Discourse of Action: Command, Control, Conflict and the Effects-based approach

CCRTS, June 2004

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‘Patchy public services, continuing guerrilla attacks on coalition troops, widespread criminality, confusion over oil revenues and the financing of reconstruction, and still no sign of a home-grown government—just some of the problems facing Iraq’s interim leaders’

The Economist, 2 July 2003

‘childish deception’ with ‘hugely ambitious aims’ and ‘unwinnable goals’

Edward Luttwak

Research

The Effects-based approach provides conceptual affirmation that for successful future multinational operational crisis planning and execution, there must first be in place a holistic, and integrated, command and control structure that is capable of understanding the conflict environment as a complex system of systems.

Premises

- the nature of conflict has changed
- the conflict environment can be explored as a complex adaptive system
- the change (or shift) in conflict necessitates *ad hoc* C2 relationships

… integration of non-military organizations (NMOs) for conflict (or crisis) planning, mitigation, operations, resolution, and termination

Outline

1. Introduction to Effects-based concepts

2. Complexity Effects-based concepts

3. The Effects-based approach, multinational experimentation and the inter-agency perspective

4. Conceptual and practical implications –
   NMOs and Effects-based planning and operations…

Conflict: Towards an Effects-Based Policy

1945 to 1990	1991 to 2001	2002 to ?
•Linear System	•Asymmetric System	•Complex Adaptive System
•Limited Dimensions	•Increasing Dimensions	•Unlimited Dimensions
•Sequential operations	•Rapid reaction operations	•Complex operations
•Reacting to Threats	•Coping with Threats	•Mitigating Threats
•Attritional Forces	•Response Forces	•Agile Forces
•Focus on Attack and Defence	•Focus on Outcomes/Exits	•Focus on Effects
	•Joint/Coalition Focus	•'Collaborative' Focus
•Single service focus	•OOTW and Civ-Mil Ops	•Inter-Agency Direction
•Civilian vs Military	•Small/Light Weapons	•Advanced Technology and WME
•Mass/Directed weapons		

Source: Robert Vermaas, *Future Perfect: Effects Based Operations, Complexity and the Human Environment* (Operational Research Note, Department of National Defence Canada, Ottawa, CA, 2004)

The Six Flavours of EBO…

1. ‘EBO’ is a planning methodology that links strategy to operations…
2. ‘EBO’ is efficient targeting…
3. EBO consider the application of all available sources of power…
4. EBO involve rapid, decisive operations and rapid dominance…
5. EBO require the interaction and collaboration between the operational commander and other key players in order to deal with the complexity of conflict…
6. EBO require NCW principles for support…

The Six Flaws of EBO…

1. The Air Force invented it…

2. EBO is too connected to strategy, or,
not connected enough to strategy…

3. EBO derives from a position of strength, therefore, close combat is always wrong…

4. Relies on ‘chi’ rather than ‘cheng’ –
- extraordinary vs. ordinary;
- direct vs. indirect

5. We can predict cause and effect…

6. We adapt as the enemy adapts…

Effects Based Operations

" operations that influence the ***state of a system*** to achieve directed policy aims using the integrated application of ***all applicable*** instruments of power. Actions are planned, executed, assessed and altered within a ***complex adaptive system***."

- Conflict is holistic
- Conflicts, adversaries, environments are complex adaptive, so too must operational planning and decision making

Source: Robert Grossman-Vermaas, ***Complexity, Command and Control and the Effects-based approach: an inter-agency perspective*** (Operational Research Diviion, Research Note, Department of National Defence, Ottawa, CA, forthcoming)

Effects-based Understanding of the environment

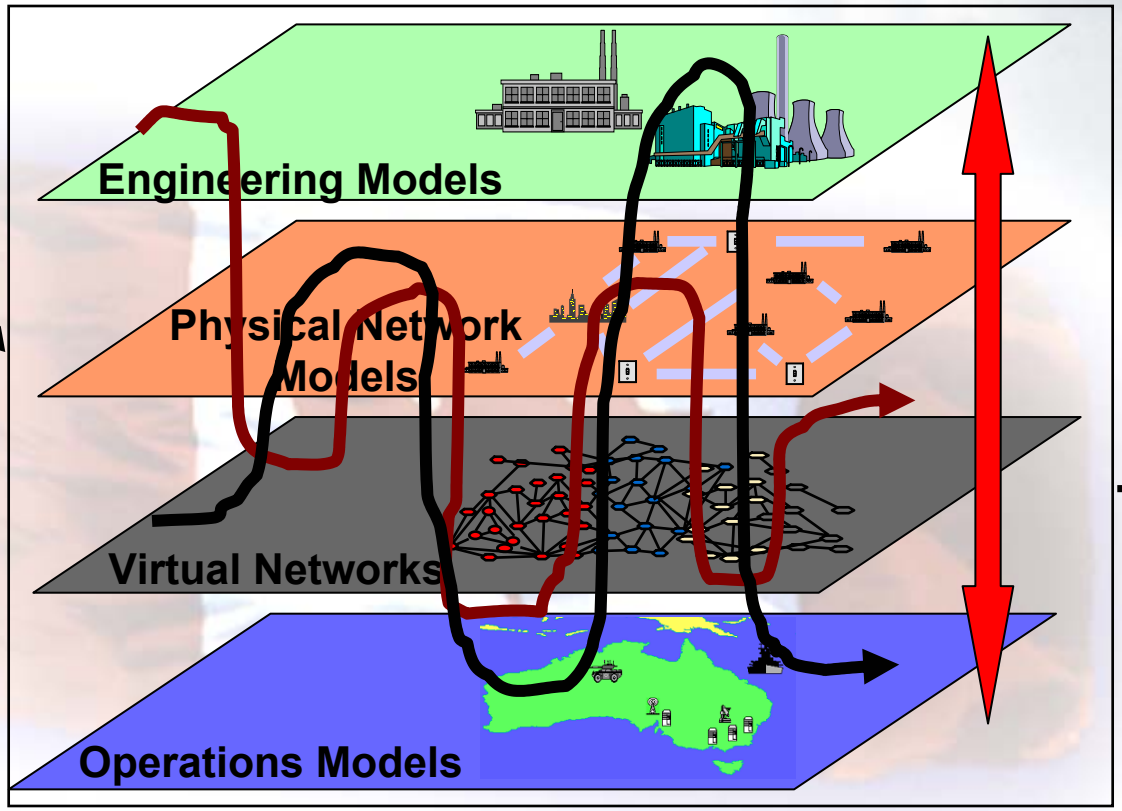
Objectives

+

Effects

Constraints

Observations



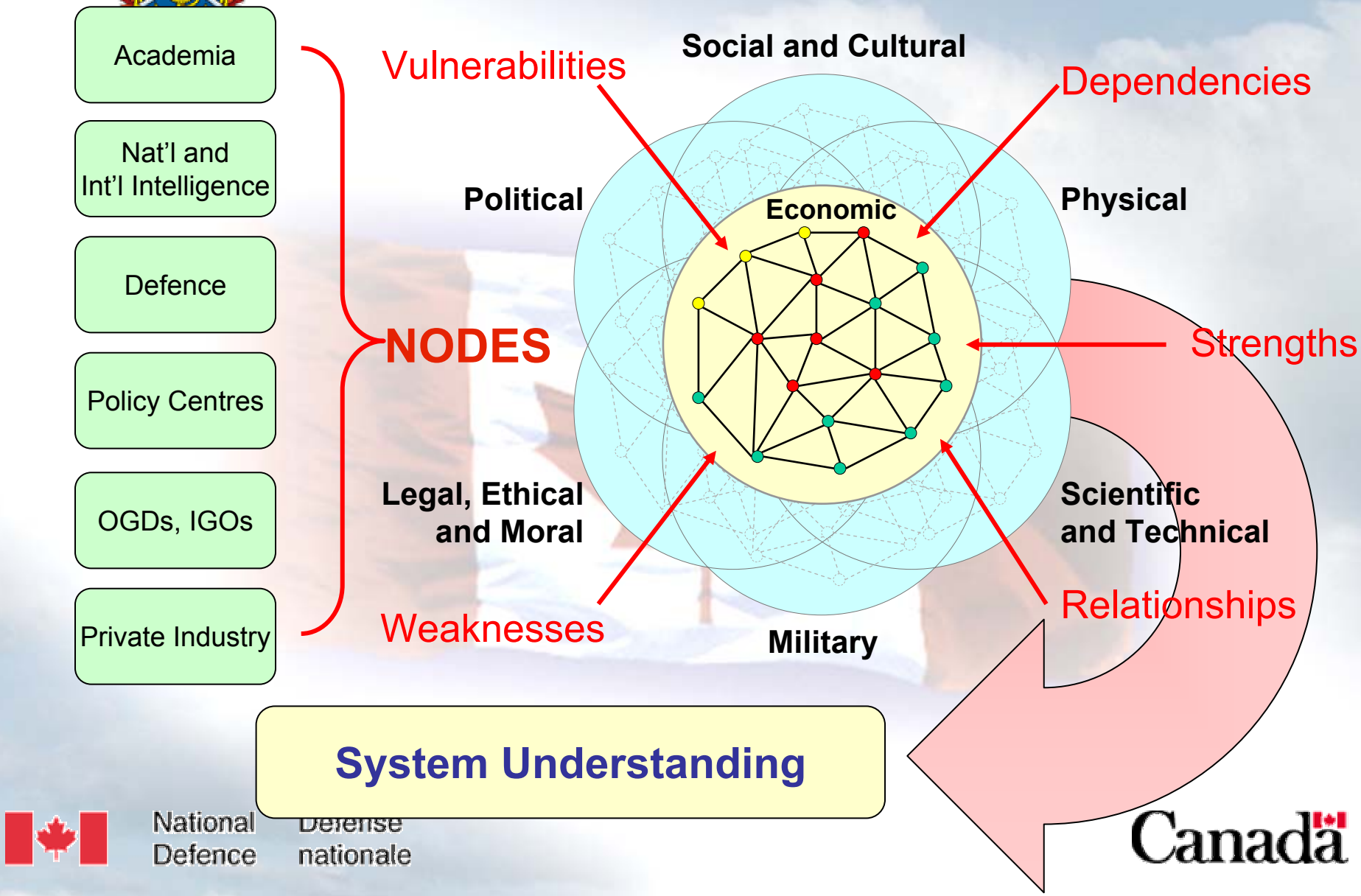
Causal

Logical

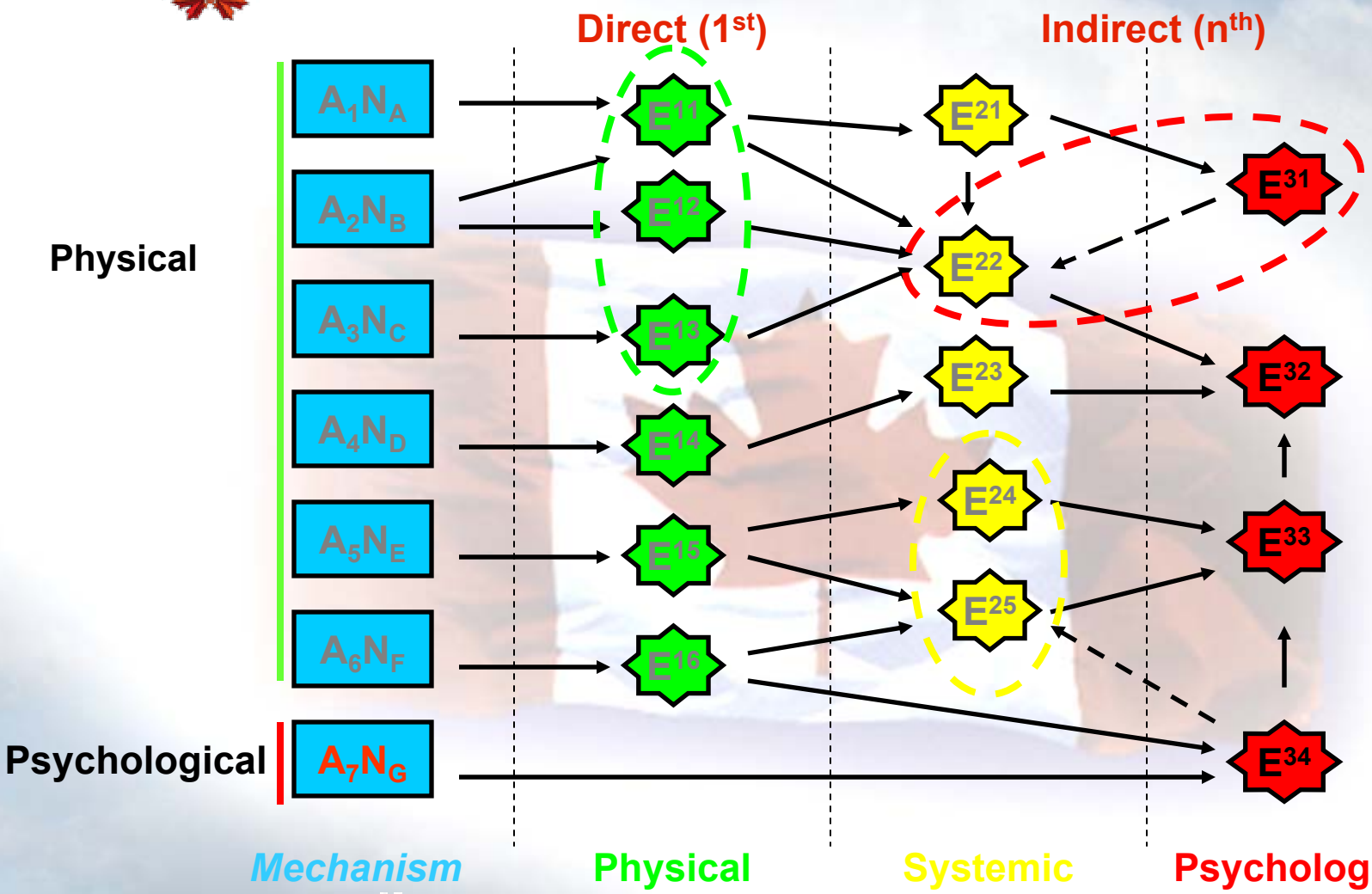
Temporal

Spatial

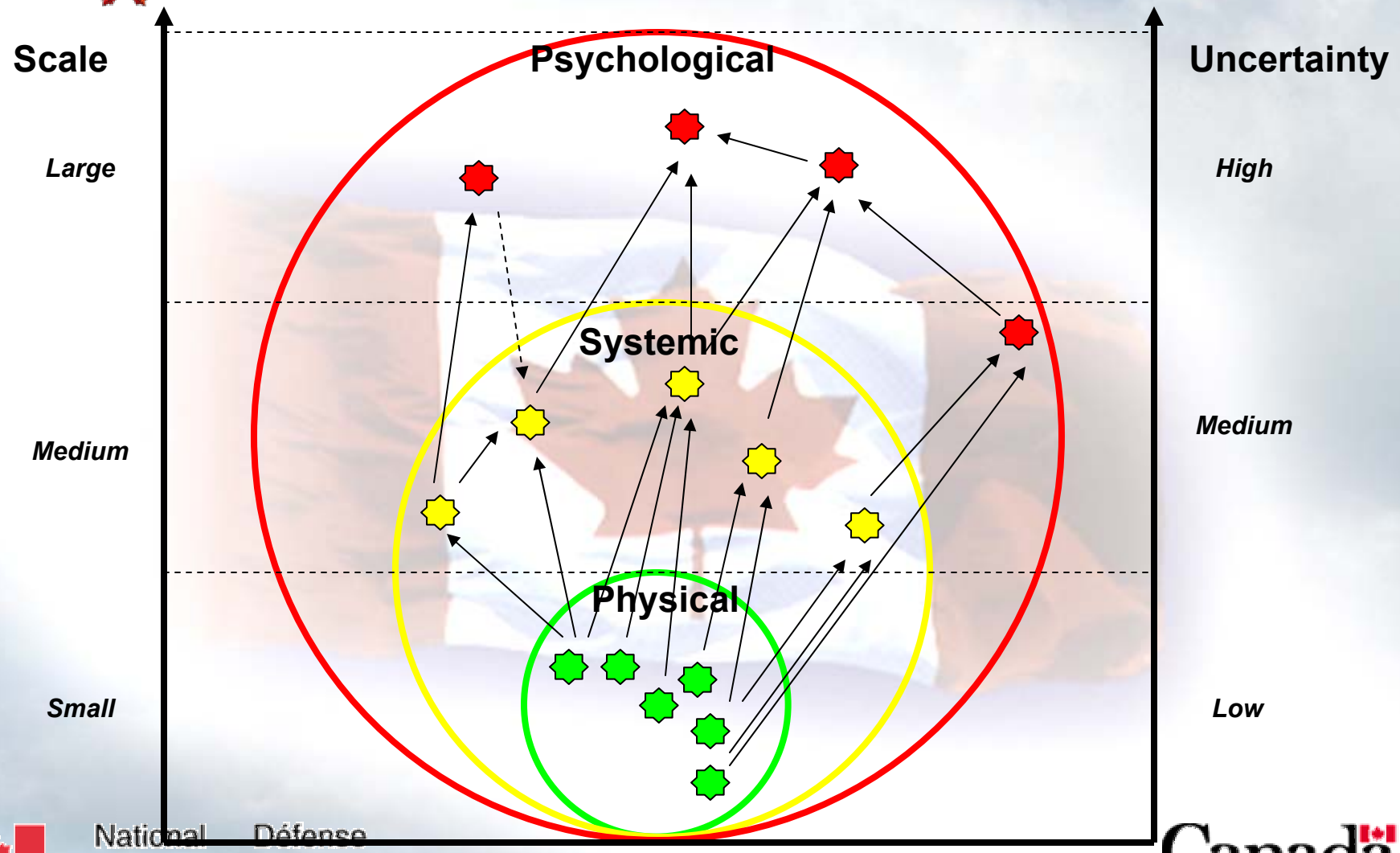
Operational Net Assessment (ONA)



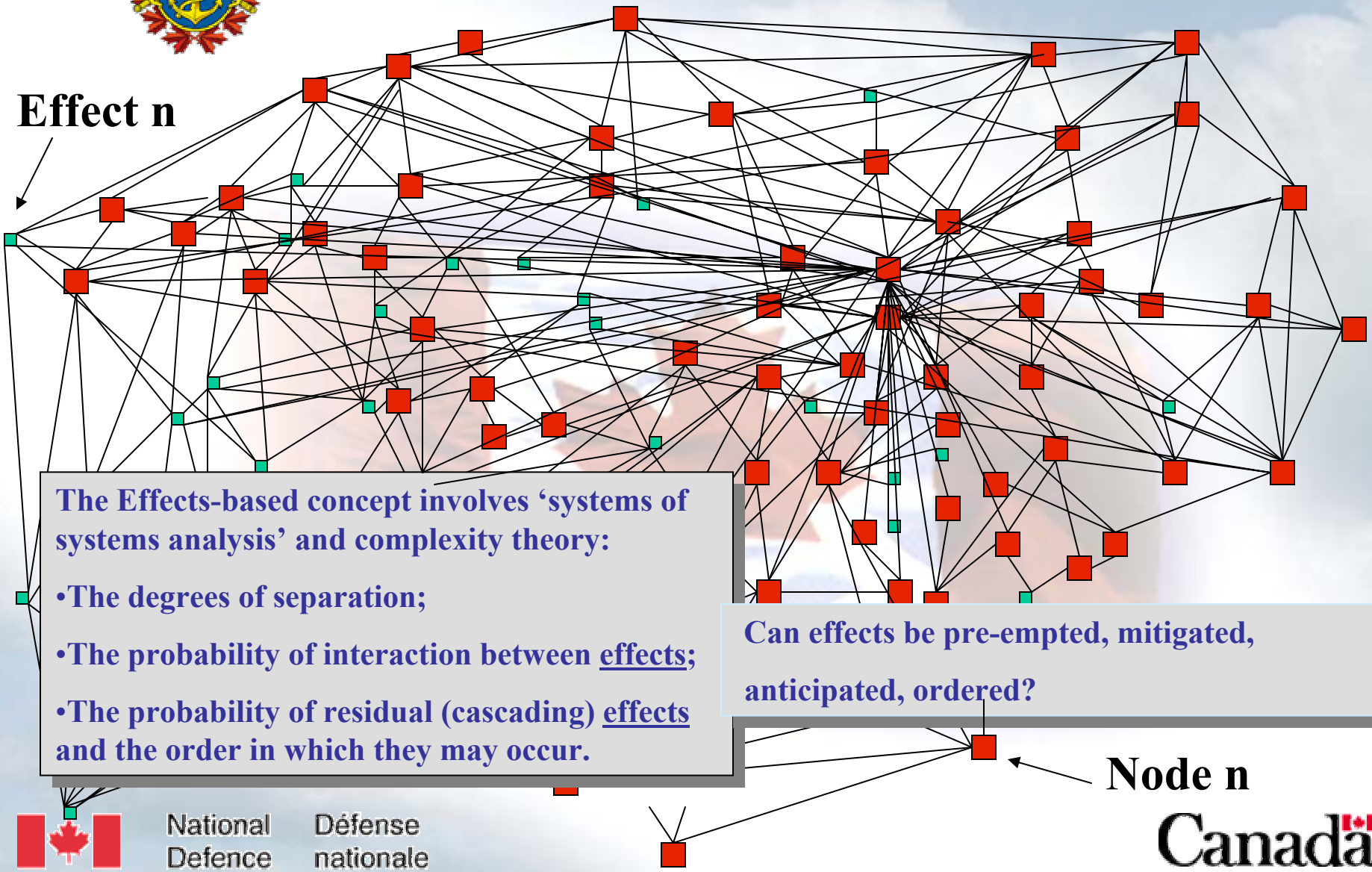
Propagation of Effects



Hierarchy of Effects



Complexity: Effects Based Operations



The Effects-based concept involves 'systems of systems analysis' and complexity theory:

- The degrees of separation;
- The probability of interaction between effects;
- The probability of residual (cascading) effects and the order in which they may occur.

Can effects be pre-empted, mitigated, anticipated, ordered?

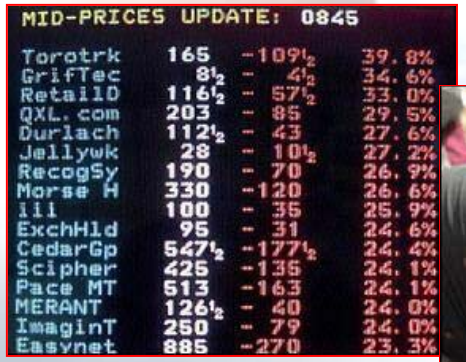
EBO – the next thing?

Newton

- the whole is equal to the sum of the parts
- equilibrium and deterministic C&E
- systems are complicated and passive
- analytically solvable structures
- inputs and outputs are proportional
- ‘hard’ science
- comfortable knowledge

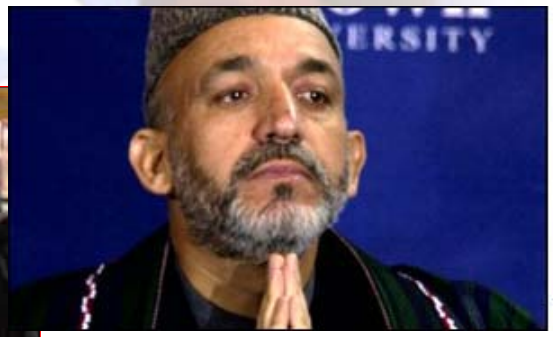
Beyond

- the whole is more than the sum of the parts
- non-equilibrium and indeterministic
- systems are complex and adaptive
- emergent behaviour – agent based
- inputs and outputs are non-proportional
- ‘soft’ science
- uncomfortable knowledge



MID-PRICES UPDATE: 0845

Torotrk	165	-109½	39.8%
GrifTec	8½	- 4½	34.6%
RetailD	116½	- 57½	33.0%
QXL.com	203	- 85	29.5%
Durlach	112½	- 43	27.6%
Jellywk	28	- 10½	27.2%
RecogSy	190	- 70	26.9%
Morse H	330	-120	26.6%
iii	100	- 35	25.9%
ExchHld	95	- 31	24.6%
CedarGp	547½	-177½	24.4%
Scipher	425	-135	24.1%
Pace MT	513	-163	24.1%
MERANT	126½	- 40	24.0%
ImaginT	250	- 79	24.0%
Easynet	885	-270	23.3%



EBO: Conceptual Requirements

EBO involves:

- **Understanding of complexity and cause and effect**
- **Understanding of network depend inks/weaknesses**
- **Planning (EBP) process and**
- **Decision making in 're tools, models, assessment**
- **Adaptation (flui**
- **Risk analysis and over time and space**
- **Sensors, resources, speed, agility, synchronization, MOEs**
- **NMO (or) DIME construct**
- **Multiple levels of conflict**

YIKES!!!!

All within an agent-based complex C2 planning, operations and assessment organization?

Is it workable, testable?

Multinational Experiment 3 (Feb 04)

Aim

- **To develop and assess Effects Based Planning (EBP) within SJFHQ construct – Process (EBP); Organization (CJFHQ); Technology (CIE)**
- **Sub-concepts: Coalition Inter-agency Coordination Group (CIACG)**

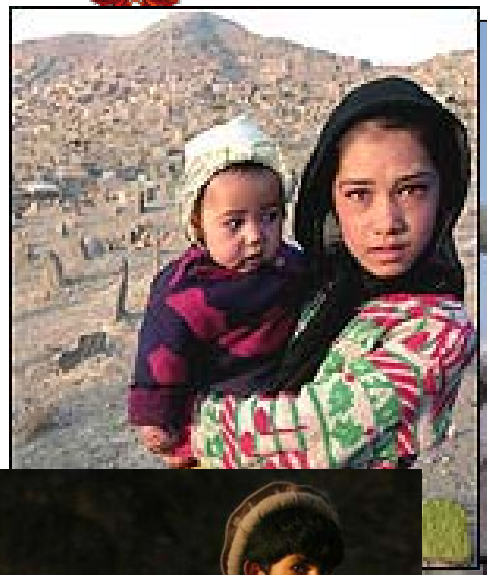
MNE 3 and the CIACG

'…to establish operational connections between civilian and military departments and agencies that will improve planning and coordination within the government'

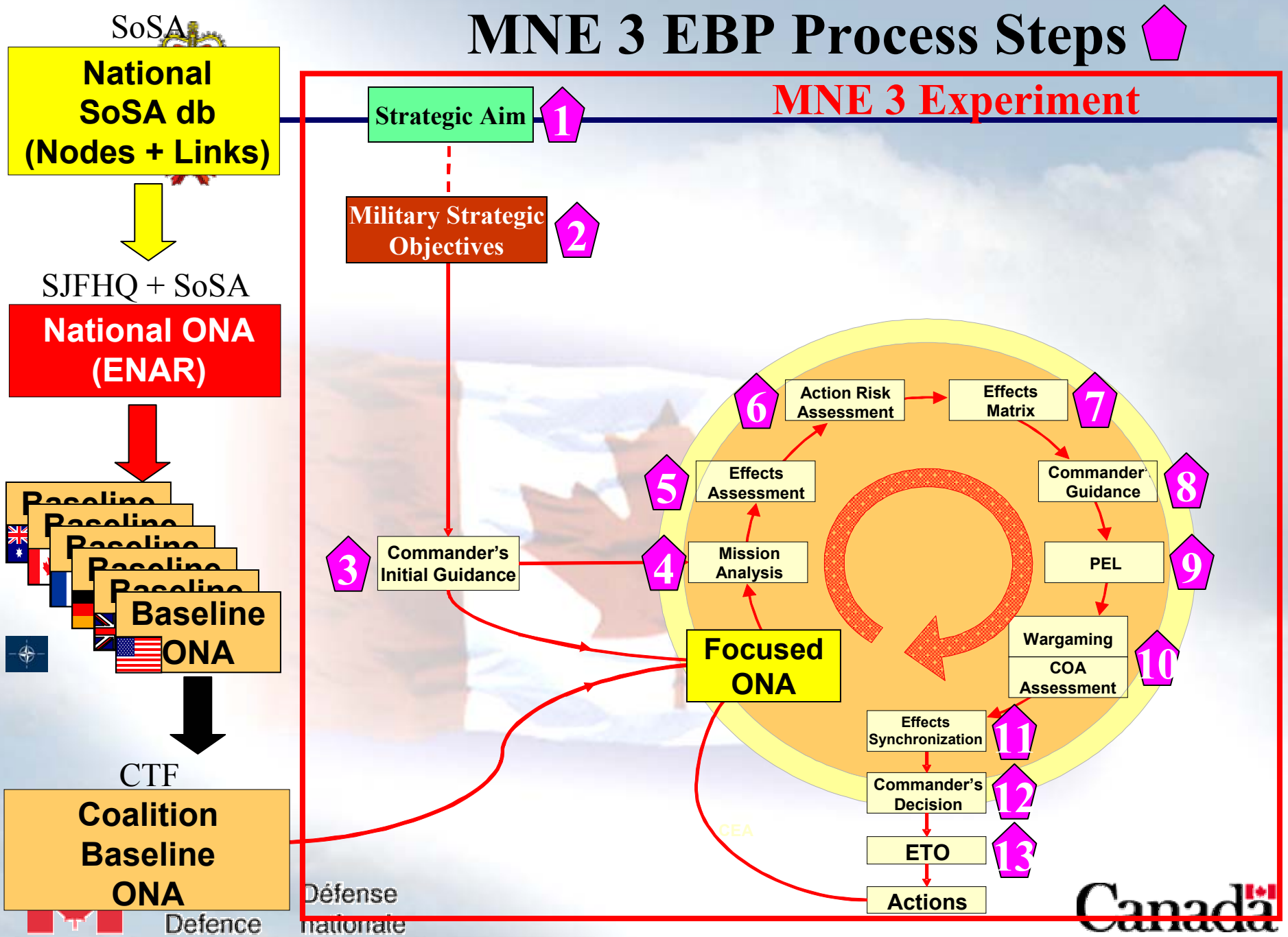
'a multi-functional advisory element that represents the civilian departments and agencies and facilitates information sharing across the inter-agency community'

'coordinating and harmonizing operational planning between the coalition military planners and the relevant civilian agencies or departments of their respective governments'.

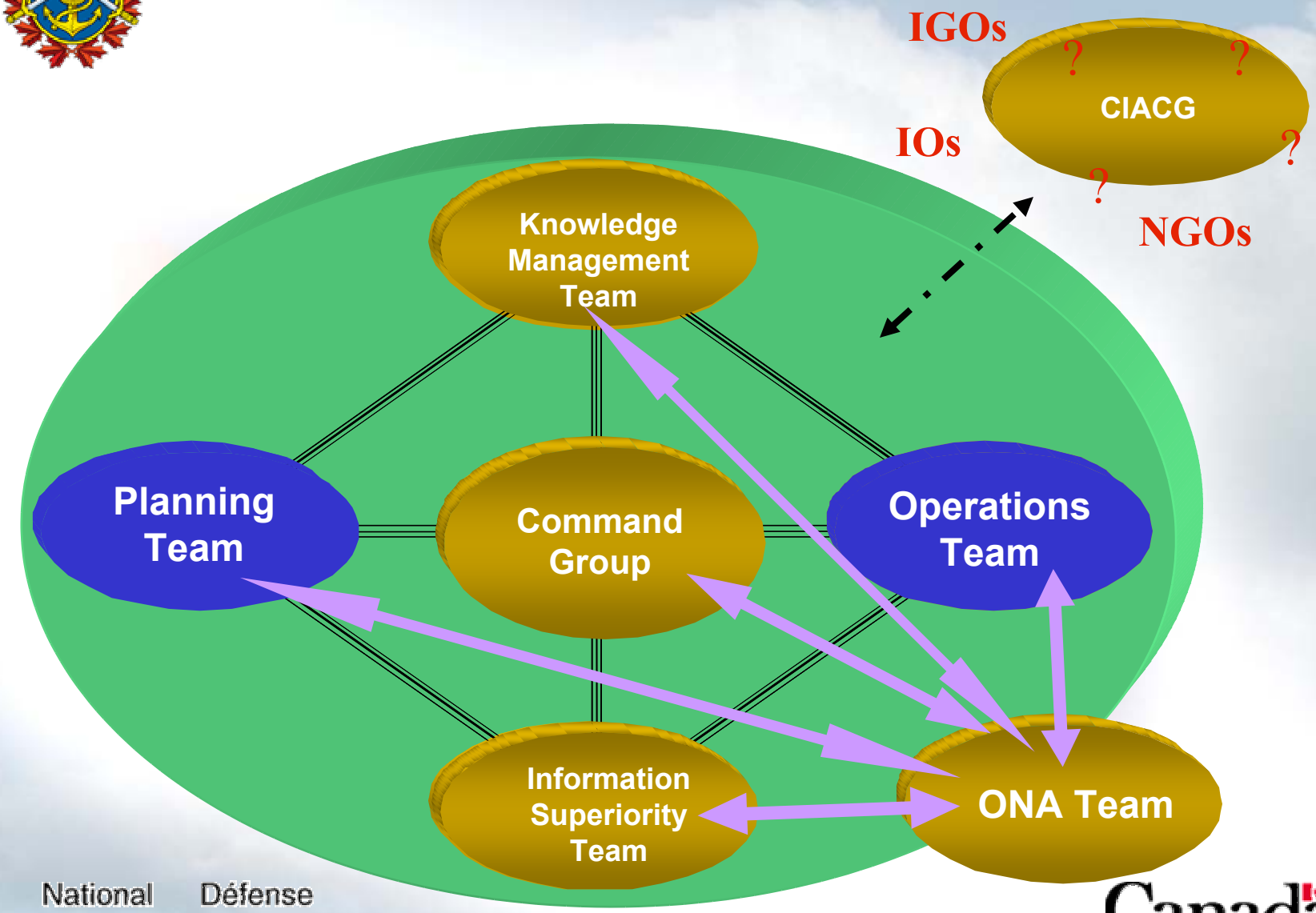
Crisis in Afghanistan



MNE 3 EBP Process Steps



CTFHQ Construct



General Observations – MNE 3 and NMOs

- There were no clearly defined roles for the CIACG
- No clear definition in CONOPS or Experiment Design
- CIACG was Liaison, Guide, Planning Center
- CIACG attempted to provide advice on 2nd, 3rd order effects?
- CIACG was not fully integrated into the CTF

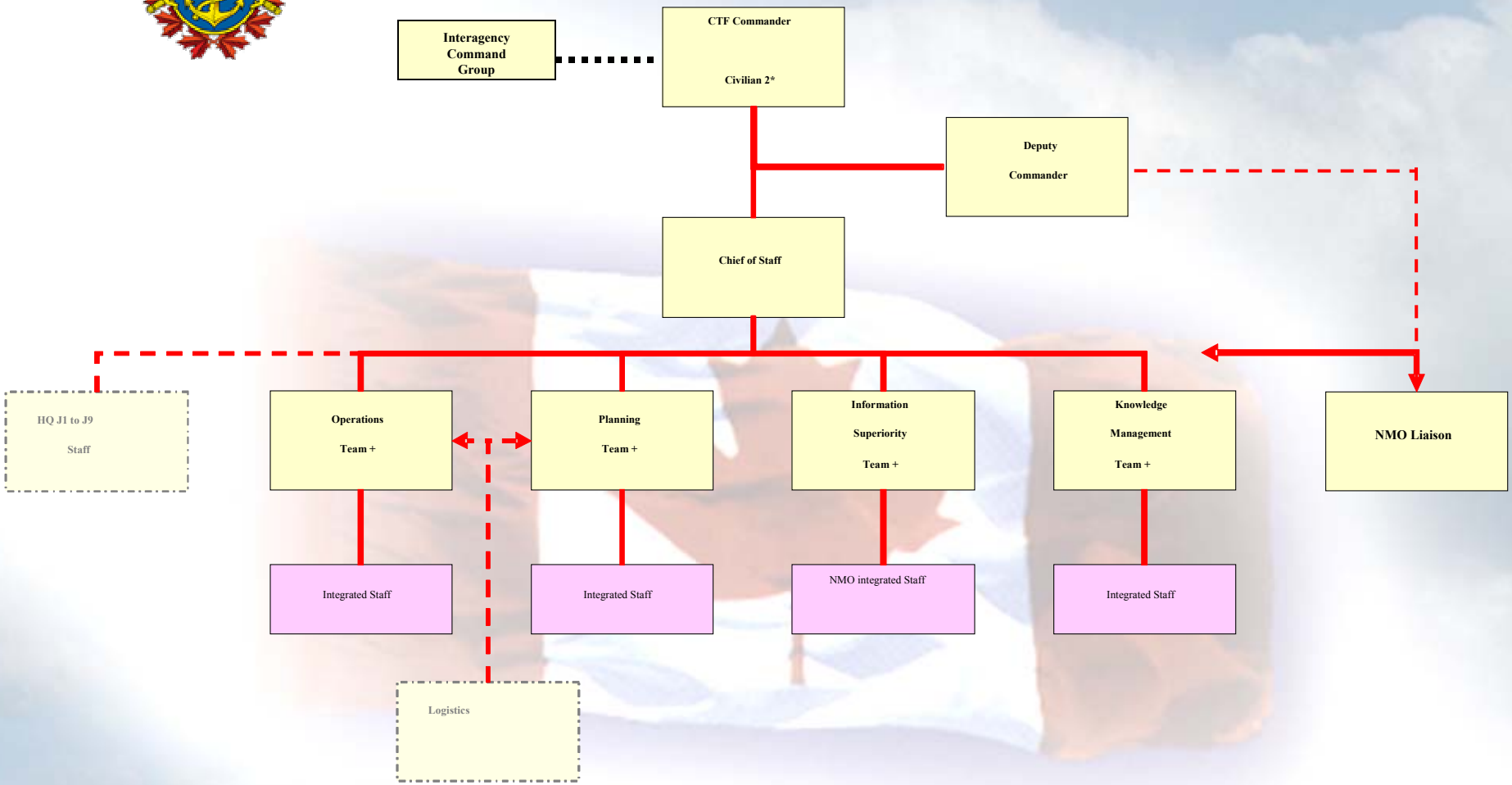
During MNE 3, the CIACG operated at a much higher [conceptual and political strategic] level than anticipated

Questions unanswered by MNE 3

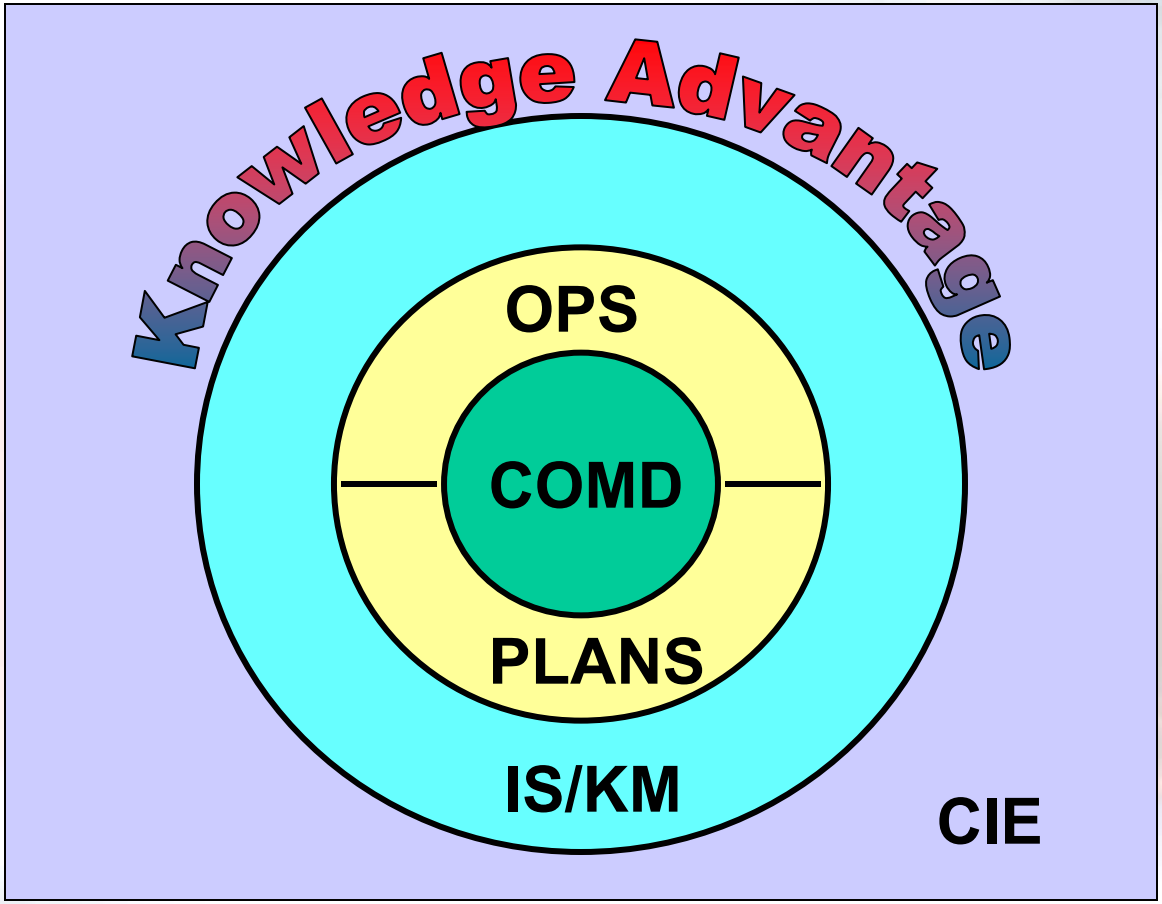
- What should the composition of the CIACG be?
- What should the operating relationships be between the CIACG and its component national governments?
- Should it maintain the higher (strategic) level of interest?
- If so, how should this translate to the operational level? Risk assessment?
- Should the CIACG coordinate activities of the IOs and NGOs?
- What ethical issues require consideration?
- C2 issues between CIACG and CTF need resolution, refinement

Who's in Charge?

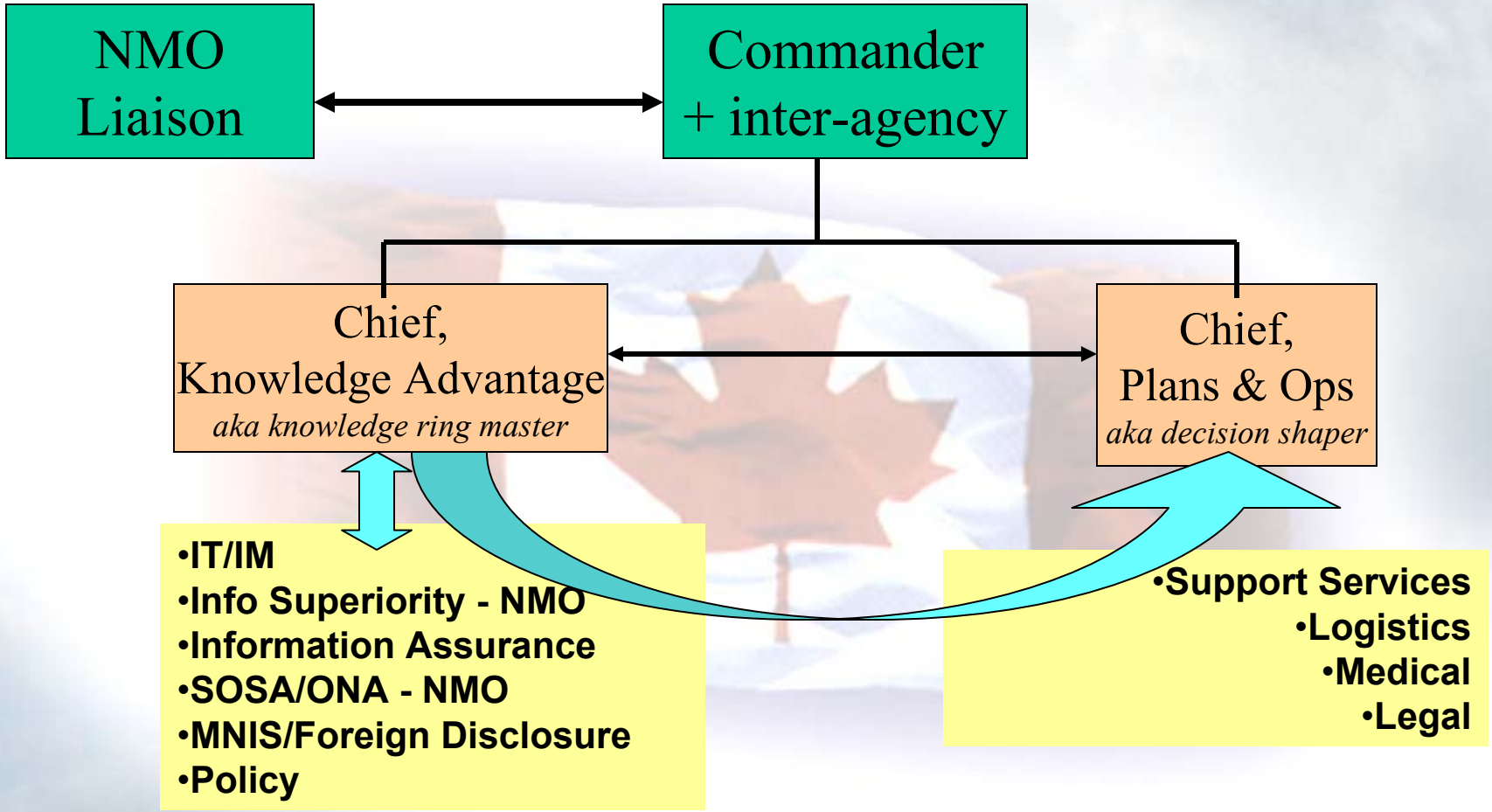
CTFHQ and NMOs



CTFHQ Knowledge Advantage Paradigm



EBO CTFHQ Construct - NMOs



Reflections - EBO, C2 and NMOs

Effects-based combat operations in Afghanistan and I[illegible] have not been 'effects-based'…

Conflict has changed. We are w[illegible]omplex adaptive system

War, intervention, regional securit[illegible]velopment have become inextricably intertwined.

Symbiosi[illegible]ity and security, war and post-war

NMOs should be a[illegible]he potential 'blowback' effects of military action and vice versa

Where do we go from here?

Armed forces must adapt to the environment(s)

Complex and non-linear systems create an environment that favours ad hoc C2arrangements

Questions?

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