

Command Authority and Information Flows in Net-Centric Operations

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Preview

- **Information sharing is an important part of net-centricity**
 - Break down the stovepipes
 - Eliminate / reduce the “seams”
 - Enable many new possible information flows
- **Some of those many new possible flows must be plugged**
- **Hard to do that and be net-centric**
- **We talk about why that is, and what to do about it**

Net-Centric Information Management



**The
Net-Centric
Future**

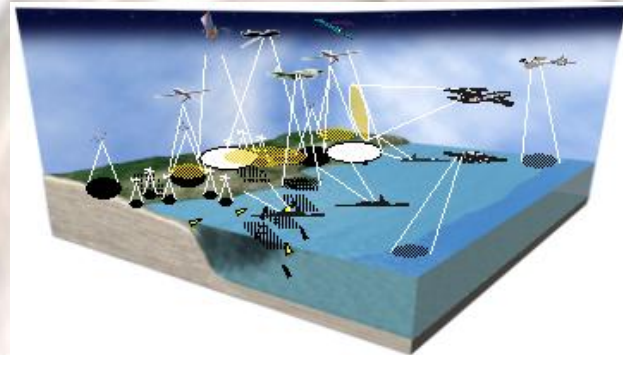
The Fortune Teller's Predictions

① Seamless network connectivity



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Expeditionary Sensor Grid
>10K distributed,
networked sensors

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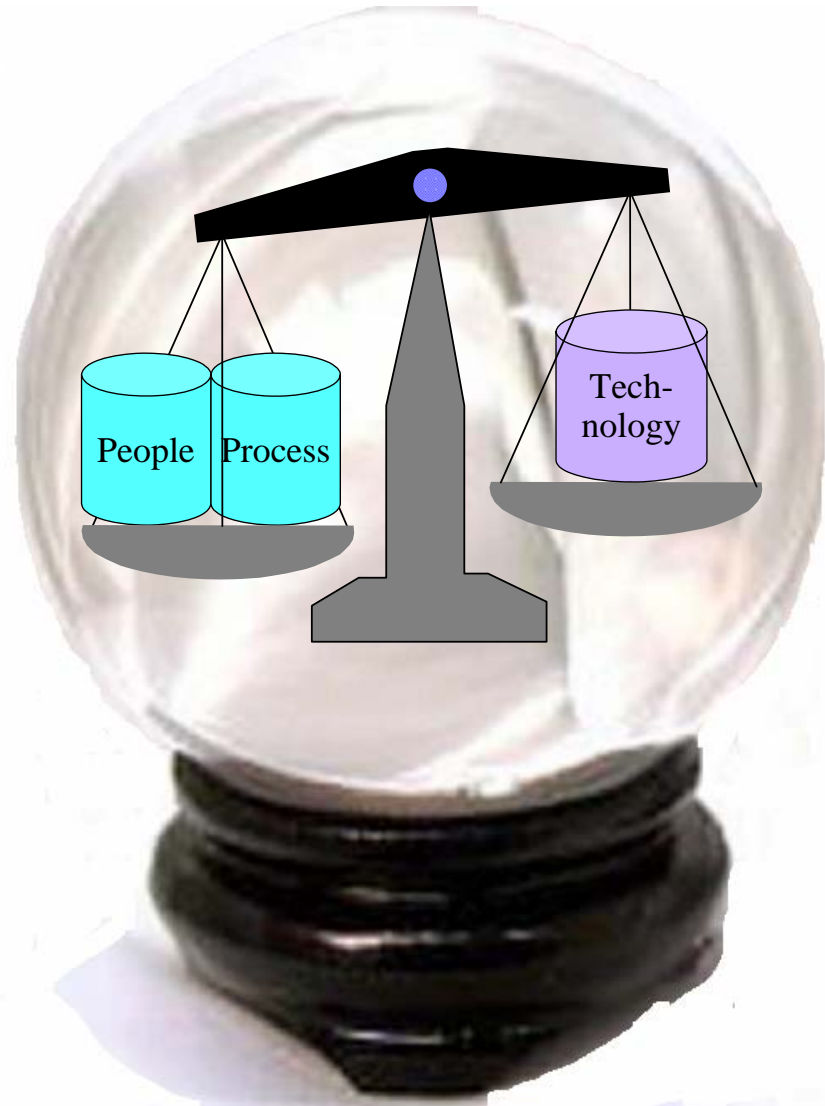
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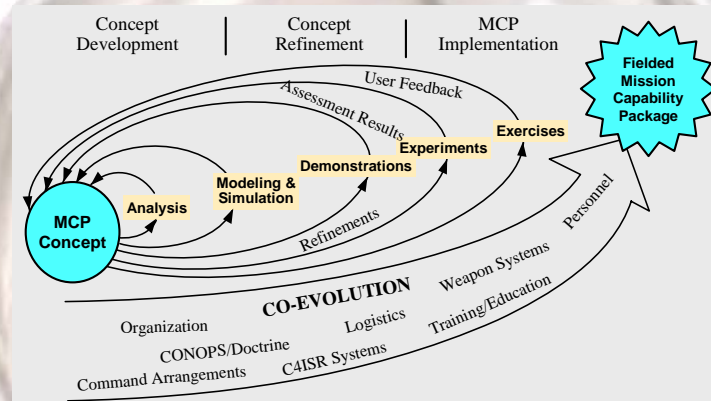
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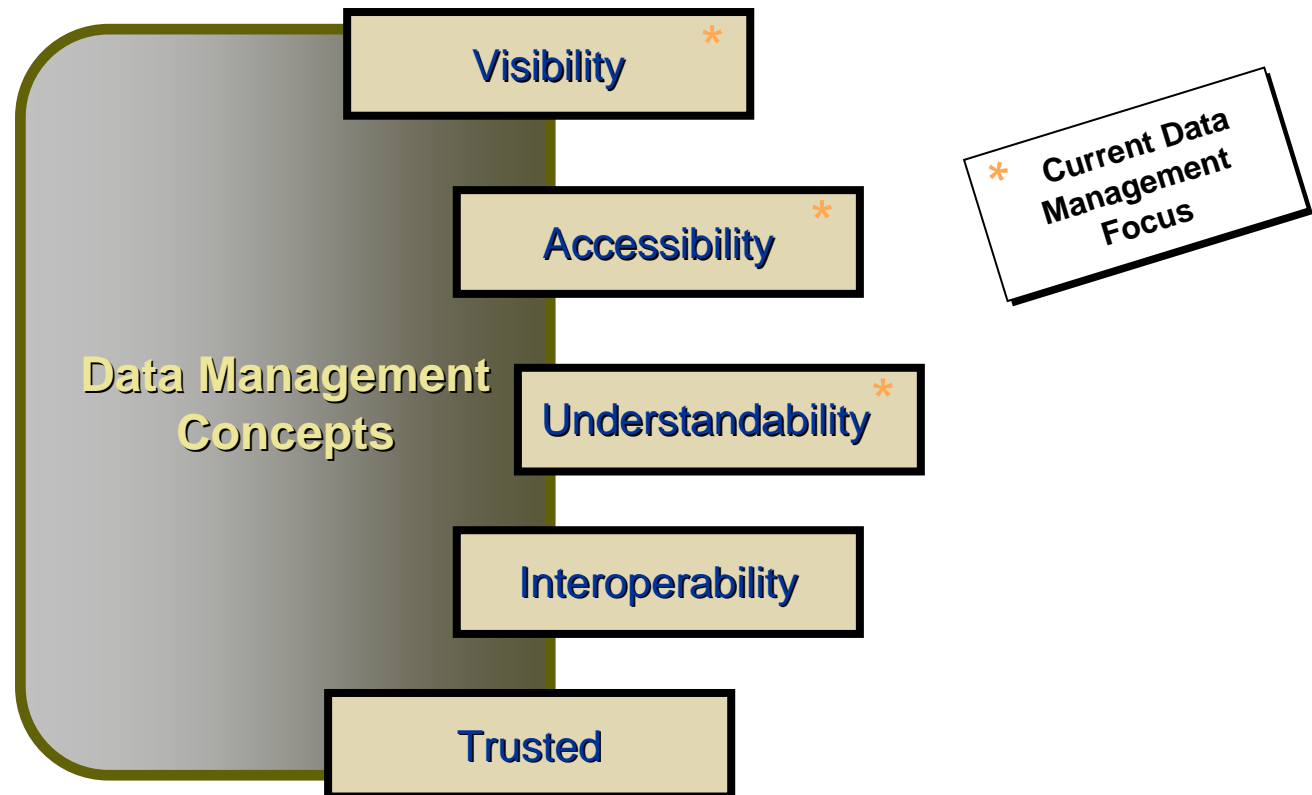
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Implications

- ① **Seamless network connectivity**
 - ② **Very many network participants**
 - ③ **Bandwidth limits at the sharp end**
 - ④ **Information assurance still crucial**
 - ⑤ **Advantage comes from best use of IT**
 - ⑥ **Flexibility essential for quick coevolution**
- **Five Rights**
 - **Get the Right information**
 - **To the Right person**
 - **At the Right time**
 - **At the Right place**
 - **To make the Right decision**
 - **End of end-to-end pairwise arrangements**
 - **For semantics**
 - **For information flows**
 - **For access control**

DoD Net-Centric Data Strategy: Goals



Access Control Is Part of NCDS

- **Making data accessible isn't the end of access control**
- **Access will be limited by law, policy, security classification**
- **Access restrictions**
 - **Should be based on deliberate policy choices
(Which can be changed quickly)**
 - **Not accidents of incompatible implementation
(Which take a long, long time to change)**
- **Much of what we say about access control applies elsewhere**
 - **Priority**
 - **Quality of service**

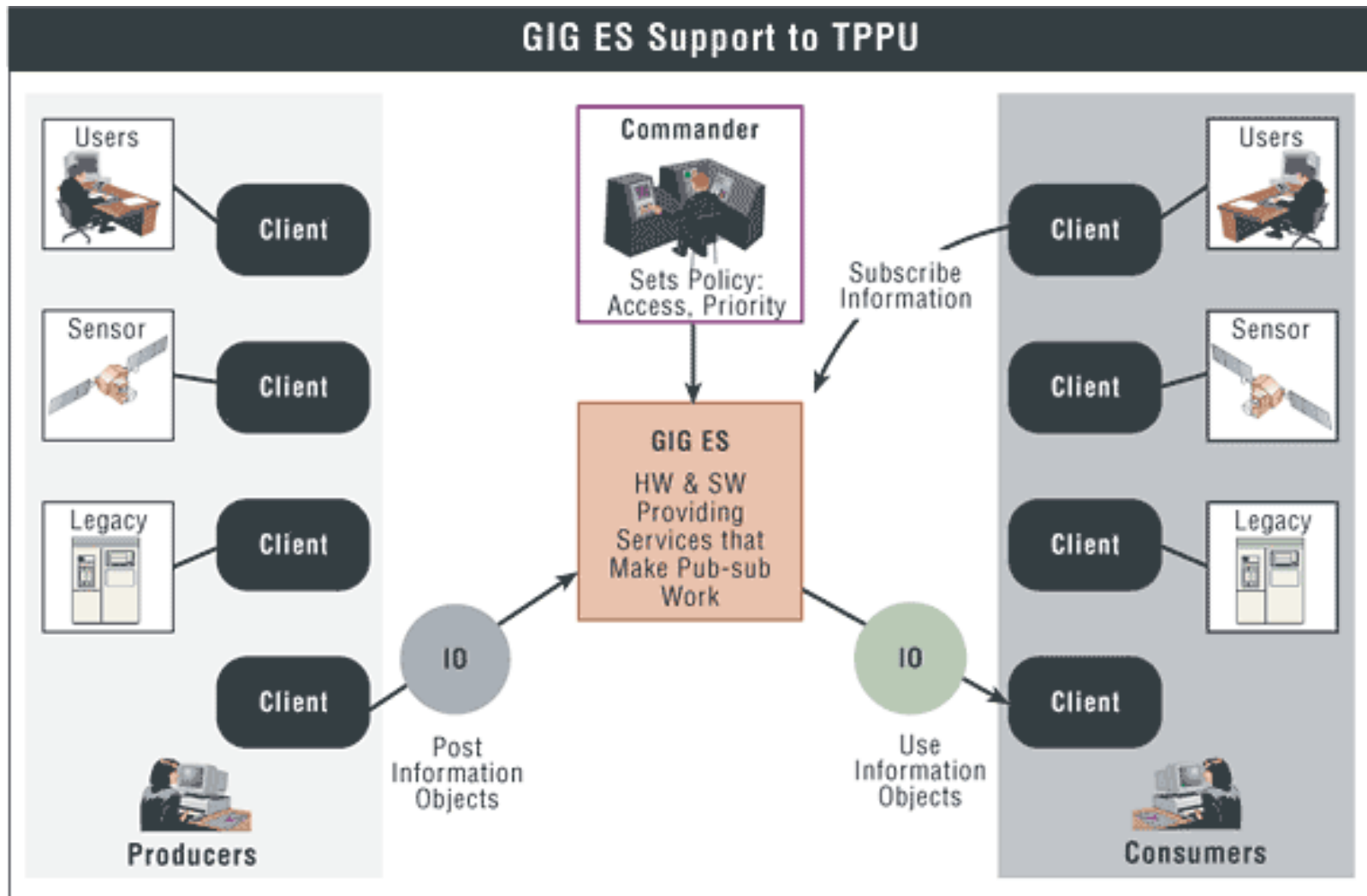
Changes Are Required

- Can't succeed with the old approaches
- Access control via stovepipe systems
- Rigid implementation – control only via air gap physical separation

Information-Based Policy Enforcement

- What are the component parts?
 - Attributes of information that make it sensitive
 - Attributes of consumers that give them access
 - Rules that define policy in terms of those attributes
 - Infrastructure that is trusted to enforce those rules
- This is Attribute-Based Access Control

Task, Post, Process, Use (TPPU) Paradigm



Problems of Administration

- **Managing attribute definitions**
- **Tagging data assets**
- **Assigning privilege attributes to consumers**
- **Scale explodes when many organizations networked together**
- **Creates problems with administration**
 - **Huge “laundry list” of attribute definitions**
 - **Impenetrable “spaghetti” of policy rules**
 - **Far too much administration work**

What Can Help

- **Automated tools**
 - To turn commander's intent into formal policy rules
 - To analyze effect of combining sets of rules
- **Tagging information with the inputs needed to decide, not the outcome of the decision**
- **Administrative conventions, based on**
 - Command authority
 - Organization structure
 - Data asset type

Conclusion

- **Net-centric access control requires**
 - **Attribute tagging for data assets**
 - **Attribute-based policy rules**
 - **Trusted infrastructure to enforce those rules**
- **Large enterprises will require**
 - **Administrative conventions**
 - **Automated support**