



Enhancing Collective C2 in the International Environment: Leveraging the Unclassified Information Sharing Enterprise Service

Office of the DoD Chief Information Officer

**Mr. Gerard J. Christman, Contractor
Sr. Systems Engineer**

**Integrated Information Communications
Technologies (ICT) Support (IIS) Directorate
gerard.christman.ctr@osd.mil**

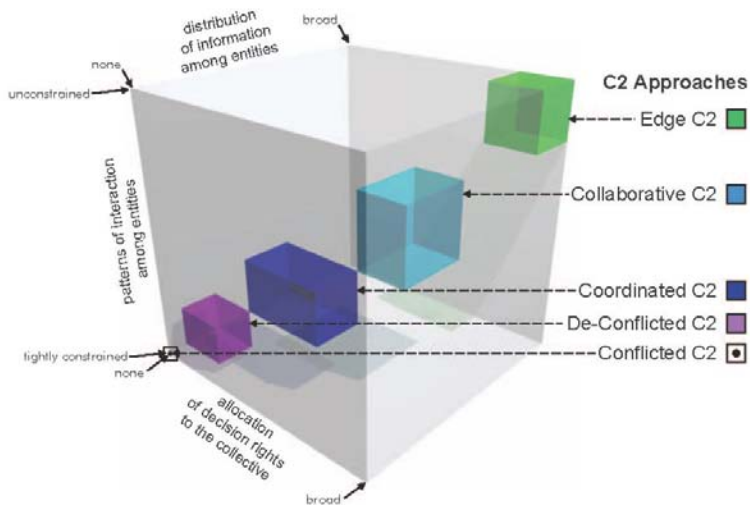
21 June 2011



Purpose



- Describe the DoD Unclassified Information Sharing (UIS) environment as an important contributor to achieving Edge C2
- Illustrate how DoD's UIS can complement and enable C2 systems with the most relevant information available in the unclassified domain
- A means for command and control systems to avail themselves of broader trusted data sources
- Share DoD CIO efforts enabling DoD to migrate towards the Edge C2



<u>C2 Approach</u>	<u>Allocation of Decision Rights to the Collective</u>	<u>Patterns of Interaction Among Participating Entities</u>	<u>Distribution of Information (Entity Information Positions)</u>
<u>Edge C2</u>	Not Explicit, Self Allocated (Emergent, Tailored, and Dynamic)	Unlimited As Required	All Available and Relevant Information Accessible
<u>Collaborative C2</u>	Collaborative Process and Shared Plan	Significant Broad	Additional Information Across Collaborative Areas/Functions
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<u>Conflicted C2</u>	None	None	Organic Information



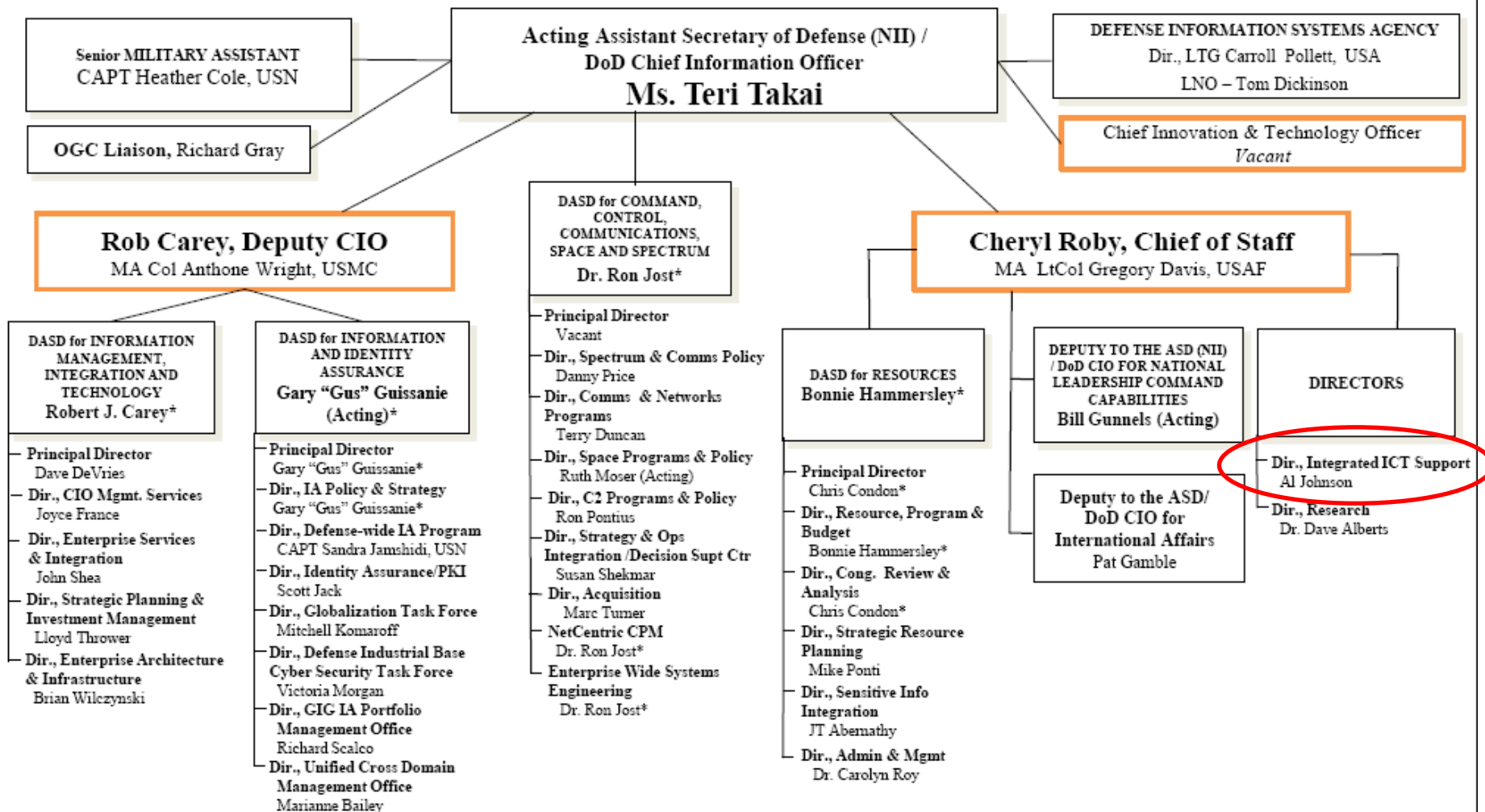
Agenda



- Introduction
- OASD(NII) Integrated ICT Support (IIS) Directorate
- The Focus and Intended Impacts of DoD's UIS
- The Dynamics of Humanitarian and Disaster Response Environments
- Taking UIS to the Next Level
- Conclusion



OASD(NII) / DoD CIO Interim Organization



* Denotes dual-hatted

Chart updated 4/7/2011



Integrated ICT Support Directorate



Vision Statement

A DoD enterprise that enables rapid, agile, and persistent sharing of civil-military information and situational awareness to facilitate coordination and cooperation with the interagency and external mission participants across the full range of irregular warfare and stability operations.

Mission Statement

Develops and oversees policy that shapes ICT enablement of irregular warfare, stability operations, and theater security cooperation. IIS identifies ICT gaps, recommends solutions, and assesses the Department's progress towards improved information sharing and more effective civil-military coordination, situational awareness, and decision making. IIS engages with the Joint Staff, Interagency, and external organizations to facilitate resolution of COCOM and Service contingency operations ICT support issues. 6



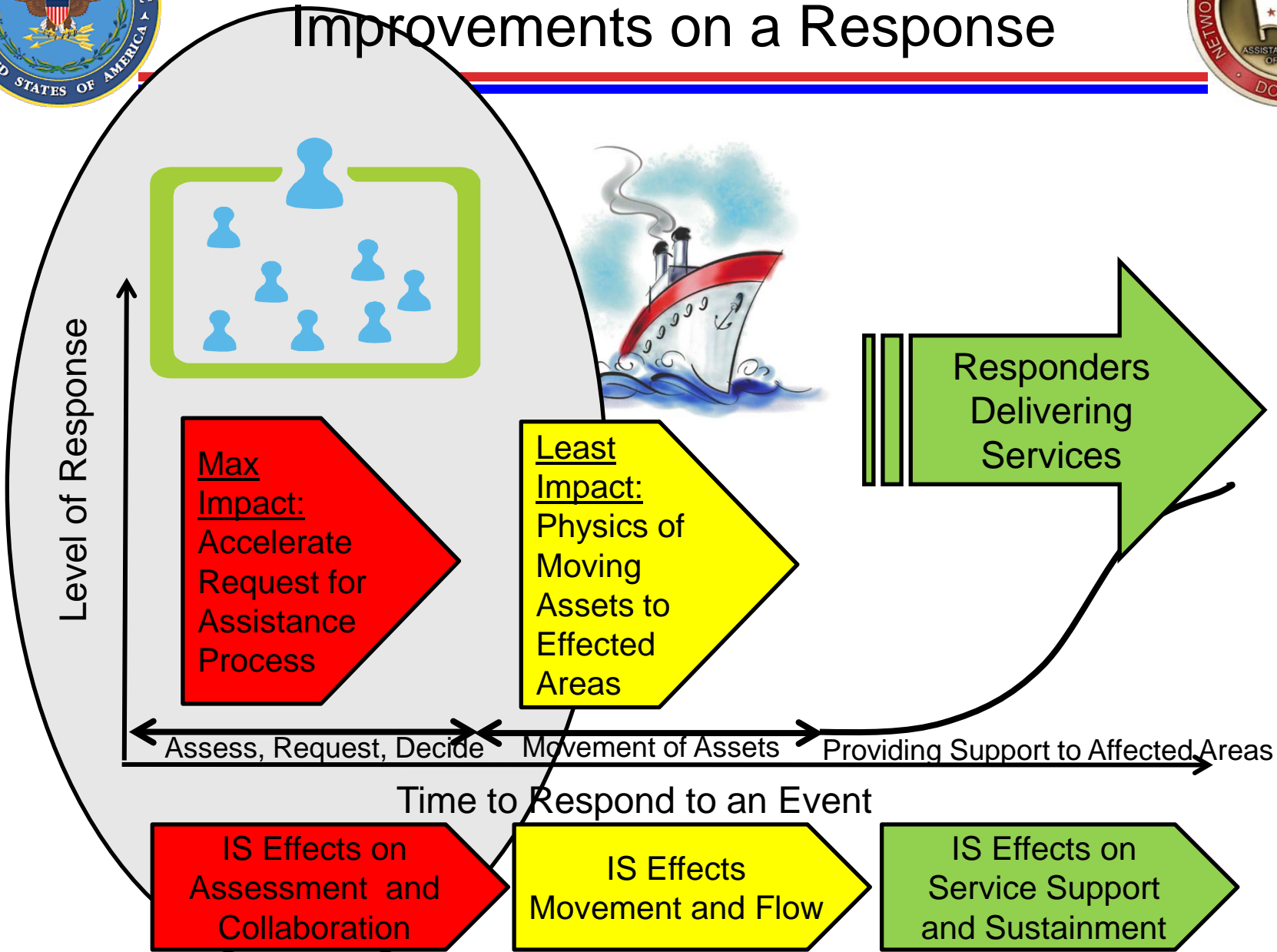
Focus Point of Discussion: Enhance C2 by integrating Unclassified Information



- Traditionally C2 conducted via military centric networks
- Today's Web services can expose a tremendous amount of unclassified information to inform the C2 decision making processes
- Command and Control is more than simply sharing information.
- The C2 process needs to be informed by the available and exponentially increasing social networks – can lead to more agile C2 processes.

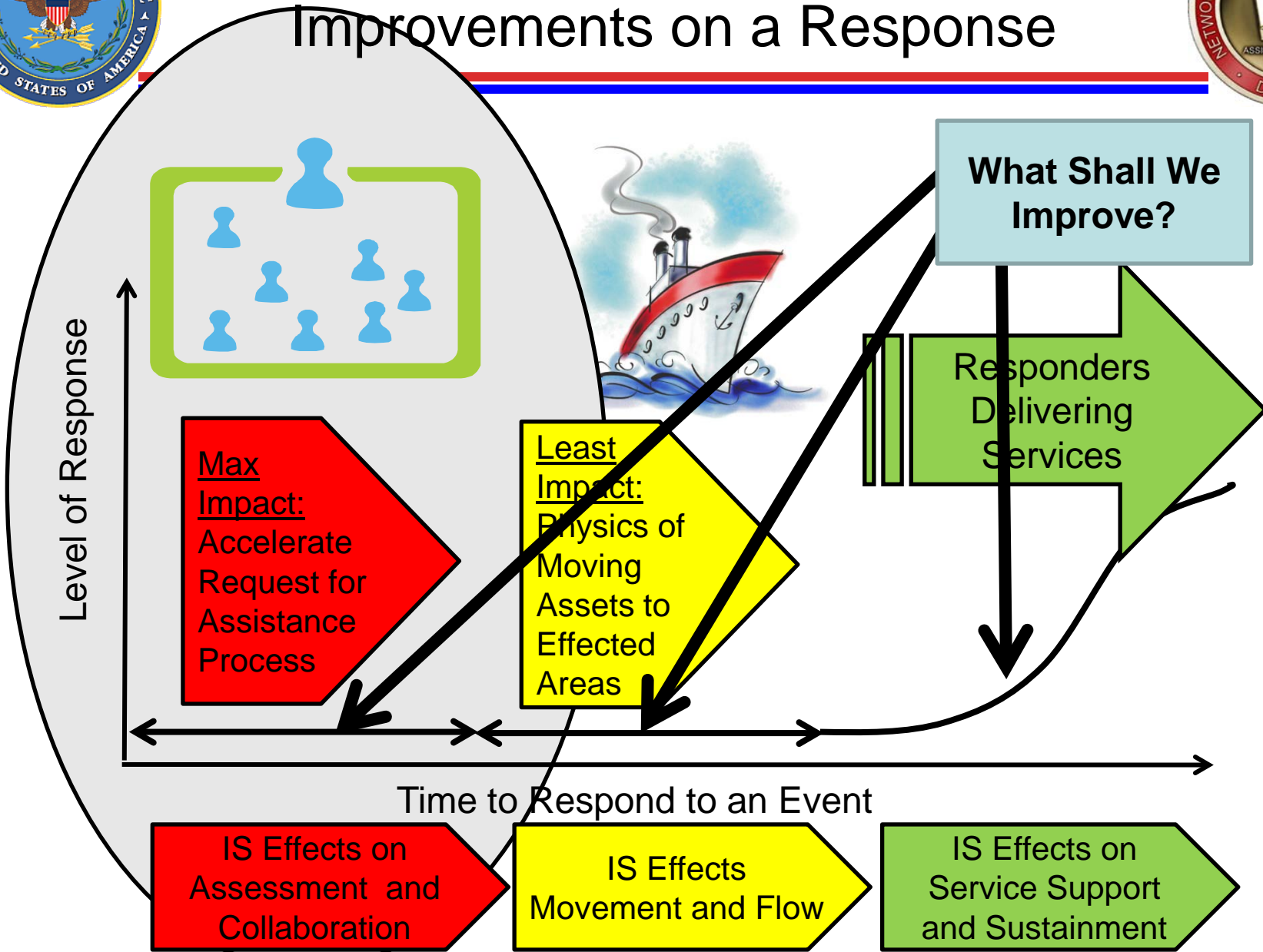


The Intended Impacts of Info Sharing Improvements on a Response





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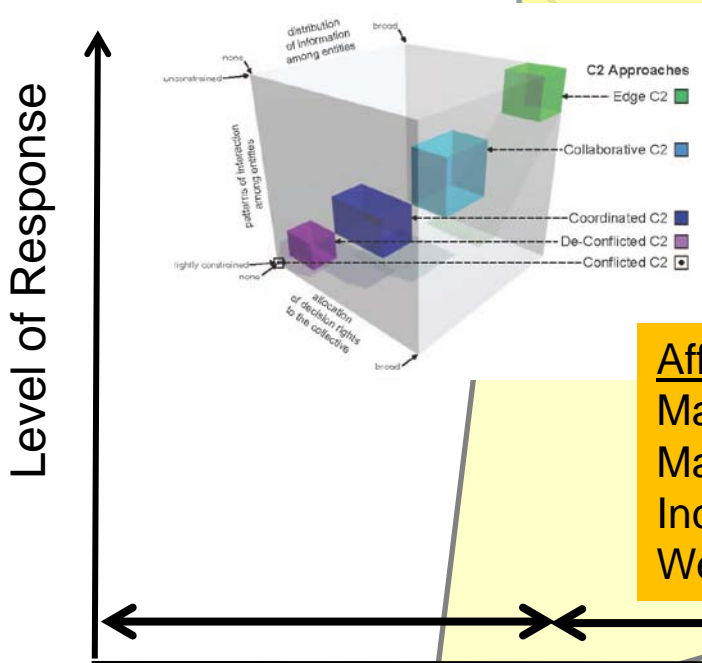




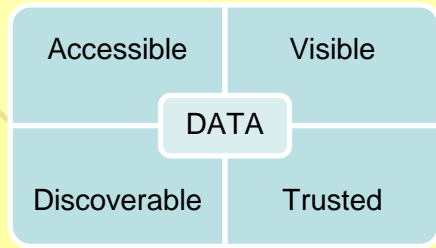
Proposed Methods of Achieving Info Sharing Improvements



Step 1: A Modeled Approach



Step 2: Leverage Data



Affect the Cognitive Process:
 Machine readability
 Machine understandability
 Increased use of Semantic Web
 Web Ontology Language-OWL

Step 3: Influence A Process

- Observe
- Orient
- Decide
- Act

Reduce This Timeline



UIS: Use Additional Data Sources to Augment our C2 systems



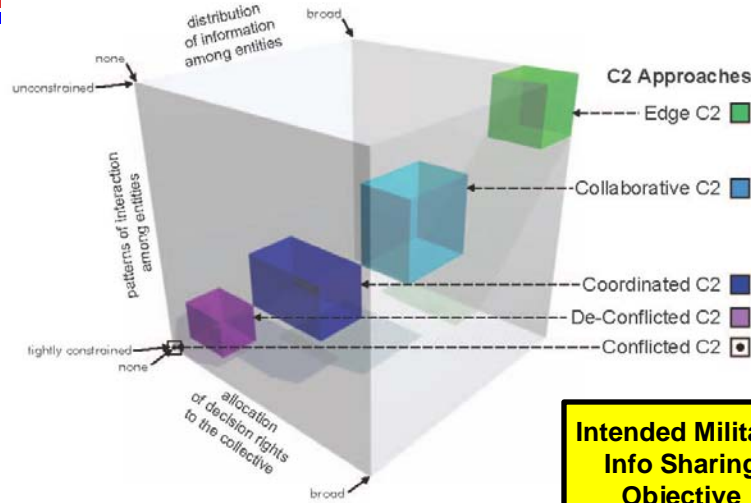
“The Culture and Social Science of Sharing”

Collaboration is an “*enhanced*” form of interaction, whereas information sharing, cooperation, or coordination are enablers - important but not sufficient!

Collaboration = Collaborative Information Environments
 Two or more *humans* cooperating in such a way that the result is a mutual *creation* reflecting notable insight, skill, or intellect
 - Requires *human* interaction (so far)
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Coordination
 The regulation of diverse elements into an integrated & harmonious operation
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Cooperation
 Working together on a common goal or task
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Information Sharing
 The basic act of providing information to others
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 - Requires no cooperation or shared objectives



Make information visible, accessible, understandable, and trusted!

Intended Military Info Sharing Objective

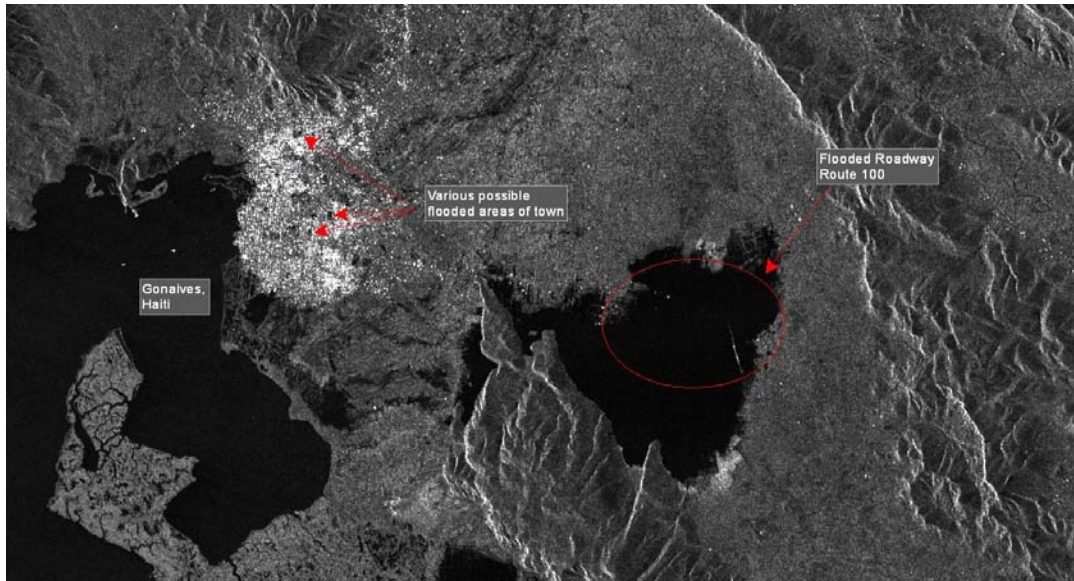
Desired External Info Sharing Objective

<u>C2 Approach</u>	<u>Allocation of Decision Rights to the Collective</u>	<u>Patterns of Interaction Among Participating Entities</u>	<u>Distribution of Information (Entity Information Positions)</u>
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6/29/2011



The Challenges of Humanitarian Assistance and Disaster Responses

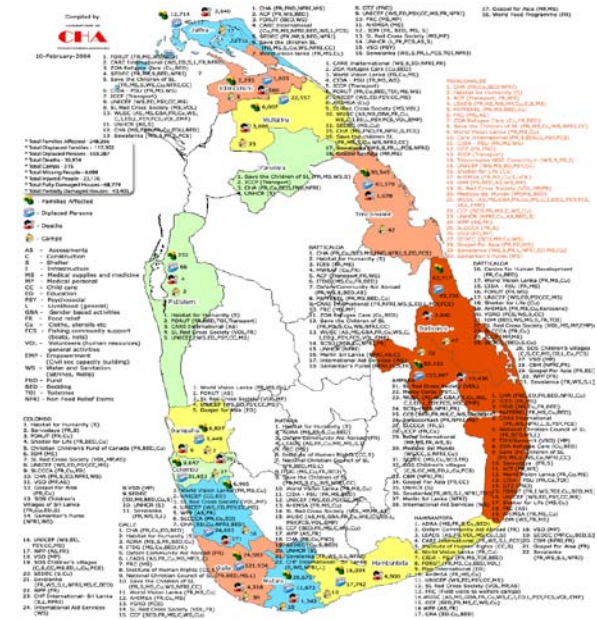




Disaster Response Experiences

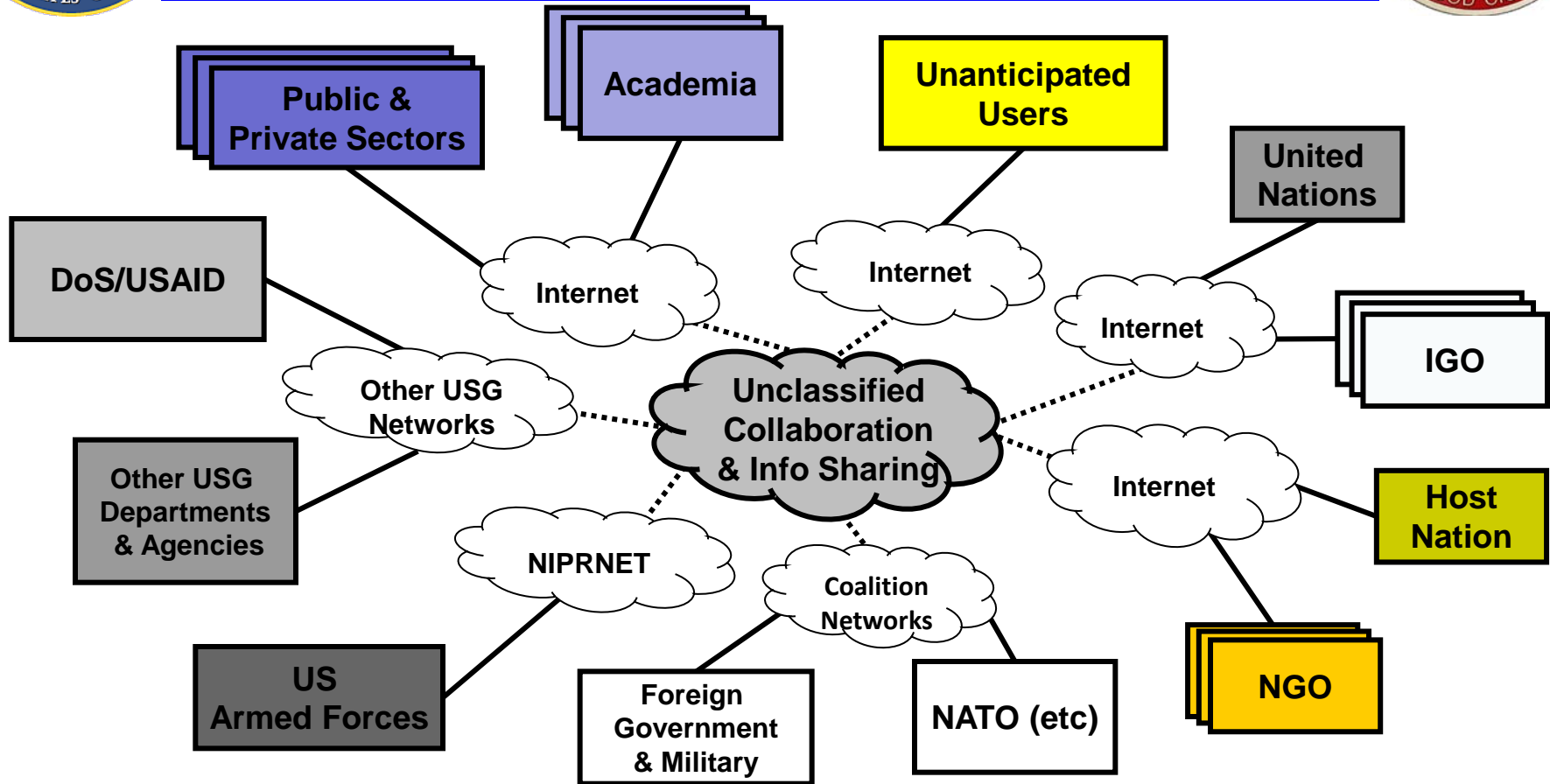


- Leaders identified a need for more effective information exchange and collaboration between organizations and their non-traditional partners:
 - Restricted ability to “connect and collaborate”
 - Independent organizations with separate guidance, resources, protocols, and philosophies
 - Limited sharing of information, assessments, and plans across extended partnership network is limited – exchanges are “ad hoc”
 - Required extensive operator intervention for stand-alone tools and legacy systems
- Ineffective communication can lead to failed programs, wasted resources, longer response times, and duplicate or counter-productive actions between responders





Complex Dynamics of Establishing an Info Sharing Organizational Construct



Phases of Military Operations

Phase 0
(Shape)

Phase 1
(Deter)

Phase 2
(Seize Initiative)

Phase 3
(Dominate)

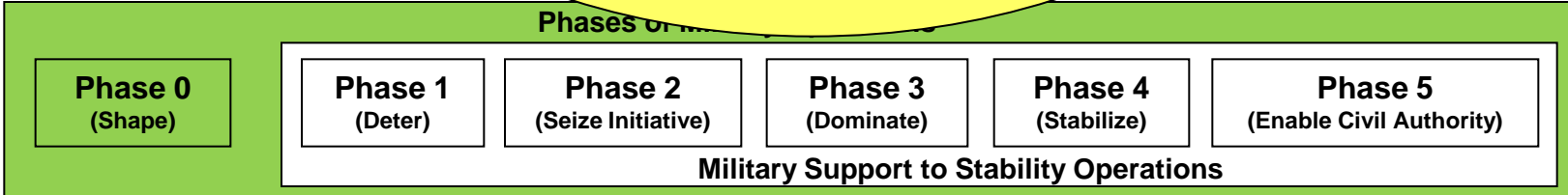
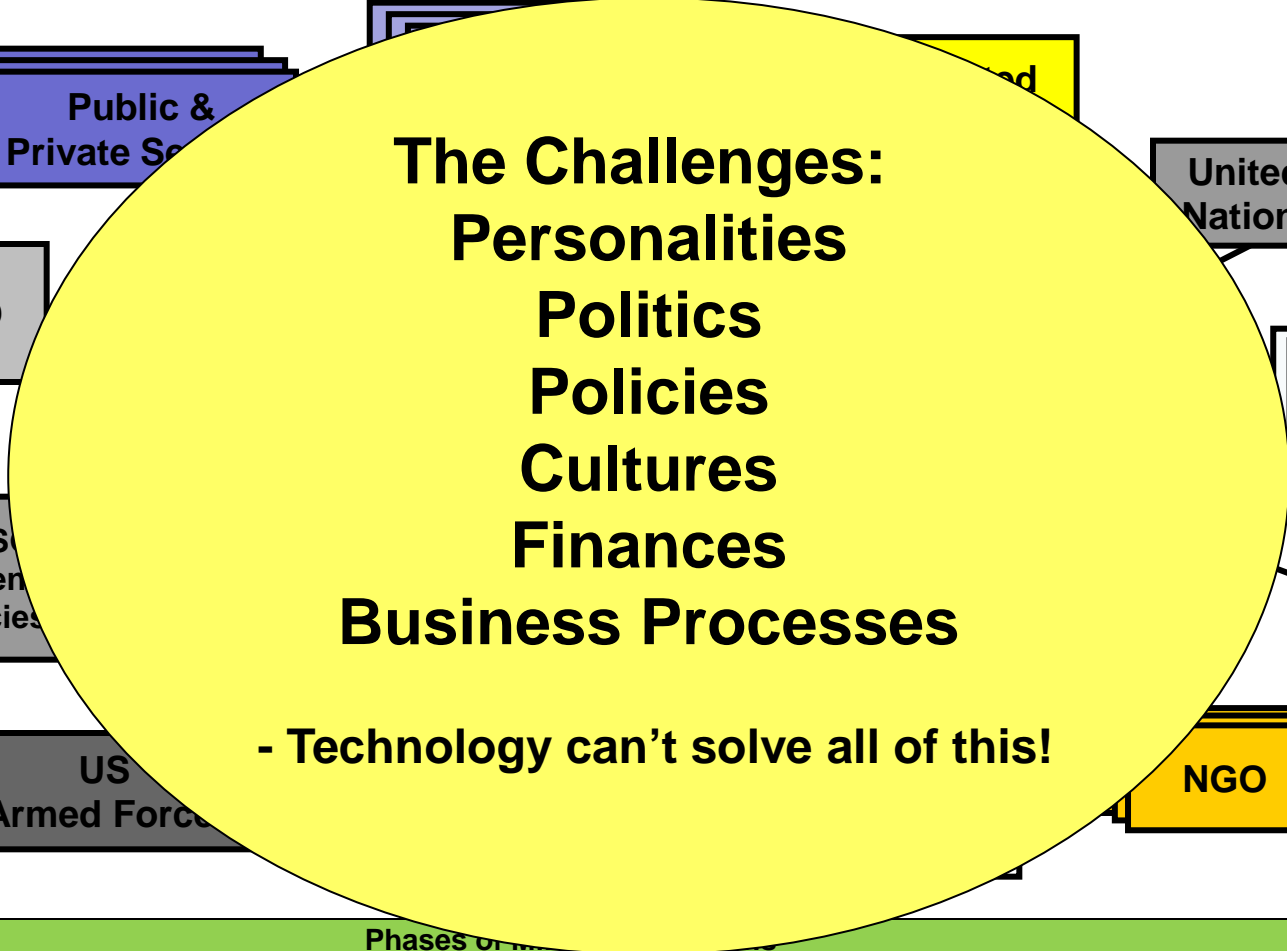
Phase 4
(Stabilize)

Phase 5
(Enable Civil Authority)

Military Support to Stability Operations



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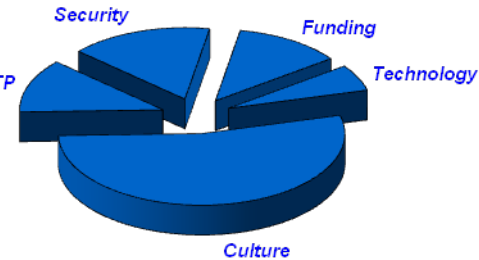




Impact of Limited Unclassified Information Sharing



- Unclassified information sharing and coordination between organizations is problematic
 - Government and Military culture is to “classify by default” rather than “share by default.”
 - Organizations are not used to sharing or cooperating with each other
 - Existing Networks are cumbersome or ad hoc; lack standards
- Organizational cultures and stovepipes impede progress
 - Policies and procedures lack information sharing clarity (what to share)
 - Over classification and excessive caveats
 - Tactics, techniques, and procedures are not standardized or rehearsed
- Information sharing is not always recognized as “good”
 - Military organizations are concerned about information integrity
 - Civilian responders (NGOs) are concerned about neutrality
 - All parties seek risk aversion
- Goal: Sharing must be bi-directional





Making Sense of the Business Processes: How to Establish a Common Understanding



Key Information Requirements

- Imagery
- Assessments
- Incident Reports
- Maps
- Org Charts
- Foreign Disclosure guidance
- Situational Awareness
- Ops/Intel Fusion
- Access to SMEs
- In Depth Country Knowledge
- High Level Contacts
- Connections to Locals

Relevance to Key Consumers

- Assess what is going on
 - Situation
 - Possible actions
 - Actions of others
 - Resources needed
 - Resources available
- Decide on possible actions
- Self-identify my interest, intended actions, and resources
- Network
- Collaborate
- Synchronize Actions
- Execute



A Content Solution: Identify The Common Information



Key Information Requirements to Key Consumers

- Imagery
- A...

Organizational Business Process:

- What is happening?
- Do I care?
- What do I care about?
- What can I do about it?
- What can't I do? Why?
- What do I want to happen?
- Who agrees with me?
- Can I help others who share my goals and objectives?
- Can someone help me with my gaps?
- How do I find them?
- How do they find me?
- How can we work together?

- AC

- In Depth

- High Level Contact

- Connections to Locals

Actions

- Execute



Taking Our Unclassified Information Sharing to the Next Level



- Policy
- Technology
- Business Processes
- Cooperation and Partnerships



Shaping the UIS Environment: Aug 2010 Secretary of Defense Efficiency Initiatives



- Directed a series of initiatives to move the defense enterprise toward a more efficient, effective, and cost-conscious way of doing business.
 - A cap, at FY 2010 levels, in the aggregate number of authorized and funded Manpower billets
 - A cap, at the FY 2010 levels, in the number of authorized and funded senior Departmental positions
 - ...temporarily halt the tasking or formation of any new DoD internally-generated oversight reports
- And others...drives us to an affordable enterprise solution



DoD's UIS Info Sharing Paradigm Shift

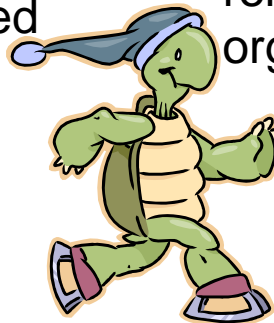


Early Web Presence

- Web 1.0 Asia Pacific Area Network
- Methodical
- Fixed members
- Fixed access
- Fixed requirements
- Development cycle
- Adaptability
- BUT – an alert team motivated to adapt new technology and processes!

Today's Virtual Composite Environment

- Web 2.0 All Partners Access Network
- Agile and Ad Hoc
- Unstructured collaboration - wikis, blogs, forums
- Unstructured collaboration - file sharing, calendar, custom lists
- Connect with subject matter experts and the crowd
- Maintain ongoing, professional relationships across international and organizational boundaries





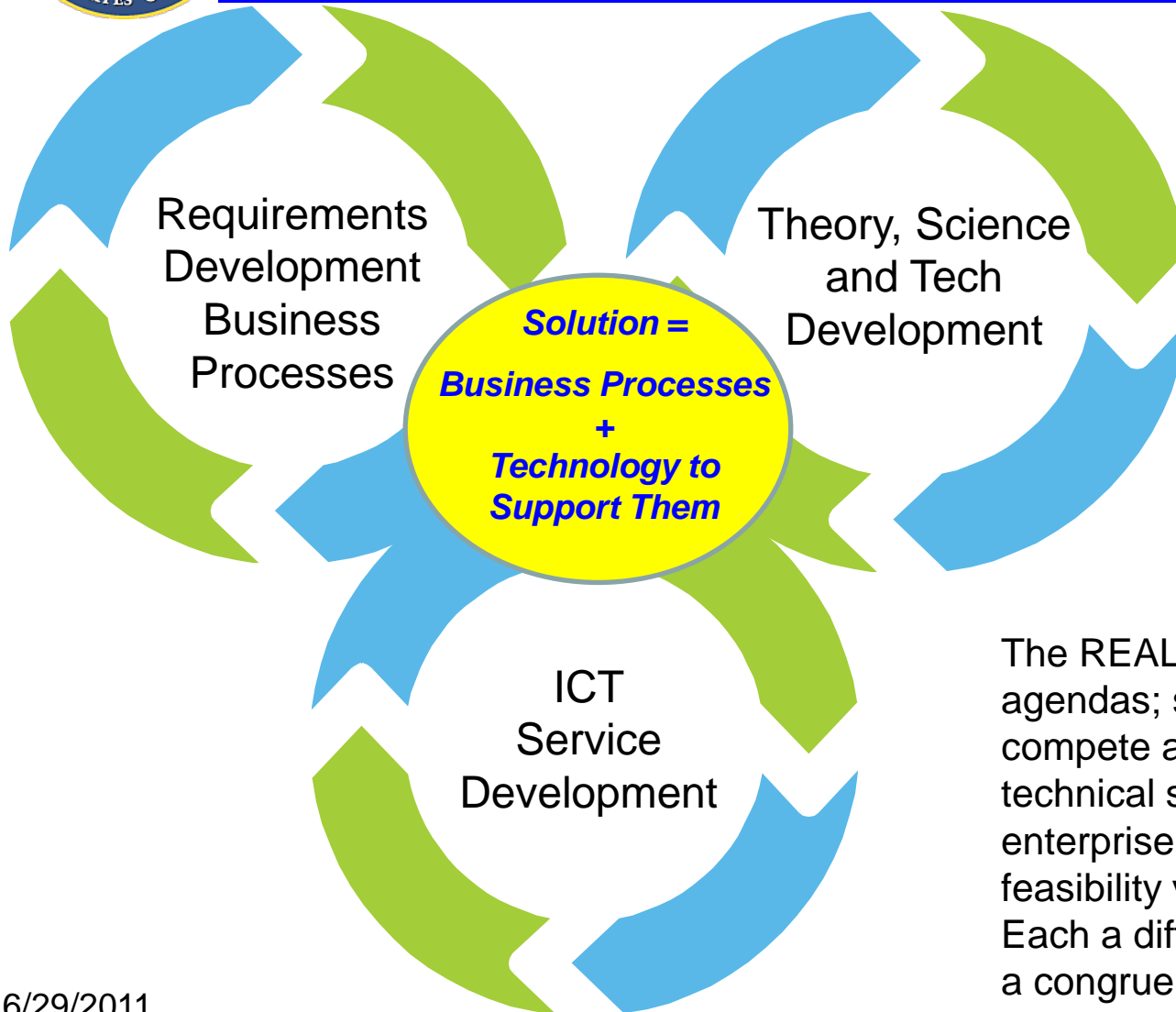
C2 system of systems



- Web 1.0
 - Teams of staff and analysts culling through reams of information
- Web 2.0
 - Strive for machine to machine interpretability to compress the decision cycle
 - The Semantic Web
 - Participatory
- Web 3.0
 - Agent based browsing
 - Improved business intelligence
 - Improved machine to machine response
 - Data mining₂₂



Make Sense of Inter-twined Agendas Affecting Information Sharing



In theory, we should be able to deliver sustainable solutions that meet social science and human behavior needs of the customer.

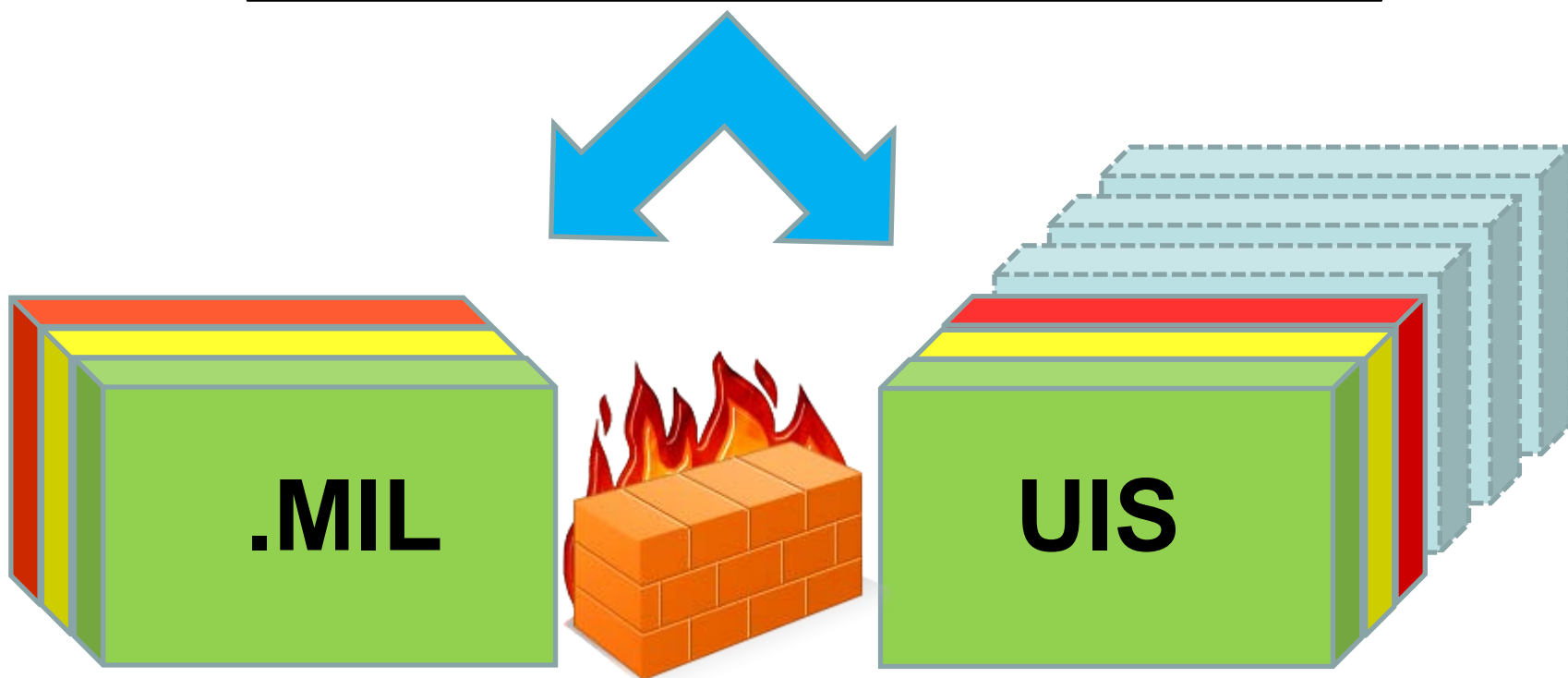
The REALITY is that intertwined agendas; seemingly complementary, compete and affect the eventual technical solution provided to the enterprise. User's wants vs technical feasibility vs theoretically available. Each a different focal point striving for a congruent endstate.



Focus on Agile Requirement Definition and Capability Integration

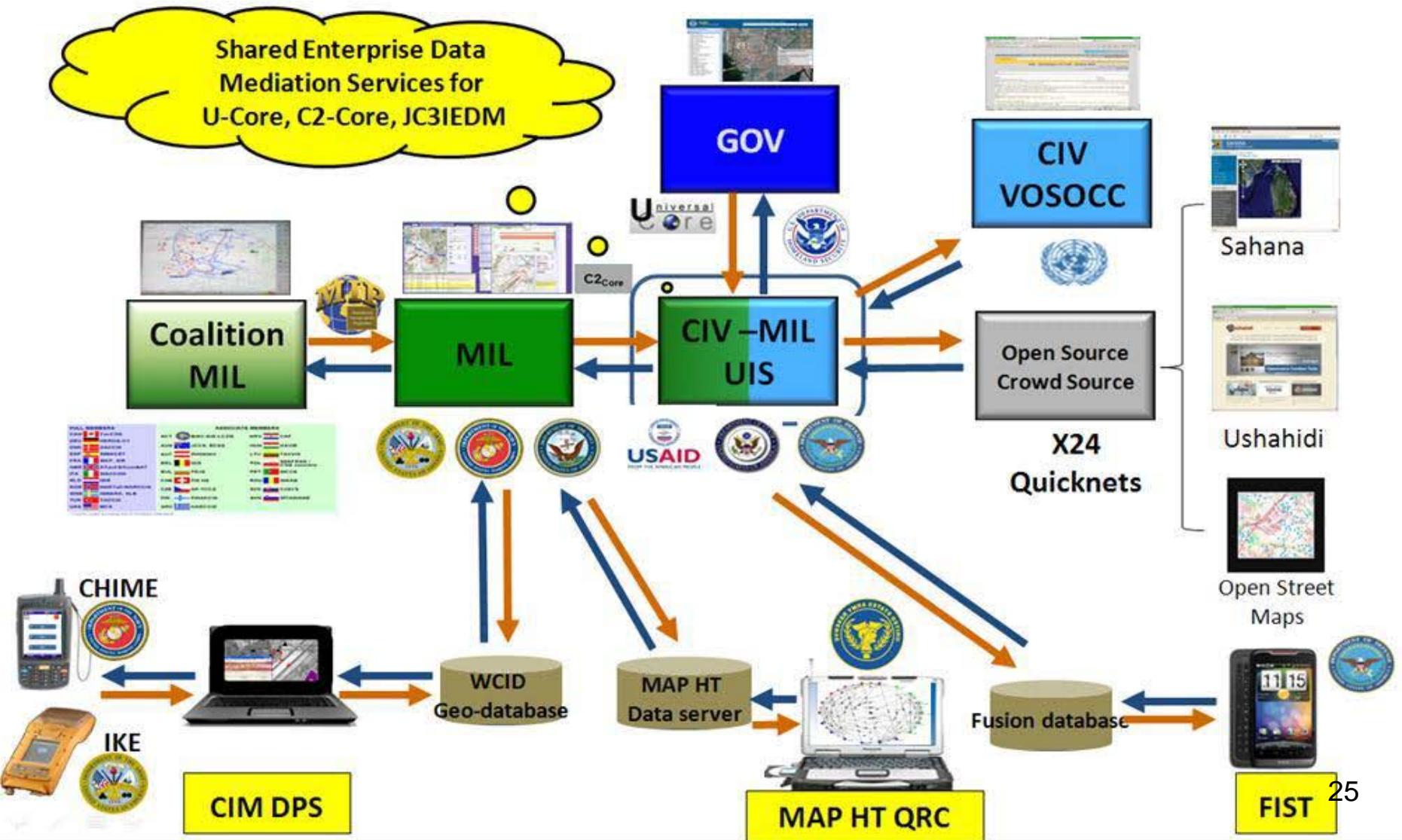


Strive for agile capability growth in response to user needs and technological advancements



Expose more of this trusted info to that domain!!

Comprehensive Approach to CIM Information Sharing





Understand Information Sharing and Collaboration Hierarchy



Collaboration is an “enhanced” form of interaction, whereas information sharing, cooperation, or coordination are enablers - important but not sufficient!

Bi-Directional Sharing Is Key To Bridging Cultural Impediments

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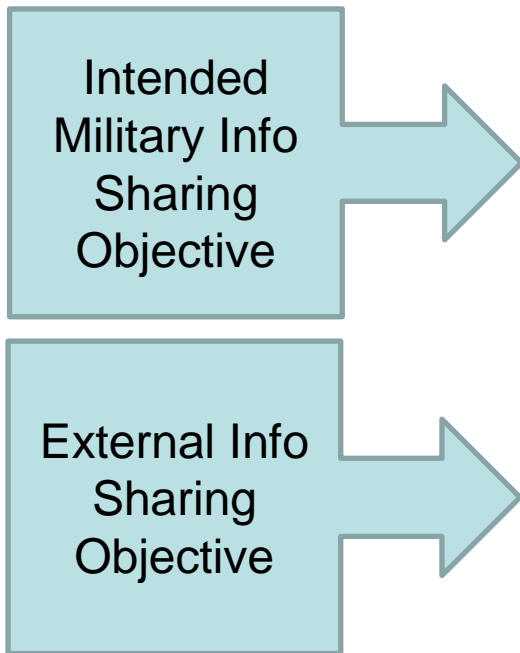
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Leveraging a “C2 Level of Maturity” Model to Describe DoD’s Unclassified Info Sharing Focus



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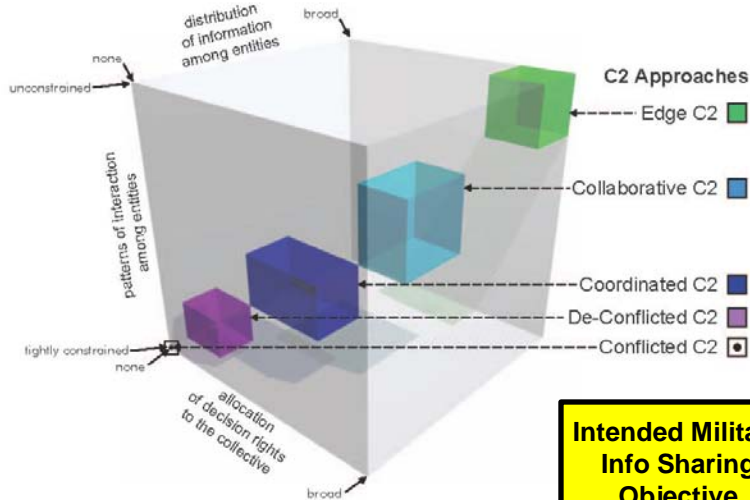


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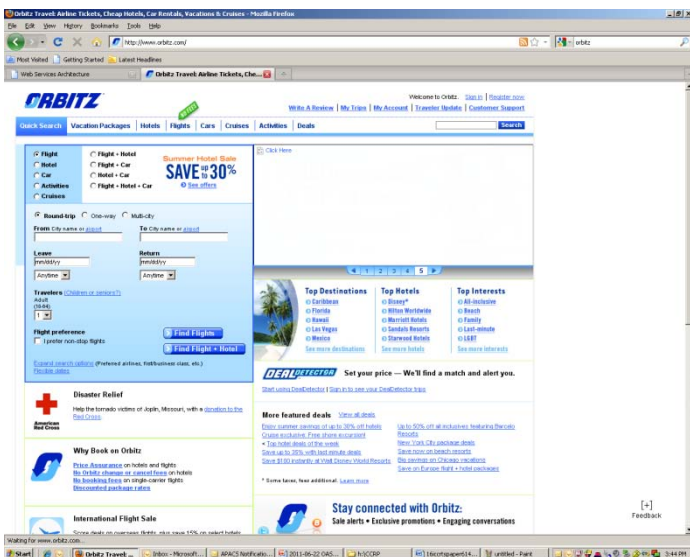
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* NATO NEC C2 Maturity Model, CCRP, Feb 2010




Leveraging Commercial Best Practices to Improve Machine Interpretability




Amazon doesn't create product data - It does specify the ontology

Vendors share their product data - description, price, dimensions, manufacturer, shipping, model #,



Web Ontology Language (OWL)



Orbitz doesn't create any flight tables – It does specify the ontology

Airlines share their flight information – to, from, date, times, prices, aircraft type, seats avail



Conclusion



- The DoD CIO engages a broad spectrum of DoD and non-DoD mission partners
 - Work for better partnership with USG departments and agencies
 - Leverage Academia and expose Social Networking Trends to the DoD Science and Technology communities
 - Participate in technology demonstrations and experiments
 - Share best practices
- Improve information sharing concepts, policies, and procedures:
 - Better organization
 - More efficient discovery of resources
 - Execute missions with less cost and less duplication of effort
 - Improved Interagency, International Organization and Non Governmental Organization information sharing
 - Improved ability to rapidly address emerging user requirements



Contact Information



Mr. Al Johnson

***Director, Integrated Information Communications Technologies (ICT) Support Directorate
Office of the Assistant Secretary of Defense, Networks and Information Integration***

1235 S. Clark St., Crystal Gateway One, Suite 601, Arlington, VA 22202-4363

+1(703) 697-8190

+1 (703) 601-2442

Al.Johnson@osd.mil

Mr. William (Bill) Barlow

***Deputy Director, Integrated Information Communications Technologies (ICT) Support Directorate
Office of the Assistant Secretary of Defense, Networks and Information Integration***

1235 S. Clark St., Crystal Gateway One, Suite 601, Arlington, VA 22202-4363

+1(703) 601-2437

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