

### Enabling Operationally Adaptive Forces

Ideas for Fundamental Change to Acquisition

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## Can we make Acquisitions operationally adaptive?





### **Operationally Adaptive Acquisitions?**





### How are we doing today?

- User input is paper based, hierarchical, choices made inside the beltway
- Capability deliver times measured in months (best case), often years
- Integration of multiple systems: Extremely difficult, time-consuming, and expensive
- RMF is a good start for cyber, but how good is our code? How are we going to continuously monitor?
- Efforts to fix all these are independent





A traditional human-intensive, paper-based design and production process ...



... transitioned into a computer- and model-based mostly automated process

Specification





Solutions exist today for creating an RMA in information systems development, similar to today's mechanical engineering approach



#### ADAPTIVE CAPABILITY DELIVERY OVERVIEW -Code -Eng review trades Parametric -Code -What ifs . . . . . . . . . . . . . . . . -16,000 modern--Dev Test SLOC/Min izing Code Rapid Auto Code **MBSE** Semantic quality/Cyber **Integration &** Generation enabling **Formal model** Provisioning health Feedback Deployment Artificial Intel Capture -Machine elements Learning **ACD** across -Natural DOTMLPF language **Knowledge Base** (PPPPPP) processing -Continuous monitoring -Know. Rep. -Operator feedback -Auto -Rapid updates reasoning -Increase adaptability



# Example: Code Analysis Web Portal

- Project completed < one man-year; integrated 24 separate applications and/or data sources; created semantic interoperability
- CAWP passed NSA Julia data base benchmark code assessment test (estimated at four manyears to review manually; CAWP completed in ten minutes)
- Capabilities:
  - Code Detector determines type of language used
  - Code Analysis Using code analyzers within the Tools Output Integration Framework
  - Report Generator creates reports from TOIF output

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	Show NIST Report	Security Controls Report (NIST 800-53A Revision 4)	CSV	4	
	Show STIGs Report	Application Security and Development (STIGs Version 4 Release 2)	CSV	4	





### Sounds good, but....

### Previous MBSE Programs



**Direct Operator Input** 



From 2003 SIAP Brief

No clean slates/Legacy Systems!!

Who's in charge?





### Continuing Research Areas

- Formal modeling is hard; how to grow enough well trained formal modelers?
- How do we incentivize service acquisition executives, PEOs, PMs, to try these solutions?
- What is the interface/process that enables operators to directly impact requirements?
- What is the concept of operations?