Tank-automotive & Armaments Command/  
TACOM, Warren, Michigan  
Test and Evaluation Command/TECOM,  
Alexandria, Virginia  
U.S. Army Security Assistance Command/  
USASAC, Alexandria, Virginia

### THE NAVY ACQUISITION ORGANIZATION

The Navy acquisition executive is the Assistant Secretary of the Navy for Research, Development and Acquisition (ASN (RD&A)). ASN (RDA) sets policy and manages the Navy's acquisition system. Six deputy assistant secretaries (covering the program areas of ships, mine/underseas warfare, air, C4I/EW/Space, Theater Air Defense and Expeditionary Forces) support him. The Navy's CIO is a separate organization reporting directly to the Secretary of the Navy. The Navy's SAE is supported by five functional directors—Acquisition and Business Management, International Programs, Acquisition Career Management and Acquisition Reform and Planning, Programming and Resources. The Office of Naval Research is a line unit that reports directly to the ASN (RDA).

Twelve PEOs, with responsibility for major defense programs in areas, such as undersea warfare and mine warfare, report directly to the SAE. The Navy PEO offices are located at the

Naval Systems Commands and contain about 15-20 personnel per office. The PEO Joint Strike Fighter (JSF), dual hatted as the Program Manager, manages a joint Navy/Air Force program. This is an innovative Navy/Air Force management approach to increasing emphasis on joint program management. The current Program Manager/PEO is an Air Force general officer and reports to the ASN (RDA). At the end of the Air Force PM's tour, the position will alternate to a Navy PM whose reporting official will be the Air Force's Acquisition Executive. Two of the PEOs are actually Direct Reporting Program Managers (DRPMs) for—Strategic Systems Programs (SSP) and Advance Amphibious Assault Programs (AAAP). Figure 12 shows the ASN(RDA) organizational structure. Appendix C provides a functional description of each office.

### Naval Systems Commands

The next level of major command in Navy acquisition is the Systems Commands, two of which are headed by three star admirals. Each of these commanders has responsibility for programs not managed by the Service Acquisition Executive. They also have the responsibility to implement acquisition initiatives and provide the manpower and logistics support for the Navy PEOs and DRPMs. The PEOs and DRPM are collocated with the respective Systems Command. The four major Navy Systems Commands are:

Naval Air Systems Command (NAVAIR),  
Patuxent Naval Air Station, Maryland  
Space and Naval Warfare Systems  
Command (SPAWAR), San Diego,  
California  
Naval Sea Systems Command (NAVSEA),  
Washington, DC  
Marine Corps Systems Command, Quantico,  
Virginia

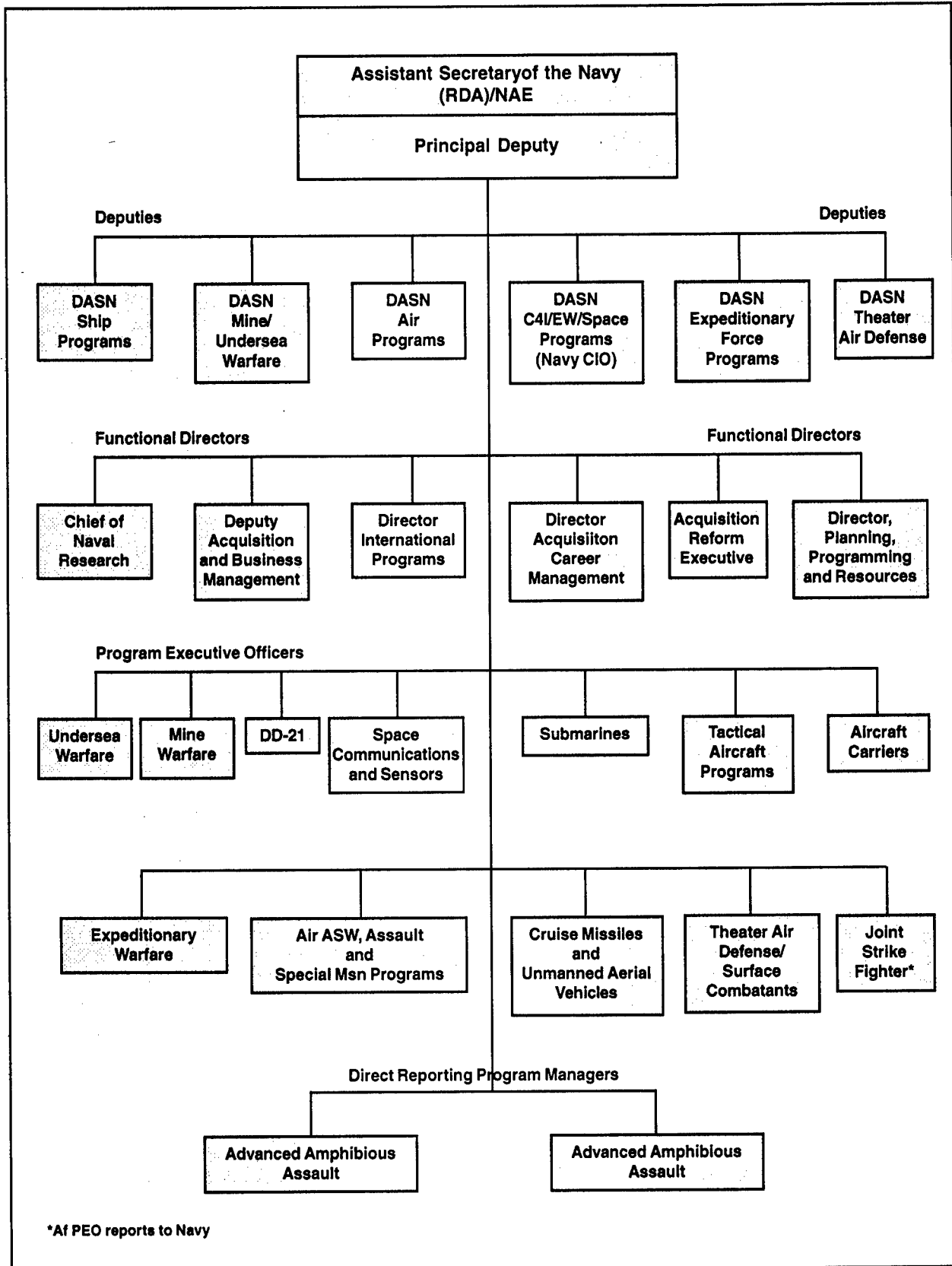


Figure 12.  
Office of the Assistant Secretary of the Navy (Research, Development & Acquisition)

Within these commands are various subordinate commands which support the acquisition system. For example, NAVAIR has the Naval Air Warfare Center Aircraft Division (NAWC AD), Naval Air Warfare Center Weapons Division (NAWC WD), Naval Air Warfare Center Training Systems Division (NAWC TSD), and Naval Inventory Control Point (NAVICP). There are two other support systems commands: the Navy Facilities Engineering Command, Washington, D.C., responsible for construction and facilities maintenance and the Navy Supply Systems Command, Mechanicsburg, Pennsylvania, which provides in-service logistics support.

### **AIR FORCE ACQUISITION ORGANIZATION**

The Air Force acquisition executive is the Assistant Secretary of the Air Force (Acquisition)—(ASAF (A)). ASAF (A) has two principal deputies. The Principal Deputy (Acquisition and Management) oversees the management of Air Force acquisition programs, acquisition reform, and acquisition training and education. This individual currently holds the position of chairman of the NATO Airborne Early Warning and Control Program Management Board of Directors. The Principal Deputy (Acquisition) provides management direction of programs, works the interface with the user and the Hill. Additionally, he is designated as the Air Force's Chief Information Officer.

The support staff consists of mission area directors and functional directors. The four Mission Area Directors for Information Dominance, Global Power, Global Reach and Space and Nuclear Deterrence provide policy, direction, resource allocation (PPBS) (program budgets), and oversight for programs within their mission areas. The four functional organizations are Contracting; Special Programs; Science, Technology and Engineering; and Management

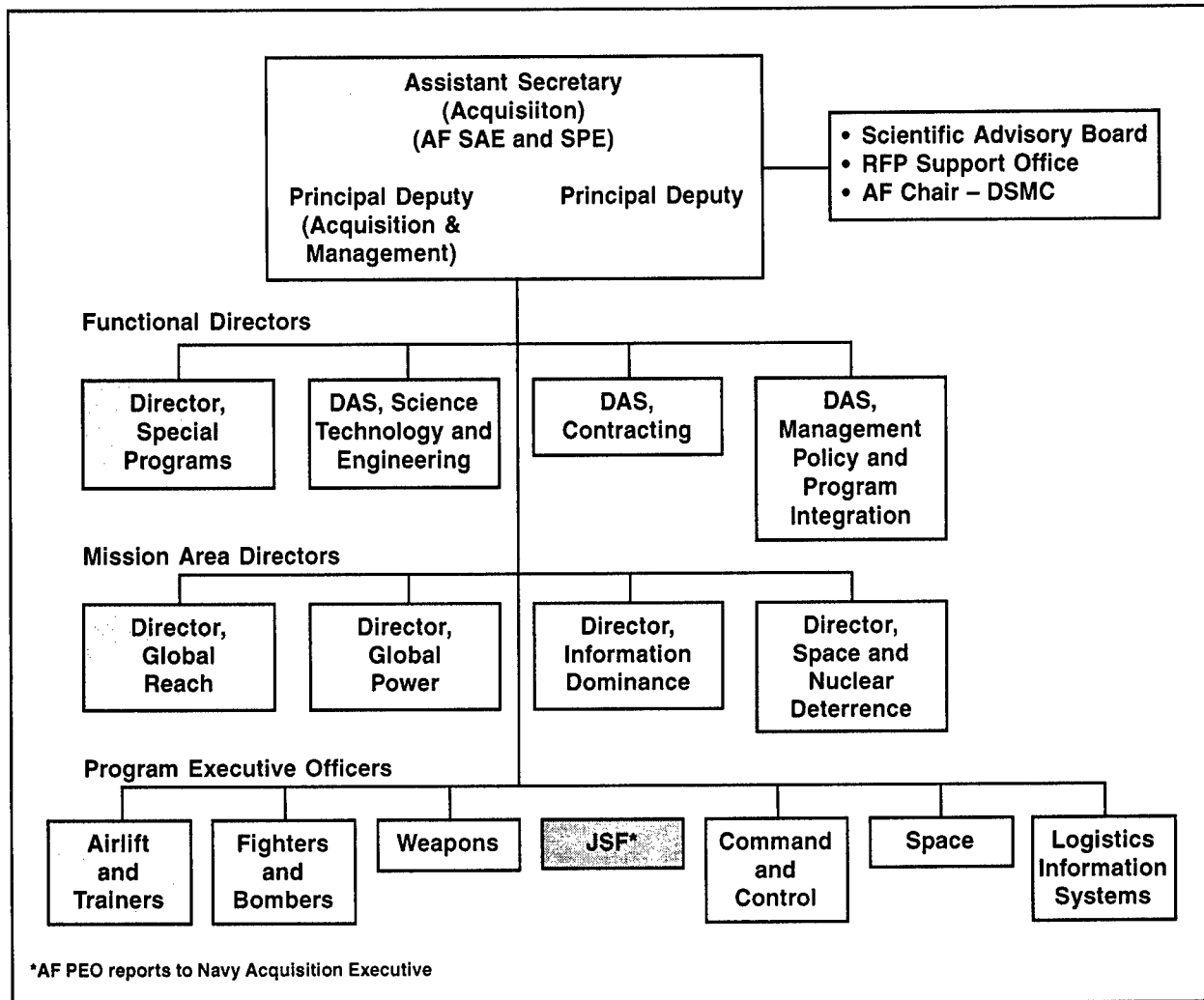
Policy and Program Integration. There is also the Air Force Acquisition Management Chair located at the Defense Systems Management College. Figure 13 shows the organizational structure. Appendix C provides a functional description of each office.

Air Force Program Executive Officers (AFPEOs) are responsible for a number of mission-related programs, which collectively comprise the PEO's portfolio. The current six PEOs have portfolios grouped into areas, such as fighters and bombers, weapons, airlift and trainers, space, command and control, and logistics information systems. The PEOs are a field unit, not part of the headquarters staff, and have small staffs, consisting of seven personnel for each office. A typical PEO will have oversight of five or six programs, each managed by a Program Manager, who is held responsible for ensuring that cost, schedule and performance aspects of acquisition programs are executed within an approved program baseline.

For other than Major and Selected programs (ACAT IIIs), the commanders of AFMC Product Divisions and Air Logistics Centers perform a PEO role. In their PEO role they are referred to as Designated Acquisition Commanders (DACs). These DACs are also established in a direct reporting line between their subordinate program managers and the SAE. In their role as center commanders, they report to the Air Force Materiel Command commander. Figure 14 shows this relationship.

### **Air Force Materiel Command**

The headquarters for AFMC, a major Air Force command, is located at Wright-Patterson AFB, Ohio, and employs over 100,000 personnel. Its mission is to manage the Air Force research, development, test, and acquisition of programs and to provide logistics support for Air Force weapons systems. Specifically, they perform



**Figure 13.**  
**Office of the Assistant Secretary of the Air Force (Acquisition) (as of April 1999)**

scientific research and depot maintenance, provide technical support for existing weapon systems, such as the F-16, certifying and managing system safety, integrity and suitability for combat use. They also provides the manpower and process support to the PEO structure.

AFMC has management responsibility for Air Force weapons systems “womb to tomb.” Weapon systems with significant development or production efforts remaining are managed by one of four Product Centers. These centers are primarily responsible for development,

acquisition, testing, and fielding of new or modified weapon systems. The four centers are:

- Aeronautical Systems Center, Wright-Patterson AFB, Ohio
- Space and Missile Systems Center, Los Angeles Air Force Base, California
- Electronic Systems Center, Hanscom Air Force Base, Massachusetts
- Air Armament Center, Eglin Air Force Base, Florida

Existing weapon systems and military equipment are managed by one of five air logistics



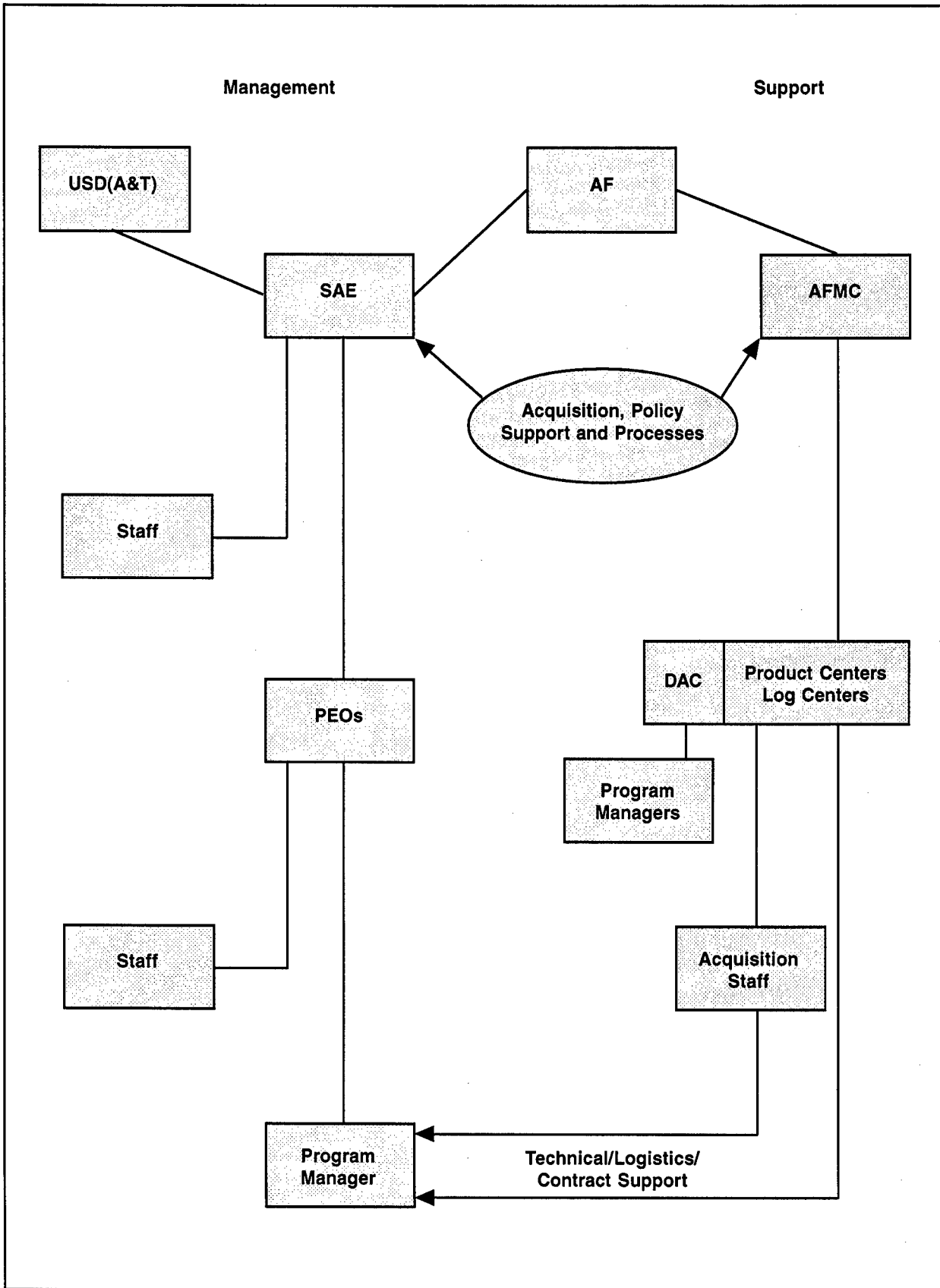


Figure 14. Acquisition Management Structure

centers. These centers have responsibility for logistics support and maintenance of weapon systems and equipment.

Ogden Air Logistic Center, Utah  
Oklahoma City Air Logistics Center,  
Oklahoma  
Sacrament Air Logistics Center, California  
(scheduled to close 2001)  
San Antonio Air Logistics Center, Texas,  
(scheduled to close 2001)  
Warner–Robbins Air Logistics Center,  
Georgia

In support of weapons development, AFMC has two test Centers—Arnold Engineering Development Center, Tennessee, and Air Force flight Test Center at Edwards AFB, California. AFMC is also home of the Air Force Research Laboratory (AFRL). The AFRL is the science and technology organization for the Air Force. They perform internal research and leverage the capability of other national scientific organizations, industry, and academia. The Air Force Security Assistance Center is also part of AFMC, and manages foreign military sales programs totaling in excess of \$20 billion in support of more than 80 foreign countries.

## *Chapter 7*

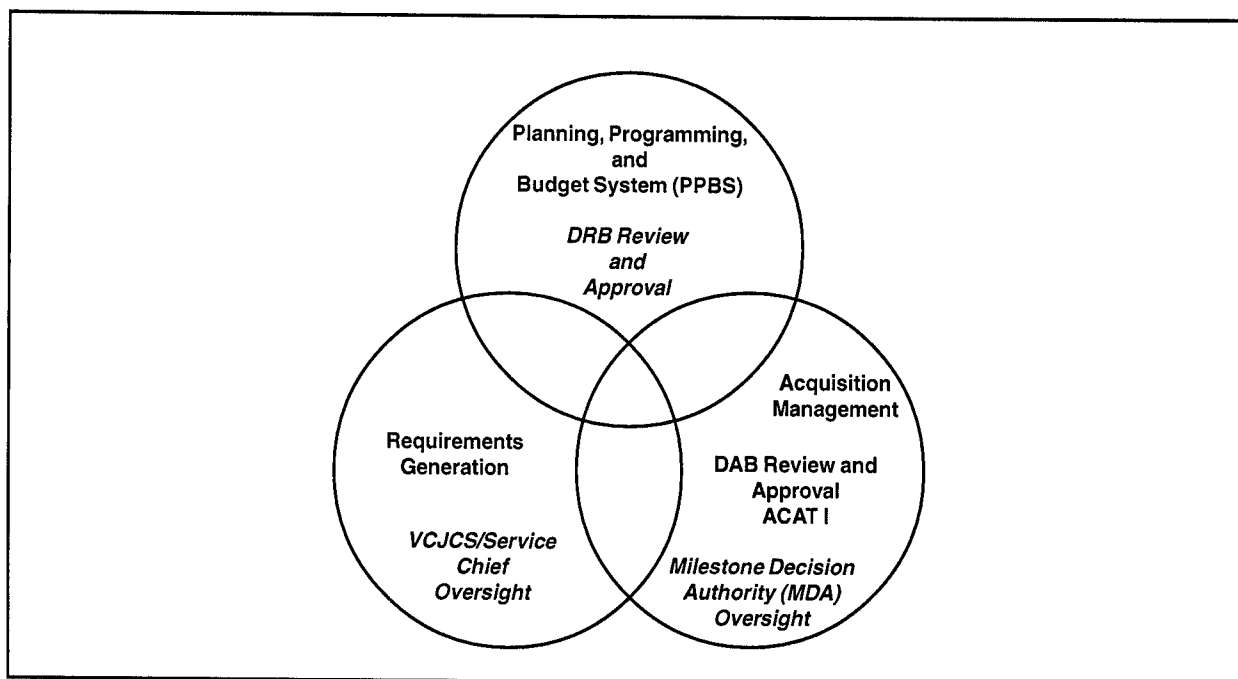
# THE DEFENSE ACQUISITION SYSTEM

There are three decision support systems used to manage the department. They are: (1) the Requirements Generation Process (discussed earlier); (2) the Planning Programming and Budgeting System (PPBS), and (3) the Acquisition Management System. All three systems are designed to assist senior decision-makers such as the SECDEF, USD (A&T) and other senior officials in making critical decisions. The output from these systems provide the money, authority, people and other resources necessary to execute programs and deliver a product to the warfighters. Figure 15 provides a conceptual look at the systems and the overlap between the systems. While these systems interact, they

also operate separately, continuously and concurrently. Decisions and issues overlap from one system to the other; and each impacts on the ability of the acquisition system to deliver timely, cost effective systems.

### PLANNING, PROGRAMMING, AND BUDGETING SYSTEM

In 1962 Defense Secretary Robert S. McNamara and Charles J. Fitch, OSD Comptroller, wanted to “run government more like a business.” They developed the Planning, Programming and Budgeting System (PPBS) to link strategic planning



**Figure 15. Three Decision Making Support**

activities to the budget. This system, unique to the Department of Defense, provides the mechanism for development of the Department's portion of the President's Budget.

Prior to implementation of the PPBS system, the military departments "planned, programmed, and budgeted" a year at a time. PPBS provides a disciplined process to tie long-term planning, such as the Defense Planning Guidance, to the resources needed to implement the planning and the budgetary dollars necessary for implementation. Senior leaders then have the information to make informed affordability assessments, to prioritize requirements and to make resource allocation decisions on defense acquisition programs. PPBS is a cyclic process, looking out five years, with annual reviews of the resources necessary for the department to operate. In each phase, OSD issues guidance; the Services, defense agencies and the JCS request resources; and the Defense Secretary issues a decision. The Deputy Secretary of Defense, with advice from the Defense Resources Board (DRB), manages the PPBS system.

The planning portion of the PPBS is the responsibility of the USD Policy. Generally, this phase begins about two years in advance of the fiscal year in which the budget will be requested. The Services and Joint Staff, with OSD, conduct this six-month process beginning in the fall and ending in March. The overall framework for planning is provided by the President in his National Security Strategy and the National Military Strategy. This phase begins when the JCS issues the Joint Planning Document (JPD) which proposes long-term strategy and force levels necessary to achieve national military objectives. Based on the JPD, OSD issues the Defense Planning Guidance (DPG) document, which provides the strategic mid-range-planning framework for developing the Service Program Objective Memorandum.

The programming phase is next and is the responsibility of OSD's Program Analysis and Evaluation office. The Services respond with their Program Objective Memoranda (POM) stating requirements for resources, such as personnel and supplies, and justifying acquisition programs. The JCS then submits to OSD the Chairman Program Assessment (CPA) assessing the capabilities and risks associated with the proposed forces and programs. A period of formal discussions (program review cycle) follows between the Services, OSD, and the JCS. Once an acceptable level of resources and programs is agreed to, the Secretary of Defense issues the Program Decision Memorandum (PDM). See Figure 16 for the time frames for conducting the PPBS cycle.

The final phase is the budgeting phase and the responsibility of the OSD Comptroller. The PDM has set the resource and acquisition program levels. These are translated into the Service annual budgets, which are in turn reviewed by OSD. Based upon OSD comments, the services submit a Budget Estimate Submission (BES) in September. After resolution of issues caused by the BES submittal, OSD issues program budget decisions and the DoD budget is finalized. What survives is voluminously documented and submitted to OMB for inclusion in the President's Budget, which is submitted to Capitol Hill in February.

### **The Acquisition Management System**

The Acquisition Management System consists of the policies and procedures governing the operations of the entire DoD acquisition system. There are two documents that guide the defense acquisition business. The first regulation is the DoD Directive 5000.1, Defense Acquisition, which identifies the key officials and panels for managing the system and provides broad policy and principles for all acquisition programs. Its sister pamphlet is DoDR

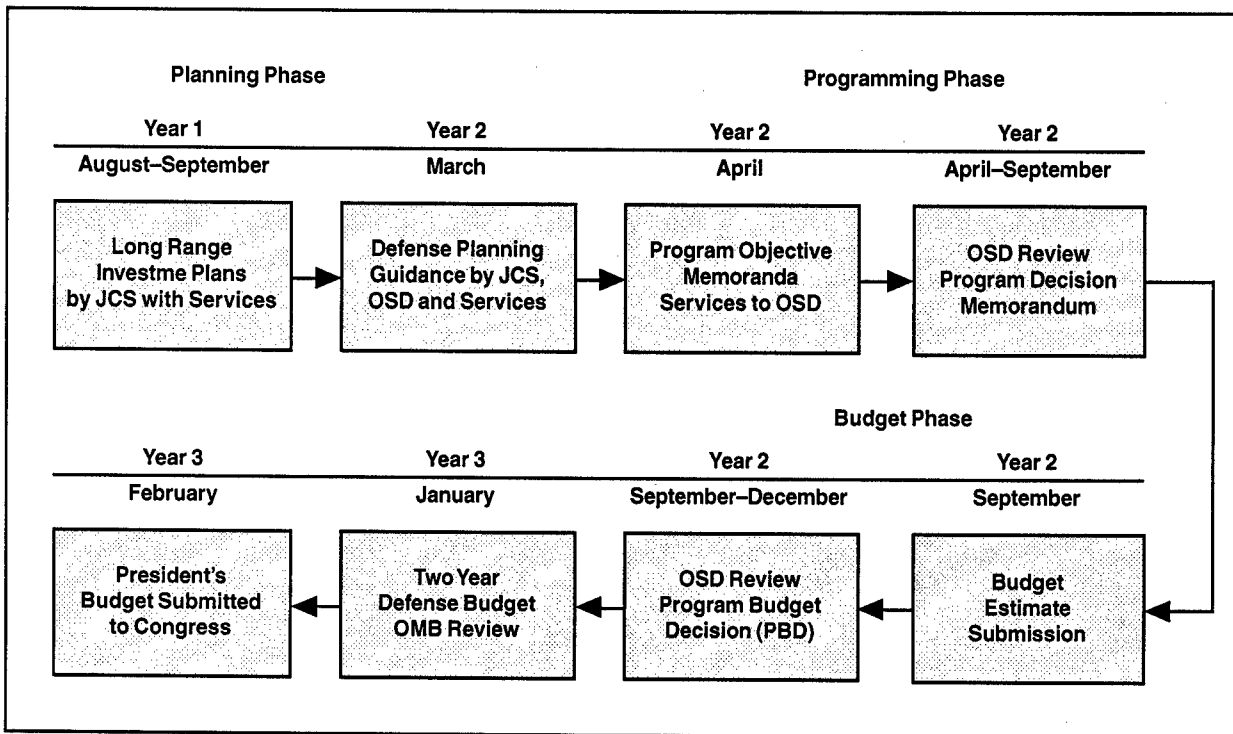


Figure 16. Planning Programming Budget Cycle

5000.2, Mandatory Procedure for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System Acquisition Programs (MAIS). This document provides specific mandatory policies and procedures to guide the development and production of major programs. There are three general principles governing the operation of the defense acquisition system:

1. Translate operational needs into stable, affordable programs,
2. Acquire quality products, and
3. Organizing for efficiency and effectiveness.

The acquisition system is designed around a series of life-cycle phases. It begins with the conceptualization of a system and extends to actually developing and fielding a system, and eventually phasing it out of the inventory. It is more colorfully described as "womb to tomb." The four phases of the DoD acquisition system

are: (1) Concept Exploration (CE), (2) Program Definition and Risk Reduction (PDRD), (3) Engineering and Manufacturing Development (EMD), and (4) Production, Fielding/Deployment, and Operational Support. As a system moves through its life cycle, it must pass decision points. These points are called Milestone Decision Points (Milestone 0 to IV). The phases and milestone decision points are shown in Figure 17.<sup>20</sup> At each of these milestones, the decision-maker, the Milestone Decision Authority (MDA), will make a determination whether or not the system is programmatically and technologically ready for the next phase. As an example, an Army personnel carrier entered the Program Definition and Risk Reduction phase with two goals—demonstrating certain technology and developing a successful prototype. The MDA will evaluate how successful the program performed its goals and what its projected cost, schedule and technical risks are for the next phase. If the Phase I goals have been met and the performance parameters are acceptable, the

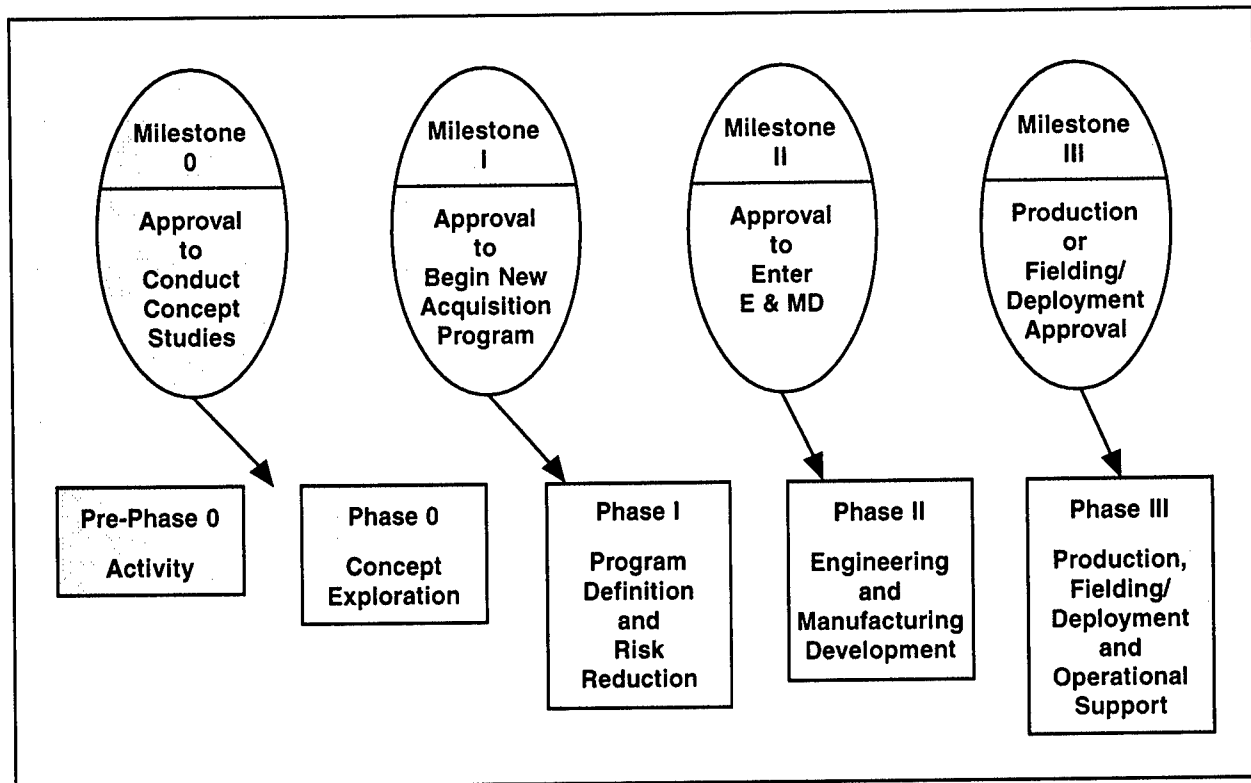


Figure 17. Milestones and Phases

MDA will approve the program's entry to the next phase—Engineering and Manufacturing Development. Of course, if the program has not met its goals and the risks are perceived to be too great, the program could be cancelled or additional technical efforts may be undertaken. For Major programs, the Defense Acquisition Board (DAB)(to be discussed later) is the MDA. This is an event-driven process and some programs will go through a phase in one or two years where another may take four or five years. The next section provides a description of each of the milestones and phases.

## PHASES AND MILESTONE

### Milestone 0/Phase 0: Concept Exploration<sup>21</sup>

The Requirements Generation Process has identified a shortfall in military capability and turned to the acquisition community. The basic

questions the acquisition community is asked "How can I solve this problem? What type of material solution is possible?" The answer could be a new aircraft, a remotely-piloted vehicle, modification of an existing aircraft, or other possible solutions. During this phase most of the effort is paper products—studies of various concepts to meet the warfighters needs. These studies will address the following types of questions:

- What are the technical problems that must be overcome?
- What technology is available to meet military needs?
- What are the technical risks?
- What will the program cost and how long to field?

This “concept” will translate a range of ideas into a more detailed, but still abstract, description of a possible solution. Generally, this phase is short lived, possibly several years, and relatively inexpensive.

### **Milestone I: Approval to Begin a New Acquisition Program/Phase I – Program Definition and Risk Reduction**

This is the phase where a program becomes a program. If it is an ACAT I program, the DAB will provide criteria for entering the next phase of acquisition. During this phase the program office will look at alternative acquisition strategies and solutions. New technologies will be evaluated for possible incorporation into the system. The cost, schedule, and technical risks will be assessed? Prototypes may be built and tested to further identify and reduce risks. Technical factors that drive cost will be evaluated. Estimates of the life-cycle cost of the system will be developed. Other factors, such as interoperability with other services and allies, should be pursued and evaluated. As the title to this phase indicates, the program office is trying to “flesh out” the item and focus on risk reduction of the system prior to the next decision point. This phase can be as short as two to three years or well over five years.

### **Milestone II: Approval to Enter Engineering and Manufacturing Development/Phase II – Engineering and Manufacturing Development**

The purpose of the Milestone II decision point is to determine if the results of Phase I warrant continuation of the program, and to approve entry into Engineering and Manufacturing Development. The program is now moving from the experimental phase into the engineering design phase and it is a significant commitment of government funds. A particular approach—ship, radar, airplane—has been selected and the

actual design of the system takes place. The contractor designs the system, builds actual products, and then tests the item to ensure it performs to specification. Also during this phase, operational testing will be accomplished to ensure that it performs as it should in a combat environment. A limited commitment to production, called Low Rate Initial Production (LRIP),<sup>22</sup> will occur. Depending upon the system and the program risks, the MDA could approve the LRIP initially or when EMD is completed. This phase often takes three to five years or longer.

### **Milestone III: Approval for Production, Fielding/Deployment, and Operational Support/Phase III – Production, Fielding/Deployment, and Operational Support**

It works! It has been tested and is ready for production. With the Milestone III production approval by the MDA, this phase brings the equipment to the warfighter. As the equipment is delivered, the military services will introduce the equipment into the inventory and into actual use. Along with the equipment will come the technical orders on how to operate and repair the equipment, the spare parts, the training and training equipment, and test equipment necessary to operate the equipment.

In summary, the development of a weapon system is a methodical, event driven process, which can well take over 10–15 years. However, the warfighting environment is dynamic. New technology makes old technology obsolete. Testing may have identified deficiencies that need to be corrected. The enemy’s equipment and tactics may change. For these types of reasons, additional changes to the system, some major, may occur many years after the system is fielded. The first B-52 pilot’s grandson, and perhaps great grandson, may still be flying that aircraft. Systems such as the B-52, which have been in the inventory for 50 years, require

constant change to keep up-to-date with emerging threats and new technology. Some modifications, such as new avionics, or engines, could be of sufficient cost and complexity that they could qualify as a new major system program. If this happens, they will be managed as a “new” major program.

### DESIGNATION OF PROGRAMS

The Department assigns a designation to a program to ensure the proper level of management review. These designations also indicate the statutory and regulatory policy that the program must comply with. The most senior level of review, OSD (DAB) review, is selected for the most costly programs - a Major Defense Acquisition Program (MDAP), also referred to as an Acquisition Category I (ACAT I) program. The next level is a Major Program, or Acquisition Category II (ACAT II). For less than major programs, or ACAT III programs, the level of review is delegated to the Program Executive Officer or Systems Command level. In most cases the cost of a program is used to determine the review level. An MDAP is based upon the cost for research, development, test and evaluation (RDT&E) of a weapons system of more than \$355 million dollars<sup>23</sup> or for production cost of an item for more than \$2.135 billion. The Service Acquisition Executive will review a major system (ACAT II) at the Service, versus OSD level. An ACAT II designation is based upon RDT&E cost of more than \$135 million, or procurement cost of more than \$640 million. All other systems are considered less-than-major systems (ACAT III). While normally the level of review is designated by a system’s cost, at other times, the USD (A&T) or the SAE will determine that because of high technical risks or political issues, a more senior review is warranted.

For over twenty years the department has provided oversight of motor automated information

systems under a separate forum. The Major Automated Information System Acquisition Review Council (MAISARC) process has recently been integrated into the DAB process. A program receives a Major Automated Information System (MAIS) Acquisition Program designation at a lower dollar value. A program with costs in any single year in excess of \$30 million dollars, or total program costs in excess of \$120 million, or total life-cycle costs in excess of \$360 million<sup>24</sup> will be designated an ACAT IAM program.

### Categories of Acquisition Programs and Milestone Decision Authorities (MDA)<sup>25</sup>

Category	Management Responsibility/MDA
ACAT ID	USD (A&T).
ACAT IC	Generally the Service Acquisition Executive.
ACAT IAM	Assistant Secretary of Defense (C3I). <sup>26</sup>
ACAT IAC	SAE.
ACAT II	SAE.
ACAT III <sup>27</sup>	Delegated to PEO/PM/acquisition command.

### DEFENSE FORUMS

There are several key boards the DoD uses to manage decision making in the three decision systems. These boards allow the Deputy Secretary or the Under Secretary for (A&T) to have the benefit of the key players in the system to provide input and advise him in making his decision. The Defense Resources Board (DRB) is the senior DoD resource allocation board chaired by the Deputy Secretary of Defense. The DRB advises the Deputy Secretary on major resource allocation decisions and authorizes funds. Its membership includes Chairman and



Vice Chairman JCS, Under Secretaries of Defense, Chiefs and Secretaries of the military Departments. The DRB coordinates the two decision systems—the PPBS and Acquisition Management Systems.

### **The Defense Acquisition Board (DAB)<sup>28</sup>**

This body has been called the “corporate-level vice-presidents of DoD weapons acquisition.” It is the senior DoD *acquisition* review board chaired by the USD (A&T)<sup>29</sup> for ACAT I programs. At each milestone the DAB authorizes program initiation or continuation. Each DAB review assesses the programs accomplishment of its required objectives during the current phase and is it ready for the next acquisition phase. When the DAB approves continuation, it provides exit criteria which must be met to continue into the next phase.

### **DAB Members**

The principal members are:

- The Vice Chairman of the Joint Chiefs of Staff (vice chairman of Board);
- Principal Deputy USD (A&T);
- Under Secretary of Defense (Comptroller);
- Assistant Secretary of Defense (Strategy and Requirements);
- Director of Operational Test and Evaluation (DOT&E);
- Director of Program Analysis and Evaluation (PA&E);
- Acquisition Executives of the Army, Navy, and the Air Force;
- Cognizant Overarching Integrated Product Team (OIPT) Leader, PEOs and Program Managers.

Senior advisors, such as, the Director of Defense Research and Engineering also routinely support the DAB Chairman.

As part of the Department’s acquisition reform efforts, the DAB process has been changed to use Integrated Product Teams (IPT), in particular the Overarching IPT to improve the quality of information and to speed up the process. A concern of the senior OSD leaders has been the length of time and bureaucracy that has crept into the process over the years. The use of the IPT structure, along with other acquisition reform changes, is meant to overcome these problems. It should be noted that in many cases the OIPT could resolve all major issues, and not require the DAB to meet in executive session, but rather perform a “paper” DAB. If the DAB agrees, then the approval document—an Acquisition Decision Memorandum (ADM)—will be issued.<sup>30</sup>

### **INTEGRATED PRODUCT TEAMS (IPT)**

Over the last ten to fifteen years, the concept of IPTs, as a management approach, has gained favoritism both in government and industry. The IPT is based upon the concept that having the right people working together as a team will result in a better product for the customer. The typical IPT will have a team of experts from a variety of acquisition functions, such as, engineering, contracting, logistics, and the user. At the program office level they work the day-to-day program problems. Many IPTs include contractor (industry) representatives. As an example, an airplane program office might have the following IPTs:

- IPT for engines,
- IPT for simulators, and
- IPT for aircraft.

The IPT began in the program office, but, as the acquisition community found they worked well, the concept was expanded as part of the Department's Acquisition Reform Program. There are now three other types currently in use: (1) the Working IPT; (2) the Integrating IPT; and (3) the Overarching IPT. (See Figure 18.)

### Working IPTs (WIPT)

The WIPT is the service Headquarters and OSD action functional officers' opportunity for insight into the program mostly from a functional viewpoint, such as, contracting or testing. This group will formulate/coordinate documents needed in

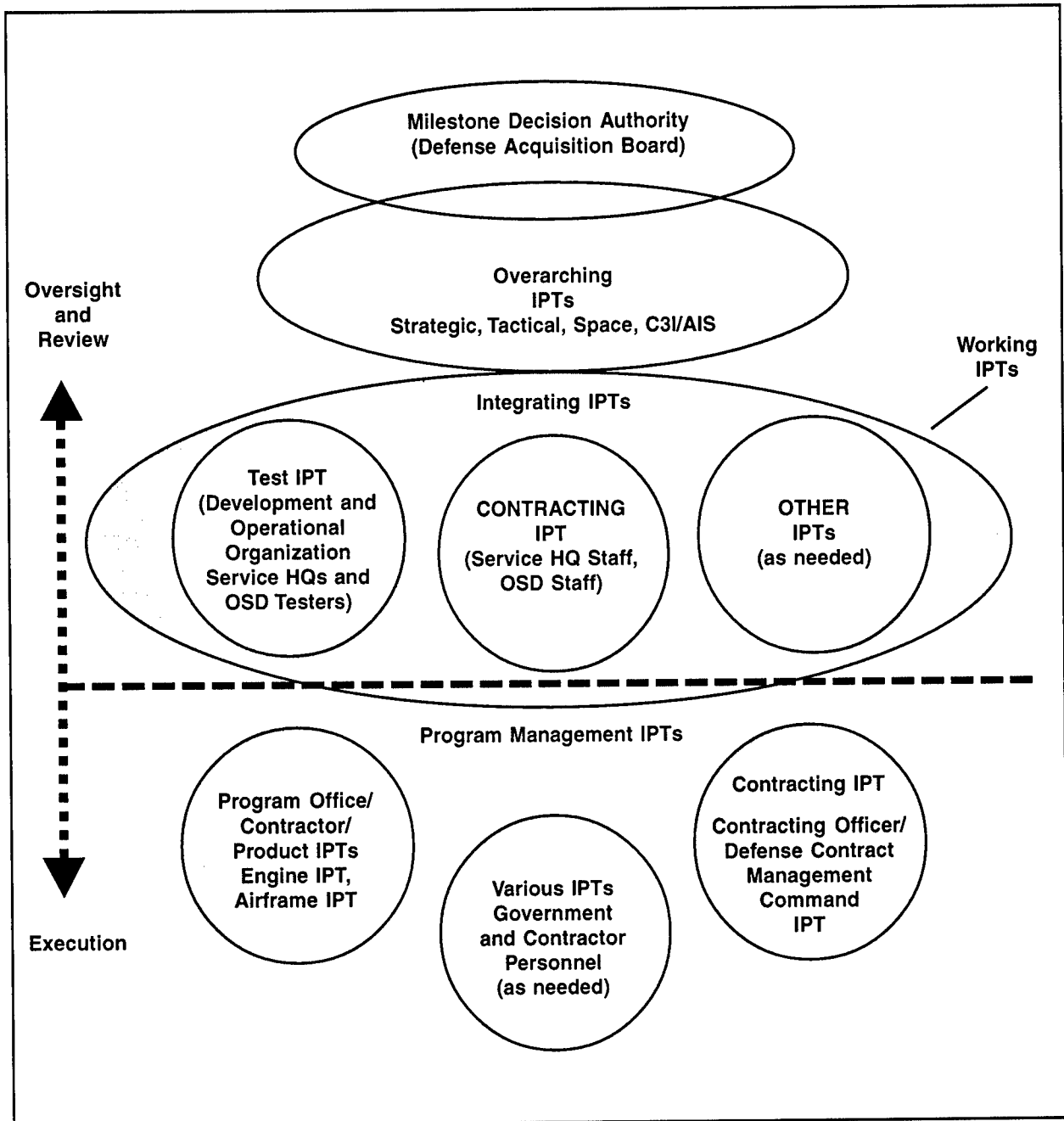


Figure 18. Defense Acquisition Integrated Project Team (IPT) Structure

that functional area, such as the Single Acquisition Management Plan (SAMP).

### Integrating IPTs (IIPT)

The Program Manager will generally lead the Integrating IPT. Membership on the Integrating IPT is generally a senior member of the functional areas represented in the Working IPT. The Integrating IPT coordinates the Working IPT efforts. In doing this they will support the development of strategies for acquisition and contracts, cost estimates, evaluation of alternatives, logistics management, cost-performance trade-offs, and other efforts.

### Overarching IPTs

The Overarching IPT is the highest organizational level IPT and is used in managing ACAT level I programs. An OSD official assigns each program to an OIPT lead. There are four OIPTs and the officials leading them are:

OIPT	OSD Official
<b>Strategic &amp; Tactical</b>	Director of Strategic and Tactical Systems
<b>Space</b>	Assistant Deputy Under Secretary of Defense (Space and Acquisition Management)
<b>C3I/AIS</b>	Deputy Assistant Secretary of Defense (C3I)

Typical OIPT membership is the PM, PEO, Component staff, Joint Staff, USD (A&T) staff and the OSD staff principals or their representatives, involved in oversight and review of a particular the program. OIPTs meet as necessary over the life of a program. The goal is to resolve as many issues and concerns at the lowest level possible, and to expeditiously escalate issues that need resolution at a higher level,

bringing only the highest level issues to the MDA for decision.

The indicated above the OIPT plays a significant role in improving the DAB process. The OIPT will meet two weeks prior to a scheduled DAB review. The acquisition strategy, the program status, outstanding issues, and criteria for next phase will be discussed. If the issues and problems can be worked at the OIPT level, the OIPT leader, with the SAE, will recommend to the Chairman of the DAB chairman not having a formal DAB, but rather a "paper" DAB.

### THE PROCUREMENT/CONTRACTING SYSTEM<sup>31</sup>

The Department of Defense is the largest buyer in the world. It spent over 128 billion dollars in Fiscal Year 1998. The items bought range from developing major weapon systems, such as the F-22, to buying repair services for copiers. It is a large, complex system with hundreds of buying offices located throughout the world. The basic policy of the U. S. Government is that products and services will be bought, if possible, competitively. The original regulation governing procurement for the DoD was the Armed Services Procurement Regulation, first issued in 1948. This document has evolved over the last 50 years, going through two name changes—Defense Acquisition Regulation (DAR) in the 1970s to the Federal Acquisition Regulation (FAR) in 1984. While competition has always been the hallmark of the system, it was not until the passage of the Competition in Contracting Act (CICA) of 1984, which mandated full and open competition, that over 50 percent of the dollars spent were actually competed. CICA instituted a very structured process for sole source authorization. It requires approval by the local competition advocate for lower dollar acquisitions. The Senior Procurement Executive must approve acquisitions over \$50 million

dollars. In Fiscal Year 1998, 58 percent of the department's dollars were competed, which equates to over \$74 billion dollars available for competition.

The Director, Defense Procurement, on the staff of USD (A&T), sets policy for procurement within the department. In turn, each of the Services has a functional organization at the service headquarters level responsible for policy.<sup>32</sup> The actual awarding of contracts in the Department of Defense is decentralized. There are hundreds of contracting organizations located at military posts and bases throughout the world. In general, they buy goods and services that are most efficiently procured at local level—maintenance and repair of facilities, office supplies and food products. Weapon Systems Contracting is done at centralized agencies, such as the Army's Communications Electronics Command in New Jersey, the Navy's Space and Naval Warfare Systems in California, and the Air Force's Aeronautical Systems Center in Ohio.

There are two general types of contracts used in DoD contracting—Fixed Price and Cost Reimbursement. Fixed price type contracts, as the name implies, set the price to be paid to the contractor on the day the contract is awarded. This type of contract is used where the item is well-defined, for example, a jeep or an existing missile. For newly-developed equipment, where there are many technical and manufacturing risks, a cost-type contract is used to share the risk between the government and the contractor. In a cost-type contract, the government reimburses all allowable and reasonable costs, plus a small fee. To use a fixed-price contract for Research and Development (R&D) over \$10 million requires approval by the USD (A&T). In general, during the early phases of research and development through EMD, a program office will use a cost-type contract. Once the system moves to production and the design is finalized, then a fixed price contract will be used.

For a more thorough discussion of contract types, see FAR Part 16.

How are contractors competitively selected for a major acquisition contract? To ensure transparency in the procurement system and a "fair" chance for each offeror, a highly structured process of "Source Selection" has developed. A typical source selection starts with the "Contracting Officer"<sup>33</sup> issuing a Commerce Business Daily (CBD) announcement for a preproposal conference. All interested bidders are invited. Attendees will be briefed on the military requirement and an approximate schedule of events. The next event is issuance of a "draft" Request for Proposal (RFP) looking for industry comments for changes and problems. Finally, all interested bidders will be provided an RFP. Interested contractors will submit a proposal. A source selection evaluation team will evaluate the proposals. Their assessment will be briefed to the Source Selection Authority (SSA), a senior government official, who will make the actual selection. For large dollar and highly controversial weapon system acquisitions, the Source Selection Authority could be the Secretary of the Department or the SAE. Most often it is a Program Executive Officer or other senior official.

What happens if you think the process was unfair? The U. S. Congress has established a protest mechanism. For dissatisfied offerors, protests of award of contracts can be sent to the agency that awarded the contract or the General Accounting Office. An alternative, but more costly method, is to go to the U. S. Federal District Court or the U.S. Court of Federal Claims. Once a contract is awarded, the DoD has a dispute forum for issues involving contract performance. Unhappy contractors can go to the Armed Services Board of Contract Appeals, which is an administrative forum, designed to be a relatively inexpensive way to administratively settle disputes. Again the Federal District

Court or the U.S. Court of Federal Claims offer an alternative venue. An initiative of the DoD's acquisition reform movement is the use of a third method—Alternate Disputes Resolution (ADR). ADR is designed to be a cost-effective method of using impartial arbitrators to resolve the dispute.

Once the contract is awarded the program office will assign contract administration activities, such as payment and quality assurance, to the Defense Contract Management Command which has offices located in various regions throughout the U.S. Management of the contract, as it relates to key program requirements, will be maintained in the program office.

The Defense Contract Audit Agency (DCAA) plays a significant role in supporting program offices with contract audits and accounting and financial advice during the negotiation, administration, and settlement of contracts and subcontracts.

The U. S. defense acquisition system is highly regulated with laws and policies covering every area of procurement, such as contractor's financial systems, records keeping, socio-economic requirements, subcontracting, and ethics. But, it is also a transparent system designed to ensure fair treatment of vendors with equitable opportunities to bid on new defense work.

### **“Color of Money”**

“I have the wrong color of money” is a refrain often heard in program offices. Since all American dollars are green, it is often a confusing statement to someone new to the acquisition business. The “color of money” refers to the type of funds authorized and appropriated by Congress to be spent by the DoD. There are three basic types of funds most often used in acquisition—Research, Development, Test and Evaluation (RDT&E) funds, Procurement funds, and Operation and Maintenance funds. Congress appropriates each of these types of funds for a specific purpose. RDT&E funds may be used only for research and development, and by policy are spent (obligated) *normally in the year appropriated*. This is where the problem comes in. For example, a program office will have budgeted in Fiscal Years 1&2 for RDT&E funds and Fiscal Year 3 for procurement (production) funds. If the development effort slips, a not uncommon occurrence, then the program office may need more RDT&E funds and less production funds in year 3. Thus, the refrain “I have the wrong color of money.” The financial management portion of the DoD business is complicated with many rules, and there are many variations of the “color of money” problem. It is usually solved by a reprogramming action to move money from one program to another. However, if the total amount of RDT&E funds needed for the program exceeds \$4 million dollars (\$10 million for procurement), then Congressional approval is required. So, if you hear the term “color of money,” be aware that the program office has a money problem, not always easily solved.

## Chapter 8

# DEFENSE ACQUISITION AND TECHNOLOGY WORKFORCE

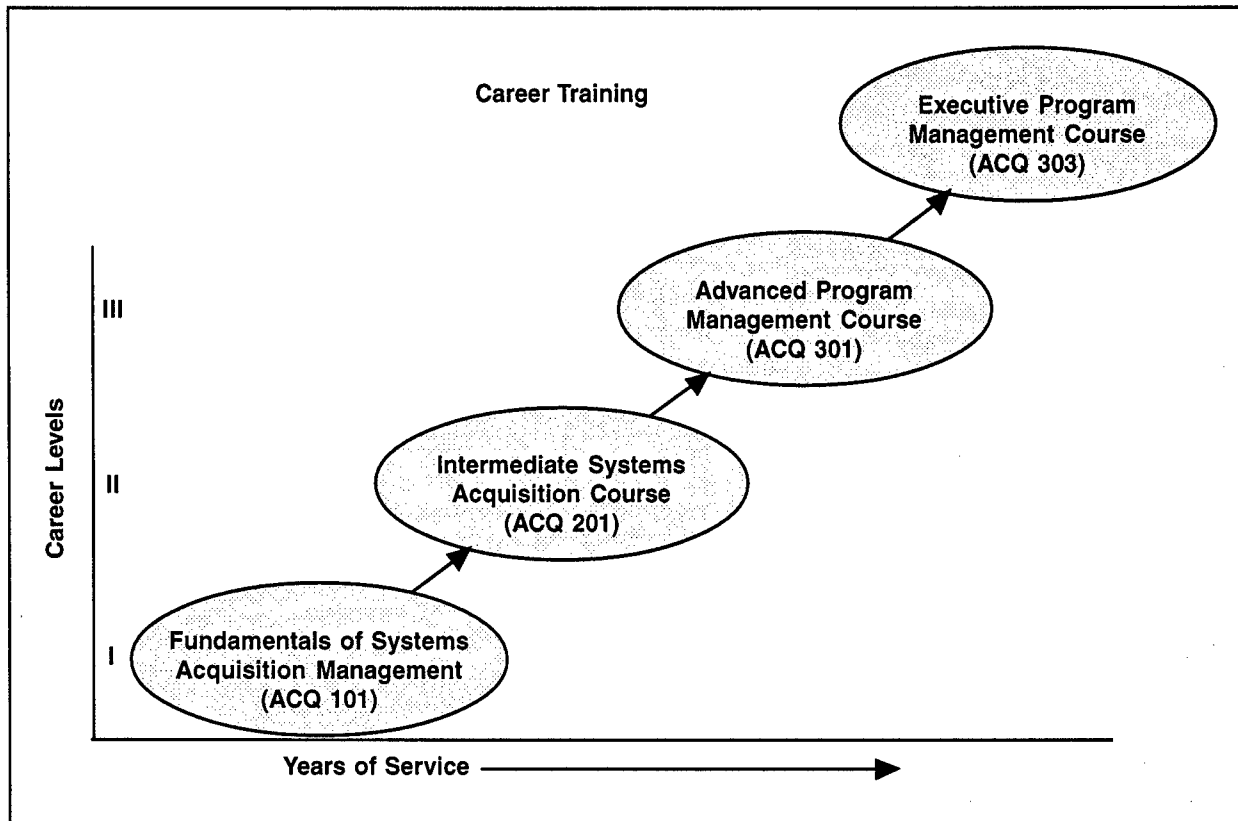
About 149,000<sup>34</sup> personnel, military and civilian, work in the Defense Acquisition and Technology workforce. In the 1980s a series of scandals raised questions regarding acquisition policies, organization and the effectiveness of the workforce. The Packard Commission report which had great impact on restructuring the requirements process and the acquisition management of the defense programs also played a key role in raising the issue of training and education of the workforce. Efforts were begun in the services to improve the training of the workforce and to ensure personnel met minimum standards. Finally, in 1990 Congress passed the Defense Acquisition Workforce Improvement Act (DAWIA). The purpose of DAWIA was to provide for a workforce to be fully proficient and knowledgeable in the business of acquisition. Education, training, and experience requirements were established for each acquisition position based on the level of complexity of duties required for that position.

To carry out this mission, DAWIA mandated establishment of a Defense Acquisition University (DAU) structure. Currently the structure acts as a consortium of schools, which includes the Defense Systems Management College, Ft. Belvoir, Virginia; Air Force Institute of Technology, Wright-Patterson AFB, Ohio; the Naval Postgraduate School, Monterey, California and the Army Logistics Management College, Ft. Lee, Virginia, as the prime consortium members. Through its consortium of schools, DAU offers 81 courses with over 1200 offerings covering all acquisition career fields. Every year

more than 35,000 personnel receive training from DAU.

### Typical Career Path

A typical career path in acquisition can be seen by looking at the program management career field. When an individual is hired into the workforce they will enter at level I. Level I, the first of three levels of progression, generally requires that an individual possess an appropriate degree, and once hired, receive a combination of on-the-job and formal training. For program management the formal training is ACQ<sup>35</sup> 101, the Fundamentals of Systems Acquisition (see Figure 19 for career training). After several years on the job an individual will continue to receive on-the-job-training plus attend the ACQ 201, Intermediate Systems Acquisition Course and achieve their level II certification. With continued successful performance on the job, and by taking the PMT 302, Advanced Program Management Course at the Defense Systems Management College (DSMC), an individual can achieve level III certification and be eligible for a critical acquisition job. A critical acquisition job is a senior position—GM/S 14<sup>36</sup> for civilians and lieutenant colonel for military. The final step in the program management career field would be competitive selection to manage a major system program and attendance at the PMT 303, Executive Program Management Course. These three levels meet the training and experience requirements to become a major systems program manager. Similar types of education and



**Figure 19. The Program Management Education Continuum**

training requirements exist for all acquisition career fields.

The acquisition Corps consists of both military and civilian members. As can be seen from the discussion of other areas, the Services, based upon their traditions and needs have structured the size of their acquisition workforces slightly differently. The following are the current estimates of the size of the acquisition workforce and the breakout between military and civilian (Figures 20 and 21).

The Navy has the largest number of acquisition personnel with over 49,000 personnel. However, they have the fewest military as part of the acquisition workforce. The Air Force has traditionally had the most military working in acquisition. One of the contributing factors for the military difference is the Navy's and Army's tradition of military personnel spending the first

several tours in an operational environment. It is not until later in their careers that Army and Navy personnel move from an operational job, such as an artillery officer or pilot, into the acquisition workforce. This approach is similar to the Air Force's tradition of moving its rated personnel, pilots and navigators, into the acquisition workforce, at about the 8-10 year point in their career. The Air Force also has a significant number of career acquisition military personnel who begin their career in acquisition. Military officers fill most program management positions, although one of the features of DAWIA was to increase the number of program management positions available for civilians.

As a result of the Department's Acquisition Reform efforts, the impact of downsizing the workforce and budgetary cuts, the DoD and the Services have instituted several changes from the original concepts of education and training.

	Military	Civilian	Total
Army	2,675	39,338	42,013
Navy	3,304	46,379	49,683
Air Force	9,605	23,816	33,421
Other DoD <sup>b</sup>	754	23,176	23,979
<b>Totals</b>	<b>16,378</b>	<b>132,709</b>	<b>149,087</b>
<sup>a</sup> Based upon the Jefferson's Solution revised Packard definition for core acquisition positions – March 1998. <sup>b</sup> Includes organizations such as DLA, BMDO, etc.			

**Figure 20. Acquisition and Technology Workforce Breakout<sup>a</sup>**

Program Management	17,000
Procurement/Contracting	19,000
Science/Engineering	45,000
<sup>a</sup> There are many other career fields not included, e.g., logistics, communications, that have acquisition personnel as part of their career programs.	

**Figure 21. Sample Career Field Sizes<sup>a</sup>**

Initially training and education requirements were strictly functional—training only in one career field, e.g., contracting. An effort within the services has been made to have personnel qualified in several career fields (multi-career field qualified). This provides not only a broadening of the workforce’s capabilities, but also allows management the opportunity to move personnel to a broader range of positions. The second effort focuses on continuing education. The department recognizes that the education and training as described above is the minimum necessary to do the job. “If you look throughout the commercial world at particularly successful companies, the focus on continuous education is something you see consistently across the board,” said Stan Soloway, Deputy Under Secretary of Defense for Acquisition Reform. To ensure personnel continue to maintain or grow their skills and knowledge, the Department has mandated 80 hours of professional continuing

training every two years. This program is designed to keep the workforce current with acquisition reform changes, functional and technical advances, and generally to improve the business knowledge and leadership competencies of the workforce. A third effort is to “out-source some of the business education and leadership development training to universities and other training organizations.” The outsourcing will allow the department to decrease its cost of education and to bring in a broader perspective in acquisition education. A fourth effort is the incorporation of distance education into the delivery methods used by the schools. To improve efficiency, to train more personnel, and to reduce cost, DAU with its consortium schools is developing and designing more courses to be offered by CD-ROM or on the internet. Current plans are for 50 percent of the consortium’s curriculum to be offered through CD-ROM or internet.



## Chapter 9

# TEST AND EVALUATION OF WEAPON SYSTEMS

“Testing is the conscience of Acquisition,” stated former Secretary of Defense William J. Perry, in referring to the role DoD’s test organizations play in acquisition. As the “conscience” of the system, the DoD test organizations provide timely information to decision makers on the health of a weapon system and help to identify and reduce development risks. The department divides Test and Evaluation (T&E) into two parts: Development Testing (DT) and Operational Testing (OT). DT refers to the early testing often performed by the contractor, while OT is “combat testing.”

The current Test and Evaluation structure is partially due to Congressional concern in the 70s and early 80s about the adequacy and realism of operational testing. In 1983, Congress created the Director, Operational Test and Evaluation (DOT&E) as a safeguard against billion-dollar weapons being produced with insufficient operational (“combat”) testing. To ensure a check and balance to the acquisition organization and to provide a bias-free view of operational testing to the decision-makers, the Director reports directly to SECDEF and DEPSECDEF. DOT&E is responsible for oversight of operational testing in the department. This is primarily a policy making and oversight role. Actual testing is conducted by the individual services through parallel organizations established within the Services. See Figure 22 for an organizational perspective on test and evaluation in DoD. The Director is appointed by the President and confirmed by the Senate. DOT&E has the unusual authority to report

directly to Congress without departmental approval.

Responsibility for DT testing rests with the Director, Test, Systems Engineering & Evaluation (DTSEE). DTSEE reports to the Under Secretary of Defense for Acquisition & Technology, USD (A&T), through the Principal Deputy. DTSEE serves as the advocate for DT for all major weapon systems and manages all DT activities and Systems Engineering activities. DTSEE establishes all DoD policy and procedures for Developmental Testing, and also oversees all major test ranges in DoD. These test ranges, which are collectively known as the Major Range and Test Facility Base (MRTFB), are shown in Figure 23.

### SERVICE TEST ORGANIZATIONS

While DTSEE and DOTE direct T&E activities within OSD, they primarily have a policy making and oversight role. Actual testing is sponsored by the military components and is conducted by contractors or developing agencies (for DT) or by the independent Operational Test Agencies (for OT). Each military component has a Test Executive, who serves as a focal point for T&E policy and oversight and manages the T&E process. Each Test Executive reports directly to the senior military officer (Chief of Staff or Chief of Naval Operations) of that military component. Each military component has an independent Operational Test Agency (OTA). As shown in Figure 22, the OTA commander reports

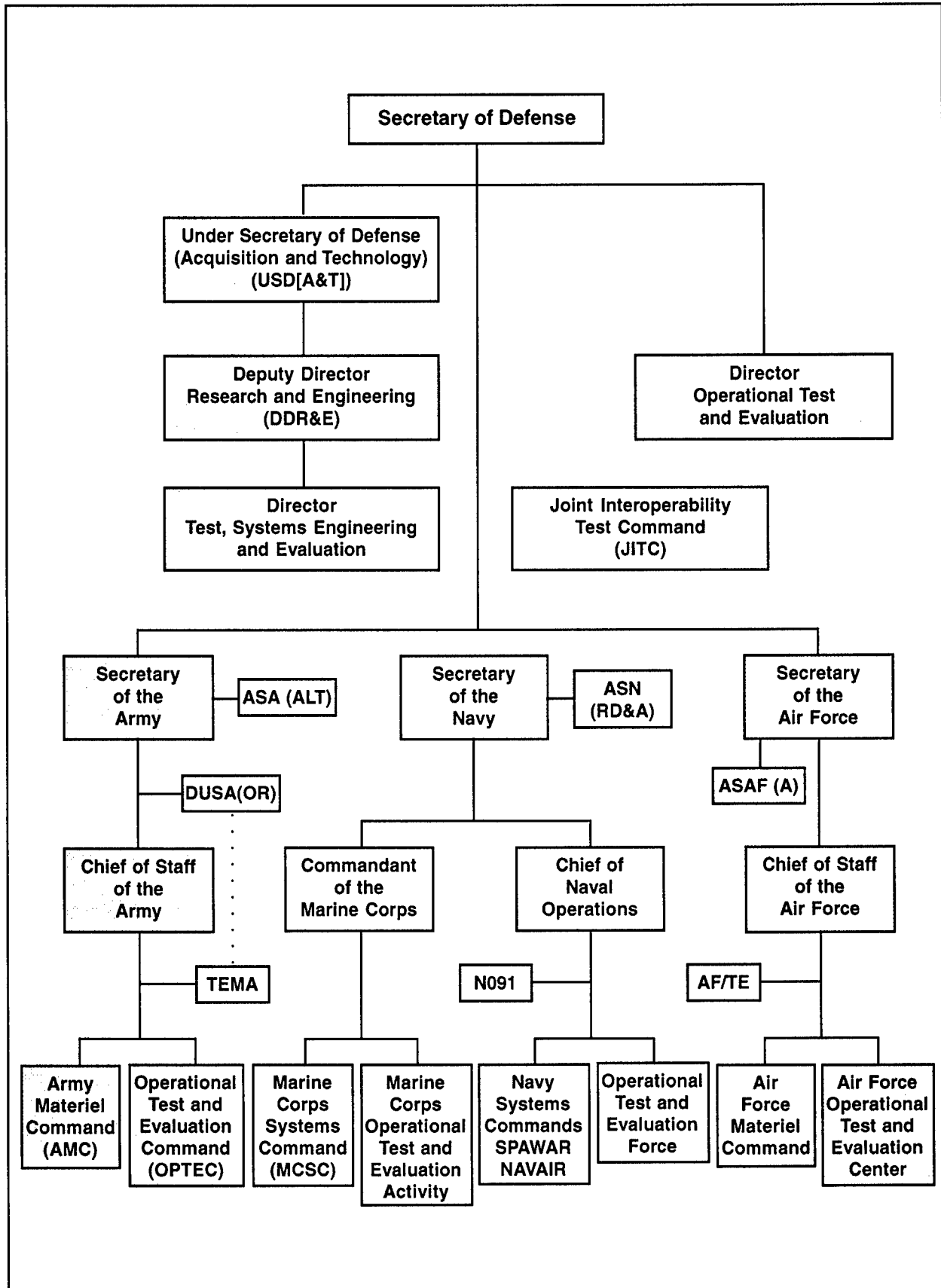


Figure 22. DoD Test and Evaluation Organization

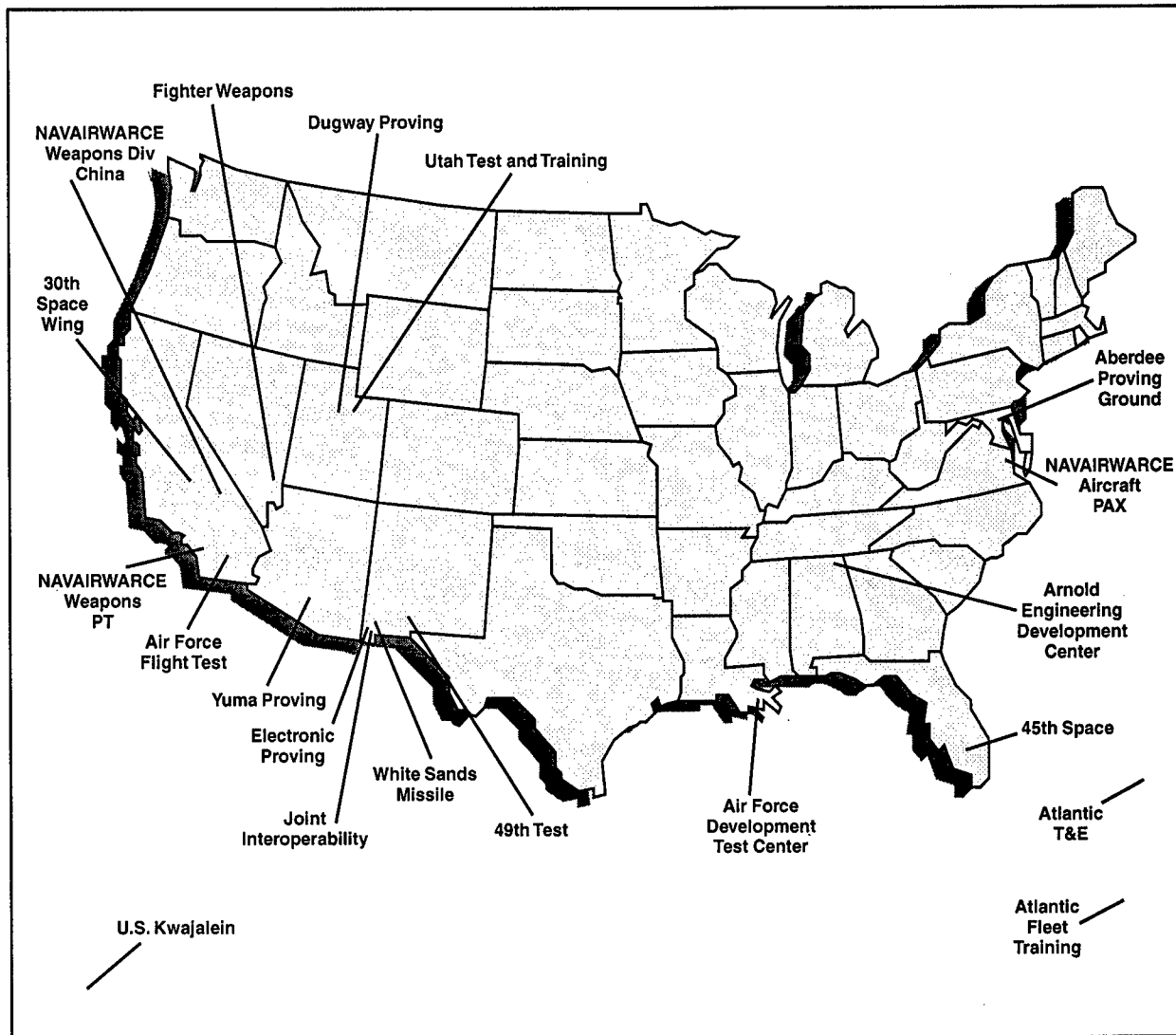


Figure 23. Department of Defense Test Ranges

directly to the service Chief of Staff, and is a general officer. They are listed below:

**ARMY:** Operational Test & Evaluation Command (**OPTEC**) located in Alexandria, Virginia,

**NAVY:** Operational Test & Evaluation Force (**OPTEVFOR**), located in Norfolk, Virginia,

**AIR FORCE:** Air Force Operational Test & Evaluation Center (**AFOTEC**), located in Albuquerque, New Mexico, and

**MARINE CORPS:** Marine Corps Operational Test & Evaluation Activity (**MCOTEA**), located at Quantico, Virginia.

Each OTA performs Operational Test & Evaluation to determine effectiveness and suitability of weapon systems. These tests are independent of the developing agency, the program manager, and the contractor. This provides for an unbiased assessment of a system's combat potential. Unlike DT, which is oriented to verifying contract or specification compliance, the OT performed by the OTAs is structured to stress the weapon system as it would be used in combat,

including tactics and countermeasures. The results from this type of testing give the users and the decision-makers valuable insights into combat performance. The Test Executive in each Service provides test policy guidance, approval of ACAT II and III programs and reviews MDAPs prior to submittal to DOT&E.

### Army

As seen in Figure 22, the Test Executive for the Army is TEMA (Test & Evaluation Management Agency). Army DT is actually conducted by TECOM (Test & Evaluation Command), which is part of the Army Materiel Command (AMC). Army OT is conducted by TEXCOM (Test and Experimentation Command), which is part of the Operational Test and Evaluation Command (OPTEC). The Army is the only Service to have a single activity responsible for evaluation of both DT and OT—the Operational Evaluation Command (OEC).<sup>37</sup>

### Navy

The Test Executive for the Navy is N091 (Director of Navy Test & Evaluation and Technology Requirements). Navy DT is conducted by the cognizant systems command, such as NAVAIR, and the Operational Test and Evaluation Force (OPTEVFOR) conduct Navy OT. The Marine Corps Systems Command (MCSC) is responsible for DT testing, while the Marine Corp Operational Test and Evaluation Agency (MCOTEA) (independent of MCSC) performs operational testing.

### Air Force

The Air Force Test Executive is AF/TE (Air Force Test & Evaluation). Air Force DT is conducted by the Air Force Materiel Command (AFMC) and the Air Force Operational Test and Evaluation Center (AFOTEC) conduct Air Force OT.

## OBJECTIVES OF DT&E/OT&E<sup>38</sup>

The primary objective of DT is to measure technical performance and to verify contract compliance or specification compliance. DT programs should be structured to identify and mitigate technical design risks. This is an iterative process. As the tests are conducted problems will be encountered and design fixes will be incorporated. The primary purpose of OT is to determine “operational effectiveness” and “operational suitability,” and survivability. Operational effectiveness refers to the ability of a system to accomplish the intended mission when used in realistic combat conditions by typically trained/skilled operators. Operational suitability refers to the ability to maintain and deploy the system, with particular emphasis on reliability, availability, maintainability, and training.

DT is the responsibility of the program manager or developing agency and is conducted by both the contractor and government test organizations. DT serves as the essential technical feedback loop of the engineering development process. OT, on the other hand, is not the responsibility of the program manager because OT must be accomplished independently of the systems developer.

Once DT testing is complete then the contract for Engineering and Manufacturing Development (EMD) is complete. The weapon systems then enters into OT testing which must be successfully completed for approval of LRIP and to continue into production. The results will be reported to the Secretary and the Senate and House Armed Services and Appropriations Committees.

As part of the Acquisition Reform effort within the department several changes are being evaluated. The first change is combining Developmental Test activities with Operational Test

activities where possible, which should result in more efficient use of test resources and test articles. This can be done using Integrated Product Teams or a Combined Test Force. However, the need for some totally independent OT still exists. The second change is to have contractors do more DT and the government less. This should result in placing more development risk on the contractor, and seamless testing throughout development. The third change is to have earlier involvement of the test force (especially the operational testers) during systems development. This should expose potential problem areas much sooner, when they can be addressed

more economically. The fourth change is to increase the use of modeling and simulation during systems development and test and evaluation activities. Modeling and simulation have great potential for cost/time savings because they can quickly produce repeatable test events under many varied environmental conditions. The fifth change is to combine testing and training whenever possible. The benefits of combining testing/training come from letting users operate equipment earlier in the design cycle, resulting in valuable feedback from users and early insights about combat performance in the field.

## *Chapter 10*

# COOPERATIVE ACQUISITION AND FOREIGN MILITARY SALES (FMS)

“I have determined that International Armament Cooperation is a key component of the Department of Defense’s bridge to the 21<sup>st</sup> Century,” stated Secretary shortly after he became Secretary. The pressures of smaller defense budgets, and increasing operational activities with coalition forces, makes international armaments cooperation with our allies an attractive proposition. This is nothing new. The U.S. has a history of successful cooperative programs, such as efforts beginning in the 1970s to cooperatively produce systems, such as the NATO Airborne Warning Aircraft Systems (AWACS) and the F-16 multi-national production programs. By sharing development and production costs, each national partner can buy more military power at less cost. Standardizing equipment, particularly with our NATO allies, can also lead to shared logistics lines, making the fighting forces more capable, again at less cost. While the department has participated in successful, and some not so successful, cooperative programs, many more opportunities exist for cooperation. As DoD moves to the 21<sup>st</sup> Century and budgets continue to decline, the department is putting renewed effort into expanding cooperation with our allies.

Another international defense program—Foreign Military Sales (FMS), is a part of Security Assistance. This program provides military and economic assistance to our allies. FMS includes the sales of military equipment, education and training of foreign military, and loans or grants for the purchase of U. S. equipment. Arms sales in the United States are conducted in two ways:

government to government (referred to as FMS) or foreign government to a U.S. Contractor (referred to a Direct Commercial Sale). Through FMS, allies and friendly nations spent an estimated \$23.5 Billion dollars in Fiscal Year 1996.<sup>39</sup> See Figure 24 for top 15 U.S. FMS contractors.

Both the executive and legislative branches play significant roles in Cooperative Acquisition and Security Assistance. Congress has been an active participant in foreign policy and security assistance. The legal basis for executive branch actions in security assistance is codified in several different places, including the Foreign Assistance Act, Foreign Military Sales Act, Arms Export Control Act, Export Administration Act (which has expired and not been renewed). Cooperative projects are covered by Title 10 of the United States Code.

Besides providing the legal basis for arms sales and transfers, Congress is involved in several other ways. As part of its routine procedures, the department is required to notify Congress whenever it sells significant military equipment with a value over \$14 million to a foreign government, or when an international agreement for a cooperative acquisition project is signed, or in certain cases, proposed for signature. In some cases, Congress will pass specific legislation denying a sale of arms. One of the most famous examples of this type of congressional involvement was the passing of the “Pressler Amendment”<sup>40</sup> which restricted the sale of F-16s to Pakistan. This, however, is extraordinarily

<b>DoD Foreign Military Sales</b> Total: \$8,409,630,000			
Rank	Parent Company	Amount (\$000s)	Market Share
1	Lockheed Martin Corp	\$ 1,638,770	19.49 %
2	Boeing Co.	1,523,285	18.11
3	Raytheon Co.	1,214,881	14.45
4	Avondale Industries Inc.	584,016	6.94
5	General Electric Co	329,709	3.92
6	United Technologies Corp.	291,917	3.47
7	BDM Corp.	171,108	2.03
8	Science Applications Intl. Corp.	162,698	1.93
9	Northrop Grumman Corp.	152,424	1.81
10	FMC Corp.	144,251	1.72
11	GTE Corp.	142,120	1.69
12	General Dynamics Corp.	122,993	1.46
13	Renco Group Inc.	87,079	1.04
14	VSE Corp.	85,572	1.02
15	Canadian Commercial Corp.	84,081	1.00

Rankings are based on prime contracts of \$25,000 or more for military R&D, services and products sold to non-U.S. governments

**Figure 24. Top 15 Contractors 1998**

unusual. Normally, the mere threat of legislative restriction will cause the executive department to restructure an arms sale, as was the case with the F-16 aircraft sale to Saudi Arabia.

In the executive branch, the three primary departments most heavily involved in security assistance and cooperative programs are the Departments of Defense, Commerce and State. The Department of State (DOS) has the overall responsibility for the continuous supervision and general direction of the security assistance program. The Secretary of State determines whether or not there will be a security assistance program, sale, or export for a country. Department of State makes its decisions based upon the foreign policy and national security implications of a transaction. Does this transaction protect and promote U. S. interests throughout the world? What are the political, economic,

human, environmental and security impacts of this transaction? In the DOS, two offices play key roles: The Under Secretary of State for Arms Control and International Security Affairs which is the principal adviser and focal point for security assistance matters; and the Bureau of Political Military Affairs, Office of Defense Trade Controls which has responsibility for setting policy for export of foreign military sales items and for issuing export licenses for military equipment sales. They also maintain the International Traffic in Arms Regulations (ITARs), which provides the rules for the registration of, and import and export licensing or all direct commercial imports and exports of armament into and out of the United States. The ITARs contain the U.S. Munitions List of military equipment, such as aircraft, ships and other equipment, subject to regulation.

The Department of Commerce, Bureau of Export Administration has responsibility for setting policy and licensing for export of equipment that has primarily a commercial application but with military application as well, so-called dual use items. There are a multitude of other organizations involved in Security Assistance from the National Security Council, Arms Control and Disarmament Agency, Defense Threat Reduction Agency,<sup>41</sup> Security Assistance Offices and Offices of Defense Cooperation in all major foreign capitals and other organizations, which are not to be discussed here.

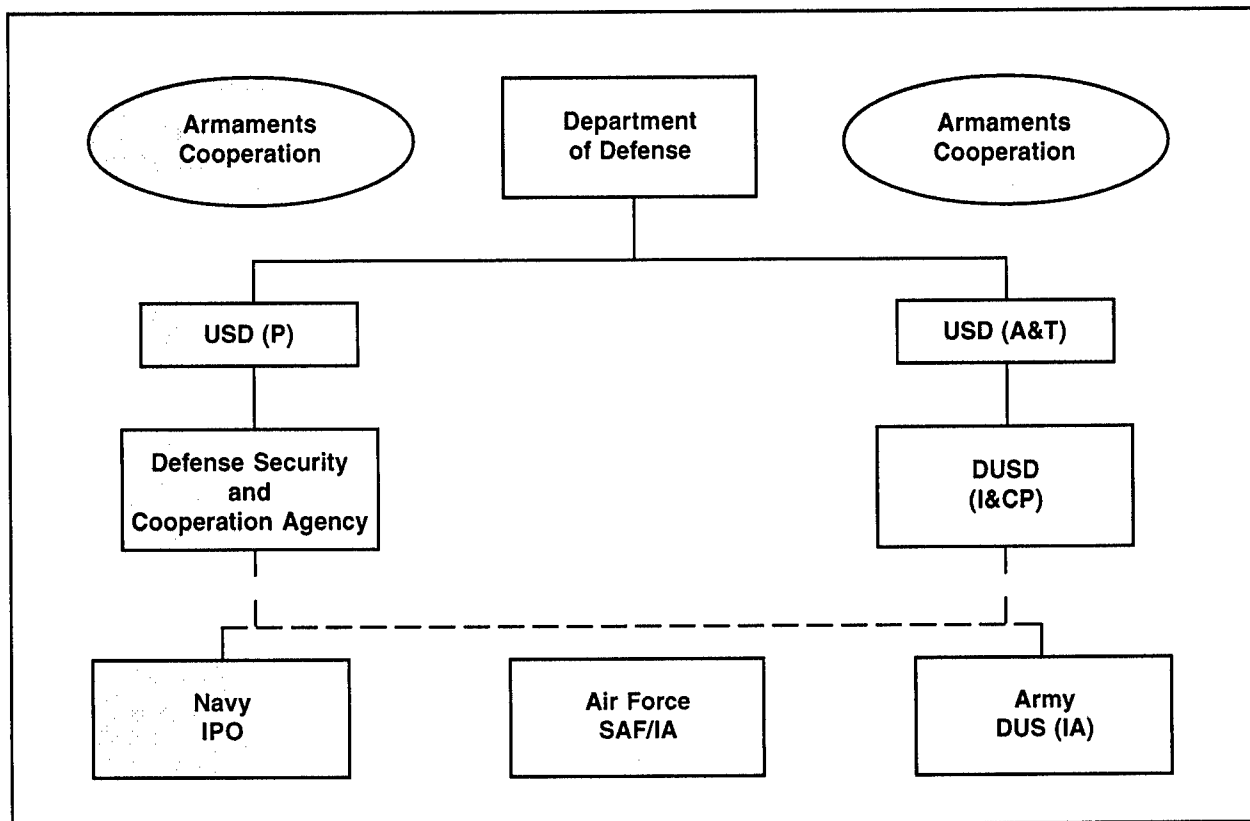
### Department of Defense

Within DoD, the Under Secretary of Defense for Policy (USD (P)) is the principal national security and security assistance adviser to the Secretary. Reporting to the USD (Policy) is the

lead agency within DoD for security assistance—the Defense Security Cooperation Agency<sup>42</sup>. Cooperative acquisition programs have a different reporting chain of command with responsibility resting within the office of the USD (A&T) in the Deputy Undersecretary of Defense (International Programs). Figure 25 shows the organizational relationships for security assistance and cooperative acquisition. The senior armaments cooperation policy and oversight body in DoD is the Armaments Cooperation Steering Committee, which is chaired by USD (A&T) and includes the Service Acquisition Executives as members.

### Military Services

Each of the Services has approached its management of these two programs—Cooperative Acquisition & FMS—in a different way.



**Figure 25.**  
**Organizational Relationships for Security Assistance and Cooperative Acquisition**



## Army

The Deputy Under Secretary (International Affairs) (DUS (IA)) has responsibility for security assistance and cooperative programs within Assistant Secretary of the Army (Acquisition, Logistics and Technology). Reporting to the DUS (IA) is, and with executive agent responsibility, the U.S. Army Security Assistance Command (USASAC), a major subordinate command of the Army Materiel Command (AMC). USASAC, created in 1975, is responsible for worldwide execution of the Army security assistance program including co-production of Army materiel with our allies and international partners. They also develop the Army position on commercial license applications for the export of munitions, services and technology.

Within AMC, the Deputy Chief of Staff for Security Assistance, has responsibility for the Office for International Programs. This office sets policy and provides oversight for international cooperative programs, international agreements, and interoperability. They also have several offices located overseas in Australia, Canada, France, Germany and the United Kingdom, which focus on research and development activities.

## Navy

The Navy has centralized international activities into the Navy International Program Office (IPO). The Navy IPO is part of the Assistant Secretary of the Navy (Research Development and Acquisition) staff. The Navy IPO has responsibility for both cooperative programs and security assistance.

## Air Force

The Deputy Under Secretary of the Air Force for International Affairs (SAF/IA) is the central

office for policy and oversight of security assistance and cooperative acquisition. Air Force Materiel Command, Director of International Affairs and its subordinate command, the Air Force Security Assistance Command (AFSAC), manage the security assistance program. Cooperative acquisition program management is the responsibility of the Assistant Secretary of the Air Force (Acquisition). Management of cooperative programs is part of the normal acquisition management system.

## Armaments Initiatives

The DoD policy on armaments cooperation is to "utilize International Armaments Cooperation to the maximum extent feasible, consistent with sound business practice and with overall political, economic, technological and national security goals." This policy goal, while not always realized, gives clear indication of the priority placed by DoD on cooperative programs. There is a variety of initiatives to encourage the cooperative development of systems. NATO and non-NATO multilateral and bilateral forums, Data Exchange Agreements, and Scientific and Engineering Exchanges are efforts that can lead to the development of armament cooperation. A recent initiative by the department is the creation of the International Cooperative Opportunities Group (ICOG). The ICOG focuses early in the acquisition process by looking at the science and technology programs, Advance Concept Technology Demonstrations, and the early phases of major systems. By identifying common requirements, complementary technologies, budgets and strategies, and a potential for industrial teaming, forming a cooperative program stands a much greater chance of success. Another program, the Foreign Comparative Testing (FCT) Program, has already shown success with an estimated \$3.3 billion dollars saved in the avoidance of costly RDT&E.<sup>43</sup> FCT is designed to test for eventual buy of off-the-shelf military equipment developed by other countries. This

program, which has been in existence for 20 years, has tested nearly 380 pieces of military equipment from missiles to avionics with procurement of 95 of them.

## Chapter 11

# THE INDUSTRIAL BASE

During the early 1940s, the demands of World War II quickly overcame the capabilities of the small U.S. peacetime arsenal system. The United States government turned to its commercial industry to produce the millions of pieces of military equipment needed to pursue the war. At the end of the war, as it has done after every war, the military demobilized. Its industrial base—the “Arsenal of Democracy”—demilitarized and returned to the lucrative pre-war commercial market—producing cars and household appliances. With the advent of the Korean “police action,” the United States again called on its commercial industry to produce military equipment. But, as we moved from the “hot” Korean conflict to the “Cold War,” the U.S. defense budget remained untraditionally high. With both the United States and the Union of Soviet Socialist Republics (USSR) continuing to produce large amounts of military weapons, each generation more capable than the preceding, the defence industry became “big business.” During this time period, U.S. industry transmuted into what President Eisenhower called the “military-industrial complex”—a permanent defense technological and manufacturing industry.

As the defense industry grew, the Defense Department developed its own set of specialised procurement rules and regulations, system of technical specifications and standards, Cost Accounting Standards (CAS), ethics requirements and oversight procedures. Congress, responding to cost overruns and to various special interest groups passed legislation imposing many new requirements on the Defense Department and its contractors, such as set-asides of work for small businesses and domestic producers.

Rather than imperil their commercial divisions with increasing costs, industry spun-off separate defense divisions. Having a separate manufacturing and technology base increased the cost of buying military equipment. An early 1990s study indicated that the defense industry legitimately charged a 20–25 percent premium because of these arcane rules and regulations mandated by the government.<sup>44</sup>

Traditionally, the United States has relied on a privately owned, profit-oriented industrial base to provide most of the goods and services used by the military departments. This defense manufacturing and technology base industry can be characterized as providing high performance, high quality military equipment at high cost with low volume of production. Defense is currently over a \$100 billion a year business. This includes over \$80 billion a year for research and development and procurement of systems and equipment. Four firms—Lockheed Martin, Boeing, Northrup-Gruman and Raytheon—are the dominant businesses in defense. Three of the four firms, with Boeing being the exception, rely on defense contracts for over 90 percent of their business revenue.<sup>45</sup>

Over the last 50 years, the department has “primed the pump” of R&D with its investment in many new technologies. The U.S. Government supported and directed programs that produced the basic technologies that spawned numerous military and commercial innovations. These innovations, both military and commercial applications, include mainframe computers, personal computers, stealth technology, avionics for commercial aircraft and many other

technologies. As an example, in the microelectronics industry, DOD was once the dominate buyer, with almost 70 percent of the microelectronics industry sales in 1965 and contributing significantly to that industry's investment in R&D. Today, defense accounts for less than 1 percent of microelectronic sales. In general the defense investment over the last twenty years in R&D has been overshadowed by private sector investment in R&D. In 1997, defense R&D spending provided 30 percent of the U. S. investment in R&D. This was down from the peak years of the defense buildup in the mid-1980s when it was 46 percent of the national investment.

While DOD policy has been to rely on private sector facilities for the fulfillment of government contracts, remnants of the government's earlier "arsenal system" still remain. These public facilities are used to manufacture and repair aircraft, ships, ground combat systems, and other military equipment. They generally fit into two categories. The first category is government arsenals and depots where government personnel perform all the work. The other category is referred to as Government-Owned-Contractor-Operated (GOCO) facilities. See Appendix E for a listing of arsenals, depots, and GOCOs currently performing defense work.<sup>46</sup> While it has been a slow process, the military departments have attempted to divest itself of GOCO plants. As an example, the U.S. Air Force owned 100 GOCOs in 1950; today, it is down to seven GOCOs with two additional GOCOs planned for transfer to the private sector in late 1999. One of the chief causes of delay in the GOCO divesting process has been the need for environmental cleanup.

In recent years, several trends have emerged as a result of declining defense budgets. Businesses have left the defense market, companies have merged, and the Department has recognized that its defense budget could not support its

modernization program as well as a separate defense industrial base. While no hard data exists, significant numbers of companies at the 3<sup>rd</sup> or 4<sup>th</sup> tier vendor level have apparently left the defense business over the last decade. Large companies, such as Intel, Motorola and Hewlett-Packard have refused to do business with the Department unless it buys on commercial terms, without the imposition of expensive and burdensome federal laws and regulations. This was a simple matter of economics—smaller budgets, the concomitant drop in work orders and the "stretching out" of programs made the defense business less attractive to commercial vendors.

While many companies had lost interest in the defense market, the remaining companies still had too much manufacturing capacity to meet future defense budgets. In 1993, then Deputy Defense Secretary Perry had his famous "Last Supper" meeting with the chief executive officers (CEOs) of top defense corporations. He is quoted as having admonished them by commenting that less than 50 percent of them would be at the next meeting. This led to "merger mania." Defense consolidation and mergers became monthly news. Lockheed and Martin-Marrietta merged to become Lockheed Martin. Hughes Aircraft and Raytheon merged as Raytheon. Northrup and Grumman merged into Northrup-Gruman Corporation, and Boeing and McDonnell-Douglas merged under the Boeing banner. Other companies like GE, Westinghouse, and IBM got out of the business completely. As a result, Lockheed, Boeing, Northrop Grumman, and Raytheon emerged from the merger mania period as "the big four."<sup>47</sup> Defense industry went from five or six manufacturers for major weapons systems to one or two for a military product. Figure 26 shows the top fifteen defense contractors for 1998. Figure 27 indicates the changes in the numbers of companies for each market.

"Merger mania" may be over for at least the major contractors. Recently, the Justice Department,

Total Purchases: \$115,847,206,000		Fiscal 1997 Contract Awards (\$000s)			
Rank	Parent Company	Total	Air Force	Army	Navy
1	Lockheed Martin Corp.	\$12,395,041	\$6,530,533	\$1,890,458	\$3,731,404
2	Boeing Co.	10,988,491	6,503,141	704,209	3,661,614
3	Raytheon Co.	6,478,655	1,643,706	2,244,394	2,393,454
4	Northrop Grumman Corp.	4,091,558	2,621,049	562,445	831,498
5	General Dynamics Corp.	2,101,421	0	674,544	1,400,029
6	United Technologies Corp.	1,917,962	1,104,109	481,114	350,041
7	Litton Industries Inc.	1,751,402	224,620	161,475	1,291,309
8	General Electric Co.	1,629,903	551,277	227,107	779,620
9	Science Applications Intl. Corp.	1,102,057	290,080	482,102	195,939
10	ITT Corp.	917,929	235,510	612,342	54,827
11	GTE Corp.	911,598	222,593	568,582	39,969
12	TRW Inc.	791,617	366,661	222,157	52,557
13	Textron Inc.	750,285	0	159,465	567,918
14	Computer Sciences Corp.	735,443	291,417	204,653	96,754
15	Bath Holding Corp.	694,738	0	0	694,738

Figure 26. Top 15 Defense Contractors

Department of Defense Industrial Base	Number of Suppliers	
	Past	Current
<b>Aircraft</b>		
Bombers	3	1
Fighters	5	2
Helicopters	4	2
<b>Space</b>		
Ballistic Missile Defense	6	2
Launch Vehicles	3	2
Satellites	5	2
Rocket Motors	5	2
<b>Shipbuilding</b>		
Aircraft Carriers	1	1
Submarines	2	1
Surface Combatants	5	2
Auxiliary/Amphibious	7	3
Shipyards	8	4
<b>Tracked Vehicles</b>		
Tanks	1	1
Armored/Personnel Carriers	2	1
<b>Missiles</b>		
Strategic	1	1
Tactical	8	3

Figure 27. Changes in Defense Market

with OSD concurrence, blocked the Northrop Grumman and Lockheed merger because it had the potential of creating a monopoly. One of the foundations of government procurement is competition. As companies drop out of the defense business or merge, competition disappears and costs rise. This is particularly worrisome with the large system integration companies like Lockheed and Boeing. As the defense business base continues to decline smaller companies will probably continue to merge. At the large prime level the market has probably seen the end of U.S. company mergers, although mergers or partnerships between international companies are still probable.

Since the 1950s, the U.S. has maintained a separate defense industrial base. This base is no longer sustainable. The question, then, is how to merge the defense industrial base with the U.S. commercial base. Consequently, through

its "acquisition reform" and "revolution in business affairs" initiatives, the DoD has attempted to change the way it does business. Some changes have already been implemented. Military specifications and standards are no longer the preferred method of doing business. Congress, at the DoD's urging, has passed such legislation as the Federal Acquisition Streamlining Act to remove some of the barriers. These laws made modest changes with major issues still left to be resolved, such as eliminating specialized accounting and auditing systems.

In sum, the U.S. defense industrial base is in a period of change. Current initiatives are focused on merging the defense/commercial industrial base, reducing the cost of doing business, reducing the departments and the defense industry's overcapacity, and, at the same time, maintaining a competitive market.

## Chapter 12

# MY CRYSTAL BALL

The year is 2005. The nation is five years into the new millennium and the F-22 has entered into the inventory. The new administration has announced plans for the next generation of air vehicle—Will it be a fighter or Unmanned Air vehicle (UAV)? Who will buy it? How will they buy it? Who will be the supplier? Discussing (Guessing?) the future gives one the opportunity to demonstrate ones lack of prescience. However, by following the old saw “the past is prologue,” i.e., by looking at current military and acquisition trends, future trends may emerge.

The current major trends impacting the acquisition business are:

- downturn in defense R&D and procurement budgets,
- emphasis on jointness and centralization of the defense acquisition business into OSD and Defense Agencies,
- Congressional involvement in the minutia of the acquisition business,
- decrease in the size of the acquisition workforce,
- increased need for training for the acquisition workforce,
- Republican and democratic administrations efforts to reform the acquisition business,
- Outsourcing and privatization of government work and infrastructure to decrease

costs and make more money available for modernization of military equipment,

- Mergers at the major system company level, with a corresponding decrease in the competitive environment,
- Increased reliance on the commercial industrial base for defense needs, and
- Increased globalization of the defense industry.

What is the environment in 2005 going to look like? There are several geopolitical trends that will impact the direction of the defense department’s spending. First, there will be no single country that will have the military power to threaten the United States or its Allies. Russia will continue to meld into the international world order and China will continue its move towards becoming an economic power. While China may continue to be a regional threat, its primary emphasis will be economic. Secondly, there will be a continual need for a military response by the United States and its partners typified by the regional conflict in Kosovo. While each conflict will require a different response, they all will have certain characteristics to that response: (1) conflicts will be fought by coalitions; (2) a need for allied air dominance; (3) interoperability of forces; (4) rapid movement of personnel; (5) real-time intelligence information; and (6) a quick humanitarian response.

These conflicts will also generate concerns with asymmetrical responses, such as terrorist (or

rogue nations) retaliation with nuclear, chemical and biologic weapons and possible missile attacks.

Our response in the year 2005 to this scenario will include defense spending on creating a theatre ballistic missile defense, responses for Nuclear, Biologic and Chemical (NBC) attacks, and equipping expeditionary forces. There will be fewer new-start programs. Modifications to existing platforms will be the norm with particular emphasis on changes that enhance interoperability stealth and maneuverability. The space business will continue to receive a healthy share of defense dollars for satellites that provide location details, communication and other information. And finally the soldier on the ground, the “digitized soldier” of the future, will be increasingly dependent upon instant communications and information, and programs supporting this effort will continue to garner a portion of the defense budget. Against these needs will be continual pressure for more defense with less money.

Against this background, the year 2005 will see the following acquisition trends:

- The program office will change, becoming smaller—25-50 people. It will be more joint, with many more programs continuing to be managed similar to the F-22 program or totally separately from the Services, such as the Ballistic Missile Defense Organization (BMDO). The office will be much more virtual with many personnel only working several days a week at the office. The movement of some program offices to collocate with the operational user or industry may occur. There will be fewer military in the acquisition business. The improved industry-government relations that have happened over the last ten years will continue, although the term Integrated Product Teams (IPT) will be replaced with a new term.
- The major defense firms will continue to perform primarily as integrators and will become more dependent upon the commercial industry to provide the products that make up the “brains” of weapon systems.
- Short commercial cycles will drive acquisition strategies that match the changing technology cycle. These short cycles will continue to exacerbate the obsolescence problems the U.S. is currently experiencing in its weapon systems. The F-22 is often cited as an example of the obsolescence issue. It is reported to have identified several thousand “old” parts prior to delivering the first production aircraft next century. While this is a small portion of the aircraft’s parts it can have a significant impact in driving up the total ownership costs of the department. Closely allied with this, is the budgetary impact of fewer dollars available thus driving strategies that look for incremental changes to systems and equipment. Evolutionary acquisition will be the preferred method of acquisition.
- Technological changes to the commercial market will introduce less costly methods of doing business and this will drive cost saving changes in the logistics and management systems of the department.
- There will be increased congressional involvement in details of the acquisition business. As the defense budget becomes smaller Congress will have even less discretionary spending oversight and will find that involvement in defense programs is an irresistible target of opportunity. One other trend that has accelerated in the last decade is the increased amount of congressional members without a military background. This demographic change will continue and will result in reduced DoD influence in the legislative branch



The Service Systems, Product and Logistics Commands roles will decrease in acquisition as the logistics business relies more upon commercial industry for support. The PEO structure will continue as currently structured thus continuing the role of the systems, product and logistics commands as providers of personnel and facilities and managing process issues.

- Outsourcing and privatization will continue. Most of the logistics functions will be outsourced. The program office will outsource much of its work with only a few key government personnel remaining on the staff. Much of the defense budget will go to Service contracts.
- Mergers will continue, but mostly across international borders, such as the recent merger to create Chrysler Daimler Aerospace. The firms coming out of these combinations will continue to ensure defense work is equitably spread across countries, much as is currently done in the United States among the states. The role of commercial industry in R&D will, with the exception of a few

technologies, be critical to changes in defense hardware. Also, as we merge and globalize the defense and commercial industrial bases, surge capability and ensured sources of supply will become a greater problem. Sole-source suppliers—such as we have now for subs, tanks armored vehicles and strategic missiles—will be the norm. A CSIS report<sup>48</sup> states that, “by 2010, there likely will be only one firm manufacturing expendable space launch vehicles, strategic bombers, and a variety of munitions from scatterable mines to bombs and mortars.” Competition will have to take place at the subcontractor level. This will continue the pressure on the department to get more defense for its dollars.

This chapter provided an introduction to the acquisition business of the DoD as practiced in 1999. With the new century and changes in the world environment the acquisition business will change. It will offer new challenges and opportunities for the future acquisition and technology worker. An important part of this work will involve the development and production of future weapon systems and equipment in a cooperative effort with our allies.

## FURTHER READINGS

### Congress

Davidson, Roger H. and Oleszek, Walter J., "Congress and Its Members," Third Edition (Washington: CQ Press, 1990).

### Cabinets

Jennings, Ivor, Cabinet Government, 3d ed. (1969).

Herman, Valentine, and Alt, James E., eds., *Cabinet Studies* (1975).

Mackie, T., and Hogwood, Brian, *Unlocking the Cabinet: Cabinet Structures in Comparative Perspective* (1986).

### Acquisition Desk Book –

<http://www.acq.osd.mil/ar/>

### Acquisition

Benson, Lawrence R., "Acquisition Management in the United States Air Force and Its Predecessors," Air Force History Office, 1997.

Ferrara, Joe, "DoD's 5000 Documents: Evolution and Change in Defense Acquisition Policy," *Acquisition Review Quarterly*, Fall 1996, Vol. 3 No. 2, pgs 109-130.

Fox, J. Ronald with James L. Field, "The Defense Management Challenge, Weapons Acquisition," Harvard Business School Press, 1988.

Gansler, Jacques S., "Defense Conversion: transforming the arsenal of democracy," Cambridge, MA: MIT Press, 1995.

Gansler, Jacques S., "Affording Defense," MIT Press, Cambridge, MA 1989.

Gansler, Jacques S., "The Defense Industry," MIT Press, Cambridge, MA, 1980.

Jones, Jr., Wilbur D. "From Packard to Perry, A Quarter Century of Service to the Defense Acquisition Community," DSMC Press, GPO, Ft. Belvoir, Va., June 1996.

Kausal, Tony, "What a Difference a Century Makes... Or Does It?," in *Contract Management Magazine*, October 1989, Pages 24-25.

McNaugher, Thomas L. "New Weapons Old Politics, America's Military Procurement Muddle," The Brooking Institute, Washington DC 1989.

Nagle, James F., "A History of Government Contracting," The George Washington University, Washington, DC 1992.

Trask, Roger R. and Alfred Goldberg, "The Department of Defense 1947-1997, Organization and Leaders," Historical Office, Office of the Secretary of Defense, Washington, D.C. 1997.

## ENDNOTES

1. Federal Papers 52:327.
2. Federalist Paper #24.
3. Federalist Paper #26.
4. Trask, Roger R. and Alfred Goldberg, "The Department of Defense 1947-1997, Organization and Leaders," Historical Office, Office of the Secretary of Defense, Washington, D.C. 1997, page 15.
5. Federalist Paper #66.
6. Davidson, Roger H. and Oleszek, Walter J., "Congress and Its Members," Third Edition (Washington: CQ Press, 1990), page 327.
7. Oversight Plan for the 105th Congress, pg. 1.
8. GAO also has specific legislative responsibilities and often undertakes reviews on its own.
9. Korten, page 2.
10. The rest are Noncareer SES -67 and Schedule C-128.
11. For clarification purposes, generally, when "DoD" is used it means the entire department. OSD refers to the Secretary's office.
12. Trask, Roger R. and Alfred Goldberg, "The Department of Defense 1947-1997, Organization and Leaders," Historical Office, Office of the Secretary of Defense, Washington, D.C. 1997. pg. 8.
13. For a fuller explanation of the Army's requirements process see Army Regulation 71-9 and TRADOC Pam 71-9: <http://www-tradoc.army.mil/cmdpubs/reqdef.htm>
14. CNO (N8) may convene a Resources and Requirements Review Board (R3B) to perform a DON level review prior to endorsement or validation and approval.
15. Prior to report.
16. Originally the title was Under Secretary of Defense (Acquisition). I have used the current title to avoid confusion.
17. By law these political appointees are required to bring a significant industrial background.
18. Also referred to as the Component Acquisition Executive (CAE).
19. The departments, DoD agencies (and others) are collectively referred to as "components." Each agency has an acquisition executive; the Component Acquisition Executive, (CAE).
20. Terminology has changed over time.
21. Not every system will begin at concept development. Some systems may enter at phase II or III.
22. LRIP is not applicable to ACAT IA programs; however, a limited deployment phase may be.
23. In fiscal year (FY) 1996 constant.

24. In fiscal year (FY) 1996 constant.
25. MDA is person with authority to approve a programs entry into the next phase of acquisition. USD (A&T) for example is normally the MDA for ACAT I programs.
26. The "M" refers to Major Automated Information System Review Council.
27. Army and Navy also have category IV programs.
28. Originally title Defense Systems Acquisition Review Council (DSARC), but revised in 1987.
29. PDUSD(A&T) may also chair DABs.
30. Note that the DAB review only approves a program to proceed; it has no direct role in the resource allocation process.
31. The terms procurement, contracting and acquisition can often be used somewhat confusingly even for acquisition professionals. In the U.S., "acquisition" is meant to be the all-encompassing term, while procurement and contracting are meant to be a subset of acquisition dealing with the awarding and management of contracts. To make it even more confusing, Congress often passes legislation using all three terms interchangeably or often with specific meanings.
32. SAF/AQC is OPR for Air Force contracting; Deputy Acquisition and Business Management is OPR for Navy contracting; and DASA Procurement is OPR for Army contracting.
33. The only person authorized by law to award or modify contracts
34. There are various measures of the acquisition workforce: 1) DoD Instruction 5000.58, acquisition organizations, 355,299 people; 2) Pub.L. no. 101-50, Defense Acquisition Workforce Improvement Act, 105,544 people; and 3) Jefferson Solutions Report, revised Packard Commission, 177,613 people. Current number reflects March 1998 data.
35. ACQ is an acronym for "acquisition."
36. GM/S – General Manager or General Scale and refers to the Program Scale/Rank for Civil Servants.
37. TECOM and OPTEC will be combined into Army Test & Evaluation Command (ATEC) effective 1 Oct 99.
38. Basic T&E policy is summarized in DoD Regulation 5000.2-R. Each military component publishes policy and procedure implementing T&E.
39. According to the US Arms Control and Disarmament Agency (ACDA) the US in 1996 exported approximately 23.5 Billion worth of defense material, which is 55 percent of the world amount of FMS.
40. Named for Senator Larry Pressler, Republican, South Dakota.
41. Formerly Defense Technology Security Administration.
42. Formerly the Defense Security Assistance Agency (DSAA).
43. The Defense System Management College, Ft. Belvoir, Virginia conducts training for management of Cooperative Acquisition programs.

44. Coopers and Lybrand study.
45. The US defense industrial base is somewhat difficult to define, since it relies upon private companies, who continuously enter and leave the business.
46. Schlesinger, Jr., Weidenbaum, M., *Defense Restructuring and the Future of the U.S. Defense Industrial Base*, CSIS Washington DC, March 1998, p. 15.
47. *Ibid.* Forty some different aerospace companies, in whole or in part, were consolidated into three: Lockheed Martin, Boeing, and Raytheon.
48. Schlesinger, Jr., Weidenbaum, M., *Defense Restructuring and the Future of the U.S. Defense Industrial Base*, CSIS Washington DC, March 1998, p. 15.

## GLOSSARY

**Acquisition** – The conceptualization, initiation, design, development, test, contracting, production, deployment, logistic support (LS), modification, and disposal of weapons and other systems, supplies, or services (including construction) to satisfy DoD needs, intended for use in or in support of military missions.

**Acquisition Executive** – The individual, within the Department and Services, charged with overall acquisition management responsibilities within his or her respective organization.

**Acquisition Life Cycle** – The life of an acquisition program consists of phases; each preceded by a milestone or other decision point, during which a system goes through research, development, test and evaluation, and production. Currently, the four phases are: (1) Concept Exploration (CE) (Phase 0); Program Definition and Risk Reduction (PDRR) (Phase I); (3) Engineering and Manufacturing Development (EMD) (Phase II); and (4) Production, Fielding/Deployment, and Operational Support (PF/DOS) (Phase III).

**Acquisition Management** – Management of all or any of the activities within the broad spectrum of “acquisition,” as defined above. Also includes training of defense acquisition workforce, and activities in support of planning, programming, and budget system (PPBS) for defense acquisition systems/programs. For acquisition programs this term is synonymous with program management.

**Appropriation** – An authorization by an act of Congress that permits federal agencies to incur obligations and make payment from the treasury. An appropriation act is the most common means of providing budget authority.

**Authorization** – An act of Congress which permits a federal program or activity to begin or continue from year to year. It sets limits on funds that can be appropriated, but does not grant funding which must be provided by a separate congressional appropriation.

**Buy-American Act** – Provides that the U.S. government generally gives preference to domestic end products. (Title 10 U.S.C. & 41 A-D). This preference is accorded during the price evaluation process by applying punitive evaluation factors to most foreign products. Subsequently modified (relaxed) by Culver-Nunn Amendment (1977) and other 1979 trade agreements for dealing with North Atlantic Treaty Organization (NATO) allies.

**Combat Developer** – Command or agency that formulates doctrine, concepts, organization, materiel requirements, and objectives. May be used generically to represent the user community role in the materiel acquisition process. (Army and Marine Corps)

**Contract, Cost Reimbursement Type** – A type of contract which provides for payment to the contractor of allowable costs incurred in the performance of the contract. This type of contract establishes an estimate of total cost for the purpose of obligating funds and establishing a ceiling which the contract may not exceed, except with prior approval of the contracting officer.

**Contract, Fixed Price Type** – A type of contract, which provides for a firm price to the government, or in appropriate cases, an adjustable price.

**Depot** – A centrally located installation for the storage, repair, or distribution of military equipment and materials.

**DoD Component Acquisition Executive (CAE)** – A single official within a DoD Component who is responsible for all acquisition functions within that Component. This includes Service Acquisition Executives (SAEs) for the military departments and acquisition executives in other DoD Components, such as the U.S. Special Operations Command (USSOCOM) and Defense Logistics Agency (DLA), who have acquisition management responsibilities.

**Foreign Comparative Testing (FCT)** – A DoD Test and evaluation program that is prescribed in Title 10 U.S.C. &2350a(g), and is centrally managed by the Director, Test, Systems Engineering and Evaluation (DTSE&E). It provides funding for U.S. T&E of selected equipment items and technologies developed by allied countries when such items and technologies are identified as having good potential to satisfy valid DoD requirements.

**Foreign Military Sales (FMS)** – That portion of U.S. security assistance authorized by the Foreign Assistance Act of 1961, and the Arms Export Control Act. The recipient provides reimbursement for defense articles and services transferred from the U.S. that includes cash sales from stocks (inventories, services, and training) by the DoD.

**Government-Owned Contractor-Operated (GOCO)** – A manufacturing plant that is owned by the government and operated by a contractual civilian organization.

**Government-Owned Government-Operated (GOGO)** – A manufacturing plant that is both owned and operated by the government.

**Industrial Base** – That part of the total private and government owned industrial production and depot level equipment and maintenance capacity in the United States and its territories and possessions, and Canada. It is or shall be made available in an emergency for the manufacture of items required by the U.S. military services and selected allies.

**Industry** – The defense industry (private sector contractors) includes large and small organizations providing goods and services to DoD. Their perspective is to represent interests of the owners or stockholders.

**International Agreement** – An agreement concluded with one or more foreign governments or an international organization that is signed or agreed to by any DoD component personnel; signifies the intent of the parties to be bound by international law; and is denominated as an international agreement or an memorandum of understanding (MOU), memorandum of agreement (MOA), exchange of notes or letters, technical arrangement, protocol, note verbal aide memoir, arrangement, or any other name connoting a similar legal consequences.

**Low-Rate Initial Production (LRIP)** – The minimum number of systems (other than ships and satellites) to provide production representative articles for operational test and evaluation (OT&E), to establish an initial production base, and to permit an orderly increase in the production rate sufficient to lead to full-rate production upon successful completion of operational testing. For major defense acquisition programs (MDAPs), LRIP quantities in excess of 10 percent of the acquisition objective must be reported in the selected acquisition report (SAR). For ships and satellites LRIP is the minimum quantity and rate that preserves mobilization.

**Milestone Decision Authority** – The individual designated in accordance with criteria established by USD (A&T) or by ASD (C3I) to approve entry of an acquisition program into the next phase.

**Military Assistance Program** – The U.S. program for providing military assistance under the Foreign Assistance Act of 1961, as amended by the Foreign Military Sales (FMS) act of 1968.

**Program Executive Office (PEO)** – A military or civilian official who has primary responsibility for directing several acquisition categories (ACAT) I programs and for assigned ACAT II and III programs. A PEO has no other command or staff responsibilities within the Component, and only reports to and receives guidance and direction from the DoD Component Acquisition Executive (CAE).

**Program Manager (PM)** – A military or civilian official who is responsible for managing, through integrated product teams (IPTs), an acquisition program.

**Program Objectives Memorandum (POM)** – An annual memorandum, in prescribed format submitted to the Secretary of Defense (SECDEF) by the DoD component heads, which recommends the total resource requirements and programs within the parameters of SECDEF's fiscal guidance. A major document in the planning, programming, and budgeting system (PPBS) is the basis for the budget. The POM is the principal programming document which details how a component proposes to respond to assignments in the defense planning guidance (DPG) and satisfy its assigned functions of the future years defense program (FYDP). The POM shows programmed needs for five or six years hence (i.e., in fiscal year (FY) 94, POM 1996-2001 was submitted; in FY95, POM 1997-01 was submitted), and includes manpower, force levels, procurement, facilities, and research and development (R&D).

**Senior Procurement Executive (SPE)** – The senior official responsible for management and direction of the Service procurement system, including implementation of unique procurement policies, regulations, and standards (see Title 41 U.S.C. & 414, "Executive Agency Responsibilities").

**System Program Office (SPO)** – The office of the program manager (PM) and the single point of contact (POC) with industry, government agencies, and other activities participating in the system acquisition process.



**Test and Evaluation (T&E)** – Process by which a system or components provide information regarding risk and risk mitigation and empirical data to validate models and simulations. T&E permits, as assessment of the attainment of technical performance,

specifications and system maturity to determine whether systems are operationally effective, suitable and survivable for intended use. There are two types of T&E – Development (DT&E) and Operational (OT&E).



**PART 5**

**A COMPARISON  
OF THE  
ACQUISITION SYSTEMS**



## *Chapter 1*

# A COMPARISON OF THE ACQUISITION SYSTEMS OF FRANCE, GERMANY, THE UNITED KINGDOM AND THE UNITED STATES<sup>1</sup>

### **Introduction**

All the four states addressed by this study see themselves and each other as liberal democracies based on market economies. There is a common acceptance that the military sector is there to advance the overall purposes of the state and must be subjected to the direction of the government. Thus, the principles of civilian oversight of the military are commonly endorsed, as is the notion that the directly elected section of the government, the legislature, needs to endorse policies proposed by the executive. In the specific field of defense procurement, all four states frequently have a similar ambition to acquire products that have not yet been developed and produced to give superiority to the armed forces. Often, they cannot find something satisfactory "off-the-shelf," but have to make provision for its definition, development and manufacture to be sure to procure the weapons for the next war and not the last one. For them, defense procurement is not simply a matter of choosing the most advantageous from what already exists, which is no easy task in itself. It is often about articulating what should be created and arranging for it to come into being.

With these similarities of political-economic systems and of problems to be managed, it might

be expected that the management systems for procuring defense equipment might also be similar. Alas, this is not the case, as readers of previous chapters have already discerned. There is some common ground; indeed, there is, on occasion, some imitation of the admired behaviour of others. But there are also real differences of structure and approach due to history, political choices and perception of the ideal or most efficient organization and process. This chapter explores why comparisons of national systems can be valuable, and how states can vary in their conceptions of the best way to achieve "value for money." As is used in this chapter "value for money" means the most efficient way of providing military equipment at the least cost. Then this discussion explores commonalities and differences in the methods used to pursue "value for money," ranging from close defense ministry relations with state-owned companies to competition among private firms. Next is an exploration of how national political systems interact with specialised defense procurement mechanisms, followed by thoughts about collaboration and "best practice" in defense procurement.

### **Why Seek Comparisons?**

Why, it should be asked, is it desirable to make any effort at comparison? Is it not enough to

have a parallel but a separate understanding of national systems as provided in other chapters? Fundamentally, knowledge of a foreign national procurement system is especially useful to personnel engaged in co-operative acquisition from both a government and industry perspective and will provide a better idea as to how to work with representatives of other defense organisations. But, comparison also promotes several other purposes.

The first is that comparison and mutual understanding should facilitate the establishment of collaborative projects when countries go beyond trading in finished goods. In collaboration, they aspire to agree on a common requirement and to work together for its development and production. Such collaborative efforts have the best chance of success if all the states involved can understand each others' acquisition systems; and if an official or officer, fulfilling a function in one government or industry, can easily identify his/her counterpart(s) in the partner government(s) and in industry. With that knowledge, government staffs may even prove ready to modify their national systems in order to see them work more harmoniously with others. That can be said to have happened if the governments of France, Germany, Italy and the UK delegate significant project management powers to an international armaments organization—the Organisation Conjointe pour la Coopération en matière d'Armement (OCCAR). European collaboration projects have not traditionally had a strong multinational project office, a factor that has often caused delay and even confusion. To give projects clear direction, using OCCAR, would thus be a major change. OCCAR was recently given legal status under the European Union with powers to enter into contracts and is going through a national ratification processes in 1999.

In addition to facilitating collaboration, comparison of systems could also expose good

practices which others might seek to adopt. The national chapters in this book are designed to draw a picture of how national systems address the complex tasks of making defense acquisition work. It is no secret that, in many cases, these systems do not operate to the satisfaction of all concerned.

A common cause of concern is that projects fail to meet performance, time and cost targets, although delivering within such targets does not necessarily mean that a project has been optimally managed. In addition, and relevant to all four states, is the fact that real unit prices of equipment are still tending to rise significantly from one generation of equipment to the other, as the costs of different versions of the M1 Abrams tank illustrate. The former chief executive of Lockheed Martin, Norman Augustine, humorously calculated that, if present trends continue, the entire U.S. defense budget in 2054 could be devoted to the purchase of a single aircraft. This trend has not lost its relevance. As the western technological prowess in the Gulf War and Yugoslav conflicts shows, the U.S. and its allies frequently acquire highly effective, but expensive defense equipment.

No government can afford to be complacent about its defense acquisition machine and has reason to search the ways of others to look for best practice. Some governments trying new approaches include Australia's application of incremental acquisition methods, and New Zealand's exploration of leasing possibilities for combat equipment, both looking for a better way of doing business. Countries within the former Soviet Empire and other developing countries are seeking to establish effective defense procurement machines, and their governments may well be interested to learn from the effective practices of others.

Governments' lack of complacency about defense equipment procurement is reflected in the

frequency and intensity with which they address reform. In describing the four national systems the authors have offered snapshots of the current systems. However, the snapshots cannot reveal much of the history of change, which lay behind them. The U.S. and the UK have been reforming their acquisition systems continuously for at least the last two decades. Defence Acquisition Reform and Smart Procurement are the headings under which further change is being pressed forward in the U.S. and the UK respectively. In France, the role of the Delegation Generale pour l'Armements (DGA) is being changed with more focus on preparation for the future, in particular long term cost implications; private ownership is being extended in defense industry; and industry is being required to bring down its prices by as much as 30 percent. Only in Germany does the absence of a history of continual change signal government contentment with the acquisition system. But as the German chapter shows, some reform has been present in Germany since 1991.

While explicit comparisons should highlight good practices and facilitate successful collaboration, unqualified parallels and contrasts between different states are not easy to draw.

### **The Defense Acquisition System**

The tasks involved in defense procurement have a generic character, i.e., all governments need to perform them in one way or another. Military requirements should be specified and programmed so that equipment can be bought within the confines of the defense budget. It makes sense for a military force to decide on the capabilities it needs and what equipment would meet these capabilities. In analysing all four states, military authorities lead on requirement definition but do not always have the final voice. The military is not always seen to be best at deciding what generates "value for money" for the nation as a whole. In the United States,

Congress often decides which systems will have priority and in France the impact of exports plays a key role in deciding the final configuration of a military product. The programming task implies some prioritisation arrangements. Requirements are normally derived from consideration of natural strategy and doctrine. If requirements are set which cannot be met from goods already available, arrangements have to be made for their development and production. When you talk programming you generally talk about deciding money versus goods and setting priorities.

All four countries have identifiable formalised structures dealing with a system from conception to its disposal. Individual projects go through identifiable phases involving concept and project definition, development and design, production, in-service and disposal. Different nations designate slightly varying formal phases, and often have major project reviews as one phase ends in which proceed or abandon decisions are reached. As a weapon system moves through these phases, equipment has to be contracted and paid for, and arrangements have to be made in the areas of training, maintenance, spare parts and other provisions, so that manufactured equipment can be used in service.

The acquisition machines undertaking these tasks can be viewed as comprising three interacting elements: organisational units, the processes and procedures that link them, and the policies that provide overall guidance. In addition, each organisational element has its own culture or view of the world. Such cultures are often hidden from external view or not easily susceptible to definition. Differences in structures, processes, and policy mean that an official performing a task or bundle of tasks in one state can struggle to identify his or her counterpart in another state.

### Concepts of “Value for Money” (Satisfaction of National Needs)

On the policy format, all four governments under scrutiny in this volume would see themselves as pursuing “value for money” in their defense procurement activities. Indeed, “value for money” has become an untouchable mantra regarding UK procurement policy. However, the original UK MoD document listed 53 headings in eight categories relevant to “Value for Money”<sup>2</sup> and it is apparent that states have different values associated with defense.

Defense procurement can threaten or advance at least four values of concern to government. Most obviously, governments seek appropriate defense capability often with new equipment or systems to overcome an enemy threat. Secondly, governments wish to promote economic growth—defense procurement can have positive or negative effects including employment, the generation of technology, and foreign exchange earnings through exports. Thirdly, a related but different economic concern is the government responsibility to provide a stable currency, which requires keeping public expenditure within limits. Finally, in their foreign policies governments seek to build and sustain particular relations with external states and other bodies. Defense procurement choices can play a role in all areas.

None of these values are inherently contradictory. It may even prove possible to specify and procure a piece of equipment that greatly enhances defense capability, is sufficiently inexpensive that it poses no threat to the defense budget and financial stability, generates jobs and technology useful in the civil sector, and, through collaboration, offsets or sales, helps to strengthen relations with friendly states.

In practice, however, choices among these values often have to be made, and states can reach

different conclusions and compromises as to what constitutes “value for money.” France has long been associated with procurement choices that made French defense industrial self-sufficiency (autonomy) and foreign policy freedom of action more important than maximizing French forces’ combat capability.<sup>3</sup> A 1992 U.S. study found that:

*“The DGA has pursued a coherent strategy for managing the defense industry. DGA officials seeks to balance a variety of objectives, including force requirements, the health of both the defense industrial base and the larger civil industrial base, and political goals such as Franco-German co-operation. Because of the need for trade-offs among these objectives, the French procurement system is not designed to optimise individual weapon systems but rather to further the nation’s military, political and industrial interests.”<sup>4</sup>*

Of the four states under review, France is most associated with specifying requirements that the DGA believes will sell well in foreign markets, thus bringing foreign exchange and perhaps foreign policy influence. Germany has had the most restrictive policy on arms exports while the UK has enjoyed a record of solid success with arms exports during the 1990s. This is despite a reluctance to give the government Defence Export Services Organisation a significant voice in the setting of military requirements. The U.S. does not consider Foreign Military Sales (FMS) during its development of systems/equipment, but has set up a large system for FMS managed by the Defence Security Cooperation Agency. Perhaps significantly, Britain, France and Germany have signed up to a shared EU Code of Conduct on Arms Exports and are seeking to further reinforce the coherence of their arms export policies.



The U.S. appears more associated with maximising defense capability per se from procurement, but uses defense spending for socio-economic purposes, such as to promote small businesses, companies run by ethnic minorities and other programs. It also normally insists that foreign defense systems sold to the American forces be manufactured in the U.S. Foreign policy considerations have played a tangible part in building European collaboration programs, for instance with the Jaguar aircraft (as well as the Concorde civil collaboration) being symbols of UK commitment to Europe at a time when European Community membership was not available. Today, the UK Tracer program with the U.S. reflects in part a British wish to signal that it still believes transatlantic co-operation to be feasible and viable.

Within the spectrum of defense capability, states can differ for legitimate reasons as to the capabilities they feel would be most valuable. Common support for the NATO doctrine of flexible response and shared responsibilities for the defense of sectors of Germany against possible Warsaw Pact attack pressed Germany, the UK and the U.S. towards some similarity of needs. At the time France left NATO's integrated command in 1966, a period began in which France's priority became a nuclear weapons program. Its spending on conventional forces inevitably suffered as resources were put into nuclear weapons and their delivery systems. With the unification of Germany, the German Government found itself pressed to spend extensively to develop the eastern Länder. Within the (falling) defense budget, organisational restructuring, manpower and infrastructure became priorities and equipment's share of the budget declined to less than half that prevailing in the UK.

States are reluctant to define too precisely how they define "value for money," but of great significance is where procurement decisions are

made. That none of the four governments analysed here entrusts defense equipment choices solely to the ministry or department focussed on defense sends a signal. They all want the option of using equipment choices to serve wider purposes. In France and the UK, the Cabinet makes major choices rather than by the Defence Ministry, while in the U.S., Congress can and does inject projects into the defense vote. In Germany all large contracts over 50M DM (>\$30M U.S.) must be submitted to Parliament before contract award. This reflects the legislature's concern with the executive branch making long-term commitments without their concurrence.

If the four states can differ in their interpretation of what constitutes "value for money," they can also vary in their views of how best to generate it through procurement policies executed through organisations and processes. States overlap and differ not only in their sense of the values that the defense equipment is supposed to generate; they also vary regarding the techniques that they use to promote their values.

### **Generating Value for Money**

Consider first the role of the state with regard to the defense industry. Dating back to the eighteenth century, France has a tradition of sustaining a very close link between government and defense industry, often in the form of a national monopoly. DCN is still an integral part of the French State partially manned by civil servants. GIAT had a similar status until 1990 and then became a state-owned company. Aerospatiale (missiles and helicopters), SNECMA (gas turbines) and Thomson-CSF were wholly or largely state-owned businesses. These firms received contracts in their sphere of competence regularly. In the recent restructuring, the majority of shares in Aerospatiale and Thomson-CSF have been transferred to the private sector. Prior to 1979 Britain's system was

not dissimilar, with Royal Ordnance as the state arsenal and with state-owned national champions in prominent positions. In Britain, however, state ownership of the defense industrial sector was more shallowly based, much of it having been introduced only after the advent of Labour government in 1964. When Mrs Thatcher came to power in 1979, it was accepted that Britain's defense sector would operate better in private hands, and British Aerospace, Rolls Royce, Royal Ordnance and British Shipbuilders were sold to the private sector, with the latter being broken up into separate companies based on individual yards. Mrs Thatcher's government also stressed that competitive tendering was the best route to "value for money." From the 1980s it exposed UK industry to the greater use of competition as the basis for the award of contracts. Germany also has a preference for competitive tendering, although contractors with known special expertise may be chosen without competition.<sup>5</sup> The United States originally had an arsenal system (government owned) for much of its equipment, but after World War II created the competitive privatised industrial-military base that Eisenhower later warned against and that it now relies upon for its products and services.

One difficulty in reliance on competition is that many defense industrial areas can be termed "natural monopolies." The intervals between major orders can induce those losing a competition to abandon a specific area. The resources needed to develop ever-more complex systems has tended to increase, thus making entry costs high for any company interested in moving into many defense market segments. The number of competing firms in any area tends to decline unless governments make special efforts to preserve competition. During the late 1980s and 1990s three UK shipyards dropped out of warship construction (Harland & Wolf, Swan Hunter and Cammell Laird) and three were bought by GEC (Yarrow, VSEL Barrow and

Cammell Laird). Thus, in the U.S. and the UK, the government on occasion holds qualified competitions where the winner gets the larger order and the loser a smaller contract, in order to sustain competition for the future. GE and Pratt & Whitney enjoyed this treatment in the jet engine area and GEC-Marconi and Vosper Thornycroft seem likely to be sustained in the UK. Sustaining competing firms had not been a concern in France where the national monopoly was an established tradition.

An alternative to supporting two firms for the sake of being able to hold national competitions in future is to allow more non-national firms to bid. This has been a feature of UK policy since the late 1980s. The UK DPA has been reported as having tried (unsuccessfully) to persuade Lockheed Martin to bid for its aircraft carrier contract. The two companies that actually bid were BAe/GEC and Thomson CSF (of France).

None of the states listed here would see its market as closed to other defense suppliers, but, historically, European states have been more ready to buy U.S. equipment than the U.S. has been willing to buy European defense goods. Efforts to produce more equality in the Two Way Street in defense equipment go back to the 1970's, but have generated little advance.

### **Arms Deliveries to NATO and West Europe, 1987, 1992-1997**

Table 1 gives the findings of the International Institute of Strategic Studies as regards recent data, with the balance in favour of the U.S. tending to grow.<sup>6</sup>

While it could be argued that the U.S. does not buy European equipment because of the reduced "value for money" involved, the U.S. readiness to buy from Europe contrasts with world markets as a whole. This despite the impact of the Foreign Comparative Testing (FCT) Program, which has

already shown success with an estimated \$3.3 billion saved in the avoidance of costly RDT&E. FCT is designed to test for eventual buy of off-the-shelf military equipment developed by other countries. This program, which has been in existence for 20 years, has tested nearly 380 pieces of military equipment from missiles to avionics with procurement of 95 of them.

In third markets Europeans are frequently successful against the U.S. The International Institute for Strategic Studies data shows that, in 1994-7, the major West European states secured 30.1 percent of world orders versus the United States' 28.7 percent.<sup>7</sup> IISS data show Britain, France and Germany having 36 percent of world-wide defense deliveries versus the United States' 45 percent.<sup>8</sup>

An alternative to competition as a means of securing "value for money" is a kind of state-owned or dominated "preferred supplier" company such as that seen in Spain, Italy, France, until a recent period, and other European states. Increasingly, such relationships are seen as not delivering equipment in a cost-effective way, and, in the treaty establishing OCCAR, France has accepted (Europe-wide) competition as the

normal way to procure defense equipment and reduce the state's share of defense industrial ownership. The most productive middle way could be found in the partner relationships between the government and the supplier especially in the UK and the U.S. "Project" partnering, most obviously beginning after any competitive phase is over implies co-operative, mutually beneficial relations between customer and supplier. "Strategic" partnering, covering many projects, can remove the need for most formal competition and is compatible with intimate customer-supplier co-operation from the beginning of a project. Such relations have the most chance of success when a supplier knows that his immediate customer is too small to assure corporate survival and that further success in wider export markets will be needed.

At a time when France is moving towards acceptance of competition as a fundamental procurement method, the U.S. and Britain are exploring the role that "partnering" can play, especially after any competitive phase, between the government and its defense supplier. The U.S. and British concepts of partnering are being developed using formal documents.<sup>9</sup> The concept involves a range of relationships, including the provision

	West Europe Exports to US	US Exports to West Europe	US Balance with West Europe
1987	1,485	5,215	3,730
1992	898	2,920	2,023
1993	766	3,025	2,259
1994	588	3,025	2,436
1995	522	3,233	2,712
1996	720	3,651	2,931
1997	730	4,276	<sup>14</sup> 3,546

Table 1. Constant 1997 US \$m

of services through Public-Private Partnerships, but trust and co-operation are basic themes.

The British and German established preference for at least qualified competition and the French tradition of monopoly suppliers in many defense areas has caused problems with collaborative projects among these three nations. The emerging MRV (Multi-Role Armoured Vehicle) was marked by competing teams from Britain and Germany having no option but to work with Giat if they wanted a French partner. They were reluctant to do so and French interest in the project diminished. As the most prominent European collaborative project, Eurofighter is of interest. Many of its sub-system contracts were awarded only after competitions among multi-national consortia with the radar being the most sensitive. However, since many partner states had only one company in a field, some competitions essentially were between British firms with all consortia having the same Spanish or Italian partner.

This raises the issue of readiness to use collaborative development and production contracts as a means of securing value-for-money. In Europe, Germany has embraced collaboration most frequently; being motivated by technological and political, as well as financial reasons. France and Britain, however, have also been involved with many collaborative projects. The costs and risks of national projects have often seemed unacceptable and the UK now expects that collaborative projects will account for over 40 percent of its equipment budget within the next decade. This compares with the standard figure of around 15 percent in the 1980s. To date, the U.S. has not often felt the need to collaborate thus leading to some serious disillusionment,<sup>10</sup> and only a small proportion of the Pentagon's budget is allocated to international collaboration programs. However, in high cost areas<sup>3</sup> such as missile defense, even Washington could become tempted in the future.

In seeking "value for money" and ensuring appropriate and democratic oversight of the military, democratic governments must decide about the defense roles most properly filled by military personnel and those best undertaken by civil servants and even the private sector. There is clearly no standard practice as regards the role of civilian as opposed to military officials and to the degree of "jointery" associated with defense procurement. In Britain, the definition, prioritisation and programming of military requirements is done on a "purple" basis, while in the U.S., each of the armed services has its own equipment budget and systems/programming staffs. France is notable for the relative weakness of its single service equipment staffs and the strength of the Delegation Generale pour l'Armements (DGA). The DGA rather than the service staffs has the major influence over equipment requirements and programming.<sup>11</sup> According to Edward Kolodziej, De Gaulle introduced a strong DGA in 1961 in part to assert his control over an unreliable officer corps that threatened to destabilise his government.<sup>12</sup> De Gaulle also wanted to have a national industrial base able to develop the armies that his external politics required, not dependent of any supplier. However, the French political system has matured since then and might, therefore, countenance at some point in the future giving to the professionalised armed forces a bigger say in the equipment they receive. In broad terms, in Germany the single service staffs generate military requirements while a civilian administrative element of the Defence Ministry, the BWB, procures the equipment involved. The BWB, however, can change requirements for cost or scheduling reasons.

Although the system in the UK is changing under the Smart Procurement Initiative, the British system still in place at the end of 1998 gave most power over finance to civil servants who had the final say in how equipment funds would be used. While the UK central customer structure

has not been settled, it is clear that the government is trying to better integrate the civil service and the military with regard to the setting and funding of requirements. Again, there is a contrast with the U.S. where the services have considerable control over the use of their funding.

In the U.S., the services keep much of the responsibility for generation and procurement of requirements, and have their own contracting organisations. Such organisations, of course, make extensive use of civilian labour and are closely regulated by (mountains of) government law and regulation.<sup>13</sup> There is however a centralised approval body for major projects, and significant central players in the United States direct acquisition policy.<sup>14</sup> On the other hand, Britain, France and Germany have opted for a central procurement body as a specialist purchasing body for the armed forces. Military officers are posted to these procurement bodies for short (two-three year) tours, but the procurement bodies remain dominated by civilians.

In comparing the organisational structure and approaches of the four nations for acquiring military equipment one notes a significant difference. The U.S. is highly decentralised both organizationally and geographically. In the United States the military services do the acquisition. In the United Kingdom, Germany and France the acquisition organizations are centralized. In the UK and Germany they are civilian run organizations located centrally in Abbey Woods and Koblenz respectively. In France they are highly civilianized, located in Paris, but with the senior leadership being provided by a "fourth" military branch, the Armament Engineer.

Superficially, the UK Defence Procurement Agency, the French Delegation Generale pour l'Armement and the German Bundesamt für Wehrtechnik und Beschaffung (BWB) may

appear to undertake similar tasks but they do so in a very different spirit. The DGA has traditionally seen itself as responsible for French economic and technological health as well as for defense procurement. It has had a co-operative relationship with its main suppliers, many state-owned because of the political view to preserve independence. In addition, DGA personnel have, in the past, taken positions with industry as part of their career progression and then returned to the DGA. With DGA reform, privatisation of industry, and more use of competition in procurement, these practices could change. The BWB is part of a German defense machine marked by a strong bureaucratic tradition and not known for rapid decision making.<sup>15</sup> It is also required to maintain distance between itself and the armed forces. The British Defence Procurement Agency (DPA), which was formed from the Procurement Executive (PE) in April 1999, is being pressed towards adopting a commercial approach to conducting business. Project leaders, for instance, have considerable freedom to select the staff who will work for them. There is little in the DPA structure to suggest a preference to UK or European suppliers or indicate that the DPA has any responsibility for British industrial health.<sup>16</sup> Indeed it is not clear which section in the UK MOD has an accepted responsibility for promoting the defense industrial ends laid out in government policy.<sup>17</sup>

Certainly, the use of Integrated Project Teams, bringing together all the government functions (finance, contracts, engineering, project management etc) involved in acquisition, is most advanced in the U.S. The use of IPTs is also being expanded in the UK where the central customer, industry, and the support organisation for new equipment are becoming involved in IPTs. In the U.S. (and in French project teams), there is a readiness to use layers of teams concerned with the same project,<sup>18</sup> although this is not encouraged in the UK. In Germany, teams

involving the military, the BWB and industry would not be acceptable because of sensitivity to close military-industry ties, although industry and support branches of the armed service involved are linked to the BWB through Working Groups from the Definition Phase of a project.

A related contrast, is between the U.S. systems in which, with equipment being procured through the individual services, there is a relatively seamless process, i.e., the organization buying the equipment also has responsibility for its acceptance and support once in service. In France, the DGA has a similar responsibility for all life use costs and for purchasing of the initial equipment as well as logistics support to include maintenance and spares for equipment. In the UK, there is a different, albeit changing arrangement. Formerly, the Procurement Executive procured new equipment which, once established in service, became the responsibility of the Principal Administration Officers (PAOs),

i.e., the heads of support in the relevant armed force. For instance, the Army Quartermaster General took over land equipment as it came into service. This led to a perception that the PE often neglected the in-service or whole-life costs of equipment during the new procurement phase because support was not a PE financial concern. Under the 1998 Strategic Defence Review, the support heads in the individual armed forces are being placed under the direction of a central military Chief of Defence Logistics. His representatives will have a constant presence on Integrated Project Teams, and project team leadership will pass from a DPA to a Defence Logistics Organisation person as equipment comes into service. Thus, there is a logic that predicts the eventual merger of the DPA and DLO into a single acquisition and support body. In Germany, however, the support organisations remain single service and separate from the BWB, although the BWB does considerable contracting on their behalf.<sup>19</sup>

## Chapter 2

# THE IMPACT OF NATIONAL POLITICAL SYSTEMS

Overarching the varying approaches as to what constitutes “value for money” in defense procurement and how to secure it through procurement practices is the broad impact of a country’s overall political system.

As can be seen from other chapters, acquisition systems are constrained by their national political systems. The national political system has structural features whose impact may be rather apparent, and generates and reflects values whose impact on defense may be more difficult to pin down. Structural features can be readily addressed.

It is of clear importance that the constitutions in the U.S., Germany, and, to a lesser extent, France have a greater impact on defense than in the UK, where the constitution is not even written. The two-year formal limit on the future preparation of armed forces found in the U.S. contrasts with the UK, where a practice of planning overall defense spending for a four-year period and equipment spending for ten years is being introduced.

It is striking that, in the U.S. and Germany, the legislature approves not only the defense budget in its entirety but also individual projects in it. In the UK and France, the legislation can only approve or reject the government’s overall budget and in the UK annual spending, planned or actual, on individual projects is kept hidden. The House of Commons Defence Committee and the National Audit Office investigate past procurement policy and practice, publishing valuable

reports, but have no say in the future. In France, the National Assembly has normally been called on to approve the armament program laws covering five years that Government has prepared, but these programs have never been implemented in full. In contrast the U.S. Congress has developed a culture reflecting the terms of the constitution in which it sees itself as having a major say as to what the armed forces should have.<sup>20</sup> Famously, it has regularly made money available for C-130 purchases that the U.S. Air Force (USAF) has not requested. From the outside, it is not clear if the USAF actually did not desire more C-130s—it may have wanted them but not put them in its own priority list because it felt Congress would make them available anyway. Responding to the practices of Congress, the U.S. services present to Congress lists of items they would like to have if more money were made available. There are many suspicions that U.S. congressional representatives support some projects more for the consequences for their electorate’s prosperity and employment than for the impact on U.S. defense capability. The phrase pork-barrel politics is often associated with defense projects.

The impact of the legislation on procurement can be significant. Because of the U.S. constitution and Congress’s reluctance to commit money for more than one year, the U.S. struggles to make the reliable long term commitments to projects that are needed to make companies confident to invest their own money. The short termism inherent in U.S. acquisition also makes it hard for Washington to make the multi-year

commitment to projects needed for collaboration projects to proceed. The German Bundestag can also disrupt the wishes of the Ministry of Defense, and there have been many occasions when the Eurofighter has had a difficult passage. But generally, once the German parliament has approved a project, including a collaborative project, it then allows it to proceed provided it does not veer drastically off cost and time schedules.<sup>21</sup>

If defense procurement is seen as involving a chain of customer-supplier relations, as is increasingly the case in the UK, different questions arise about whom should be thought of as the final customer. A right of the legislature to approve all projects implies that the people of a state, through their elected representatives, are the ultimate customer for military equipment. In France, however, the DGA, which answers directly to the Minister of Defence, sees itself serving the Ministry and has often been seen as regulating the military of the day. In the UK, there is no question of Parliament being seen as the final customer, but there is a debate about the extent to which the uniformed military should have that status.

While legislatures might be seen as particularly sensitive to the employment and technology generation consequences of defense and spending, the absence of Parliament control over industrial projects does not mean that governments

as a whole ignore such things as technological spin off from defense. In the case of Britain and France, it should not be thought that procurement is depoliticised by the absence of much parliamentary involvement. In both cases, the employment and technology gain dimensions are taken into account in procurement decisions. Indeed, French procurement choices often have seemed more driven by expected domestic economic consequences, including foreign exchange earnings from export sales, rather than by military capability involved. One notable scholar of French defense observed in 1999, "France still sees armaments policy as closely tied to social policy. It is basically about jobs."<sup>22</sup> In Britain, since the mid-1980s, there has been greater governmental interest in acquiring equipment that provided best "value for money" specifically in terms of the UK armed forces. However, political leaders clearly enjoy announcing defense orders for UK business and receiving the welcome for such orders that are heard in Parliament. Occasionally, service preferences are over-ridden, as in the 1990s when the British Army was forced to accept the Challenger 2 tank rather than its U.S. or German competition, and the RAF was provided with a mix of Chinook and EH.101 transport helicopters rather than the Chinook-only fleet that the service preferred. In each case, the government was motivated by jobs, technology and defense industrial capability factors.



## Chapter 3

# CONCLUSION

Clearly the four states analysed in this work, despite their common status as liberal democracies based on market economies, approach defense acquisition in different ways. To return briefly to the three reasons for attempting comparisons noted at the beginning of this chapter, it is apparent that the U.S. and French systems are less disposed to consider foreign equipment for purchase than are Germany and the UK. Anyone seeking insight as to how best to sell in these defense markets must recognise this fundamental factor, which may, however, be evolving. The author of the U.S. chapter here emphasises the increasing openness of the U.S. market to external competition. France has made major purchases from the U.S. in the form of AWACs and E2C aircraft.

The second reason to attempt comparison was to seek out best practice. Across the four states, there is public emphasis on the utility of competition as a means of securing "value for money." However, there is also explicit recognition in the UK and the U.S. that partner relationships, involving trust and co-operative company-government relationships, and teams involving suppliers and customers, should play an important role in defense procurement. There is no consensus or easy formula regarding the optimum balance between competition and a close relationship with industry in different areas of defense procurement.

Effective partnering needs to be seen as a dynamic process in which both supplier and customer develop supportive attitudes. David Wootton, an UK consultant, has characterised four combinations of supplier customer

relations, based on two ideal type positions in each area. The "effective buyer" recognises that "both parties to an agreement need a successful outcome" and seeks "to understand the factors which make the outcome a success for the supplier". The "resentful buyer" assumes "that the supplier's sole aim is exploitation." Such a buyer sees the supplier as having no interest in building a "long term trusting relationship." This behaviour ultimately produces the result the buyer seeks to guard against. On the other side, the "proactive supplier" focuses "on the success of the customer, based on the belief that the satisfied customer will come back for more." This sort of supplier is looking to build a long-term relationship. In contrast, the "hard-nosed supplier" ensures "that every variation to the contract results in a cost increase." These attitudes create the resentful buyer. The outcomes suggested by the different relationship combination are in Figure A.<sup>23</sup>

Given the reduced number of prime contractors in many defense areas, and given that, once the number of competitors falls to two the government must often spread awards to keep two companies in business, it seem likely that more use of partnering techniques and changed attitudes are needed to secure "value for money." Customers probably need to devote more effort to vendor rating activities, checking their suppliers' performance across a range of dimensions in comparison with that of rival or comparable organisations. This should prevent preferred supplies becoming complacent.

The third reason for comparison was to gain insight into collaborative possibilities. Many

European states have long recognised collaboration as the best way forward in many areas. The U.S. is only tentatively and cautiously moving towards this conclusion.<sup>24</sup> Within collaboration, *juste retour* within a single project is formally accepted by the OCCAR states as a costly and damaging principle in European collaborative projects. Therefore, OCCAR states are looking at the possibilities of calculating *juste retour* on a global basis, spread over many projects. In cases of transatlantic projects, which are much rarer, European states seem likely to press for their full share of work in order to minimise the inevitable domination of most such projects by the US.

Clearly, contrasting concepts of “value for money” in defense equipment; differing procurement emphasis regarding the roles of competition and preferred suppliers and the place of state-directed as opposed to essentially private companies; and the variety of political systems overseeing defense procurement, all make equipment collaboration among democratic members of a close alliance often difficult. On many occasions, Europeans have wanted, even needed,

to collaborate on development badly enough that they overcame the obstacles outlined above. The U.S. has rarely concluded that collaboration is worthwhile, but often has had an interest in principle.

Looking forward, if the four IDEA nations are to collaborate in future projects, they need to be ready for the compromises involved. These involve, *inter alia*, a readiness to make multi-year commitments whose importance is understood by Congress, and greater flexibility on technology transfer and exports. There needs to be recognition among all the American stakeholders that collaboration gives access to a blend of the technology, capital and markets of others, and that these benefits involve some concessions at home. Once the costs and benefits of collaboration have been weighed and the gains seen to outweigh the costs, differences in procurement systems can be overcome. Congress could keep its powers of annual review of individual projects provided it recognized that American credibility as a collaboration partner depends on projects, which stay on course with time, cost and performance parameters that need to be left to

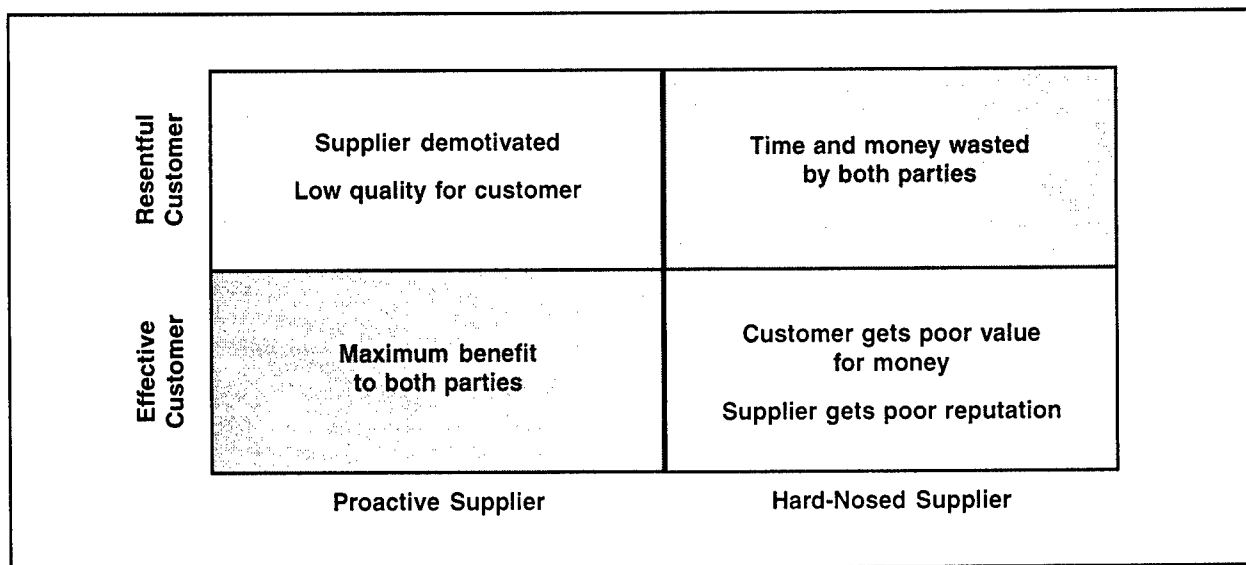


Figure A. Supplier and Customer Combinations

proceed. Not surprisingly given that Europeans have been collaborating for more than 30 years, European collaboration should take more

advanced forms, with OCCAR or a designated lead state taking a central role.

## ENDNOTES

1. Individuals wishing to quote this chapter pls. contact Professor Trevor Taylor, RMCS.
2. Defence Open Government Document 83/01, *Value for Money in Defence Procurement*, London, Ministry of Defence, 1983.
3. David Yost, "France" in D.J.Murray & P.R.Viotti (Eds), *The Defense Policies of Nations: a comparative study*, Baltimore & London, Johns Hopkins University Press, 3rd edition, 1994, pp. 239-40 & 257.
4. Office of Technology Assessment, Congress of the United States, *Lessons in Industrial Restructuring: the French Experience*, Washington DC, US GPO, 1992, p. 16.
5. Germany also favours particular sorts of business with defense contracts.
6. International Institute for Strategic Studies, *The Military Balance*, 1998-9, London, Oxford University Press 1998, p. 271.
7. Richard F Grimmett, *Conventional Arms Transfers to Developing Nations*, 1990-97, Washington DC Congressional Research Service, 31.07.99.
8. International Institute for Strategic Studies, *The Military Balance*, 1998-9, London, Oxford University Press 1998, p. 270.
9. The Confederation of British Industry and the UK Ministry of Defence, *Partnering Arrangements Between the Ministry of Defence and its Suppliers, October 1998, available from the Defence Procurement Agency and the CBI*.
10. See a German MoD Report criticising the progress of collaboration with the US and America's readiness to buy foreign equipment, "Germany slams US collaboration," *Janes' Defence Weekly*, 18 March 1999.
11. Congress of the United States Office of Technology Assessment Background Paper, *Lessons in Restructuring Defense Industry: The French Experience*, Washington DC, USGPO, 1992, pp. 10-16.
12. E.A.Kolodziej, *Making and Marketing Arms: the French Experience and its implications for the international system*, Princeton N.J., Princeton University Press, 1987, p. 243.
13. See Chapter 4, p. 8.
14. See Chapter 4, p. 22.
15. C.Kelleher & C.Fisher, "Germany" in D.J.Murray & P.R.Viotti (eds) op.cit., p. 175.
16. Preview May 1999, p. 16.
17. Preview May 1999, p. 16.
18. See Chapter 4, p. 35.
19. 2.14, 2.16.
20. See Chapter 4, p. 11.
21. See Chapter 2, p. 5.
22. Jolyon Howorth, speaking at the International Academic Congress "NATO – the first 50 years," Brussels and Bonn, 19-22 May 1999.

23. R. Wootton "Supplying: The Right Methods," *Project*, June 99, pp. 25-26.
24. See Chapter 4, p. 44.



# APPENDIX





*Appendix A*

**ARMED FORCES OF  
THE FOUR IDEA NATIONS<sup>a</sup>**

<b>United States</b>		<b>Germany</b>	
Army:	495,000	Army:	239,950
Navy:	426,700	Navy:	27,760
Air Force:	388,200	Air Force:	76,900
Marines:	173,900	Total:	347,100
Coast Guard:	37,300	Civilians:	143,500
Total:	1,483,800		
Reserves:	1,880,600		
Civilians:	790,000		
Defense Budget (1997):	\$265.8B, 3.4% of GDP	Defense Budget (1997):	\$33.6B, 2.0% of GNP
<b>United Kingdom</b>		<b>France</b>	
Army:	112,200	Army:	219,900
Navy:	46,000	Navy:	63,300
Air Force:	56,700	Air Force:	83,420
Total:	214,900	Total:	380,820
Civilians:	124,900	Civilians:	32,276
Defense Budget (1997):	\$33.2B, 3.8% of GNP, 39% equipment	Defense Budget (1997):	\$37.2B, 3.4% of GNP

<sup>a</sup> Worldwide Directory of Defense Authorities - Mar 98

## *Appendix B*

# **LIST OF ACQUISITION AND RELATED ORGANIZATIONS**

## **FRANCE**

---

**Delegation General for Armaments (Delegation General pour l'Armement (DGA))**

**Center for Higher Studies of Armament (Centre des Hautes Etudes de l'Armement (CHEAr))**

**Direction Des Centres D'Expertise Et D'Essais (DCE)**

### **Flight Tests:**

- Centre d'Essais en Vol de Bretigny (CEV Bretigny)
- Centre d'Essais en Vol d'Istres (CEV Istres)
- Centre d'Essais en Vol de Cazaux (CEV Cazaux)
- Centre Aéroporté de Toulouse (CAP)

### **Missile Testing:**

- Centre d'Essais des Landes (CEL Biscarosse)
- Centre d'Essais de la Méditerranée (CEM Toulon)
- Groupe Naval d'Essais et de Mesures (GNEM Brest)

### **Airframe, equipment and propulsion testing**

- Centre d'Essais des Propulseurs (CEPr Saclay)
- Centre d'Achèvement et d'Essais des Propulseurs et Engins (CAEPE Saint-Médard en Jalles)
- Centre d'Essais Aéronautique de Toulouse (CEAT Toulouse)

### **Ground systems pyrotechnics and protection trials**

- Centre d'Etudes du Bouchet (CEB Bouchet)
- Centre d'Etudes de Gramat (CEG Gramat)
- Centre de Recherches et d'Etudes d'Arcueil (CREA Arcueil)
- Groupe d'Etudes et de Recherches Balistiques Armes et Munitions (GERBAM Plouhinec)
- Etablissement Technique de Bourges (ETBS)
- Etablissement Technique d'Angers (ETAS)

**Naval systems and common technology**

- Bassin d'Essais des Carènes (BASSIN Val de Reuil)
- Centre d'Electronique de l'Armement (CELAR Paris et Rennes)
- Centre Technique des Moyens d'Essais (CTME Arcueil)
- Groupe d'Etudes sous-marines de l'Atlantique (GESMA Brest)
- Centre Technique des Systèmes Navals (CTSN Toulon)
- Laboratoire de Recherches Balistiques et Aérodynamiques (LRBA Vernon)

**Service De La Maintenance Aeronautique (SMA)****Trois Ateliers Industriels de l'Aéronautique**

- de Bordeaux (AIA Bordeaux)
- de Clermont-Ferrand (AIA Clermont-Ferrand)
- de Cuers-Pierrefeu (AIA Cuers-Pierrefeu)

**Direction Des Construction Navales (DCN)****DCN Cherbourg**

- |               |               |
|---------------|---------------|
| • DCN Brest   | • DCN Ruelle  |
| • DCN Lorient | • DCN Toulon  |
| • DCN Indret  | • DCN Papette |

**DCN Ingénierie**

- |             |              |
|-------------|--------------|
| • Paris     | • Toulon     |
| • Cherbourg | • St. Tropes |

---

**GERMANY**

---

**Federal Ministry for Defense (Bundesministerium der Verteidigung)****State Secretary for Armaments****Directorate General of Armaments (NAD)****Federal Office for Defense Technology and Procurement (Bundesamt fuer Wehrtechnik und Beschaffung (BWB) )****Federal Academy of Defence Administration and Military Technology (Bundesakademie fur Wehrverwaltung und Wehrtechnik (BAkWVT))**

## UNITED KINGDOM

---

**Minister of State for Defense Procurement**

**Defense Procurement Agency (former Procurement Executive)**

**Defense Evaluation and Research Agency (DERA)**

**Royal Military College of Science, Shrivenham**

## UNITED STATES

---

### DoD Acquisition Organizations

**Under Secretary of Defense (Acquisition and Technology)**

**Army:**

**Assistant Secretary of the Army (Research, Development and Acquisition)**

**Army Material Command**

**Army Program Executive Officers/Direct Reporting Program Managers**

**Navy:**

**Assistant Secretary of the Navy (Research, Development and Acquisition)**

**Naval Sea Systems Command (NAVSEA)**

**Naval Air Systems Command (NAVAIR)**

**Naval Supply Systems Command (NAVSUP)**

**Space and Naval Warfare systems Command (SPAWAR)**

**Office of the Chief of Naval Research (ONR)**

**Navy Program Executive Officers/Direct Reporting Program Managers**

**USMC Systems Command**

**Air Force:**

**Assistant Secretary of the Air Force (Acquisition)**

**Air Force Material Command**

**Air Force Program Executive Officers**

**Defense Logistics Agency (DLA)**

**Ballistic Missile Defense Organization (BMDO)**

**Defense Systems Management College**

**Special Operations Command**

---

## DOD ACQUISITION ORGANIZATIONAL FUNCTIONS

---

### Office of the Undersecretary of Defense for Acquisition and Technology

#### Principal Deputy USD (A&T)

Second in command with responsibility for the following offices besides oversight of Defense Logistics Agency:

##### **Director of Defense Procurement (DDP)**

Sets procurement policy for the department covering areas such as, contract administration, cost, pricing, finance, and foreign contracting.

##### **Director, Systems Acquisition**

Responsible for analyzing program status, review of major programs progress and earned value management policies.

##### **Deputy USD, International Programs**

Establishes policies for economic reinvestment, dual use technology programs, international cooperation, and Defense Export Loan Guarantees.

##### **Deputy USD, Logistics**

Sets logistic, maintenance, and transportation policy and provides oversight, and technical development of logistics systems.

##### **Deputy USD, Acquisition Reform**

Responsible for implementation of acquisition reform within the department and acquisition education through the Defense Acquisition University.

##### **Deputy USD, Environmental Security**

Sets policy and provides oversight of defense acquisition environmental issues to include technology development, cleanup and pollution prevention.

##### **Deputy USD Industrial Affairs and Installations**

Responsible for the defense infrastructure issues.

##### **Director Acquisition Resources and Analysis**

Responsible for legislative issues, and planning, programming and budgeting for USD (A&T).

#### **Director, Defense Research and Engineering (DDR&E)**

Oversees the Science and Technology Program and nuclear, chemical and biological matters. DDR&E has direct line authority over the Defense Advanced Research Project Agency (DARPA).

##### **Director Strategic and Tactical Systems**

Technical reviews, evaluation, treaty compliance and oversight of acquisition programs for missile defense, tactical and strategic aircraft, tactical land and naval systems, munitions, electronic warfare programs, and deep strike systems.

**Director, Test, Systems Engineering and Evaluation**

Responsible for ensuring the effective integration of all engineering disciplines into the system acquisition process, testing and the Foreign Comparative Test Program.

**Deputy USD, Advanced Systems and Concepts**

Oversight and management of the Advance Concept Technology Demonstration (ACTDs) efforts.

**Deputy USD Science and Technology**

Responsible for DoD science and technology planning to include international science and technology programs.

**Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology)**

**Deputy for Logistics**

Sets supply, maintenance, and transportation policy and provides oversight and technical development of logistics systems.

**Deputy Assistant Secretary Army Research and Technology**

Formulates Army-wide technology-based-strategy, policy, guidance and planning, and establishes and validates the Army's technology-based-priorities throughout the PPBES.

**Deputy Assistant Secretary for Procurement**

Provides management and oversight of all Army procurement functions and organizations, acquisition reform, and the industrial base.

**Deputy Assistant Secretary for Plans, Programs and Policy**

Develops the Army's acquisition policy and procedures and insures that Congressionally mandated laws and DoD policy are appropriately promulgated in Army regulations. Also responsible for formulating the Army's acquisition, logistics and technology long range plans and budgets.

**Deputy Assistant Secretary for Chemical Demilitarization**

Oversees the U.S. chemical weapon destruction program.

**Deputy for Systems Management and Horizontal Technology Integration**

Responsible for executive program management and implementation of acquisition policy for all Army ACAT I-IV programs. Serves as direct link between the Army SAE and PEOs (ACAT I & II). Also serves as Army lead for inserting new technology into existing programs and technical and programmatic guidance for Army international cooperative materiel programs.

**Director for Assessment and Evaluation**

Provides independent management oversight, technical advice, policy guidance, vulnerability assessment and reporting related to the Army's major acquisition programs. Oversees the administrative responsibilities associated with decision reviews of Major Defense Acquisition Programs.

**Deputy for Combat Services Support**

Responsible for oversight and management of combat services.

**Deputy for Ammunition**

Responsible for executive management and implementation of DoD ammunition programs to include missiles, bombs, etc.

**Deputy for Medical Systems**

Responsible for executive management and implementation of Army medical systems programs for Army hospitals, etc.

**Office of the Assistant Secretary of the Navy (Research, Development and Acquisition)****Deputy Assistant Secretary Navy (DASN) Ship Programs**

Monitors ships programs managed by Naval Sea Systems Command and the PEOs for Ship Defense and Submarines and DRPM s for AEGIS and Strategic Systems Programs. Analyzes shipbuilding industry capability and capacity.

**DASN Mine/Undersea Warfare**

Monitors technology and business opportunities and provide program and policy guidance for mine and undersea warfare programs.

**DASN Air Programs**

Monitors PEO and Naval Air Systems Command programs for aircraft, anti-submarine warfare, cruise missiles, unmanned aerial vehicles and programs. Analyzes the aircraft industry for capability for production and repair of aircraft.

**DASN C4I/EW/Space Programs**

Monitors PEO, Space and Naval Warfare Systems Command's Communications and Sensors programs. Serves as the Navy Chief Information Officer.

**DASN Expeditionary Force Programs**

Monitors Marine Corps Systems Command and the DRPM for Advanced Amphibious Assault program(s).

**DASN Theater Missile Defense**

Monitors Navy PEO and Systems Command programs related to theater missile defense.

**DASN Planning, Programming & Resources**

Performs long range ALT planning, legislative liaison, manages the management information system and works budging (PPBS) issues.

**Chief of Naval Research (CNR)**

CNR provides policy, oversight and management of the Navy's science and technology program. He has direct line authority over the Office of Naval Research, Office of Naval Technology and Office of Advanced Technology Transition.

### **Deputy Acquisition and Business Management**

Responsibilities include setting acquisition policy, procurement, ethics, reliability, manufacturing, and value engineering.

### **Director International Programs**

Responsible for cooperative research and development, foreign military sales, technology transfer, export control, security assistance, foreign comparative testing, data exchange, and other international matters.

### **Director Acquisition Career Management**

Responsible for the management of the accession, education, training and career development of the civilian and military members of the acquisition workforce. Can be described as the career manager for all acquisition workforce members.

### **Acquisition Reform Executive**

The Acquisition Reform Office facilitates implementation of the department's acquisition reform efforts to include changing business process. They also have responsibility for reduction of total ownership cost, cycle time, and the Navy's Specifications and Standards Program.

## **Office of the Assistant Secretary of the Air Force (Acquisition)**

### **Deputy Assistant Secretary Contracting**

Plans, develops, and implements Air Force-wide contracting policies and procedures. Oversight of worldwide Air Force contracting field activities.

### **Deputy Assistant Secretary Management Policy and Program Integration**

Responsible for budgeting, programming, acquisition reform, contractor advisory service, federally funded research and development centers, acquisition pollution prevention, workforce education, training and development. Develops acquisition policy. Integrates all programs individually managed by other SAF/AQ Directorates to achieve the best acquisition program mix. Ensures acquisition programs reflect requirements needed to support the Reserve Component.

### **Deputy Assistant Secretary Science, Technology and Engineering**

Develops policy for and oversees the Air Force's Science and Technology program. Serves as the chief engineer for the Air Force with responsibility for manufacturing management, software management, standardization, non-developmental items advocacy, and military specifications and standards.

### **Mission Area Director (MAD) Global Power**

Plans, programs, oversees and provides program direction for tactical systems such as fighter aircraft and combat weapons. The individuals specifically assigned to each MAD program to work the issues regarding a program are referred to as Program Element Monitors (PEMs).



**Mission Area Director (MAD) Space & Nuclear Deterrence**

Plans, programs, oversees and provides program direction for surveillance, communications, navigation and weather satellites, space launch systems, information warfare capabilities, ground-based strategic systems.

**Mission Area Director (MAD) Global Reach**

Plans, programs, oversees and provides program direction for airlift, training and special operations aircraft programs.

**Mission Area Director (MAD) Information Dominance**

Plans, programs, oversees and provides program direction for command and control, information systems, airborne command and control and radar systems, reconnaissance systems, and systems integration.

*Appendix C*

**DOD DEPOTS/GOVERNMENT-OWNED,  
GOVERNMENT-OPERATED (GOGOS)/  
GOVERNMENT-OWNED,  
CONTRACTOR-OPERATED (GOCOS)**

---

**ARMY GOGOS/GOCOS**

---

**Arsenals/Depots/Ammunition Plants (GOGOs)**

Anniston Army Depot, Anniston, AL	Tooele Army Depot, Tooele, UT
Blue Grass Army Depot, Richmond, KY	Savanna Depot Activity, Savanna, IL (BRAC 01 Closure)
Corpus Christi Army Depot, Corpus Christi, TX	Seneca Depot Activity, Romulus, NY (BRAC 01 Closure)
Crane Army Ammunition Activity, Crane, IN	Watervliet Arsenal, Watervliet, NY
Letterkenny Army Depot, Chambersburg, PA	Picatinny Arsenal, Dover, NJ
McAlester Army Ammunition Plant, McAlester, OK	Ft Wingate Depot Activity, Gallup, NM (BRAC 89 Closure)
Pine Bluff Arsenal, Pine Bluff, AR	Pueblo Depot Activity, Pueblo, CO
Red River Army Depot, Texarkana, TX	Umatilla Depot Activity, Umatilla, OR
Redstone Arsenal, Redstone Arsenal, AL	Rock Island Arsenal, Rock Island, IL
Sierra Army Depot, Herlong, CA	
Tobyhanna Army Depot, Tobyhanna, PA	

**ARMY Government-Owned Contractor-Operated (GOCOs) Active Facilities**

Hawthorne Depot, Hawthorne, NV	Lone Star Army Ammunition Plant, Texarkana, TX
Holston Army Ammunition Plant, Kingsport, TN	Milan Army Ammunition Plant, Milan, TN
Iowa Army Ammunition Plant, Middletown, IA	Radford Army Ammunition Plant, Radford, VA
Lake City Army Ammunition Plant, Independence, MO	Lima Army Tank Plant, Lima, OH

---

### ARMY Government-Owned Contractor-Operated (GOCOs) Inactive Facilities

Indiana Army Ammunition Plant, Charlestown, IN (excess)	Mississippi Army Ammunition Plant, Stennis Space Center, MS
Volunteer Army Ammunition Plant, Chattanooga, TN (excess)	Sunflower Army Ammunition Plant, DeSoto, KS (excess)
Scranton Army Ammunition Plant, Scranton, PA	Riverbank Army Ammunition Plant, Riverbank, CA
Kansas Army Ammunition Plant, Parsons, KS (excess)	Badger Army Ammunition Plant, Baraboo, WI (excess)
Longhorn Army Ammunition Plant, Marshall, TX (excess)	Ravenna Army Ammunition Plant, Ravenna, OH (excess)
Joliet Army Ammunition Plant, Joliet, IL (excess)	Twin Cities Army Ammunition Plant, Minne- apolis, MN (excess)
Cornhusker Army Ammunition Plant, Grand Island, NE (excess)	

---

### AIR FORCE DEPOTS/GOCOS

---

#### Depots

San Antonio Air Logistics Center, TX (Scheduled to close in 2001)  
 Sacramento Air Logistics Center, CA (Scheduled to close in 2001)  
 Warner-Robbins Air Logistics Center, GA  
 Oklahoma City Air Logistics Center, OK  
 Ogden Air Logistics Center, UT

#### Air Force GOCOs

Plant 4, Lockheed Martin, Ft. Worth, TX  
 Plant 6, Lockheed Martin, Marietta, GA  
 Plant 44, Raytheon, Tucson, AZ  
 Plant PJKS, Lockheed Martin, Denver CO  
 Plant 42, Site 1 Boeing, Palmdale, CA  
 Plant 3, City of Tulsa, OK (in process of transfer)  
 Plant 59, Johnson City, NY (in process of transfer)

## **NAVY DEPOTS/SHIPYARDS/WEAPONS CENTERS**

---

### **Naval Shipyards (Government-Owned, Government-Operated (GOGOs))**

Puget Sound Naval Shipyard, Bremerton, WA  
Pearl Harbor Naval Shipyard, Pearl Harbor, HI  
Portsmouth Naval Shipyard, Portsmouth, NH  
Norfolk Naval Shipyard, Norfolk, VA

### **Naval Ordnance Weapons Centers (GOGOs)**

Naval Ordnance Weapons Center, Seal Beach, CA  
Naval Ordnance Weapons Center, Yorktown, VA  
Naval Ordnance Weapons Center, Earle, NJ  
Naval Ordnance Weapons Center, Indian Head, MD  
Naval Ordnance Weapons Center, Concord, CA

### **Navy Inventory Control Points (GOGOs)**

Mechanicsberg, PA  
Philadelphia, PA

### **Naval Aviation Depots (GOGOs)**

Cherry Point, NC  
Jacksonville, FL  
North Island, CA

### **Naval Aviation Weapons Centers (GOGOs)**

China Lake, CA  
Orlando, FL  
Lake Hurst, NJ  
Patuxant River, MD

### **Supervisors of Shipbuilding (GOGOs)**

Pearl Harbor, HI  
Bath, ME  
Pascagola, MI  
Jacksonville, FL  
New Orleans, LA  
Newport News, VA  
Puget Sound, WA  
San Diego, CA

---

# BIBLIOGRAPHY

---

## UNITED STATES

---

- Benson, Lawrence R., "Acquisition Management in the United States Air Force and Its Predecessors," Air Force History Office, 1997.
- Ferrara, Joe, "'DOD's 5000 Documents: Evolution and Change in Defense Acquisition Policy," *Acquisition Review Quarterly*, Fall 1996, Vol. 3 No. 2, pp. 109-130.
- Fox, J. Ronald with James L. Field, "The Defense Management Challenge," *Weapons Acquisition*, Harvard Business School Press, 1988.
- Gansler, Jacques S., "Defense Conversion: Transforming the Arsenal of Democracy," Cambridge, MA: MIT Press, 1995.
- Gansler, Jacques S., "Affording Defense," MIT Press, Cambridge, MA 1989.
- Heberling, Michael E., "Defense Industrial Base Policy: Revisited," in *Acquisition Review Quarterly*, Summer 1994, Vol 1. No. 3, pp. 238-249.
- Horton, Peter, "Converting the Military-Industrial Complex: Why it's Difficult," in *Acquisition Review Quarterly*, Spring 1994, Vol 1, No.2, pp. 100-113.
- Jones, Jr., Wilbur D. "From Packard to Perry, A Quarter Century of Service to the Defense Acquisition Community," Defense Systems Management College Press, GPO, Ft. Belvoir, VA, June 1996
- Jones, Wilbur D. Jr., "Congressional Involvement and Relations," Fourth Edition, Defense Systems Management College Press, Ft. Belvoir, VA, April 1996.
- Kausal, Tony, "What a Difference a Century Makes... Or Does It?," in *Contract Management Magazine*, October 1989, pp. 24-25.
- Nagle, James F., "A History of Government Contracting," The George Washington University, Washington, DC, 1992.
- Trask, Roger R. and Alfred Goldberg, "The Department of Defense 1947-1997, Organization and Leaders," Historical Office, Office of the Secretary of Defense, Washington, DC, 1997.
- Williams, Richard M., "Small Business Manufacturing: An Important Component of the U.S. Defense Industrial Base," in *Acquisition Review Quarterly*, Summer 1994, Vol. 1, No. 3, pp. 250-268.

## GERMANY

---

- Kaitz, Dr. Edward M. and Dr. Kurt Jankowsky, "The Effects of of a Scale-down in Defense Budgets," Vol. I, Defense Systems Management College Press, 1993. CPM Forum Series, "Defence Armament and Logistics in Germany," Published by CPM Communication Presse marketing GmbH, Sankt Agustin, Germany, 1998.
- Kaitz, Dr. Edward M. and Dr. Kurt Jankowsky, "The Effects of of a Scale-down in Defense Budgets: German Industrial Organization," Vol. II, Defense Systems Management College Press, 1994. Military Technology, "Defence Procurement in Germany," Special Issue, No.2/99, Monch Publishing Group, Bonn, Federal Republic of Germany, 1999.
- Kaitz, Dr. Edward M. and Dr. Kurt Jankowsky, "The Effects of of a Scale-down in Defense Budgets: The Kiel Report," Vol. III, Defense Systems Management College Press, May 1995.

## FRANCE

---

- Textes relatifs à l' Organisation de la Défense, Journal Officiel de la République Française N° 1033. Echanges d'information sur la planification de la défense, DICOD – Ministère de la Défense – Collection Analyses et Références.
- Matériels de guerre, Armements et Munitions, Journal Officiel de la République Française N° 1074. Le nouveau management de projets, J. Davidson Frame – Ed. AFNOR, (traduction de "Managing Project in Organisation").
- Méthodes de Management de Programmes, Jean Cavallès – Ed. TECHNEA.

---

**UNITED KINGDOM**

---

- Defence Open Government Document 83/01, *Value for Money in Defence Procurement*, London, Ministry of Defence, 1983.
- David Yost, "France" in D.J.Murray & P.R.Viotti (Eds), *The Defense Policies of Nations: a comparative study*, Baltimore & London, Johns Hopkins University Press, 3<sup>rd</sup> edition, 1994.
- Richard F. Grimmett, *Conventional Arms Transfers to Developing Nations, 1990-97*, Washington DC Congressional Research Service, 31.07.99.
- International Institute for Strategic Studies, *The Military Balance*, 1998-9, London, Oxford University Press 1998, p. 270.
- The Confederation of British Industry and the UK Ministry of Defence, *Partnering Arrangements Between the Ministry of Defence and its Suppliers*, October 1998, available from the Defence Procurement Agency and the CBI.

