

Informing the Transformation

SAS-055

ACT - Norfolk, VA

April 2005

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Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 01 APR 2005	2. REPORT TYPE N/A	3. DATES COVERED -			
4. TITLE AND SUBTITLE Informing the Transformation		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) Office of the Assistant Secretary of Defense (C31) Pentagon 3E172 Washington, DC 20301-6000 USA		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 ADM202031. NATO/RTO-MP-SAS-055, The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 32	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Frequency Asked Questions

- What is NCW? What is Power to the Edge?
- Why are they critical to success in the 21st Century ?
- How is NCW related to transformation? To EBO?
- Are NCW and Power to the Edge proving out in practice?
- Are we creating new vulnerabilities?
- Will it be harder for coalition partners to work with the US?
- Is an Information Age transformation affordable?
- What should we do / invest in first?

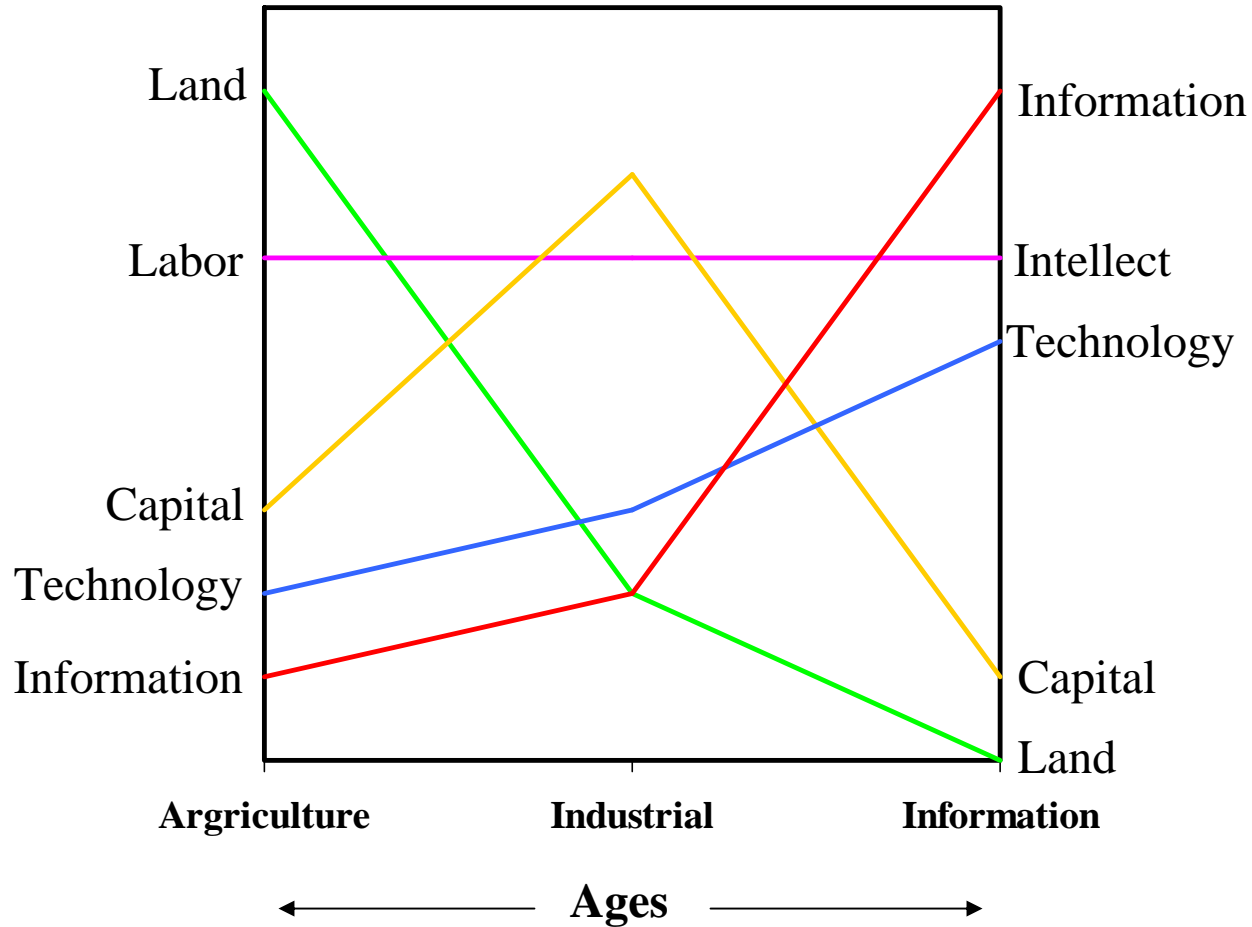
Assessment Challenges

- Predicting the Future – A discontinuous future
- Lack of Experience and Expertise
- Lack of empirical data
- Need for new measures of value
- Complexity resulting from Co-evolution
- Key measures related to IO are in the cognitive and social domains

Agenda

- DoD Transformation
- NCW: the Initial Instantiation
- Power to the Edge: the next step
- The Last Mile: Beyond Command and Control
- Implications for Analysis

Sources of Power



Transformation is about adaptation to changes in the sources of power.

Information Age Transformation

A Key Element of Defense Strategy

Warfighting / Military Operations

New Mission
Challenges

Opportunities

Transformation

Business Side of DoD

How we fight
New Concepts & Capabilities

- Battle Space Awareness
- Command and Control
- Force Application
- Force Protection
- Logistics

How we do business.....
New Processes and Systems

- Accounting & Finance
- Acquisition
- Human Resource Management
- Strategic Planning and Budgeting
- Logistics
- Installations & Environment

The Information Age requires we re-think everything!

Transformation

- Transformation is a response to the Information Age
 - Broad vision of competitiveness v. security challenges
 - Information Age focus
- Intellectual Foundations of DoD Transformation
 - NCW
 - EBO
 - Power to the Edge
- Enterprise Strategy
 - Co-evolution of Mission Capability Packages
- Pervasive changes are required
 - How we plan, prioritize
 - What we investment in
 - How we use information
 - Approach to Command and Control

Capabilities



Agility

Agility

- 21st Century Security Challenges characterized by huge amounts of uncertainty and risk
- Agility is the answer to uncertainty and risk

Robust - effective across a range of conditions;

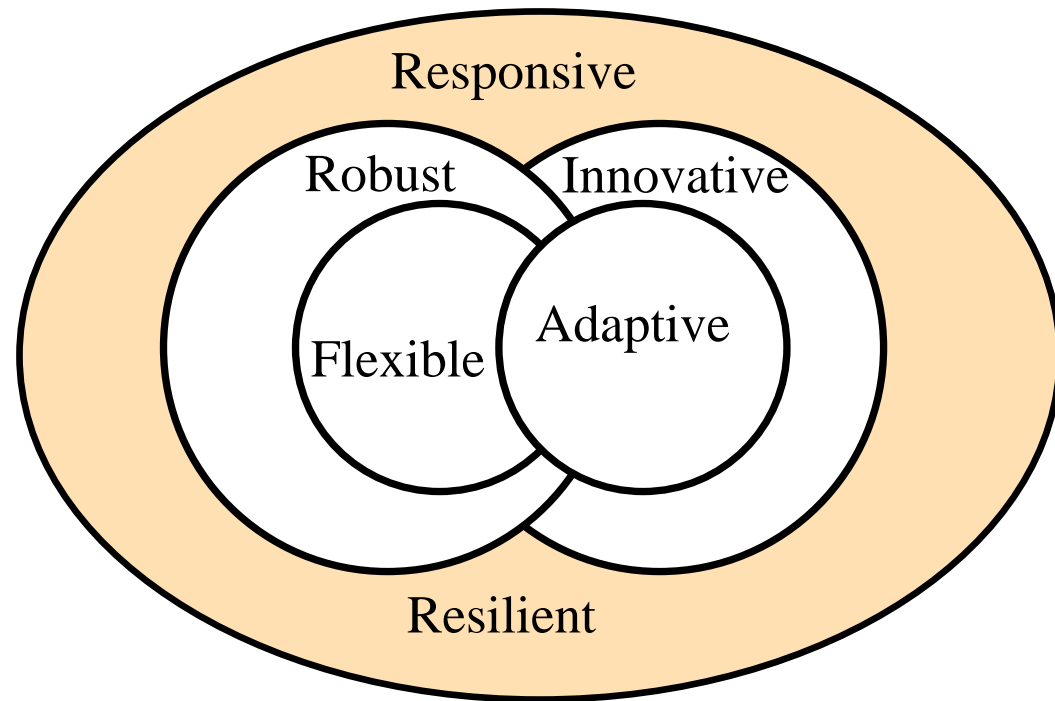
Resilient – able to function / degrade gracefully / reconstitute when damaged

Responsive - speed of recognition and action;

Flexible - multiple ways to succeed, seamless shifting;

Innovative – learning and solving

Adaptive – alteration in C2 organization and process.

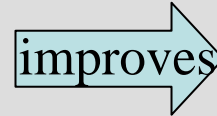


Status of DoD Transformation

- Intellectual Foundation developed to first order
- Commitment articulated by senior leadership
- Incorporated in policy, planning, and acquisition guidance
- Investments in Infostructure
 - NII Initiatives
- Program of Experimentation
- Proofs of Concept emerging
- New Doctrine
- Global phenomena
- Maturity and the last mile of transformation

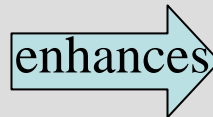
The Tenets of NCW

A robustly networked force



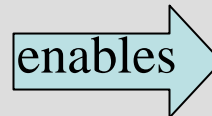
Information Sharing

*Information Sharing
and
Collaboration*



*Quality of information
and
Shared Situational Awareness*

Shared situational awareness

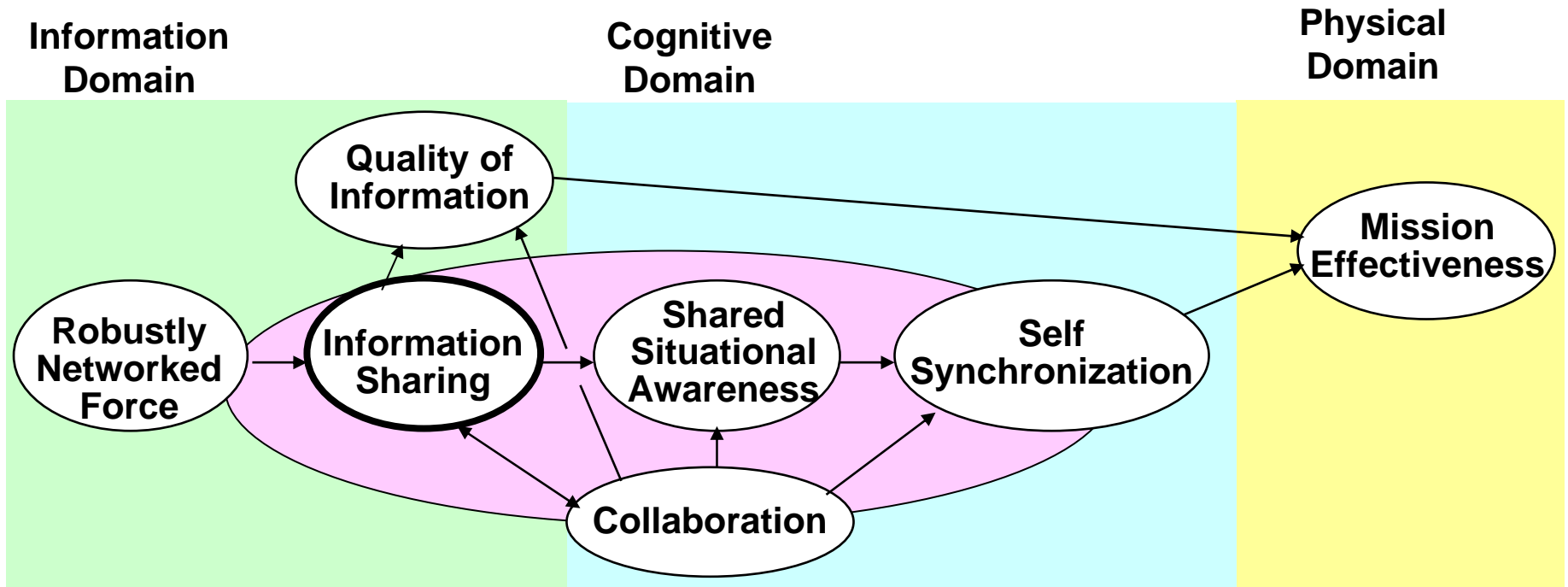


*Collaboration
and
Self-synchronization*



These, in turn, dramatically increase *mission effectiveness*

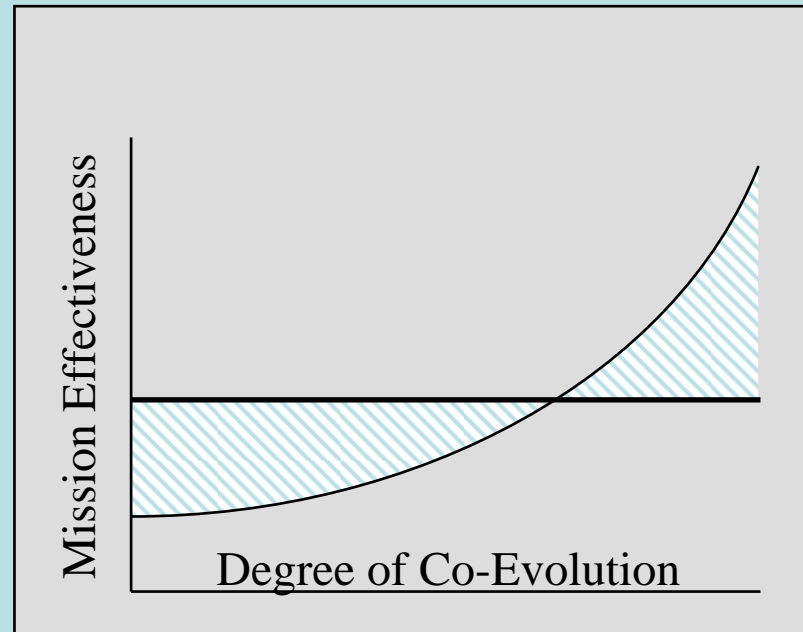
Linked Hypotheses: The Value Chain



- Information Domain
- Cognitive Domain
- Social Domain
- Physical Domain

Need for Co-evolution

- Co-Evolution is Essential
 - Isolated Changes May Have Dysfunctional Results
 - Coordinated Changes Have Synergistic Results



- Therefore, we need to think not in terms of acquisition but in terms of Mission Capability Packages

Migration Path: Getting to the Vision

measuring and understanding progress

Command and Control

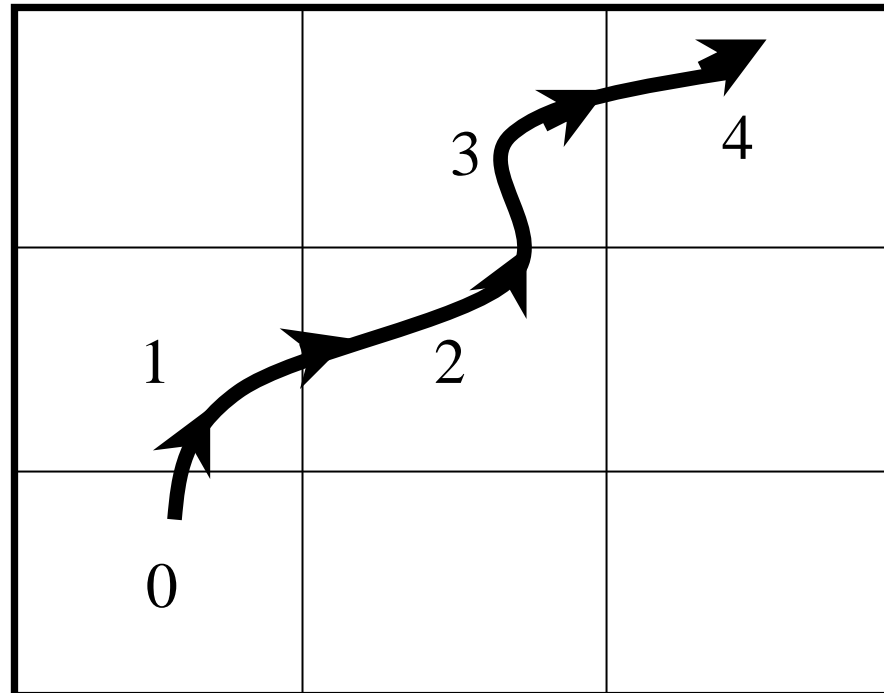
Traditional Collaboration Self-synch

Developing
Situational
Awareness

Shared
Awareness

Info
Sharing

Organic
sources



Power to the Edge

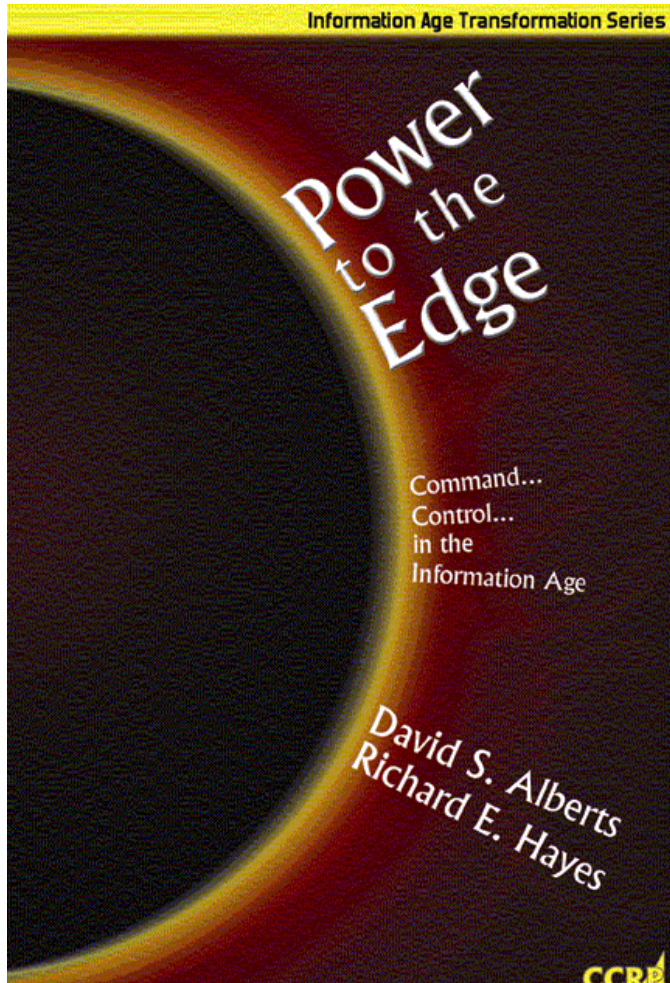
- **Power** is about the ability to accomplish something in a timely manner overcoming resistance
- **The Edge** is where the action is; where the organization or system meets the real world

Power to the Edge is about providing more means and opportunities to the entities that get things done

NCW and Power to the Edge

- The NCW Tenets are a set of linked “value chain” hypotheses
- Power to the Edge articulates the policy, organizational, and command and control approaches that can make the promise a reality

Power to the Edge: more than ‘networking’



- **Internet Protocol...**packet switched not circuit switched network
- **Secure Communications...**end to end encryption, hardened against denial of service
- **Only Handle Information Once...**data posted by authoritative sources
- **Post in Parallel...**producers make their data available as soon as it is created
- **Smart Pull...**users can pull data directly form the Network
- **Data-Centric...**data separate for applications, which to talk to each other by posting data
- **Application Diversity...**users can operate multiple applications using the same data
- **Assured Sharing...**trusted accessibility to network resources
- **Quality of Service...**Data timeliness, completeness and integrity

Agenda

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- NCW: the Initial Instantiation

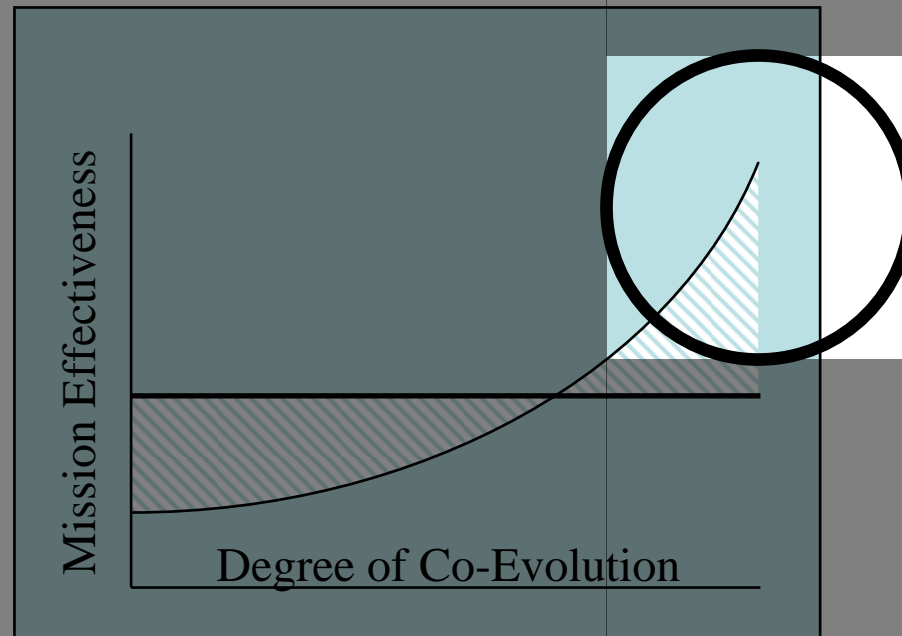
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- The Last Mile: Beyond Command and Control

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Migration Path

measuring and understanding progress

Command and Control

Traditional

Collaboration

Self-synch

Shared
Awareness

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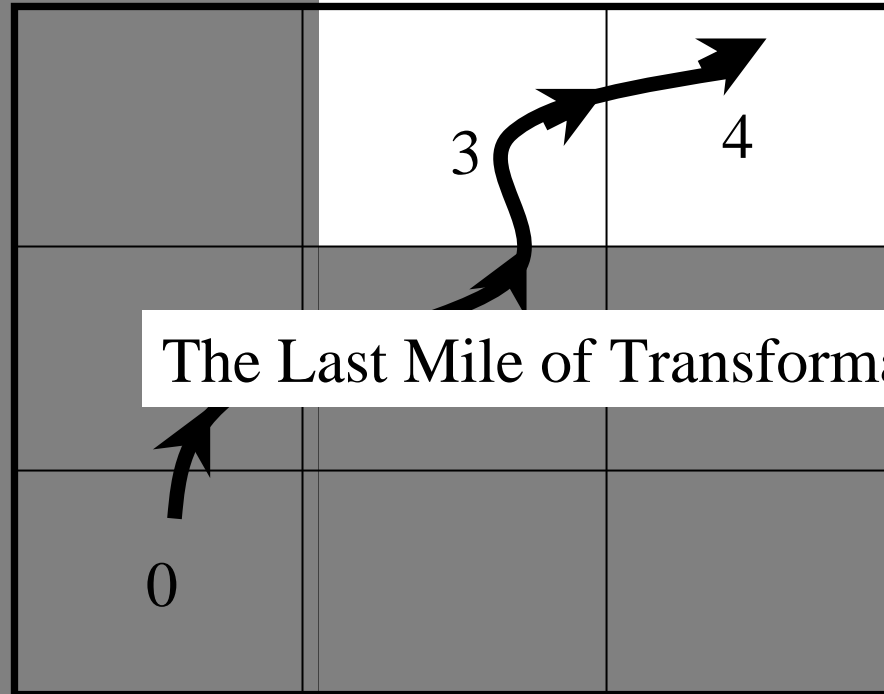
Developing
Situational
Awareness

Info
Sharing

The Last Mile of Transformation

Organic
sources

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Correct Inferences

- Information Age approaches offer opportunities to bring more of our information and more of our assets to bear
- New vocabulary is needed to prevent us from myopic exploration
- New set of criteria needed to assess new approaches to accomplishing the objectives associated with command and control
- The success of coalition operations will depend upon the compatibility of of approaches to command and control

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Formulation Challenges

- Formulation
 - Identification of relevant variables
 - Determination of objective function (dependent variables = value)
 - First order relationships
 - Constraints
- Formulate from a “Network Centric” perspectives
 - Include variables that reflect key concepts
 - Go beyond specific mission effectiveness to agility
 - Represent / consider new command concepts

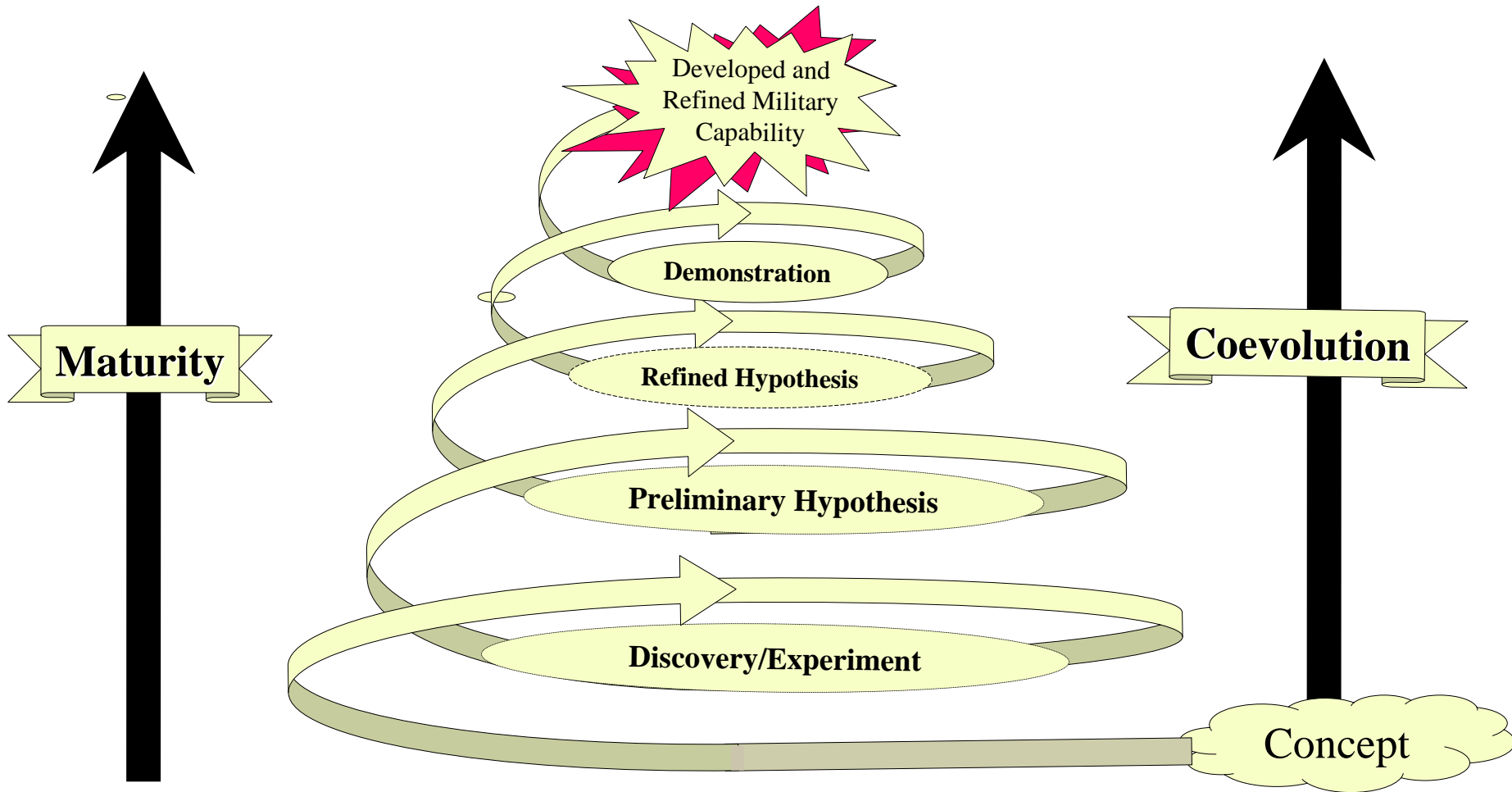
Key Concepts and Variables

- Information sharing and shared information
- Collaboration
- Awareness and shared awareness
- New command concepts
- Coalition related issues
- Full range of effects (military, diplomatic, economic, social)
- In all of the domains (physical, information, cognitive, social)

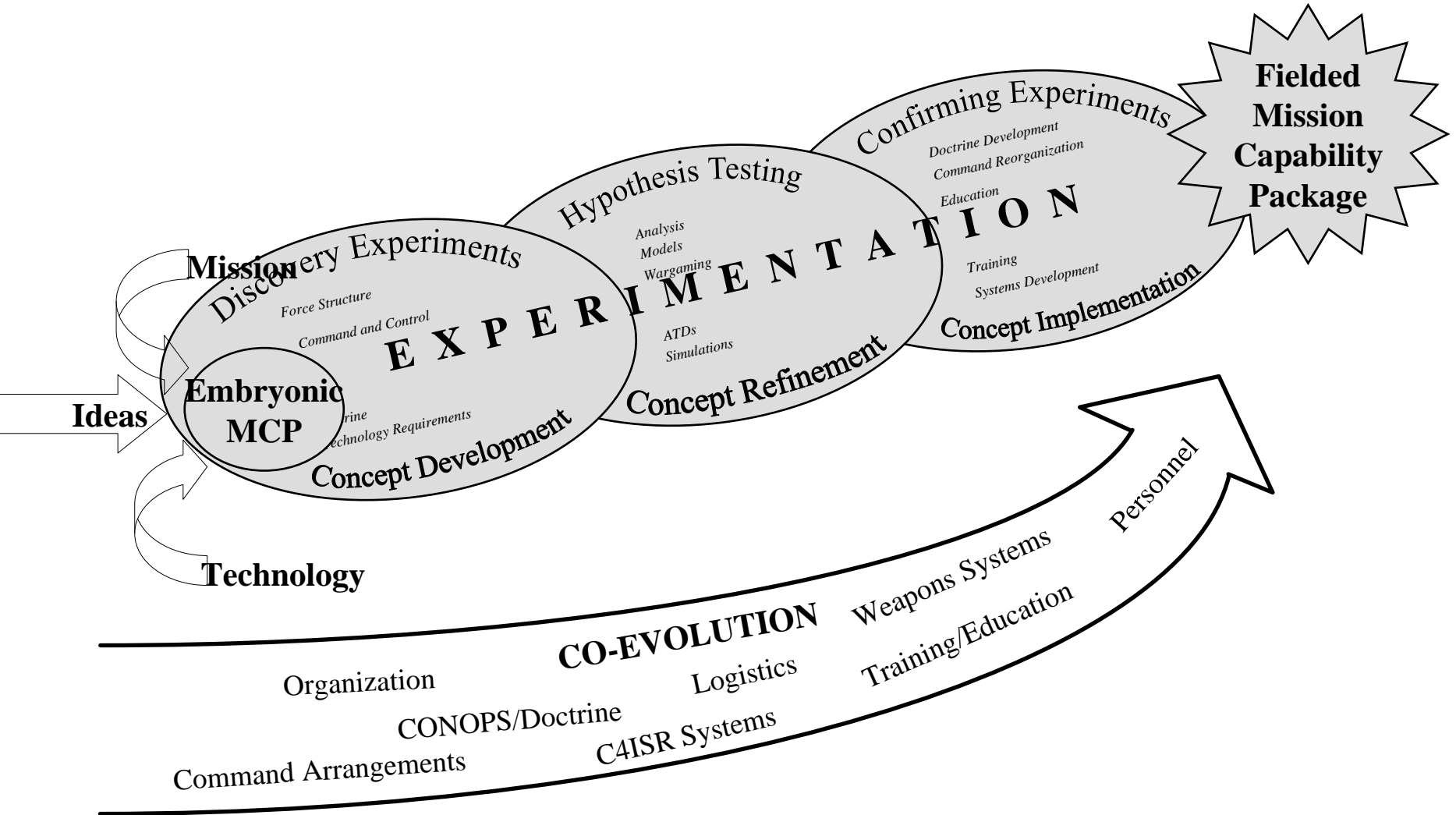


From Concept to Capability

Key Role of Experimentation



Mission Capability Package Creation



Related Efforts

- NCO Conceptual Framework
- SAS-050
- DoD Case Studies

Some Take Aways: NCW

- NCW is more about networking than networks
- NCW is the military's adaptation to the Information Age
- NCW involves the redefinition of command and control
- A new vocabulary and a new set of criteria are needed
- The success of future coalition operations will depend upon the compatibility of approaches to command and control
- NCW applications will be developed, matured over time

Some Take Aways: Analysis

- A comprehensive conceptual framework is essential
- There is not a lot of data about the future
- It is better to include the right variables even if one cannot directly measure them than to ignore them
 - Sensitivity analyses
 - Expert judgments
 - Explicit Assumptions
- All four domains must be instrumented and mined for data
- Agility is the preferred MOE

Informing the Transformation

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