23 September 2002

Meeting C4ISTAR Requirements:
Implementing and Exploiting Technology
Solutions

A Perspective from the UK

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ECC-Information Superiority

	Form Approved OMB No. 0704-0188

Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE **23 AUG 2004**	2. REPORT TYPE **N/A**	3. DATES COVERED **-**

4. TITLE AND SUBTITLE **Meeting C4ISTAR Requirements Integrating Systems & Technologies into Equipment Capabilities**	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) **Defence Science and Technology Laboratory**	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
See also ADM001711 Meeting C4ISTAR Requirements: Implementing and Exploiting Technology Solutions., The original document contains color images.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT **UU**	18. NUMBER OF PAGES **10**	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**			

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

Meeting C4ISTAR Requirements:
Implementing & Exploiting Technology Solutions

"**We place a premium on the ability to generate innovative solutions, or adopt those generated by others. By adapting and integrating them rapidly into equipment, systems and force structures, we can ensure their early use on operations.**"

Lord Bach, Min(DP)

12 September 2001

Implementing C4ISTAR Technology Solutions
Lessons from the "dotcom bubble"?

- Operational realities remain

- Must deliver benefits to commanders

- Change, adaptability, flexibility valued above stability and predictability

- Infrastructure is means not end

- Connectivity does not imply integration

Meeting C4ISTAR Requirements:
Implementing & Exploiting Technology Solutions

"**What is needed from the military is a clearer elucidation of its capability requirements for C4ISTAR, and what is needed from industry is a clearer picture of whether it can develop such capability and deliver it as required to the operator.**"

From the preamble to this Conference

Meeting C4ISTAR Requirements:

Implementing & Exploiting Technology Solutions

- Over-riding importance of Joint and Multi-National operations
- Handling information technology cycle
- Aggressive development of C2 and counter-C2 capability by allies and potential enemies

- Exploit investments in CIS, planned and already made
- Understand pressures and priorities in own forward programme
- Develop hard-edged view of technology opportunities
- Show costs of "do nothing different" options
- Develop standards into international architectures

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Implementing & Exploiting Technology Solutions

Two cardinal errors

❑ **Assuming that this is all about technology**

❑ **Believing that nothing should be done until everything can be done**

Meeting UK C4ISTAR Requirements
The key C2 and Info Infrastructure capabilities

- ❑ **Pass images and data from Intelligence agencies and sources to commanders**

- ❑ **Pass messages in time between commanders**

- ❑ **Conduct Information Operations**

Meeting UK C4ISTAR Requirements
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- ❑ **Network infrastructure in UK forces and with allies**

- ❑ **Information Services to sustain C2, planning and mission rehearsal at JC, JFC and CC levels**

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Meeting UK C4ISTAR Requirements
The key C2 and Info Infrastructure capabilities

- ❑ **Pass images and data from Intelligence agencies and sources to commanders**

- ❑ **Pass messages in time between commanders**

- ❑ **Conduct Information Operations**

- ❑ **Bearer infrastructure resilience and capacity**

- ❑ **End-to-end security with allies**

- ❑ **Seamless structure for littoral operations**

- ❑ **Network infrastructure in UK forces and with allies**

- ❑ **Information Services to sustain C2, planning and mission rehearsal at JC, JFC and CC levels**

A New Environment but Enduring Patterns?

"… to evolve a much harder hitting, quicker moving and, above all, quicker deploying division than we ever had before."

A New Environment but Enduring Patterns?

"… to evolve a much harder hitting, quicker moving and, above all, quicker deploying division than we ever had before."

General Sir Philip Chetwode

GOC in C Aldershot Command - *12 Jan 1921*

Quoted in David French
"*Raising Churchill's Army*" (OUP 2001)

Network Enabled Capability

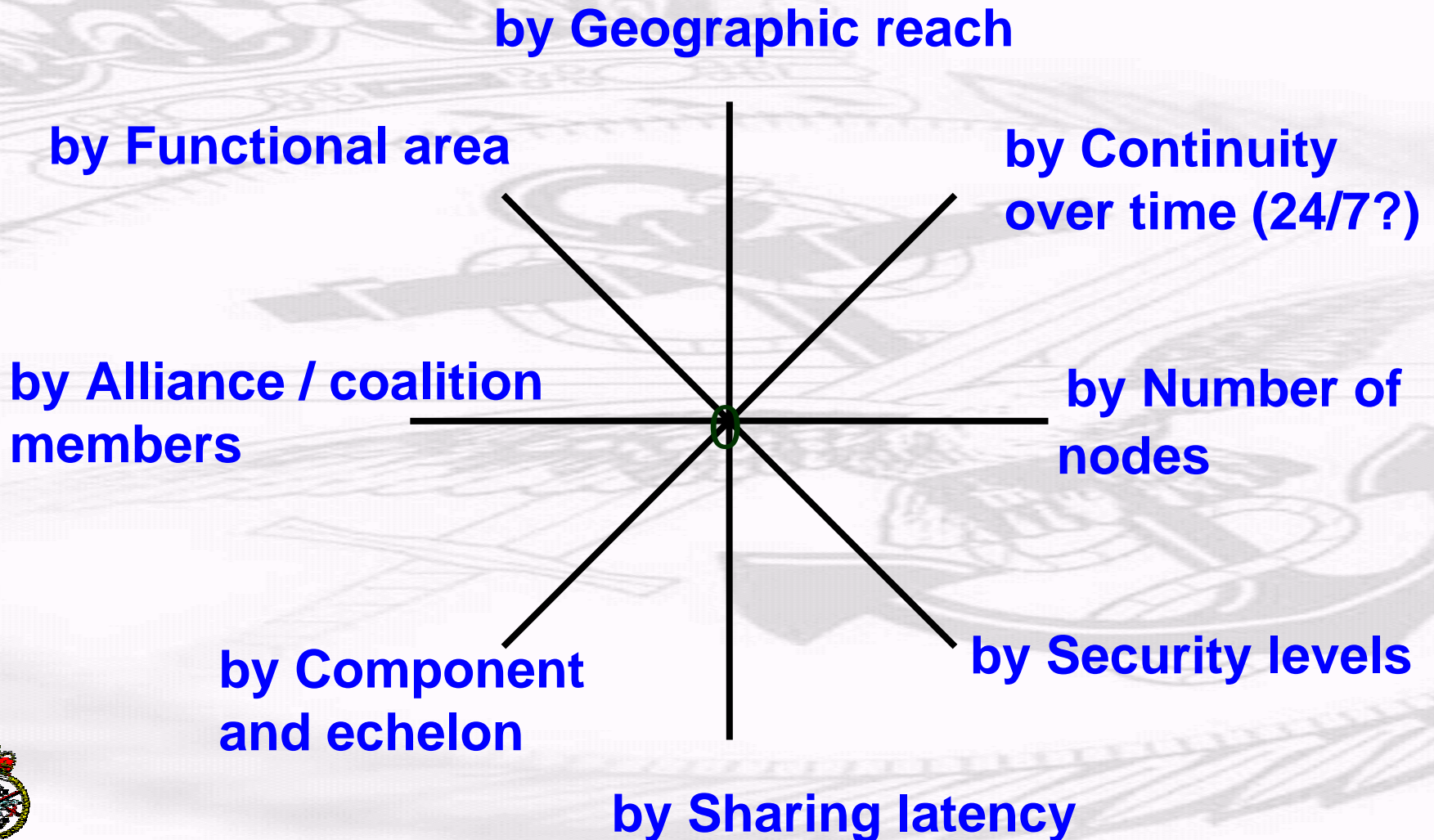- **"An integrated Equipment Capability Linking Sensors, decision makers and weapon systems so that information can be translated into synchronised and overwhelmingly rapid military effect at the optimum tempo."**

Developed from CM(IS) Scoping Note - 29 May 02

The operational attributes of shared information?

by Geographic reach

by Functional area

by Continuity over time (24/7?)

by Alliance / coalition members

by Number of nodes

by Component and echelon

by Security levels

by Sharing latency

A New Environment but Enduring Patterns?

"The difficulties of maintaining some degree of co-ordination among the British Services were severe enough, but they were nothing when compared with the problem of close co-operation with Allies who had an entirely different background of training."
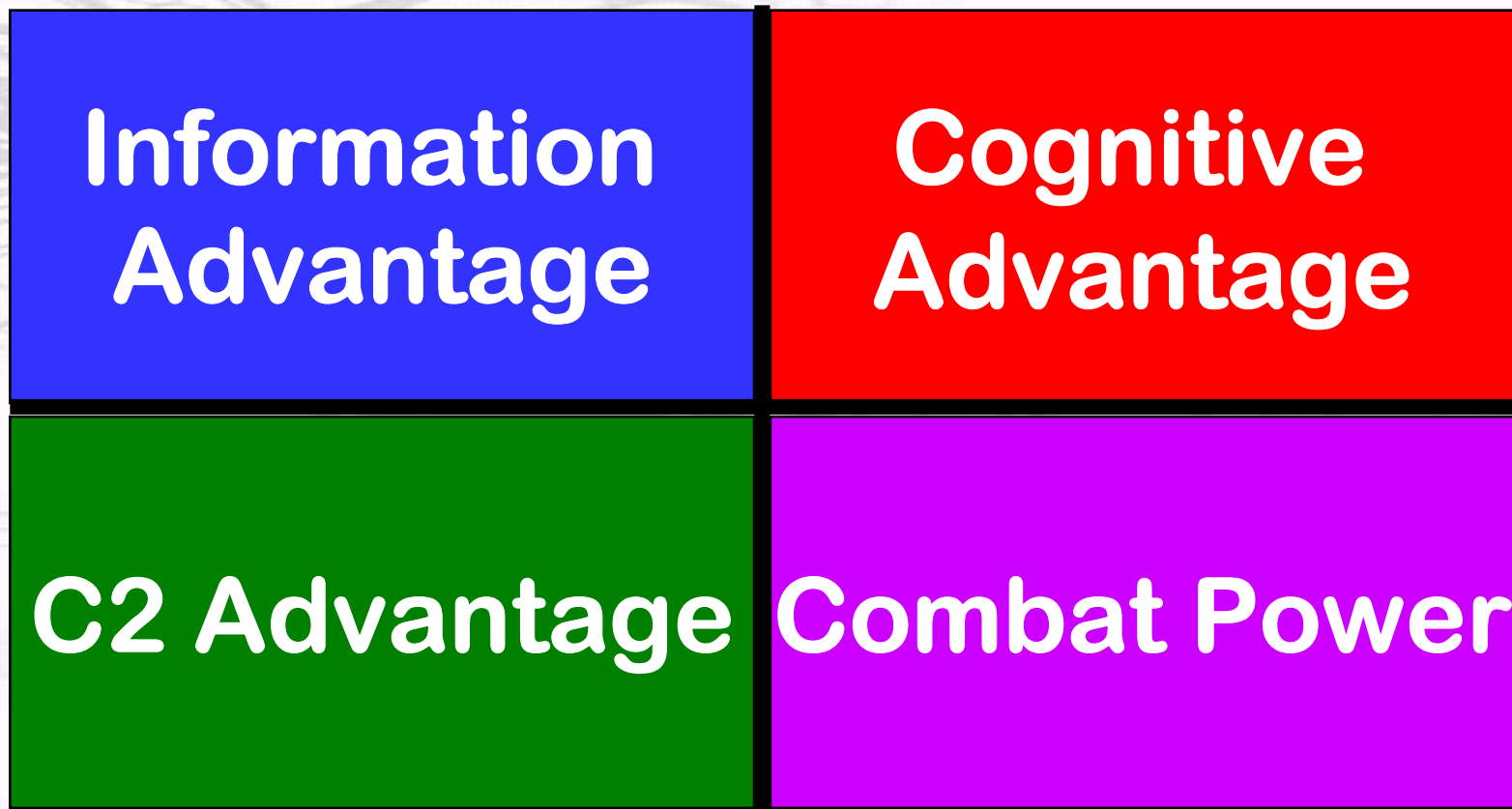
Colonel T R Gravely
The Signalling Lessons of World War 2
War Office, London - 1950

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Exploiting C4ISTAR Technology Solutions
A new understanding of the benefits?

Information Advantage	**Cognitive Advantage**
C2 Advantage	**Combat Power**

Identify, develop and assess metrics to judge, evaluate and improve the benefits

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UK NEC Research:
The dog that has yet to bark

❑ **Education**

❑ **Experimentation**

❑ **Exploitation**

Areas of NEC research potential?

- ❑ Set metrics for interoperability exploitation and to evaluate demonstrable operational benefits

- ❑ Real experiments with real units in real conditions

- ❑ Case study unavoidable (if unprogrammed) costs of retrospective integration

- ❑ Case study successful developed, maintained, adapted information systems

- ❑ Specifics for industry involvement & collaboration

- ❑ Exploiting JWID in the same year

- ❑ Metrics to show where Network Enabled Capability will make a difference and by when

Implementing C4ISTAR solutions
Are these the programme fundamentals?

- ❏ **Industry Involvement**

- ❏ **Interoperability**

- ❏ **Usability**

- ❏ **Security**

- ❏ **Commanders, staff, operators and users who understand what the system can and can't do, and how most effectively to exploit it**

A New Environment but Enduring Patterns?

Post 1918

"evolve a much harder hitting, quicker moving and, above all, quicker deploying division than we ever had before."

Post 1945

"The difficulties of … co-ordination among the British Services were severe enough, but they were nothing when compared with the problem of close co-operation with Allies who had an entirely different background of training."

Post 2001

"We place a premium on the ability to generate innovative solutions, or adopt those generated by others. By adapting and integrating them rapidly into equipment, systems and force structures, we can ensure their early use on operations."

A perspective from the UK

"The dangerous temptation of the hour is that we should consider rhapsody an adequate compensation for calculation."

Lord Salisbury
then Prime Minister, speaking in June 1897

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