

17th ICCRTS
‘Operationalizing C2 Agility’

Title of Paper:
The Fifth Bin – Opportunity to Empower the National
Four Bin Analysis Discussion

Topics:

Track 2: Approaches and Organizations

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Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE JUN 2012	2. REPORT TYPE	3. DATES COVERED 00-00-2012 to 00-00-2012			
4. TITLE AND SUBTITLE The Fifth Bin - Opportunity to Empower the National Four Bin Analysis Discussion		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Program Executive Office (Integrated Warfare Systems),16107 Benedict Court,Woodbridge,VA,22191-4302		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES Presented at the 17th International Command & Control Research & Technology Symposium (ICCRTS) held 19-21 June, 2012 in Fairfax, VA.					
14. ABSTRACT The United States is having a national discussion of the ways and means of defense and the tools of national power. A four component framework was proposed to assess national interests? defense missions and capabilities. The four components are: efficiencies; all defense operations TTPs1 and CONOPS1 cost drivers; return on investment analysis of limited utility missions, capabilities, and programs; and, QDR1 strategy modifications. Yet that framework seems to leave out an important unifying or overarching factor the population of the nation. That is, the complete population pool of the nation ? the source of military service members, all government personnel, and the employees of all companies and institutions. The author will discuss the framework, along with the fifth element, to start the dialogue of how it can make the framework factors work to a greater long term outcome beyond the initial framework employment.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 50	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

The Fifth Bin – Opportunity to Empower the National Four Bin Analysis Discussion

ABSTRACT/OVERVIEW

The United States is having a national discussion of the ways and means of defense and the tools of national power. A four component framework was proposed to assess national interests' defense missions and capabilities. The four components are: efficiencies; all defense operations TTPs¹ and CONOPS¹ cost drivers; return on investment analysis of limited utility missions, capabilities, and programs; and, QDR¹ strategy modifications. Yet that framework seems to leave out an important unifying or overarching factor the population of the nation. That is, the complete population pool of the nation – the source of military service members, all government personnel, and the employees of all companies and institutions. The author will discuss the framework, along with the fifth element, to start the dialogue of how it can make the framework factors work to a greater long term outcome beyond the initial framework employment.

OUTLINE - INTRODUCTION

When Former SecDef Gates spoke at the Pentagon on May 18, 2011 (Daniel, 2011) (DOD, 2011) about the framework for assessing the Department of Defense (DoD) capabilities, he proposed four 4 bins (areas) for defining and developing the focus for shaping the ongoing investments in missions and capabilities for the future with the international and domestic financial uncertainties which are even now still be addressed. The framework's four bins are: 1) additional efficiencies; 2) serious examination of established policies, programs, processes and mandates driving the dramatic increase in defense operating costs; 3) options to reduce or eliminate marginal missions and capabilities, specialized and costly programs with limited range of circumstance/contingency utility; and, 4) specific alternative modifications to the QDR strategy that translate into options for reductions in force structure or capability needed to execute the strategy.

While not mentioned there is an overarching, or fiducial – foundational, fifth bin, which is present and enables all the other four bins and the specifics of the process and action in those bins. That fifth bin is the personnel and population pool which make up the DoD (military and civilian), along with the complete population pool which provides, educates, generates, supports, and cares for the personnel taking care of the four bins, and executing the national missions. That population group is not isolated to the DoD, it is the same population group which performs the same functions of all the government agencies and organizations, as well as all the business, volunteer, and international organizations.

The author will examine the framework four bins, along with the proposed fifth bin, to argue that those five bins constitute an improved framework structure for assessment and analysis not only of DoD ways and means, but also all of government and other organizations. That the fifth bin of the analysis will offer linked or flexible options which are likely better than the four bin analysis results.

¹ Abbreviations: TTPs – tactics, techniques, and procedures; CONOPs – concepts of operations; QDR – Quarterly Defense Review

This parallels the need for a unifying component between the earth, wind, fire, and water elements needed to make the components work together for maximum delivery portrayed in the movie ‘*The Fifth Element*’. That fifth element was love/compassion, which brought together the strengths of the four components, and amplified them to the point where the combined five elements were greater than the sum of their components. Thus while the basic four pieces of the framework are identified, the successful analyses with the associated execution of actions to implement the results from the analyses requires personnel and organizations which are capable, competent, and adaptive to implement those actions. In some respects the offered 5th element has a parallel with the idea of adding a ‘human view’, a fourth view, to the current three views within the Department of Defense Architecture Framework (DoDAF) – operational view, systems/services view, and technical standards view, with the overarching ‘all view’. Thus like the 5th element, a ‘human view’ would add additional context and possible improved insights to that which is being analyzed for improvements.

Again, the four components are: efficiencies; all defense operations TTPs and CONOPS cost drivers; return on investment analysis of limited utility missions, capabilities, and programs; and, QDR strategy modifications.

Stated in full they are: 1) additional efficiencies; 2) serious examination of established policies, programs, processes and mandates driving the dramatic increase in defense operating costs; 3) options to reduce or eliminate marginal missions and capabilities, specialized and costly programs with limited range of circumstance/contingency utility; and, 4) specific alternative modifications to the QDR strategy that translate into options for reductions in force structure or capability needed to execute the strategy. The next sections will discuss and explore several aspects of these four, and then the author’s offered fifth component.

EFFICIENCIES

The first to be examined will be the efficiencies which are available for analysis with any process, procedure, or methodology, and where additional new efficiencies may be found.

Knowing that there can be some confusion related to what is meant by efficiencies, it is well worth reviewing the definition of both efficiency (ies) and effectiveness, as sometimes they are incorrectly used interchangeably. Though they are not interchangeable, they are related, as the following definitions and Figure 1 (Wiki, 2012a) demonstrate:

-Efficiency – 1: the quality or degree of being efficient ; 2: *a*: efficient operation; *b* (*I*): effective operation as measured by a comparison of production with cost (as in energy, time, and money) (2): the ratio of the useful energy delivered by a dynamic system to the energy supplied to it: the quality or degree of being efficient. (MW-W, 2012a)

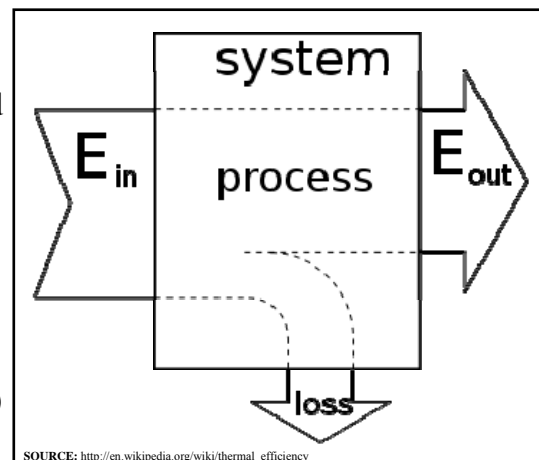


Figure 1 - Thermodynamic Efficiency - Process

-Effective – 1: *a*: producing a decided, decisive, or desired effect <an *effective* policy>; The synonym discussion of effective is that effective stresses the actual production of or the power to produce an effect <an *effective* rebuttal>. (MW-W, 2012b)

Restated: Efficiency is related to economic return on investment, while effective is related to actual achievement of desired or desirable results. Thus, when an efficient action is taken or a step or process is evaluated or reported as being efficient, this is normally referring to the measure of the output/outcome compared to the measure of input or effort which is applied or expended to achieve that output/outcome. When considering the thermodynamics of a process there is the very specific definition of a closed system heat cycle where entropy increased for the work cycle and energy is converted from one form to another. This is represented as shown in Figure 1. (Wiki, 2012a)

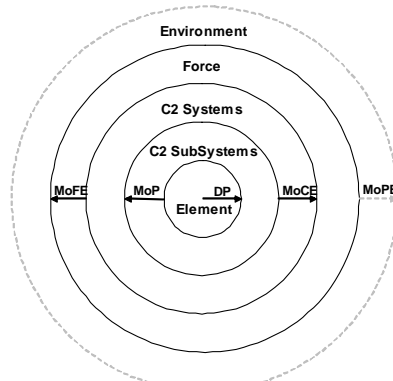
Equations 1(a) and (b), provide the parametric formula for thermal efficiency – η_{th} (eta):

$$\eta_{th} = \frac{\text{What you get out}}{\text{What you put in}}, \quad \text{or} \quad \eta_{th} = \frac{W_{out}}{Q_{in}} = 1 - \frac{Q_{out}}{Q_{in}} \quad \text{1(a) 1(b) (Wiki, 2012a)}$$

Where work = W_{out} , energy in = Q_{in} , and energy out = Q_{out} (also referred to as waste energy).

While this applies to the thermodynamic work cycle, it can also be applied to regular processes, as demonstrated by Goldratt and Fox (1992) in *The Goal*, where a new manager is assigned to a production facilities to analyze and then work out how to improve its performance, or end up closing the facilities. This analysis ends up going through all the processes involved with production steps, production flow, billing, shipping, customer satisfaction, adaptability, capital equipment, etc. In the end when reporting out on performance, the ‘standard’ method of checking and reporting indicated not so favorable results, while the true output and delivery to the customers was essentially way above the norm for industry standards. This indicated that the older methods of measurement were not actually providing representative results, representative of the true improvements which had taken place, and thus that the measurement methods were themselves lacking reliability and validity for the context and circumstances.

RELATIONSHIPS OF MEASURES OF MERIT



SOURCE: NATO CCBP – Code Of Best Practice for C2Assessment, DoD CCBP, Washington DC, July 2004, Figure 5.1.P. 8B.

Figure 2 – Measures of Merit Hierarchy

In this same manner, the examination of efficiencies within the Department of Defense, may well have to look at the actual measurement methods and decide whether they are truly the correct ones, then determine better measures, the data which must be collected to make those measurements, and establish the validity of there relationship to the process to be representative of how well the process is performing – that is how efficient is the process – η_p . Is the output/outcome worth the input? The needed framework for data collection and analysis to support decisions must be carefully selected, tested, then adjusted to support production of

supportable data for conclusions, decisions, and action plan execution. This opens the door to the concept of nested measures of merit shown in Figure 2 (DoD CCRP, 2004), where the discussion of experimentation and best practices within NATO and used within CCRP community, are described and the methodology discussed. This NATO framework is considered extensible and adaptable by the author for use within the examined framework of this paper.

Yet, how does that evaluation and improvement, let alone the analysis get accomplished unless it is through the individuals and groups associated and involved in running and delivering the ‘goods’ of national defense, the tools of national power. How do those individuals develop and maintain the skills and knowledge to examine and determine the efficiency of a process, or for that matter a process within a process, for national defense itself will have many components, organizations, stakeholders, action individuals, supporting individuals, etc. They all will have processes, procedures, and technical details to deal with, organize, use, adapt, and discard, depending on the circumstances and situation. They will have varying degrees of decomposition for evaluation and improvement. Some methods of analysis and adjustment will be better for some processes and data collection than other, i.e., no one tool or aid will be best in all cases, there must be a tool kit of evaluation methods, which has been the point of providing and discussing the NATO Code of Best Practices (DoD CCRP, 2004), as well as one of the potential results from use of the ELICIT² (CCRP, 2012-E) tool for collaboration and analysis, by examining how best practices establish data collection and analysis metrics, and with how teams can work well together to support mutual goals and outcomes, then improvements and savings, improved efficiency may be realized.



Figure 3 - Framework Model for Grand Vision

One potential framework tool which could be useful for the analysis of efficiencies is the framework or performance based logistics. Now some will say this framework has now connection to the bigger picture of the ‘good’ of national defense, though the author counters that when the national discussion is revolving around the capabilities of the force structure, systems, and personnel – DOTMLP-F³ of national defense – than the framework of supporting the protecting the national and international public then fits into the safety of the public – the outcome delivered as measured against the work/expense of the national

defense ‘consumed’ in the economy. This includes the attendant co-development of all contributing and interconnected pieces and components which work together to produce and support outcomes and results. As originally issued, Joint Vision 2010 (JV 2010, 1996) seemed to address only the military type ‘hard’ power, this changed somewhat with JV 2020 (2000), where more inter-agency and inter-nation coordination has been implied; and thus providing an opening for more types of ‘soft power’ to be included for an potential evolution across all

² ELICIT – Experimental Laboratory for the Investigation of Collaboration, Information-sharing, and Trust.

³ DOTMLP-F – Joint Doctrine, Agile Organizations, Joint Training & Education, Enhanced Materiel, Innovative Leadership, High Quality People, and Requisite Facilities.

government and all organizations. Figure 3 shows an evolved Joint Vision 2010/2020 framework (JV 2010, 1996) (JV 2020, 2000) of analysis which can be utilized for government and non-government organizations, for potential value stream contributions and analysis, or contributions analysis toward the National Military Strategy (NMS, 2011a) (NMS, 2011b) areas of: Counter Violent Extremism; Deter and Defeat Aggression; Strengthen International and Regional Security; and, Shape the Future Force. The reader is reminded that these NMS objectives are in support of the National Security Strategy (NSS, 2010) tenants of: Security; Prosperity; Values; and, International Order – both within a US initial framework, but possibly related on an international basis to other organizations and states objectives and tenants.

Underlying the process of checking efficiencies is the necessary and sufficient requirement for qualified and capably individuals to be available, at the correct time and location, with the needed skills and background to actually perform the needed analysis and formulation of implementation efforts to accomplish any needed changes. Where do those individuals come from? Besides coming from the workforce, they also come from the population pool of the work force, and the education and development pipeline which provides the population/workforce source pool. The author's question to the reader is: Does the current set of education and development processes produce a satisfactory workforce recruitment pool?, or does there need to be improvements in the development of the recruitment pool? While the development of that potential recruitment pool will support the organizations, the organizations must also be able to solve the economics and ethics balance of: compensation, alignment, and commitment for new members, so that they join and not only become a recruitee, but become a full fledged member and contributor to the organization, its process and procedures through the factors of efficiency, efficacy, and aligned objectives.

DEFENSE OPERATIONS TTPS AND CONOPS COST DRIVERS

The second factor to be discussed will be the examination of established policies, programs, processes and mandates driving the dramatic increase in defense operating costs, whether by the implied or statutory requirements, as well as the just cause requirements of international common practice.

When an examination of policies, programs, processes and mandates is to be accomplished, the devil will be in the details as there will be many levels of examinations of these factors which will need to be undertaken. The undertaking must be from the bottom to the top of the large organizations involved, as well as the small organizations involved. By that the author is implying that the examination must start at the national organization level, as well as start at the smallest organizational level, say families and communities, as well as the small group suppliers of services and components. For example the organizations can be examined for the procedures which they use and employ; they can be examined based on the personalities of the individuals within the organization structure; they can be reviewed as a style of single entity without regard to the internal characteristics.

While these are not the only styles of analysis which are available, they constitute a starting point for review of the four sub-elements of this section. Those sub-elements can and likely should be looked at from the perspective of what are the underlying features or characteristics which likely cause the identified policies, program, processes and mandates. That being said, the

characteristics of the organizations likely have to be examined as well. For example are they centralized from the standpoint of leadership and decision power control, are they decentralized and delegated with respect to leadership and decision control; are they very tall organizationally; are they relatively flat organizationally; do they have mixed characteristics through different parts of the organization? The questions or criteria for analysis can continue in several directions as pointed out in several CCRP publications and numerous presented papers. As shown in

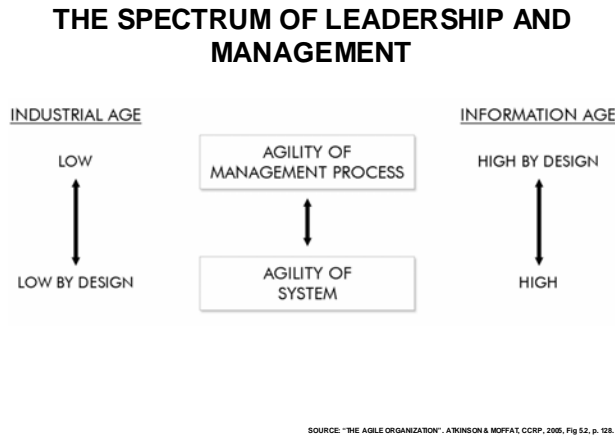


Figure 4 – The Spread of Styles

Figure 4 (Atkinson & Moffat, 2005), one style of describing organizations and some of their characteristics is provided. Other organizational parameters are: organic – mechanistic; functional – divisional; procedurally strict – adaptive/flexible; command and decision centralized – command and decision decentralized; for several other dimensions of analysis. Some may even agree that organizations may have both of the paired characteristics present at the same time, dependent on where in the extended organization structure the examination and analysis is performed. This is a characteristic presented by Collins and Porras in *Built to*

Last (1997). Where more successful organizations have continuing quite stable core tenants, principles, and objective guiding them for the long-term, and agile, adaptive, changing styles and procedures when accomplishing certain aspects and procedures in the short term within the current external environment, in support of the longer term objectives and desired outcomes.

The unifying factor within these factors, and the four sub-elements are the individuals who are the positions of the organizations, as well as all the organizations which they are part of at the same time due to their communities of interest. It is these communities of interest which also have influence on the other organizations and the sub-elements presented for examination for where are there opportunities for improvement. Principles of Lean Six Σ are potential useful analysis frameworks for making assessments and identifying improvements. Perhaps performing a ‘waste walk’, or a ‘rapid improvement event’, or carefully mapping the flow steps with their delay times or constraints will allow sufficient insight into the value stream components to find opportunities for improvements, removals, or re-sequencing of flow steps associated with the value additions to the processes, policies, programs and mandates. Yet to actually successfully accomplish these approaches the organizations and individuals must not only be available to perform the analyses, but also have an environment within which they are able and empowered to act and discover, and learn through doing to make positive contributions to the value streams which they are a participant in and member. The workforce and the pool for the workforce and action individuals once again arises as an important component underlying the examinations, tradeoffs, and then the implementation of changes.

So how will these examinations be linked between the various and numerous sections of the differing levels of the organizational structures, whether they are within the Defense Department, the military or civilian sections, within the producing commercial companies and their suppliers;

within the communities which are being protected by the military; the stockholders of the producing commercial companies, etc. The reader is reminded that a particular individual may be a member of several of these entities at the same time, those revealing that here will have to be an assessment of the priorities which are ranked by that individual between the several communities of interest/membership and whether those communities are to be considered ‘small world’ or self organizing with emergent characteristics as discussed with *The Agile Organization* (Atkinson & Moffat, 2005) and other CCRP publications. Figure 5 (Ibid, p. 113) illustrates a hoped for progression of the mixed ingredients

of certain amounts and characteristics of inputs, personnel, and environmental factors are capable of or more likely to result in or enable a community of individuals or organizations to self organize for a larger common good for all involved, which is more capable than the simple sum of their individual component/capability contributions. As alluded above, Figure 5 is an attempt to visualize this progression of organizational networks from scale free networks toward small world organizations/networks, which assist in propagation and enlargement through spawning and further network connections to ‘children/generations’ of other scale free networks, which continue to self organize and grow. Not only must the members and networks associated with the organizations, processes, and procedures be adaptive and adoptive as the circumstances may dictate or demand, they must also understand the larger frameworks involved, and when to shift, change, or acquire capabilities, for larger benefits and potentially longer term returns on investment criteria and thresholds.

NETWORK TYPES – ANOTHER VIEW

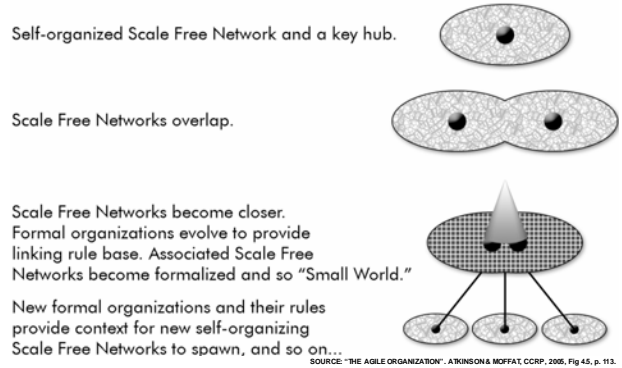


Figure 5 – Another View of Network Types

RETURN ON INVESTMENT ANALYSIS OF LIMITED UTILITY MISSIONS, CAPABILITIES, AND PROGRAMS

The third area of discussion will be options to reduce or eliminate marginal missions and capabilities, specialized and costly programs with limited range of circumstance/contingency utility. This will be related to the prior two and interconnected, not completely separate.

This area may be one of the more difficult of the four areas being discussed. As the details of analysis regarding the utility of different sections of an organization – its missions, its capabilities, and the programs which are carried out must somehow be translated into a common measurement method. The measures must be understood and accepted not only by the members of the organization, but the stakeholders, and the ‘outside observers’ of the organization and the analyses. When considering national security that is usually quite challenging, as the organizations and groups involved directly and indirectly can seemingly be endless and extensive. Take for example a manufacturer: there are the direct workers, the direct suppliers, the direct receivers. There are also the second level individuals who provide the services and products which these groups consume at work, as well as the products which their families consume at home and through the community. The individuals are all voters or related to voters

both locally and nationally, so several levels of government are involved. As the reader can conclude the network can become extensive.

At the same time the measurement method can be done in several ways – jobs, income, contract value for the company, taxes generated the local, state, and national levels; there can also be aspects of foreign trade actions involved as well. Thus there will likely need to be several level of measures and data employed for analyzing the utility of the missions, capabilities, and programs, such that the local organizations have part of the say in the data; however, there is another segment of the population which is intimately involved as well, and that is ‘the

A Visualized Framework - STRATEGIC Through TACTICAL

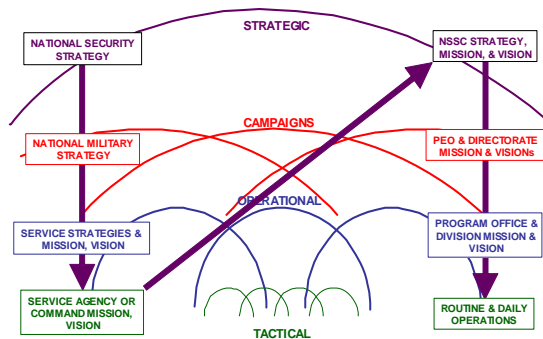


Figure 6 - An Organization View for Analysis

opposition’ and the ‘outside environment’ where the missions, capabilities, and programs are expected to interact for the users and those that the users are attempting to be efficient and effective in their outcomes for the objectives which drove the establishment and need for the missions, capabilities, and programs.

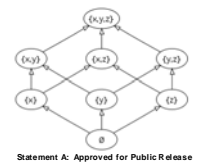
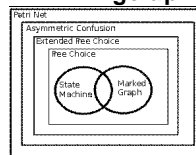
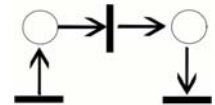
One significant aspect of these three sub-segments is the lower level and upper level organizational missions, vision, and goals statements, along with their flow down of metrics and sub-segments. A framework for this style can be seen in the accompanying Figure 6,

which is a nested set of arches and sub-arches. As can be seen in the figure, there can be quite a few levels of distillation and breakdown depending on which level the analysis is started. In fact the starting level may be either the top or the bottom, as the communities which the individuals and organizations are part or components of can be considered extensible and extended – the challenge becomes how far to go. For simple initial work and learning the boundary for the analysis can be quite near, while for more advanced and detailed the boundary may be further, encompassing a much larger environment of individuals, organizations, and circumstances.

Another framework which may be useful for the sub-segment analysis is that of the universal joint task list, expanded to include the other government organizations and agencies, and a parallel task listing for any other organization which interacts with the government, for these groups an organizations have varying types of mission and vision statements, which can be analyzed and accounted for in similar structures. These structures can also be represented via the structural diagrams utilized under the DoDAF (Wells II, 2004) (DoDAF, 2012a) (DoDAF, 2012b) (Wiki, 2012b) and the translation of those diagrams into universal modeling language for assistance in analysis. These aspects of depiction also set up the

Cause and Effect Networks

- **Influence Nets**
– demonstrate interactions
- **Acyclic Graphs**
- **A diagram**
- **Extensibility & Complexity**
– go up very quickly



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Figure 7 - Cause and Effect Networks - Influence Nets

possibility of depiction through cause and effect chains or influence nets. Figure 7 offers some aspects of cause and effect networks, which also requires a model or depiction of interactions between elements and individuals (generating that model may seem challenging at times). The model must have sufficient fidelity and parameters which support evaluation of change implantation without actual organization or organizational changes. That is a model which can be translated into executable computer language/programs/algorithms for analysis of improvements, return on investment, efficacy, efficiency, and procedural changes as discussed thus far in this paper.

With regard to utility analysis the reader is directed to Bruce de Mesquita’s (Wiki, 2012c) utility analysis predictive approach (UA, 2012), and the work reported in 2002 CCRP best paper by Wagenhals and Levis (Wagenhals & Levis, 2002), subsequently used for actual implementation. The reader is reminded that there will be other methods and tools for this analysis – value stream analysis, cost accounting analysis, or another method, which may provide useful insight into the return on investment, effectiveness, and efficiency associated with the segments of missions, capabilities, and programs.

‘Future Organization?’ – The Agile Edge

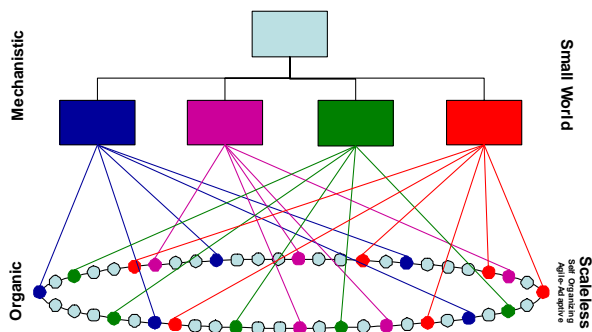


Figure 8 - Depiction of Task Teams within an Organization

All these factors for analysis must be accomplished somehow, they do not magically emerge as results fully developed – a la Athena being born fully developed as a result of Zeus’s headache – the personnel and means for analysis must have been available and ready. This is not to say that when not required they are idle, but the pool of talented organizations and personnel for recruitment must be available to be called upon for various tasks as depicted within Figure 8, for how team tasking can be drawn from an available pool.

Yet, how is that recruitment pool trained and developed, what are the standards for its education and development, from where does it draw its experience and ethics, how does it balance competing priorities and loyalties? These are all factors which go into the analysis as well as into the considerations of the development of the individuals and population as a whole for all the communities which the members of the population will claim as membership. The communities and their aspects of membership end up influencing the priority/primacy of a member’s sense of ranking goals, objectives, and actions. For an individual to place certain priorities ahead of others, the ethics, costs, and benefits for the ‘larger’ or specific related community must be seen as more beneficial in the larger environment, rather than another objective goal which is in that environment, yet a smaller subset of it, and not provide sufficient gain. This is where alignment of larger strategies and objectives become important, not only for certain leadership positions, but for large numbers of the organization members, if not all members, but also to potential recruitment candidates, current and future, as the grand strategy must be stable and adaptive as well, like the organization and its members.

QDR STRATEGY MODIFICATIONS

The final area of the initial four part framework is the area of specific alternative modifications to the QDR strategy that translate into options for reductions in force structure or capability needed to execute the strategy. This plays heavily into the examination of the external/international environment and the projections of what the future may offer, besides the prospect for an uncertain future. While there can be argued that there have always been uncertain futures, the more recent expectation is that with improved information, analysis and knowledge some degree of certainty regarding the future may be realized. Years ago this was potentially represented by the area of study known as psychohistory (Wiki, 2012d) (Wiki, 2012e), more currently informed as the cultural, historical, and biographical background of an individual, group, or organization for the purposes of establishing a style of action – reaction profile which could be utilized to evaluate the actions under various stimuli. This is the basis of influence nets and cause and effect chains for how an organization will respond and execute actions, as well as potentially starting with a current state, establishing a desired future state, than performing the analysis to end up attaining that desired future state. This is fundamental strategic planning – depicted in Figure 9 (NWC, 1995).

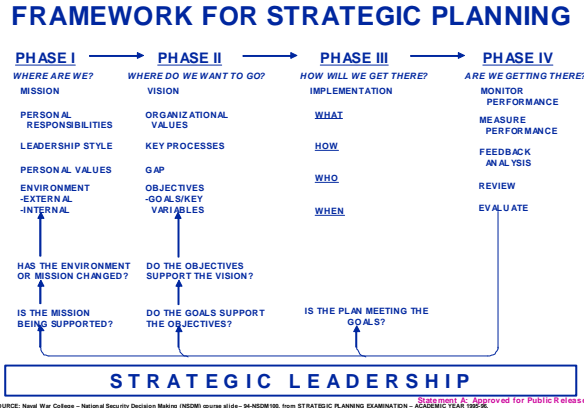


Figure 9 – Strategic Planning Model

In the simplistic model approach this is the basic strategic planning model. The reader is reminded that the strategic planning model must be applied at multiple levels identified in Figure 6, as well as the much more involved coordinating levels and groups depicted in Figure 10, with all the organizational interactions hopefully

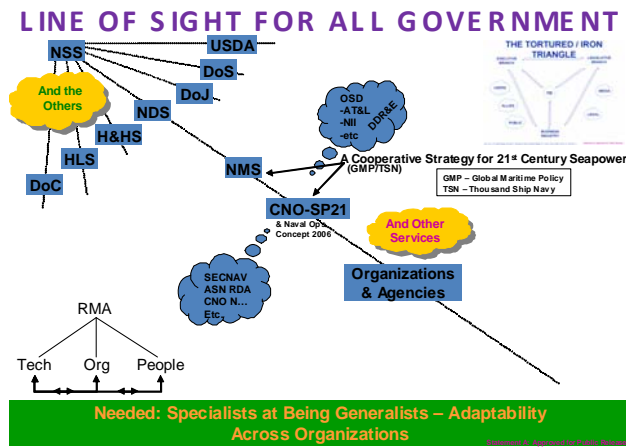


Figure 10 - The Complexity of Coordination

and mitigated. Figure 10 starts the ‘all of government model of distillation from top level strategy, policy and guidance down through the bureaucracy levels to the action individuals and groups, making for a very complex structure and ‘internal’ environment, let alone the external environment that the internal is influencing and acting upon. It also is the principle behind the Covey 7 Habits (Covey, 1990) method of planning and execution – establish a future end outcome, then establish the path to achieve that outcome; it was also the flavor of the

intent of the temporary use of the national security personnel system by the U.S. Department of Defense for development of the workforce. In fact these three are fundamentally the same, differing only with respect to the terms of reference for the components and process of the individual model, like Boyd’s: Observe, Orient, Decide, Act (OODA) (Wiki, 2012f) Wiki, 2012g) (Boyd, 2012a) (Boyd, 2012b); or, Deming’s: Plan, Do, Correct, Act (PDCA) (Walton,

1990) (PDCA, 2012a) (PDCA, 2012b) (Wiki, 2012h) models. They all do much the same; though can likely provide some differing insights into the process being analyzed because of some of the differing data which is used in each model.

Earlier, the author presented an evolved JV 2010/2020 framework for involving other government and non-government organizations for solutions within an uncertain future environment. This would be realized by improved, seamless coordination of hard and soft power for solutions and processes/procedures, applied to the many and different challenges which will continue to appear in an uncertain future. The Priorities for 21st Century Defense (Pf21stCD, 2012), and the NSS (2010), both cite a ‘whole of government’ approach, but also imply a ‘whole of organization’ approach, as all organizations have hard and soft power options among their many interactions.

With that introduction and discussion for this segment of the analysis, the reader is invited to consider that to analyze what might be changed within the QDR analysis and results, than not only must the current state be clearly determined with all its variable for all the organizations and interests, but also the long term desires and ultimate future which is desired, not only by the individual or collective organization, but potentially for the collective group of disparate members of the larger community composed of various communities of interest and many potential small world type organizations.

This also assumed that there may be the ability to ultimately link and align the objectives of these individuals, groups and organizations at many differing levels and styles of interactions. This assumes that there can be a ranking and prioritization of interests and objective with that set of individuals, groups, and organizations – a very tall order – which may end up determining the boundary of the ‘environment of analysis and interactions’.

As displayed in Figure 10 above and Figure 11, there may be a representation of how national organizations of government could be viewed as represented by their relationships with guiding documents and policies. Once a view of the organizations is established than another layer of the structures could be established for their internal structures, and their structures to external organizations – customers and suppliers – their various stakeholders, and communities of participants and their competing interests and priorities. Thus the reader is reminded that the first view of an organization may not reveal all the aspects of internal and external interactions – other styles must be sought out and utilized, which may provide insights and further options.

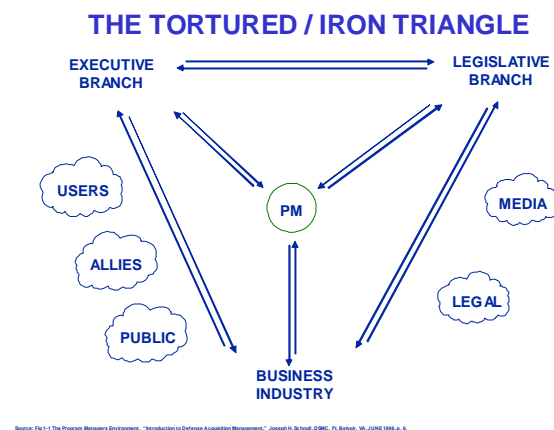


Figure 11 - Partial Competing Interests Display

All these groups are composed of individuals who participate, and also are action points within the respective organizations and communities, thus they are involved with making the decisions

which have near and long term impacts and implications – known and unknown, depending on some of the circumstances of events and decisions.

This completes the discussion of Gates’ 4 element framework, there are personnel related factors within each of the elements, and for each there are potentially several aspects which would affect how they are to be realized. Not the least of these personnel factors are the multiple and varied background of the personnel, their organizations, and the richness of their varied ideas which may open different revealing aspects of models, analysis, and approaches, not limited to using a different metric for measuring results.

THE FIFTH ELEMENT

While some will think this a stretch for generating an overarching or foundational aspect which will complement and strengthen the four components of the framework, the reader is reminded that many times the actual results are more than the simple sum of the basic components. That is the organizational emergence of synergy or also the self organizing aspect which making the seemingly hard become quite easy and quickly accomplished, a potential result implied by Figure 8 with its ‘ad hoc teams’.

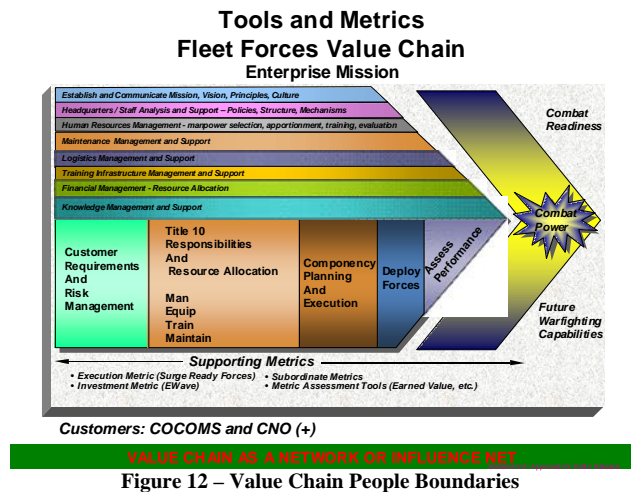


Figure 12 – Value Chain People Boundaries

From the framework of value chains or streams, Figure 12 offers another view with respect to ‘hard’ power to be linked with the smart power for harnessing all national tools as outlined in January 2012’s ‘Priorities for 21st Century Defense (Pf21stCD, 2012).’ The chance and challenge for emergent activity, and gain for added delivery of product is partly visualized with the Figure 12 from CFFC demonstrating the activities, analyses, capabilities, and capacities which must come together to provided Combat Power to the warfighter – pointy end of the spear. While this illustrates those factors, it can also

represent the people factors associated with those factors, the policy factors associated with those factors of hard power, as well as the possibility of representing the factors as ration actors or entities – a la Graham Allison’s three models which were used to analyze the Cuban Missile Crisis (Farrel & Chalouka, 1994), they are: Rational Policy Making; Organizational Process; and, Political Process. These are sometimes referenced as: the rational actor model; the bureaucratic policy model; and, the personality model. Under either set of titles, they provide a set of frameworks which open the door to interpreting situations, circumstances, contexts, and options from differing perspectives, like the varied backgrounds of the recruitment and workforce pools. If the delivery of combat power is the output measure of the group efficiency, and the existence or presence of boundary interfaces were postulated to consume some measure of effort while the contribution to combat power is being generated, than removal of those boundaries and restrictions would likely improve the out, improve the efficiency of combat power production and delivery. (This aspect and effort must also be applied to the soft power components aspect of national, international, and organizational tools as well.)

It takes the personnel and people involved to make those improvements for removing the constraints and boundaries. They are the individuals in the process who can open and close the door of opportunity and progress, facilitating or hindering the improvements. The personnel are able to choose to align the organizations and groups to the higher organization/group objectives, understanding the smaller contributions to lubricating the processes and mechanisms, or adding the sand to slow things, or jeweler's rouge to fine tune the mechanisms. As the numerous groups manage to organize and align activities, the scale free factors come into play, potentially generating the small world characteristics, which allow for ease of communication, improved understanding through shared knowledge, all supported by the background information and underlying data which has history and current timeliness characteristics. Though these group or organizational characteristics, capabilities can not be realized unless the personnel who join them have not learned and developed through education and experience those desired characteristics which allow for contributions, understanding, and adaptation when the data indicates that the needs of the circumstances and interacting environment provide the feedback data for change. This has been the analysis point behind the ELICIT (CCRP, 2012-E) joint experimentation, and the organizational studies where the functional or divisional structure is the team initial condition, while the data presentation and problem environment is at a mis-match to provide team stress, loading of team members, and potential discovery of team ability to adapt to the needs of the circumstances – can they shift on the fly so to speak to make organizational adjustments and improve coordinated responses and solution discovery. What are their personal characteristics and history profiles which assist their success or hinder their performance? What can be done to improve their preparation for team contribution? These are the people factors – their fifth element contributions which are the capacity and capability needed to make and successfully accomplish former SecDef Gate's four framework components of changes to: efficiencies; all defense operations TTPs and CONOPS cost drivers; return on investment analysis of limited utility missions, capabilities, and programs; and, QDR strategy modifications; to prepare for the future and improve the contributions to national power by consuming less effort, and thus producing more capabilities whether that is combat power, commercial activity, improved communications and international comity and thus improvements for those that need them, deserve them, or may not even be aware of their availability. And further, they apply to the soft power tools or organizations, international groups, and national groups.

SO WHAT – WHY IS THIS IMPORTANT

Having discussed the four components, and then added the fifth element to the recipe for analysis and development of options, it is time to review several of the implications and possibilities suggested by adding another factor to the framework of analysis and development.

Remember that the number of interactions between factors increases rapidly when another factor is added, just as the number and type of interactions increased rapidly when another entity is added to a set of group of entities. This becomes even more challenging when there are groups and individuals within those groups when considering organizations at many different levels, yet there is a great deal of opportunities for finding solutions and innovations when the individuals are included within the considerations.

It is through these seemingly hard to characterize interactions that the reality of emergent organization or emergent solutions arise. Remember the theory of stellar evolution where the random interactions of the matter after the ‘big bang’ can be modeled to indicate that a solar system can and will on occasion emerge from those individual interactions. Just as in the current employment of longer term observation, activity based patterns can be determined which are then analyzed to reveal organizational structure, information flows, and organizational centers of influence or action – the older idea of a ‘center of gravity’ of an organization upon which action effects are applied either directly or indirectly. The application of employing the revealed pattern of interactions to provide paths for interaction which generate changes to the cause and effect chains which produce different levels of results.

These type of interactions and results can not take place without an understanding by the action individuals and organizations of the chains of interaction by the action individuals on others, as well as the chains of interactions which lead to the generation of the capable, qualified, enabled, and involved action individuals (along with their organizations, and the individuals’ emergent small world or larger organizations which may result) for the continued effectiveness and survival of the organization.

Though where is the unifying component here? It is the personnel and families, and communities which all individuals live within. It is the neighborhoods, neighbors, community leaders, and community institutions. It is the districts and state personnel, along with the state institutions. It is the national groups and organizations, along with the transnational organizations. It is the multinational organizations which are involved with commerce in all its varieties, and those that have not only physical enforcement power, but those which have normative power to also influence individuals, groups, and organizations. All are involved to varying degrees with the results of the environment in which the author and the readers survive and thrive. It is through the individuals who are involved, that the physical results are produced directly, and the physical results are also produced indirectly.

As examples of the types of papers presented during this series of symposia, the reader’s attention is called to the following papers selected by the author as relevant to this paper’s discussion, prior to final conclusions.

In the paper *Metrics, Analysis and Methods for the Exploitation of ELICIT Experimental Data*, (Martin & McEver, 2008) the authors present illustrative examples of data presentation, formats, and analyses for consideration when performing research utilizing the ELICIT coordination and study tool. It demonstrates a wide range of data presentations and analyses which are available to assist in interpretation of ELICIT teamwork studies, and shows that there are many different methods to review the collected data which using it to progress from data, through information, to knowledge, and then potentially understanding while collecting correlating and fusing data and information, that looking beyond the initial simplistic analyses, and the need to have a robust data collection plan which supports the true test hypotheses objectives or COA of the situation.

-The authors of *Communication Processes and Patterns in High-Performing Networked Teams – A Qualitative Analysis*, (Egenhofer, et al., 2003) tackled the areas of the challenges to a team

working with and across networks in distributed actions, factors associated with the style and processes of team decision making, the patterns of interaction and effectiveness of decision-making styles, and what, if any, emergent structures arose from the groups in the study. These factors address team member backgrounds and experience, coping skills, and willingness to adjust to the environment and context, all important factors associated with adapting and adopting changes in short and long term environments for decisions.

-In *A Useful Methodology for Cost-Benefit Evaluations of Cognitive Process Improvements in Complex Command and Control (C2) Endeavors*, (Acosta, et al., 2008) the authors present an evaluation method and proposed process for evaluating ‘soft’ benefits within a framework of C2 solutions discussions, offer quantified options to ‘what-if’ trade-off challenges, and show return on investment benefits generated from ‘soft’ capability proposals using evaluations which compete for the ‘hard’ limited resource dollars within any constrained resource environment. This methodology can be used by any organization analyzing and acting to improve processes and procedures, whether they are defense, intra-governmental, international, non-governmental, or commercial organizations, that with small changes to terms of reference the model and methods are extensible.

-The paper *Automated Influence Network Generation and the Node Parameter Sensitivity* (Moon, et al., 2008) demonstrates through the authors’ presentation how a model, or influence network for cause effect chains can be translated into a automated analysis tool for evaluation and validation of collected data from multiple sources. The parameters are related to the availability of sensors, their ability to collect data, and the linkages between the various pieces of the data to establish and examine influence nets for validation and potential interactions for mitigating certain patterns which may be revealed. This demonstrates what may be accomplished when moving from a model to an automated evaluation method of the model for interacting with the environment with courses of actions.

-In *A Multidimensional Approach to Studying Cultural Difference and Coping Strategies in a Multinational Coalition Environment*, (Larsson, et al., 2008) the authors introduce the combination of social sensemaking for common ground between groups, individual strategies related to cultural filter creation and use, and the pragmatics of language use for discovering linguistic differences. These factors all must be accounted for when working not only across international organization groups and sub-groups, but in slightly different terms of reference, across group boundaries within governments and all types of organizations.

-The authors of *Using NATO Human View Products to Improve Defense Support to Civil Authority (DSCA)* (Stevens & Heacox, 2008) introduce and discuss the applicability and potential improvements which might be realized if a ‘human view’ (HV) component were added to the already existing DoDAF in support of all government and non-government coordination efforts in complex circumstances such as humanitarian assistance disaster response (HA/DR) coordination efforts. This added framework could be extended to include social and cultural human factors which must be considered when interacting and responding in complex civil-military response circumstance. The recent emergency responses to the Haitian earthquake with its use of technology to help with some of the aid delivery, the coordination for response to the Christmas time Indonesian tsunami, and Japanese earthquake with nuclear power plant

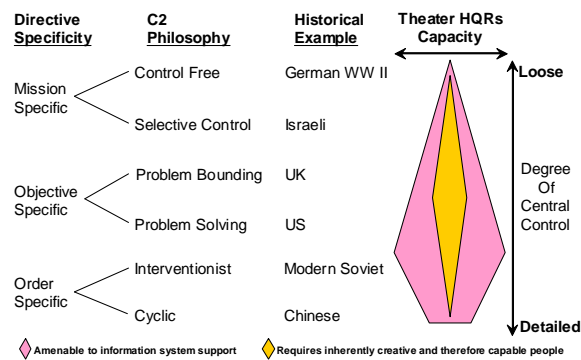
catastrophe all show that technology can assist, but the human and cultural factors are extremely important as well when evaluating and executing courses of actions within the environment and context.

-In *Modeling Support of Effects-based Operations in War Games* (Wagenhals & Levis, 2002), the authors presented their proposal for evaluating courses of action with respect to the utility and outcomes that those courses of action would deliver with respect to missions and objectives. This provides an example of using the model of interactions of cause and effect chains with analysis for the choosing an interaction path for attaining an outcome or future state. In fact, their methodology was later actually applied during operations in Iraq.

CONCLUSION AND CLOSING

The prior sections and initial closing remarks highlight some context and provide food for thought on the total five components presented by the author. That the people and personnel are fundamental, foundational ‘strength factors’ [yes, and occasionally weakness factors], which must be, and are important elements in all frameworks, models, analyses, and processes. That organizations can potentially be as varied as the people and personnel that compose them – from those constituent parts will come surprising and emerging results when they are nurtured, developed, cared for, trusted, and cajoled.

Historical Choices Among C2 System Philosophy



Source: Understanding Information Age Warfare: Alberts, et al.; CCRP, Washington DC, 2001; Figure 64, p. 178.

Figure 13 – Historical Choices Among C2 System Philosophies

Figure 13 is reproduced from Figure 64 of *Understanding Information Warfare* (Alberts, et al., 2002) where some characteristics of several different framework philosophies of C2 are depicted. Note that some of the examples had more than just the cited characteristics – e.g., German WW II, while cited as control free with ‘loose’ degree of Central Control, some readers may be aware, that Hitler did NOT delegate many aspects of certain areas of decisions, thus causing his commanders problems when circumstances varied beyond the ‘loose’ control ropes that had been provided.

For the U.S., there are examples which can be cited where the full spectrum of degree of Central Control have been demonstrated – from Desert One oversight, to President Johnson’s bombing selections from the White House, to Grenada reporting and control as ‘executed’ under the Command of Admiral Metcalf. More recently, take the example of a SOF rescue efforts where the Team has essentially a mission type order, yet full flexibility within the supporting command structure to execute in the style of the USMC developed methods tested under the Sea Dragon initiative, where the local team makes adjustments on the spot according to their actions and interactions with the local environment and the individuals and conditions of the environment.

The overall challenge for the readers will be to step back from the initial four components discussed by the author, and move to include aspects of the maintenance and development of a deep and vibrant organizations’ recruitment pool. A pool which can support all the tools of

national power, not just the DoD components hard power tools of national power, but also those hard and soft power tools of the other Executive Agencies, international and non-governmental organizations, at all levels must be involved as well.

‘Disclaimer’ Opinions, conclusions, and recommendations, expressed or implied are those of the author. They do not reflect the views of the Command and Control Research Program, DoD, U.S. Navy, Naval Sea Systems Command, or Program Executive Office for Integrated Warfare Systems. The author likewise assumes responsibility for any errors in this work.

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ACKNOWLEDGEMENT

This paper is dedicated in memory of two individuals who offered support and encouragement: My Mother: Sarah S. Bryant who passed away late April 2003, two days before her 85th birthday. Secondly, my Father: Russell E. Bryant who passed away late May 2003, two days prior to his 92nd birthday. Additionally, the author acknowledges the critical questioning and prodding of former Naval War College Adjunct Professor, Dr. T. Lindsey Moore, who helped ensure his students would always approach challenging topics with innovative ideas for solutions.

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A large bronze statue of George Washington in profile, facing right, stands on a pedestal. He is wearing a military-style coat and holding a sword in his left hand. The background shows a modern building with large windows and a clear sky. The entire image has a color gradient overlay, transitioning from yellow at the top to green at the bottom.

Operationalizing
Agility

17th ICCRTS
Fairfax, VA, USA
June 19–21, 2012

TRACK 2

APPROACHES AND ORGANIZATIONS

Track 2: Approaches and Organizations

The Fifth Bin

—

Opportunity to Empower the National Four Bin Analysis Discussion

Russell E. Bryant

PEO IWS-2DI

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OUTLINE

- **BLUF**
- **FOUR + ONE FRAMEWORK**
 - **STEP THROUGH THE 5 PIECES**
 - **CONNECTING THE PIECES**
 - **DIFFERING VIEWS OF THE FRAMEWORK**
- **SYMPOSIA CONTRIBUTIONS**
- **WII-FM - THE SO WHAT**
- **SUMMARY**
- **QUESTIONS**

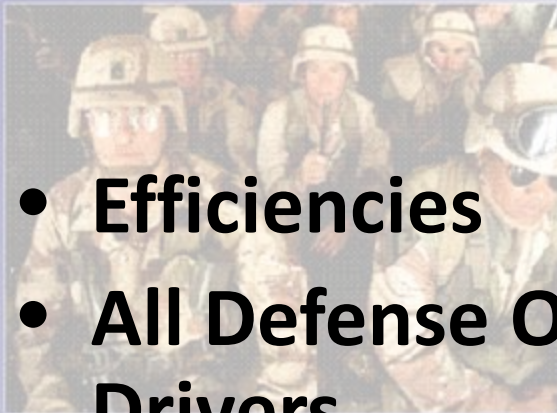
BLUF

- **Look beyond the Basic and Familiar**
- **Find the Representative Tracking Factors**
- **Consider other Perspectives and Terms of Reference**
- **Look for the Networks**
- **REMEMBER – People are Always Involved at Several Levels – Early Development of All Personnel**
- **Look for the BIGGER Picture of Context**
- **PEOPLE Under-write all aspects of a Framework**

THE FOUR ELEMENTS ' + 1 '

PEOPLE

FIRST RATE EQUIPMENT



- Efficiencies
- All Defense Operations TTPs & CONOPs Cost Drivers



- Return On Investment Analysis of Limited Utility Missions, Capabilities & Programs
- QDR Strategy Modifications



TRAINING & READINESS



LEADER DEVELOPMENT

- The 'Fifth' Element

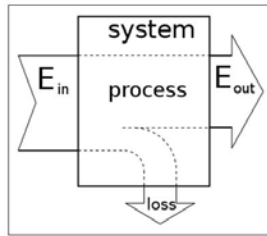
QUALITY
PROCESSES

“1) additional efficiencies”

Former SecDef Gates, May 18, 2011

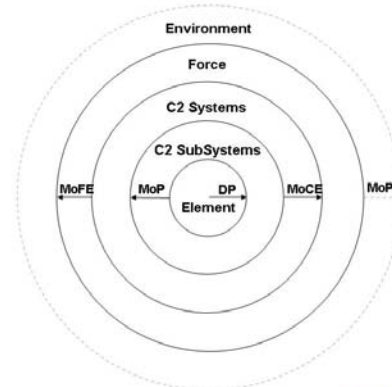
One View of System ‘η’

- $\text{Effort}_{\text{out}} / \text{Effort}_{\text{in}}$
= ‘System Efficiency’
- Challenge:
 - Setting the boundary / constraints limits
 - ? Correct ‘η’ Measures ?
- Opportunity:
 - Re-establishing better efficiency measures
 - Aligned to ‘system’ performance
 - Including ‘Personnel’



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RELATIONSHIPS OF MEASURES OF MERIT



SOURCE: NATO CCBP – Code of Best Practice for C2 Assessment, DoD CCIP, Washington DC July 2004, Figure 5.1, P. 93.

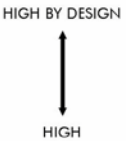
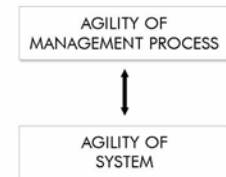
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THE SPECTRUM OF LEADERSHIP AND MANAGEMENT

INDUSTRIAL AGE



INFORMATION AGE

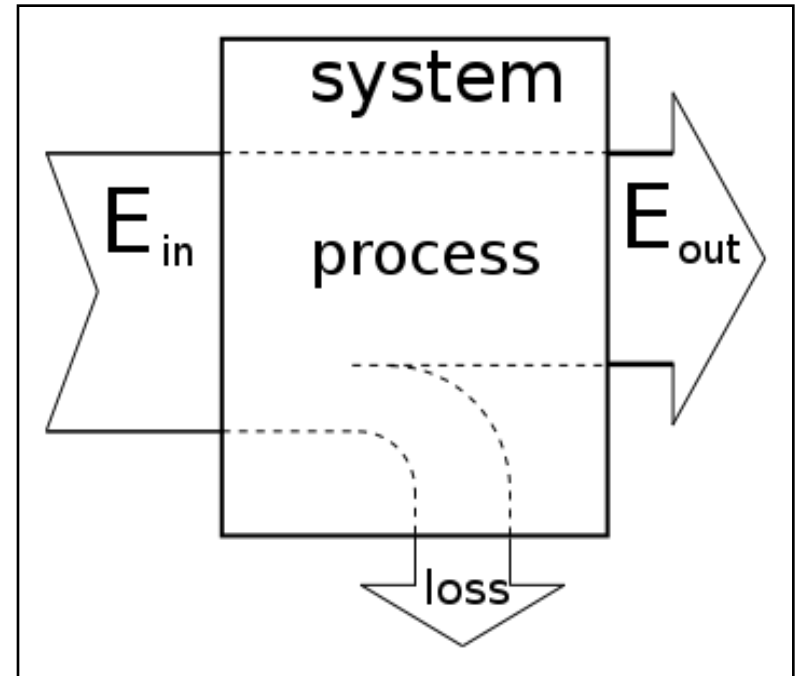


SOURCE: “THE AGILE ORGANIZATION”, ATKINSON & MOFFAT, CCIP, 2006, Fig 5.2, p. 120.

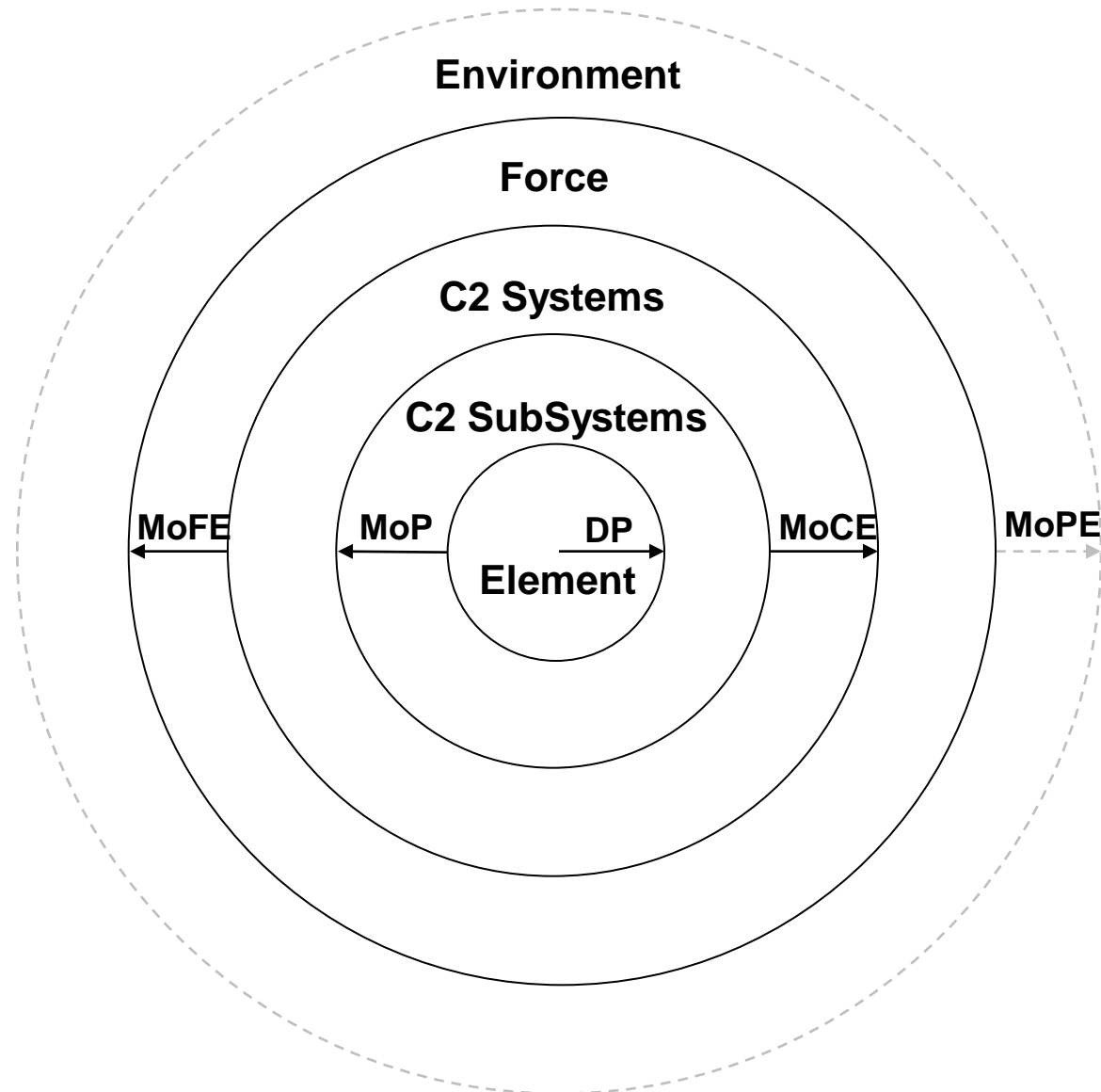
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One View of System 'η'

- $\text{Effort}_{\text{out}} / \text{Effort}_{\text{in}}$
= 'System Efficiency'
- Challenge:
 - Setting the boundary / constraints limits
 - ? Correct 'η' Measures ?
- Opportunity:
 - Re-establishing better efficiency measures
 - Aligned to 'system' performance
 - Including 'Personnel'



RELATIONSHIPS OF MEASURES OF MERIT



THE SPECTRUM OF LEADERSHIP AND MANAGEMENT

INDUSTRIAL AGE

LOW



LOW BY DESIGN

AGILITY OF
MANAGEMENT PROCESS



AGILITY OF
SYSTEM

INFORMATION AGE

HIGH BY DESIGN



HIGH

“2) serious examination of established policies, programs, processes and mandates driving the dramatic increase in defense operating costs”

Former SecDef Gates, May 18, 2011

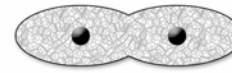


NETWORK TYPES – ANOTHER VIEW

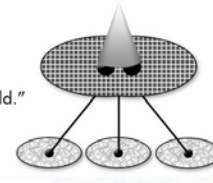
Self-organized Scale Free Network and a key hub.



Scale Free Networks overlap.



Scale Free Networks become closer. Formal organizations evolve to provide linking rule base. Associated Scale Free Networks become formalized and so “Small World.”

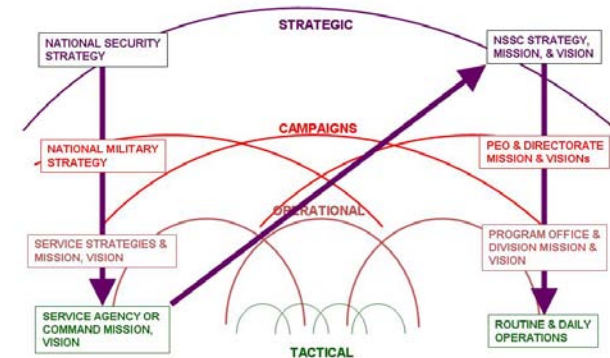


New formal organizations and their rules provide context for new self-organizing Scale Free Networks to spawn, and so on...

SOURCE: "THE AGILE ORGANIZATION", ATRINSON & MOFFAT, CCRP, 2006, FIG 45, p. 113.

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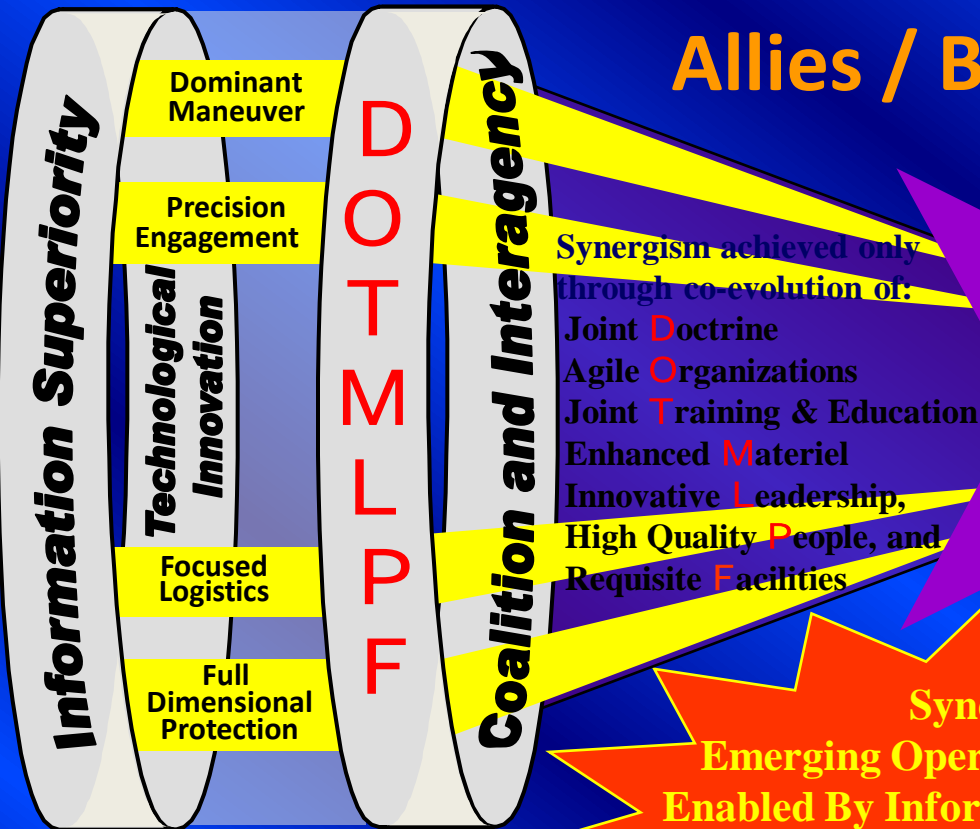
A Visualized Framework - STRATEGIC THROUGH TACTICAL



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Full Soft/Hard Power Dominance

For ALL Govt / NGO / IGO
Allies / Businesses



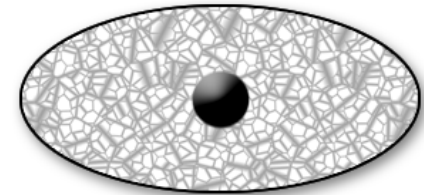
**Full
Soft/Hard
Dominance**

**Synergy -
Emerging Operational Concepts
Enabled By Information Superiority
And Technological Innovation ...
Fused Through Co-evolution of
DOTMLP-F**

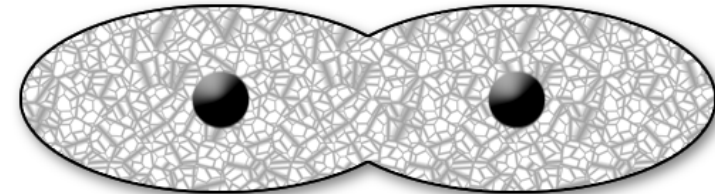


NETWORK TYPES – ANOTHER VIEW

Self-organized Scale Free Network and a key hub.

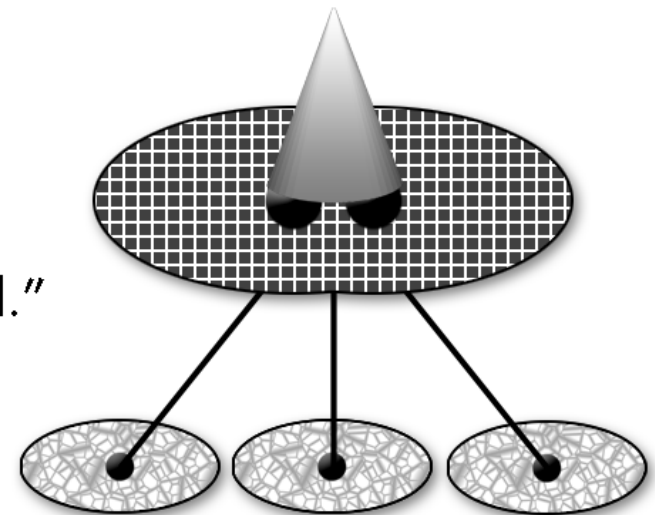


Scale Free Networks overlap.

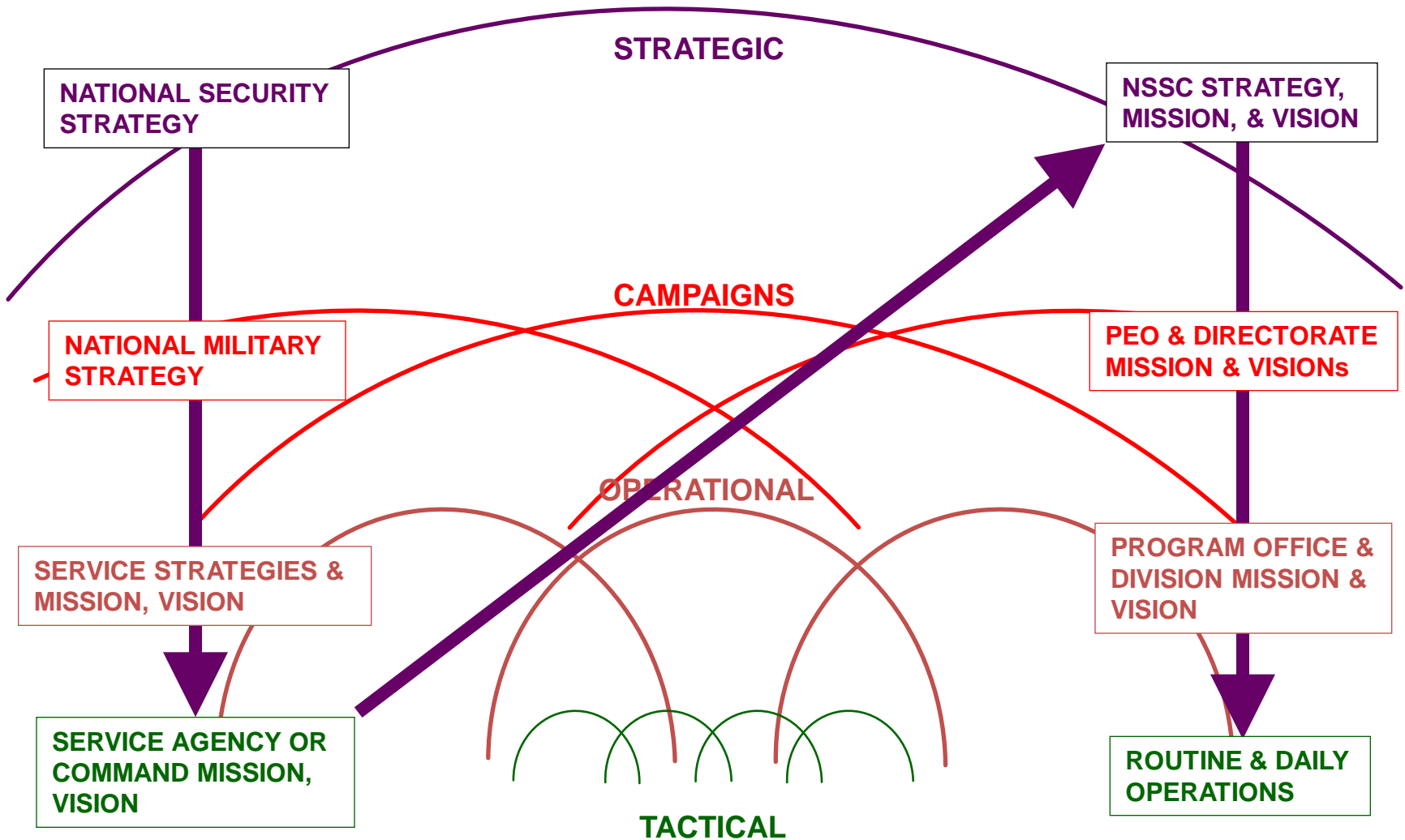


Scale Free Networks become closer.
Formal organizations evolve to provide
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New formal organizations and their rules
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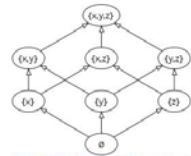
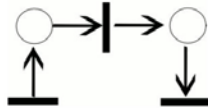
A Visualized Framework - STRATEGIC THROUGH TACTICAL



“3) options to reduce or eliminate marginal missions and capabilities, specialized and costly programs with limited range of circumstance/contingency utility” Former SecDef Gates, May 18, 2011

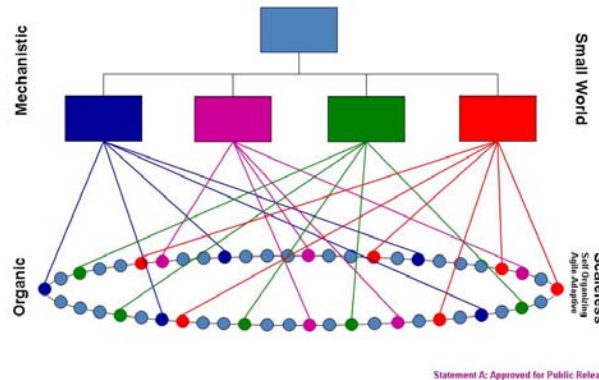
CAUSE AND EFFECT NETWORKS

- Influence Nets
 - demonstrate interactions
- Acyclic Graphs
- A diagram
- Extensibility & Complexity
 - go up very quickly



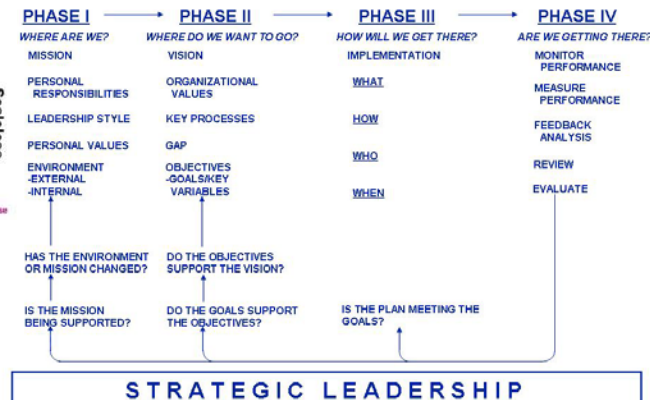
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‘FUTURE ORGANIZATION?’ – THE AGILE EDGE



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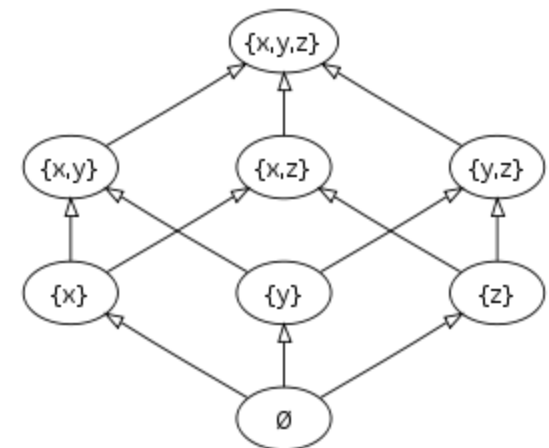
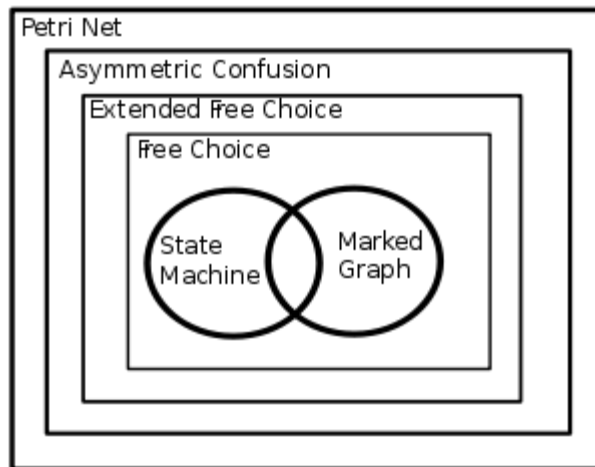
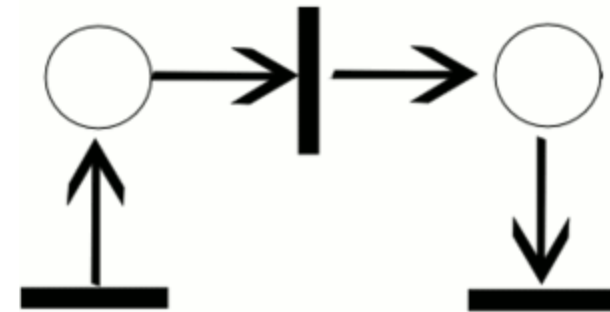
FRAMEWORK FOR STRATEGIC PLANNING



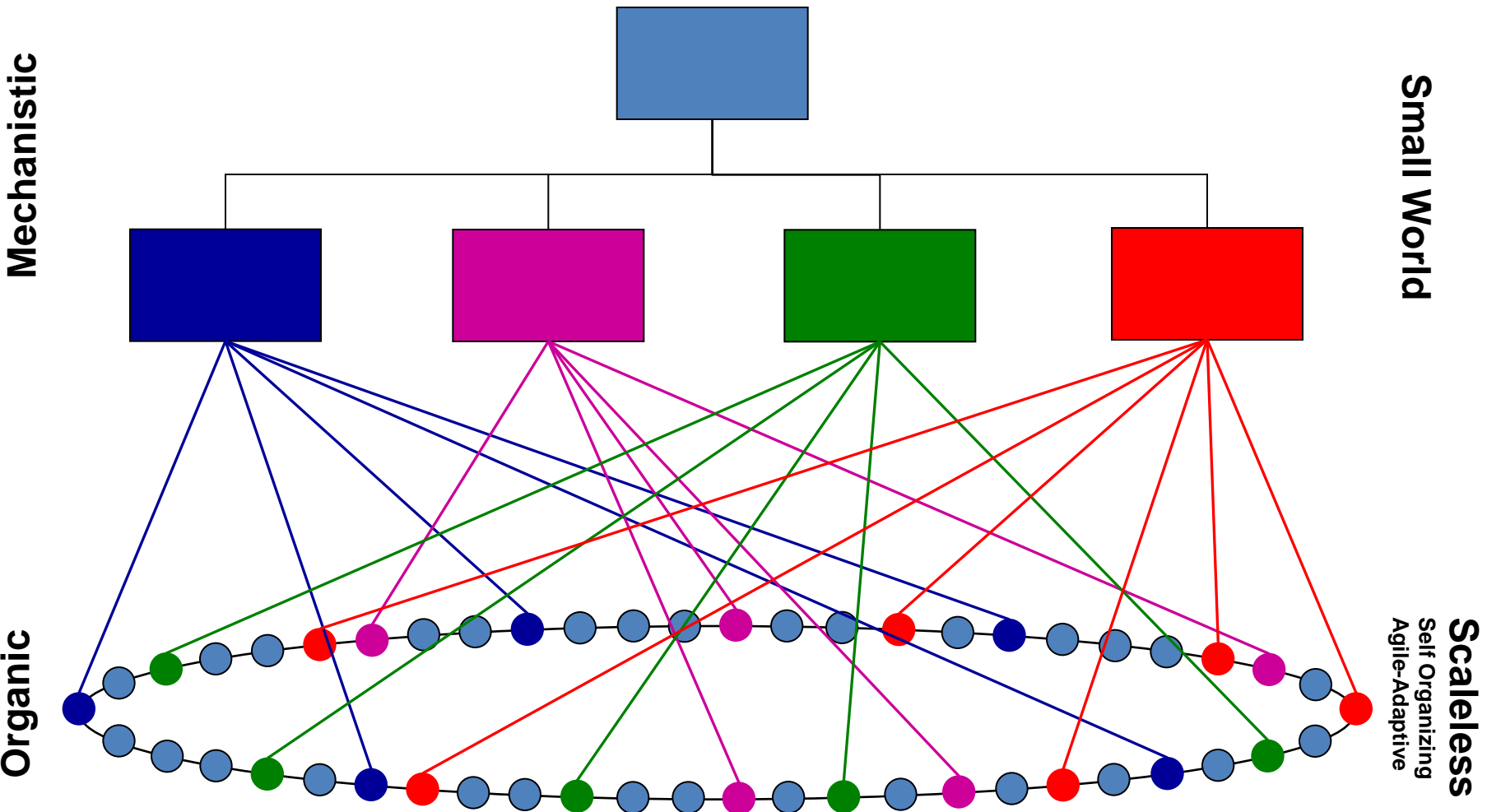
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CAUSE AND EFFECT NETWORKS

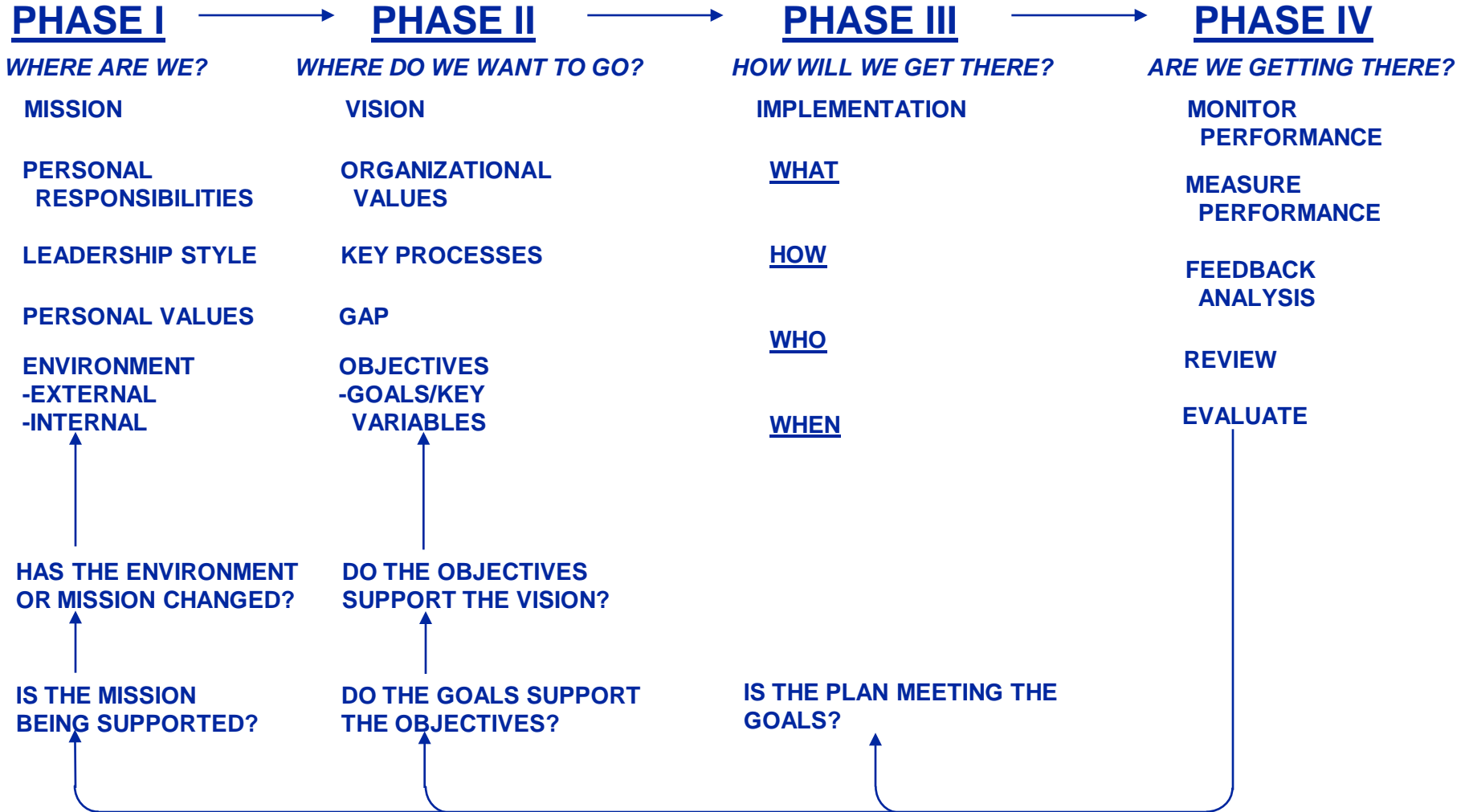
- **Influence Nets**
 - demonstrate interactions
- **Acyclic Graphs**
- **A diagram**
- **Extensibility & Complexity**
 - go up very quickly



'FUTURE ORGANIZATION?' – THE AGILE EDGE



FRAMEWORK FOR STRATEGIC PLANNING



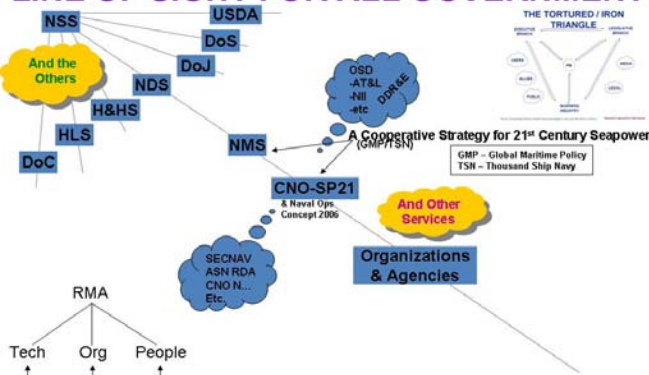
STRATEGIC LEADERSHIP

“4) specific alternative modifications to the QDR strategy that translate into options for reductions in force structure or capability needed to execute the strategy”

Former SecDef Gates, May 18,

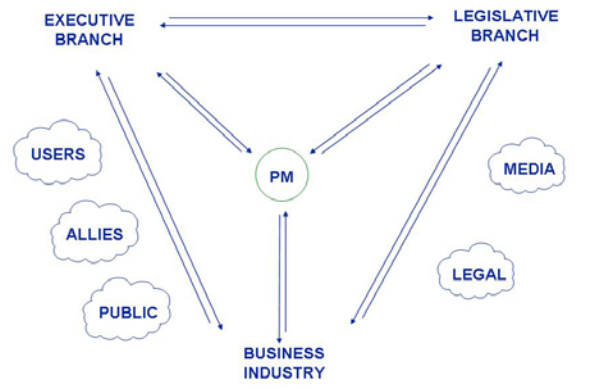
2011

LINE OF SIGHT FOR ALL GOVERNMENT



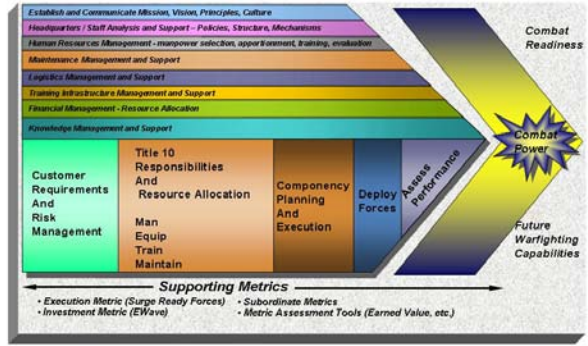
Needed: Specialists at Being Generalists – Adaptability Across Organizations

THE TORTURED / IRON TRIANGLE



Source: Fig 1-1 The Program Manager's Dilemma with "Introduction to Defense Acquisition Manager v1" by April K. SORVAL, CRCM, Ft. Belvoir, VA, 2002 188 p. 4. Statement A: Approved for Public Release

Tools and Metrics Fleet Forces Value Chain Enterprise Mission

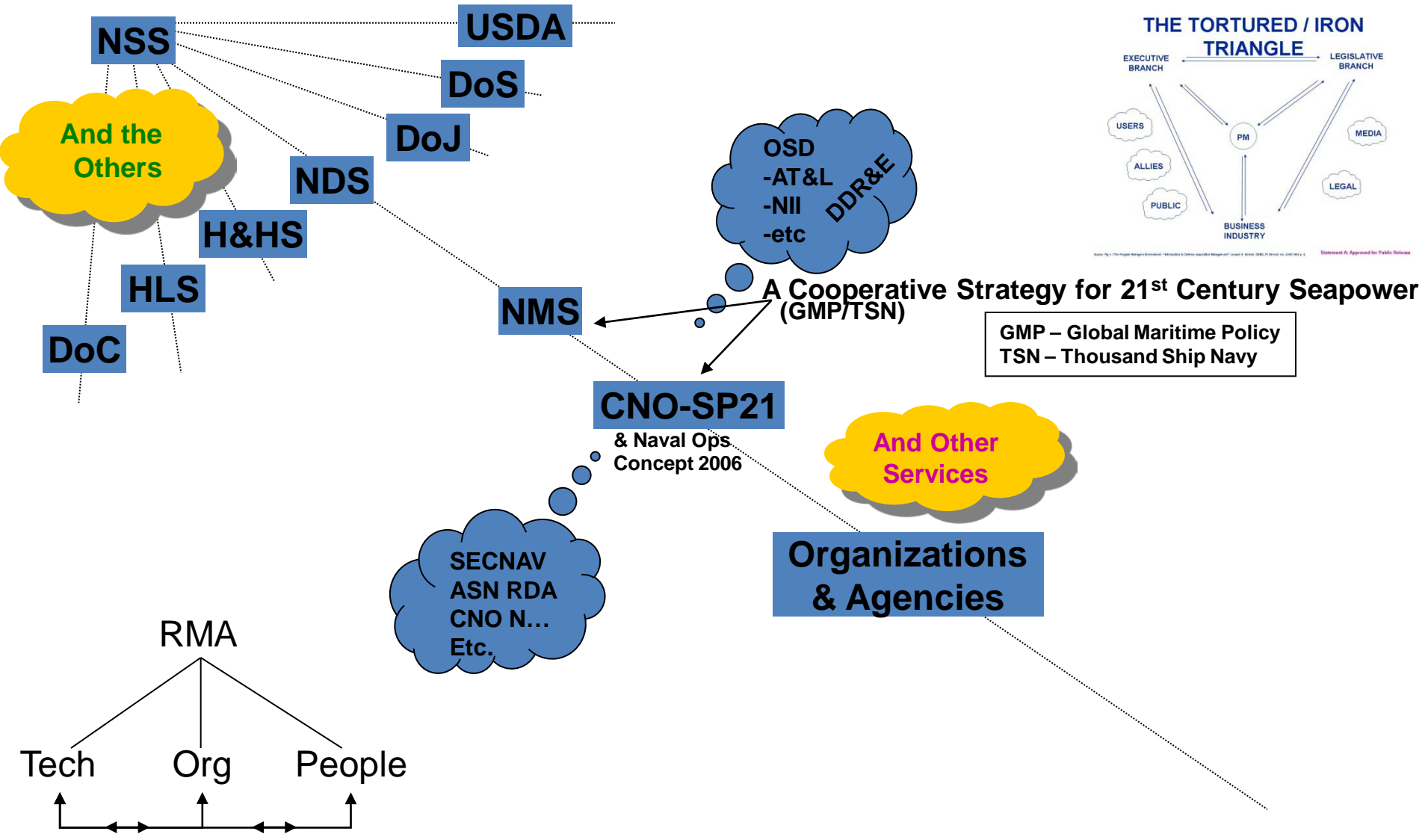


Customers: COCOMS and CNO (+)

VALUE CHAIN AS A NETWORK OR INFLUENCE NET

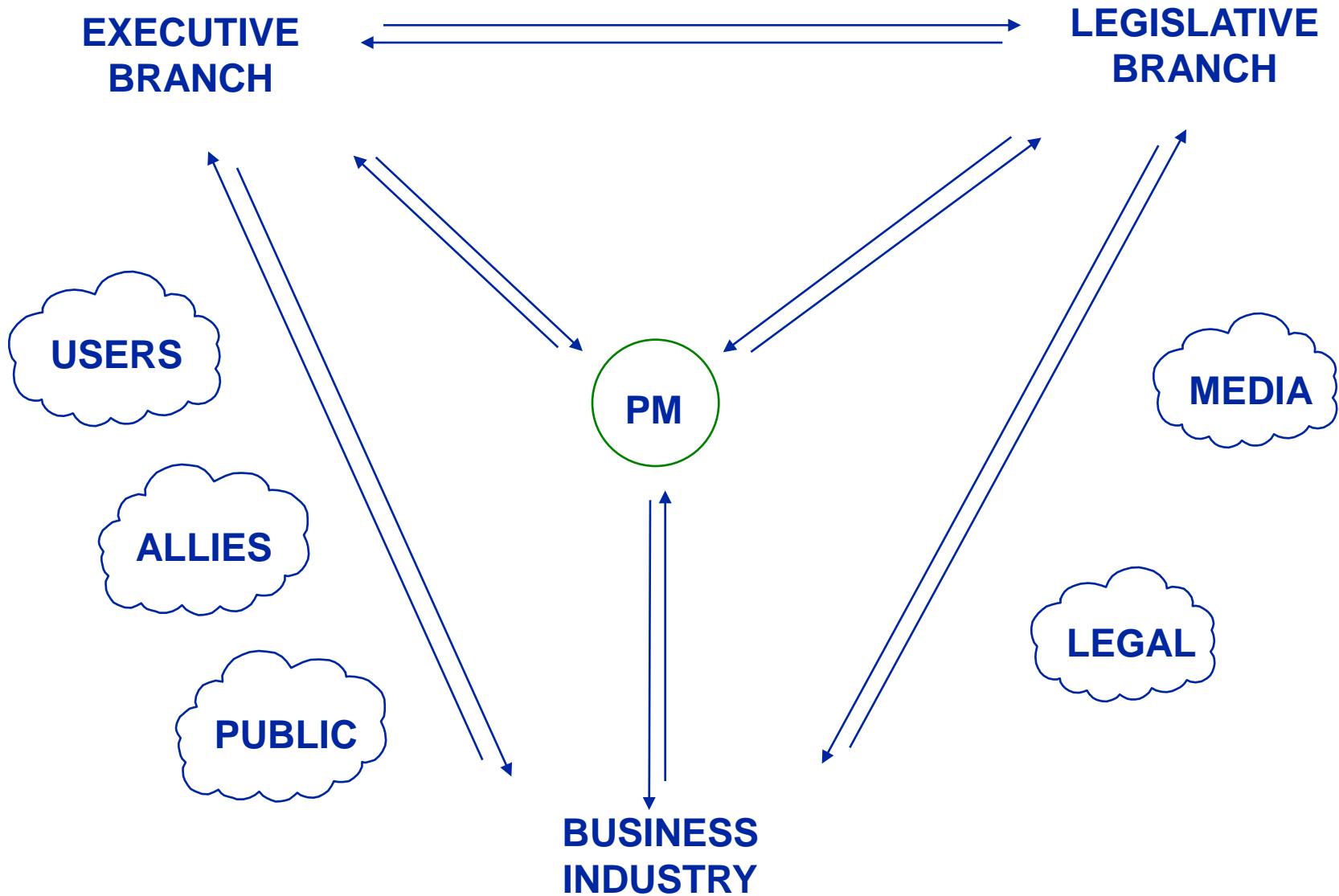
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LINE OF SIGHT FOR ALL GOVERNMENT



Needed: Specialists at Being Generalists – Adaptability Across Organizations

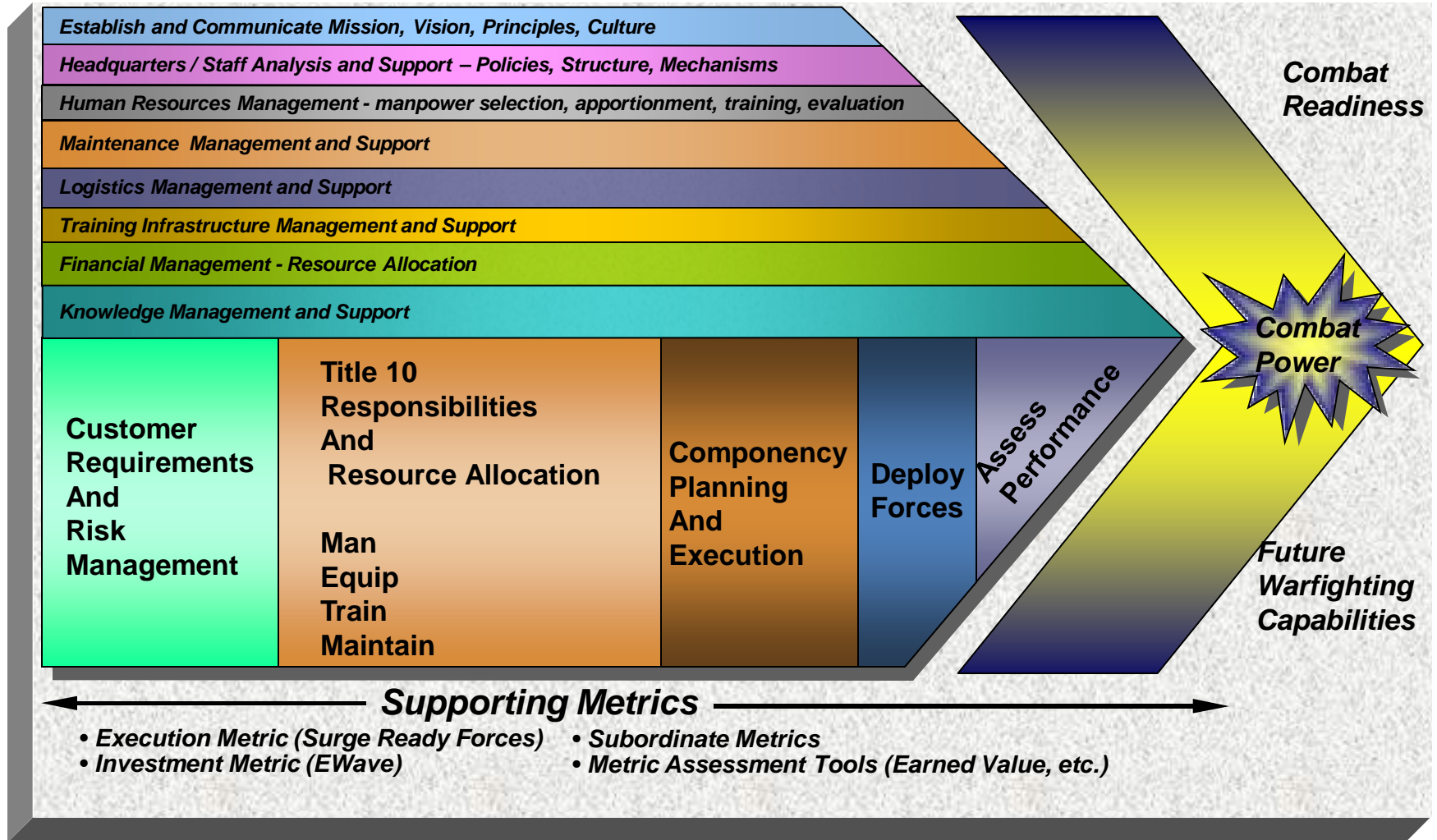
THE TORTURED / IRON TRIANGLE



Tools and Metrics

Fleet Forces Value Chain

Enterprise Mission



Customers: COCOMS and CNO (+)

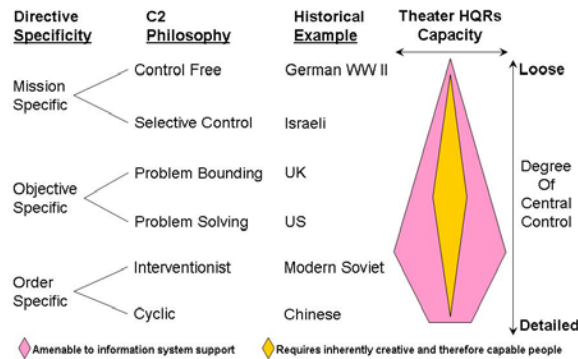
VALUE CHAIN AS A NETWORK OR INFLUENCE NET

5th Element – Personnel:

The correct ones, with the correct capabilities, for the environment and context

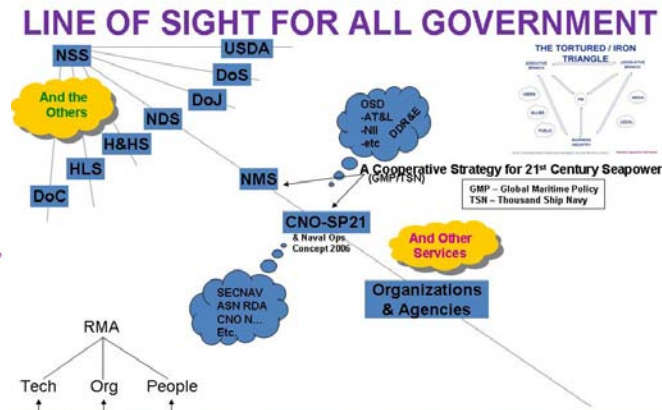


HISTORICAL CHOICES AMONG C2 SYSTEM PHILOSOPHY



Source: Understanding Information Age Warfare; Alberts, et al.; CCRP, Washington DC, 2001; Figure 64, p. 178.

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Needed: Specialists at Being Generalists – Adaptability Across Organizations

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The Foundation for the Future

PEOPLE



FIRST-RATE EQUIPMENT



**QUALITY
FORCES**

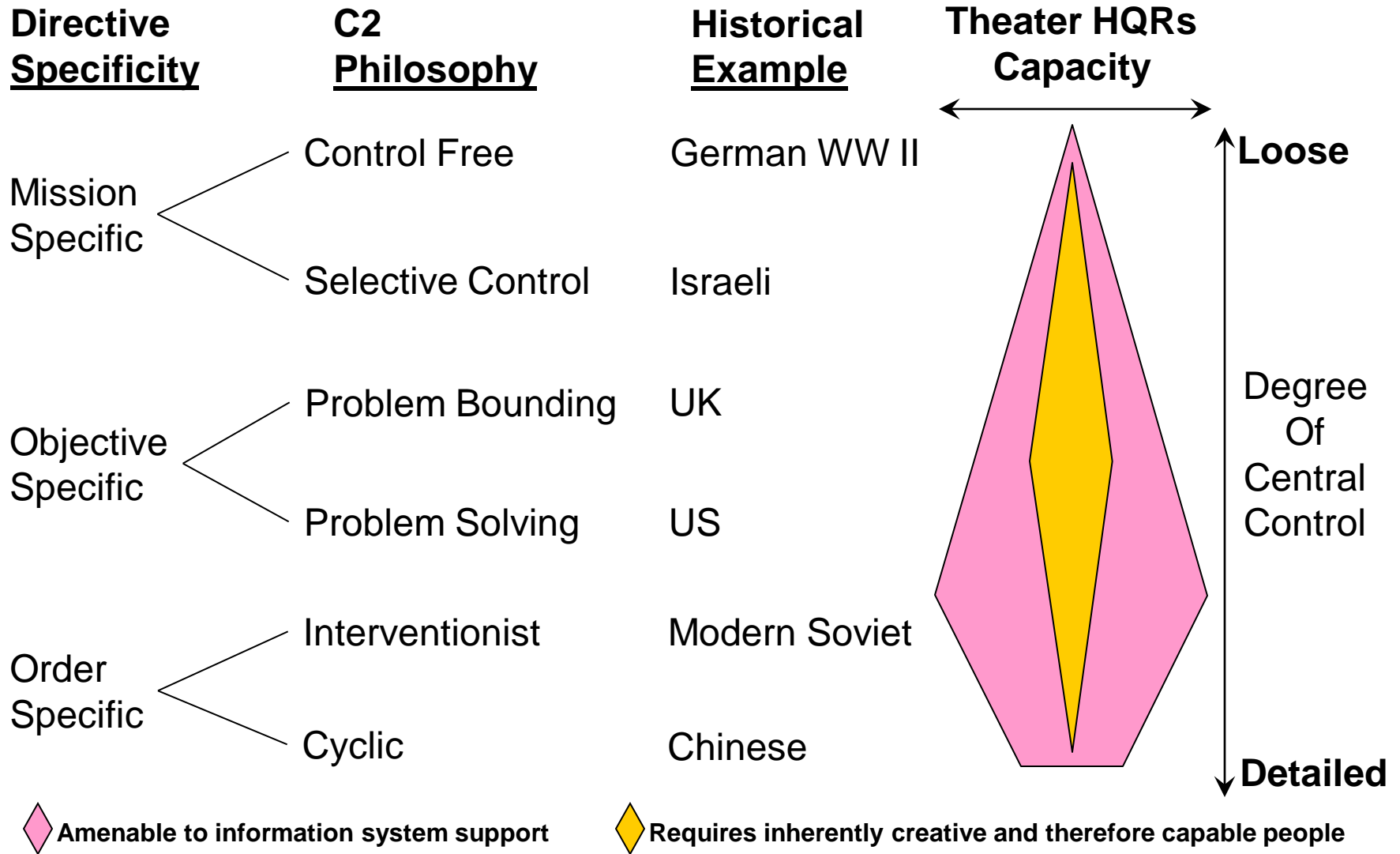


TRAINING & READINESS

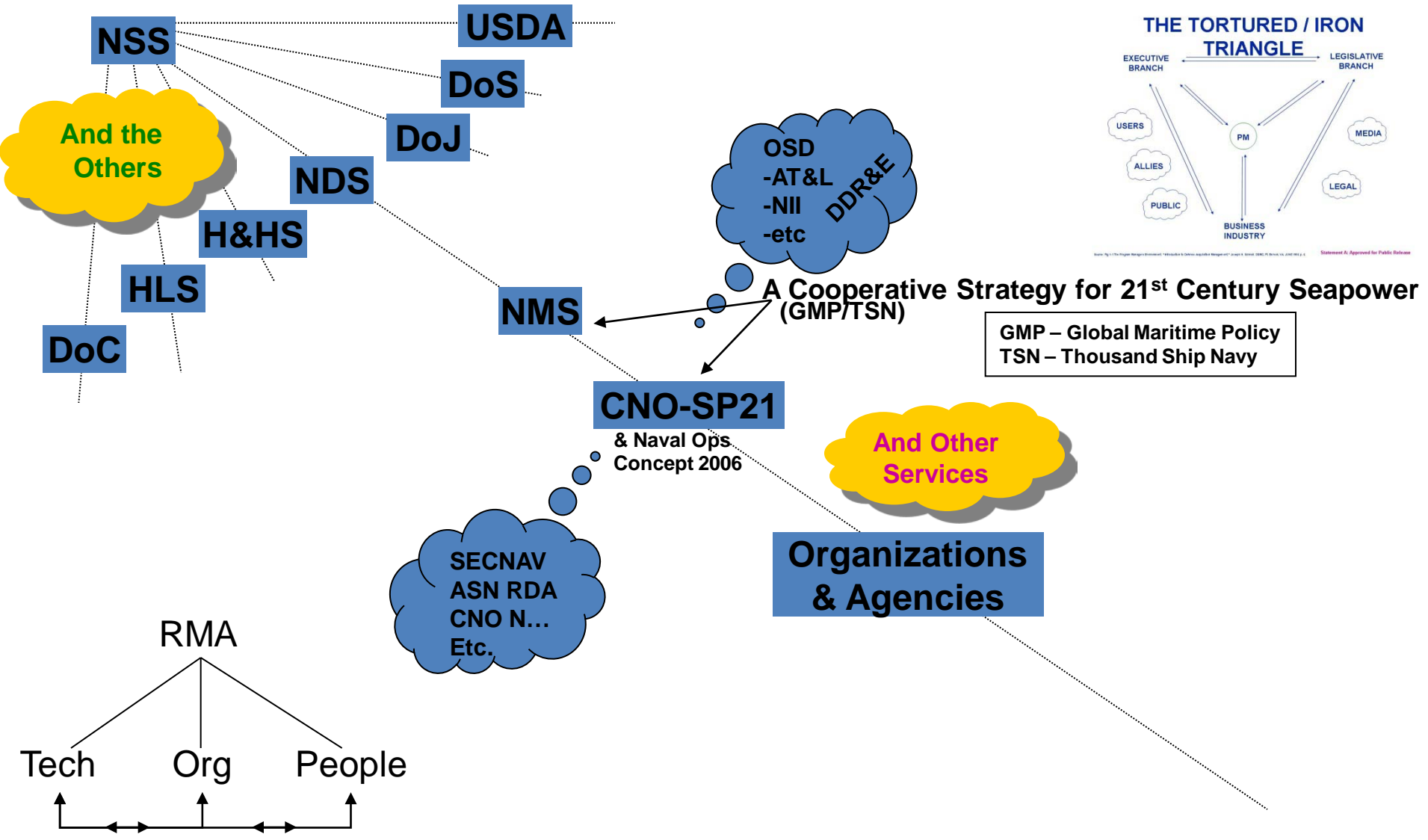


LEADER DEVELOPMENT

HISTORICAL CHOICES AMONG C2 SYSTEM PHILOSOPHY



LINE OF SIGHT FOR ALL GOVERNMENT



Needed: Specialists at Being Generalists – Adaptability Across Organizations

Symposia Contributions

- ***“Metrics, Analysis and Methods for the Exploitation of ELICIT Experimental Data” – Martin & McEver, 2008***
 - Look beyond the simple analyses of data; Robust data collection
- ***“Communication Processes and Patterns in High-Performing Networked Teams – A Qualitative Analysis” – Egenhofer, et al., 2008***
 - Team member backgrounds; coping skills; willingness to adapt and adopt
- ***“A Useful Methodology for Cost-Benefit Evaluations of Cognitive Process Improvements in Complex Command and Control (C2) Endeavors” – Acosta, et al., 2008***
 - Soft v hard benefits trade-offs; improving organizations processes and procedures
- ***“Automated Influence Network Generation and the Node Parameter Sensitivity” – Moon, et al., 2008***
 - Automation of cause-and-effect chains; shift from modeling to automated evaluation of courses of actions

Symposia Contributions (Cont'd)

- ***“A Multidimensional Approach to Studying Cultural Difference and Coping Strategies in a Multinational Coalition Environment” – Larsson, et al., 2008***
 - Social sensemaking within groups – pragmatics of language use; inter- and intra-group understanding and boundary reduction
- ***“Using NATO Human View Products to Improve Defense Support to Civil Authority (DSCA)” – Stevens & Heacox, 2008***
 - A Human View (HV) dimension; cultural and social dimensions for expansion of DoDAF
- ***“Modeling Support of Effects-based Operations in War Games” – Wagenhals & Levis, 2002***
 - COA utility and outcome analysis; improved success of missions and attainment of outcomes – actually used and applied

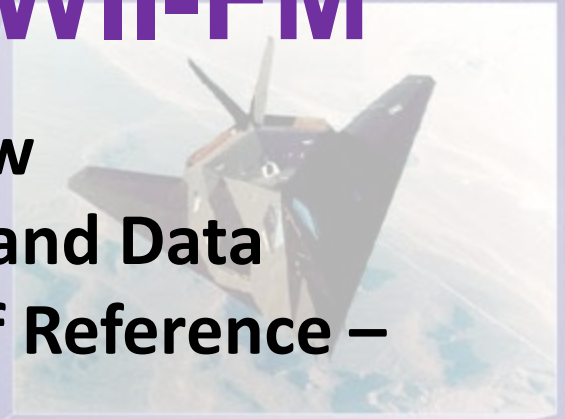
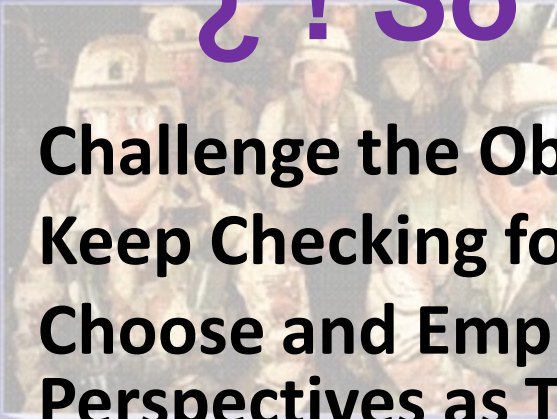
The Foundation for the Future

! So What ! ? – WII-FM

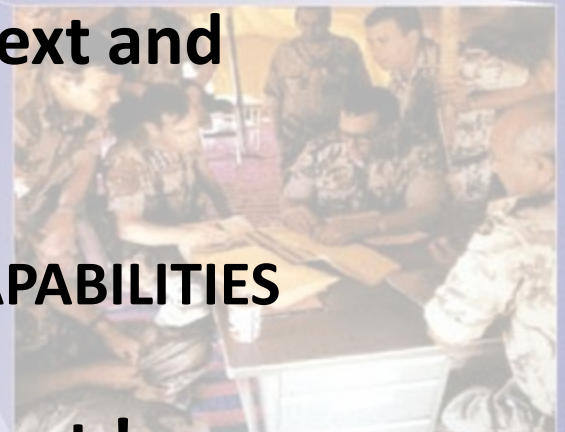
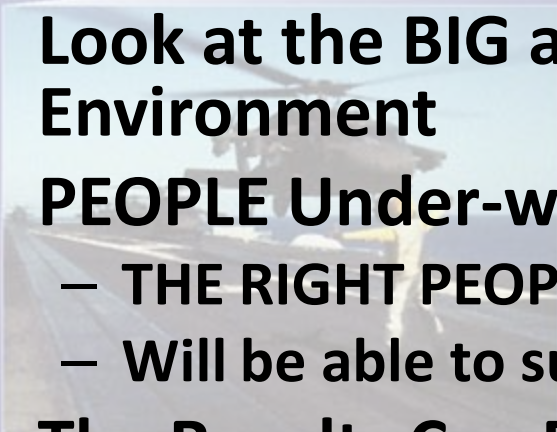
- Challenge the Obvious Path and View
- Keep Checking for Better Indicators and Data
- Choose and Employ Other Frames of Reference – Perspectives as Terms of Reference
- Find the Other Networks for Analysis & Results
- REMEMBER – People – Social and Cultural Factors (HV) – Early Personnel Development
- Look at the BIG and the SMALL Context and Environment
- PEOPLE Under-write all aspects –
 - THE RIGHT PEOPLE WITH THE RIGHT CAPABILITIES
 - Will be able to support any framework
- The Results Can Be Like the 5th Element !

PEOPLE

STRATEGIC EQUIPMENT



FORGES



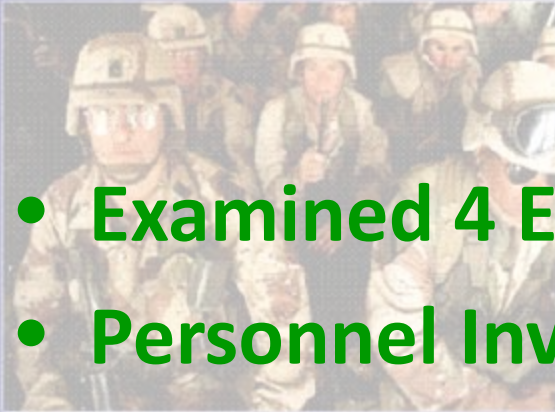
TRAINING & READINESS

LEADER DEVELOPMENT

The Foundation for the Future

Summary

PEOPLE



- Examined 4 Elements + 5th
- Personnel Involved at All Levels
- Personnel Development
 - Start Early and Not Stop
 - Remember the HV aspects

FIRST-RATE EQUIPMENT



- All Success Rests With Personnel
- Keep An Open Mind for Opportunities



TRAINING & READINESS



LEADER DEVELOPMENT

QUALITY
FORCES

The Fifth Bin

Opportunity to Empower the National Four Bin Analysis Discussion

Operationalizing
Agility 17th ICCRTS
Fairfax, VA, USA
June 19-21, 2012

QUESTIONS ?

Russell E. Bryant

PEO IWS-2DI

russell.bryant@navy.mil