



Enhancing Adoption of Agile Software Development in DoD [To Improve Acquisition Outcomes]

September 22-23, 2015

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***Office of the Secretary of Defense
USD(AT&L) – DASD(C3, Cyber & Business System)***



Conference Objective

“Change is the law of life. And, those who look only to the past or present are certain to miss the future.”

President John F. Kennedy

How will we define the future?





Adopting Agile in DoD

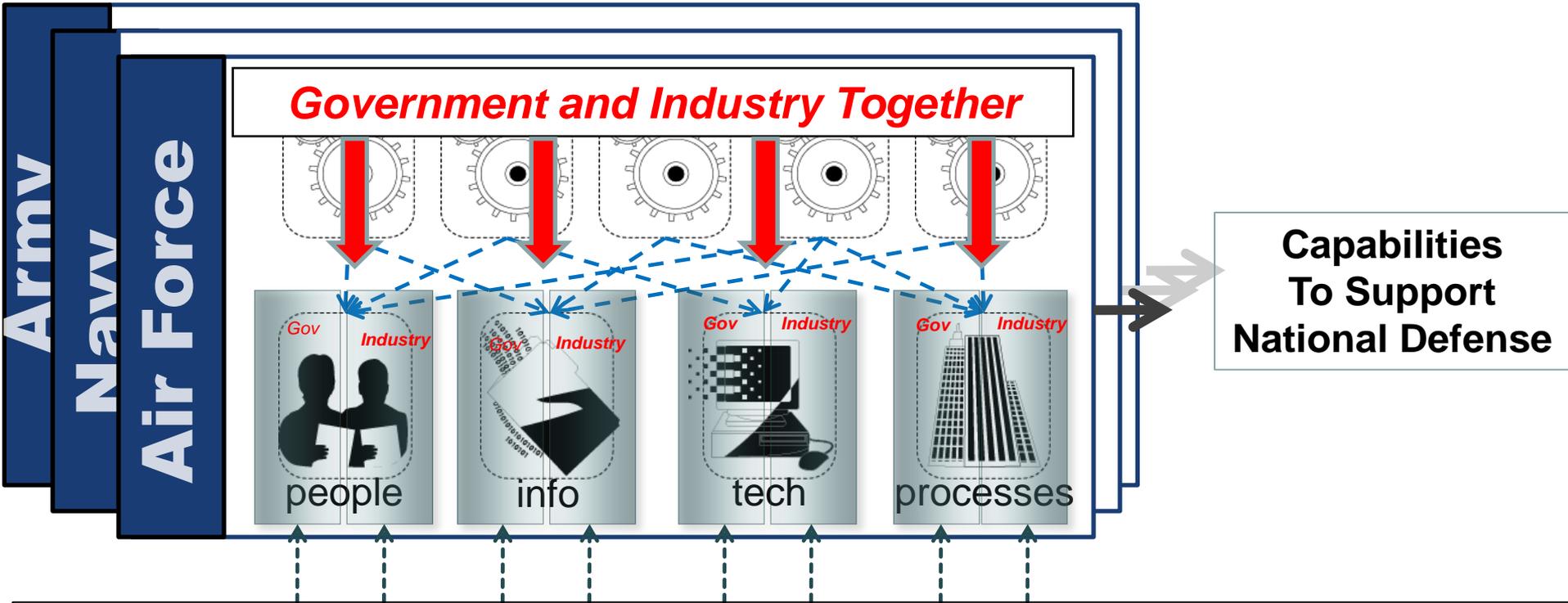
Agile is not highly visible or a major thrust area – limited metrics (like EVM) to show ROI

- Agile is highly visible in identifying inefficient staff utilization.
- Rationale to why major “traditional” DoD suppliers have adopted Agile without Government participating may be driven by competitive forces.
- Feedback from industry teams that are composed of distributed teams across multiple companies indicate they receive daily build status vs. typical monthly (1 financial system a competitive edge).
- Government reviews on Agile programs describe unprecedented metrics & communication across Government- Industry stating “would not go back.”



Adopting Agile in DoD

When is it Right, Why is it Hard



Key Factors (& Possible Barriers) Driving Reform

- **Law** - Critical input that drives priorities and change across eco-system (e.g. WSARA)
- **Policy** - Creates new processes and institutionalizes new approaches (e.g. IT process)
- **Values/Priorities** - Implements best practices to strengthen beliefs (e.g., BBP 3.0)
- **Data** - Provides critical feedback to the key factors (e.g., DoD vs Commercial cycle-time)



2011 National Defense Authorization Act

Section 933

Develop a strategy for the rapid acquisition of tools, apps, and other capabilities for cyber warfare for USCYBERCOM and other cyber operations components of military

- Orderly process for determining, approving operational requirements
- Well-defined, repeatable, transparent, and disciplined process for developing capabilities IAW IT Acquisition process
- Allocation of facilities and other resources to thoroughly test capabilities in development, before deployment and use to validate performance and take into account collateral damage

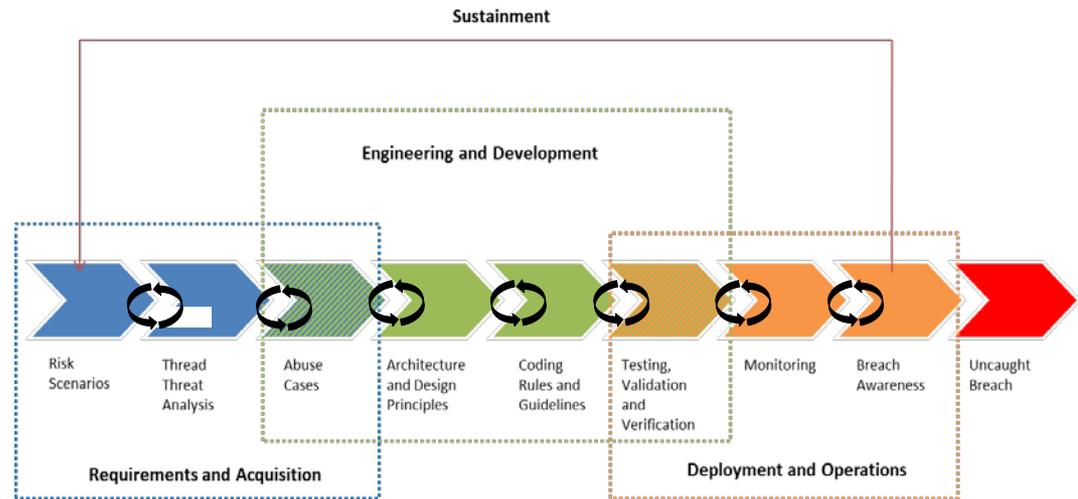
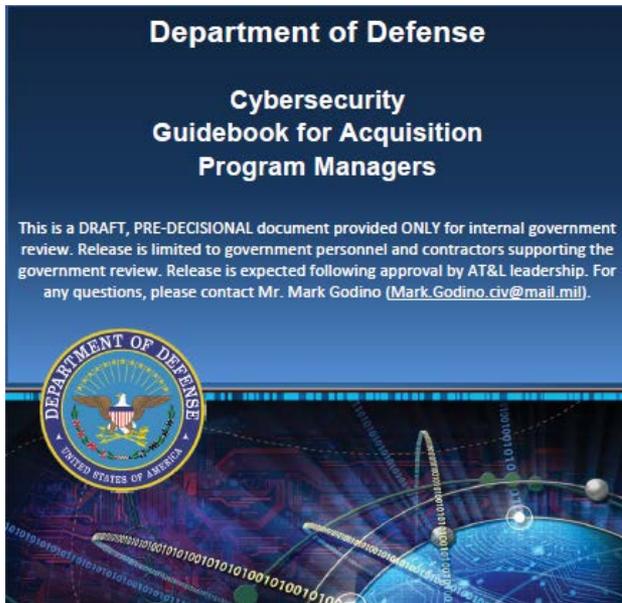


Additional Elements of § 933

- Prevent abuse of quick reaction processes
- Establish reporting and oversight processes
- Maintain cyber T&E facilities, resources
- Orgs responsible for O&M of cyber infrastructure
- Involve independent T&E community
- Role of the private sector
- Roles of each Service/Agency
- Promote info sharing, cooperation, collaboration
- Interoperability, innovation, avoid duplication



Overlapping Cyber & Agile Imperatives



- *DoD Cybersecurity Guide for Acquisition Program Managers, July 1, 2015*
 - *Integrates cybersecurity considerations across the acquisition lifecycle*
 - *Includes treatment of RMF/security controls across requirements, system engineering, test/evaluation and sustainment*
 - *Defines what cybersecurity artifacts are needed in different phases of the acquisition lifecycle*
 - *Defines the roles/responsibility of the cybersecurity officials across the acquisition lifecycle*

Agile and Cyber Cross-over Points: (1) Incremental & Iterative Approach, (2) Emphasize Communication Across Technology Stack, (3) Emphasize 100% Automated Testing, (4) Technical Rigor, (5) Feedback

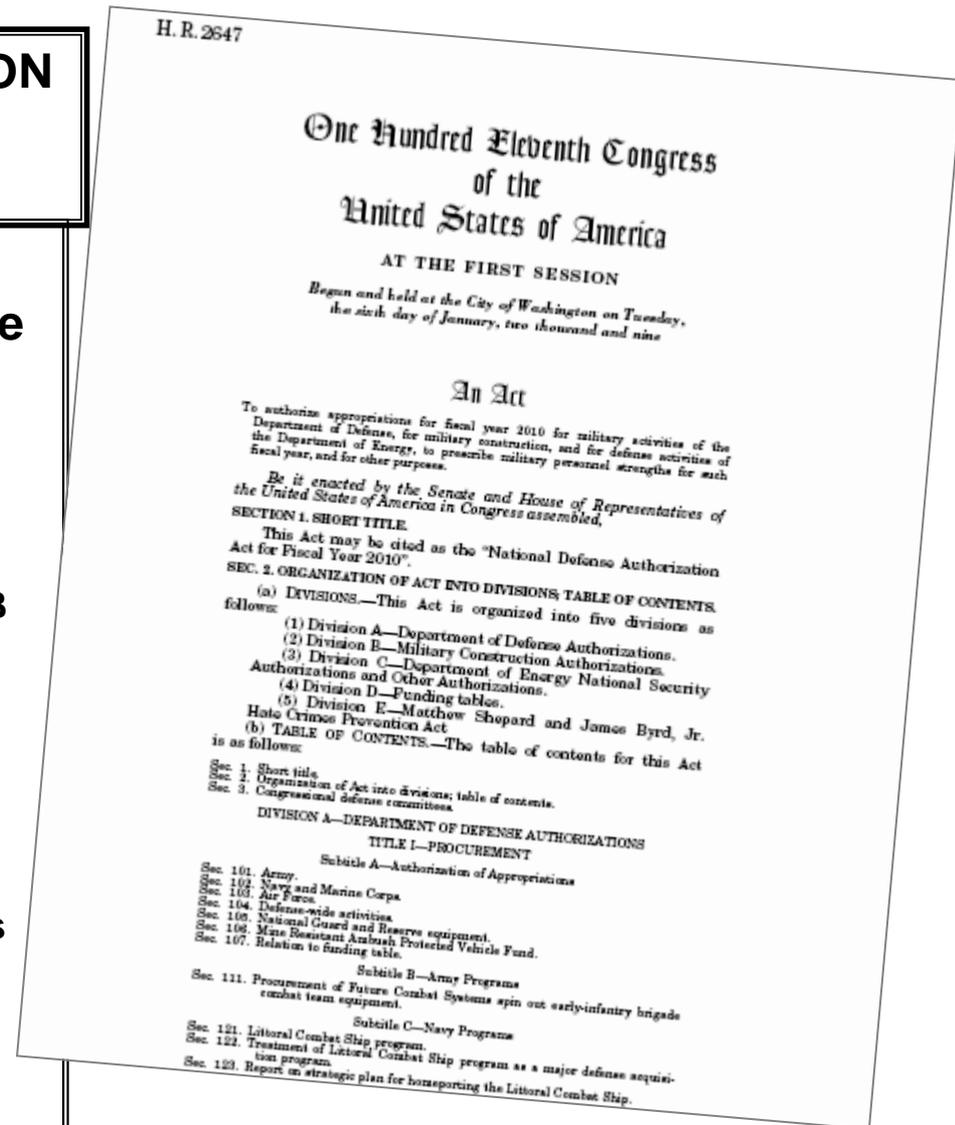


2010 National Defense Authorization Act

Section 804

IMPLEMENTATION OF NEW ACQUISITION PROCESS FOR INFORMATION TECHNOLOGY SYSTEMS

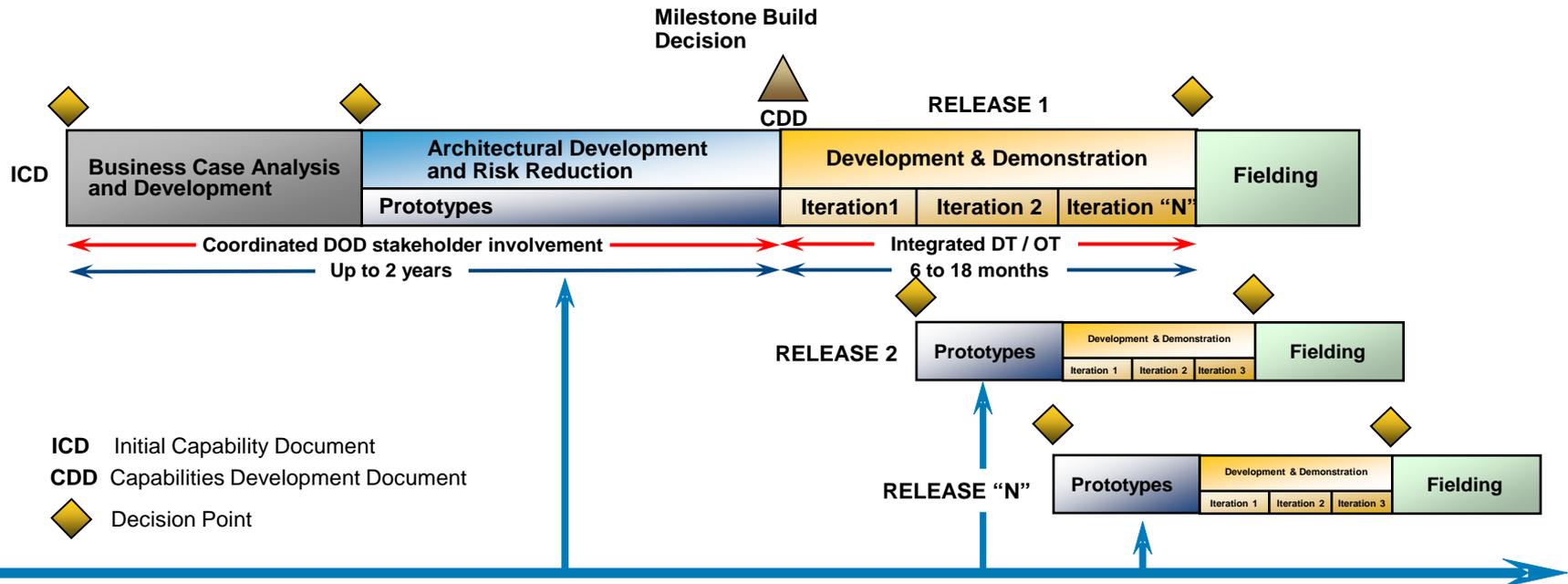
- **NEW ACQUISITION PROCESS REQUIRED** —The Secretary of Defense shall develop and implement a new acquisition process for information technology systems
 - “... Be based on the recommendations in Chapter 6 of the March 2009 report of the DSB Task Force on DoD and Procedures for the Acquisition of Information Technology
 - Ne designed to include—
 - (A) early and continual involvement of the user;
 - (B) multiple, rapidly executed increments or releases of capability;
 - (C) early, successive prototyping to support an evolutionary approach;
 - (D) a modular, open-systems approach





Acquisition Model

Chapter 6 of March 2009 DSB Report



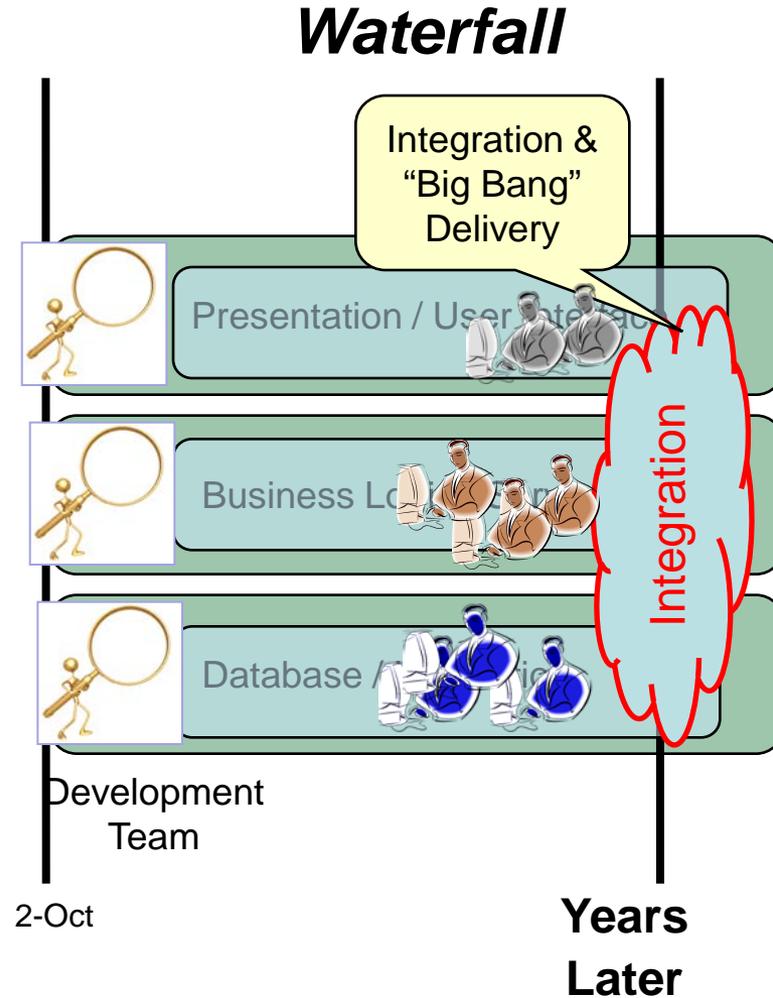
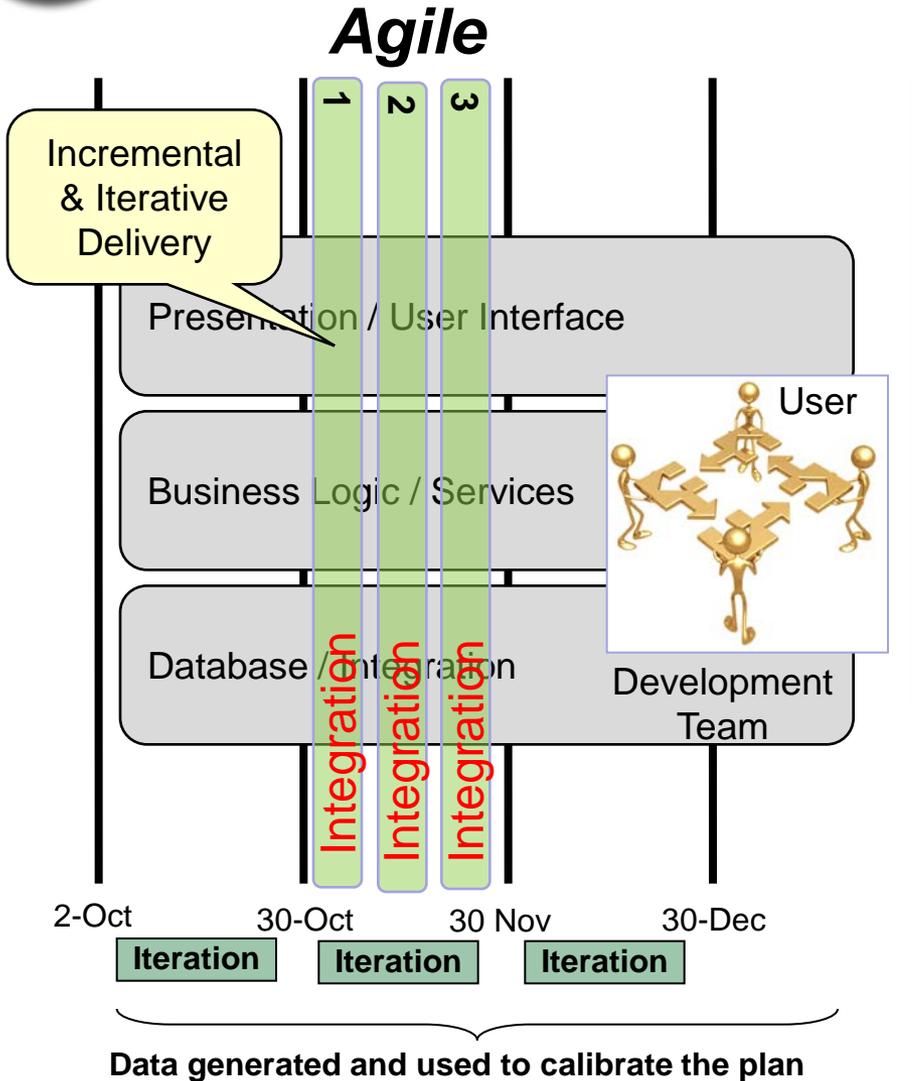
Acquisition Model: Continuous Technology/Requirements Development & Maturation

Impact to Core DoD Processes

- **Requirements:** *From:* fix set of requirements; *To:* evolving requirements & user role throughout
- **Delivery:** *From:* static waterfall model; *To:* Agile model with user feedback driving priorities
- **Governance:** *From:* Driven by Milestones & breaches ; *To:* More frequent review- delivery focused
- **Functional Areas:** *From:* rigor tied to documentation for single milestone;
To: rigor tied to demonstrated risk and delivery of capabilities



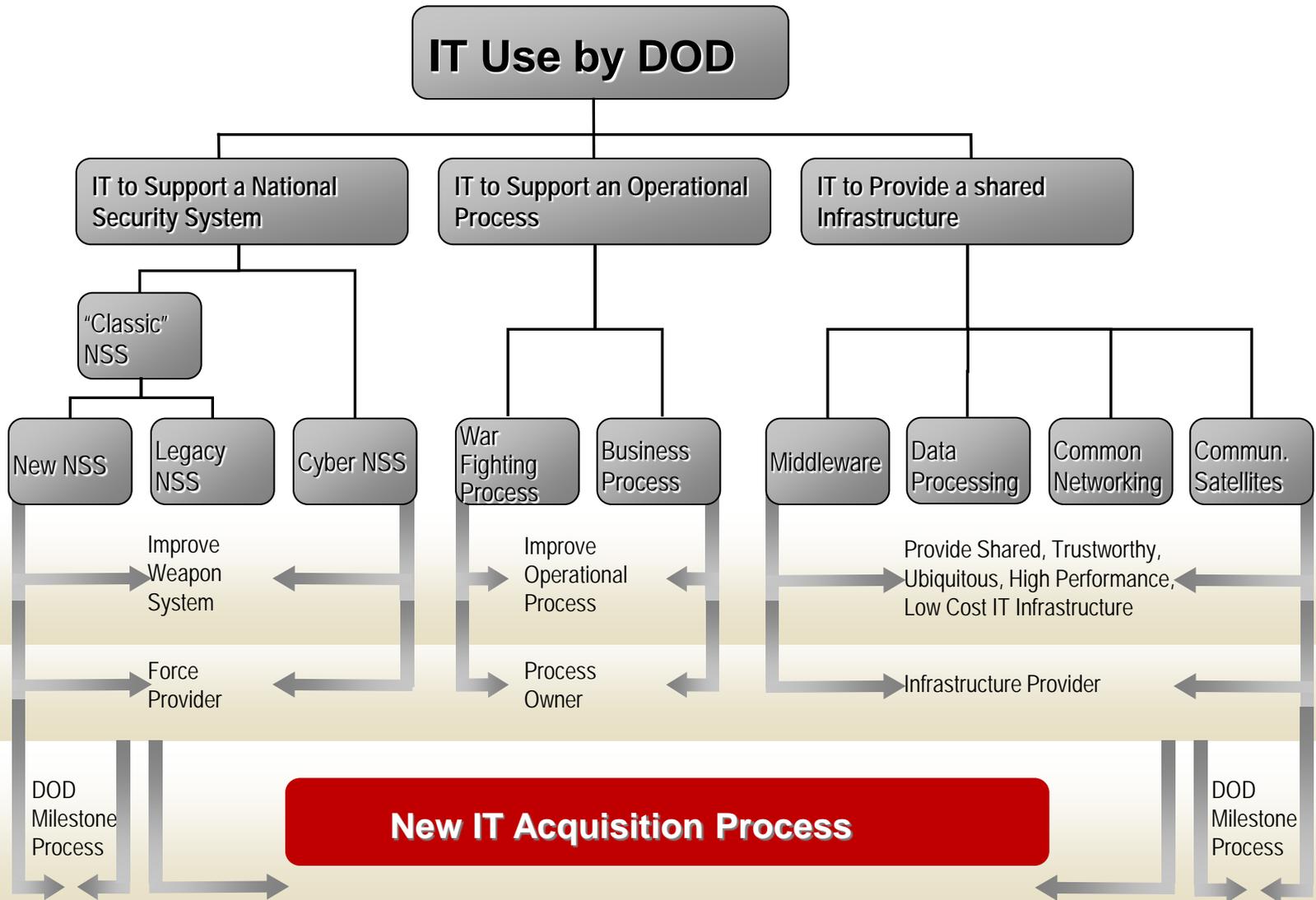
DSB Model Impact on Development



Significantly Changes Workforce Dynamics



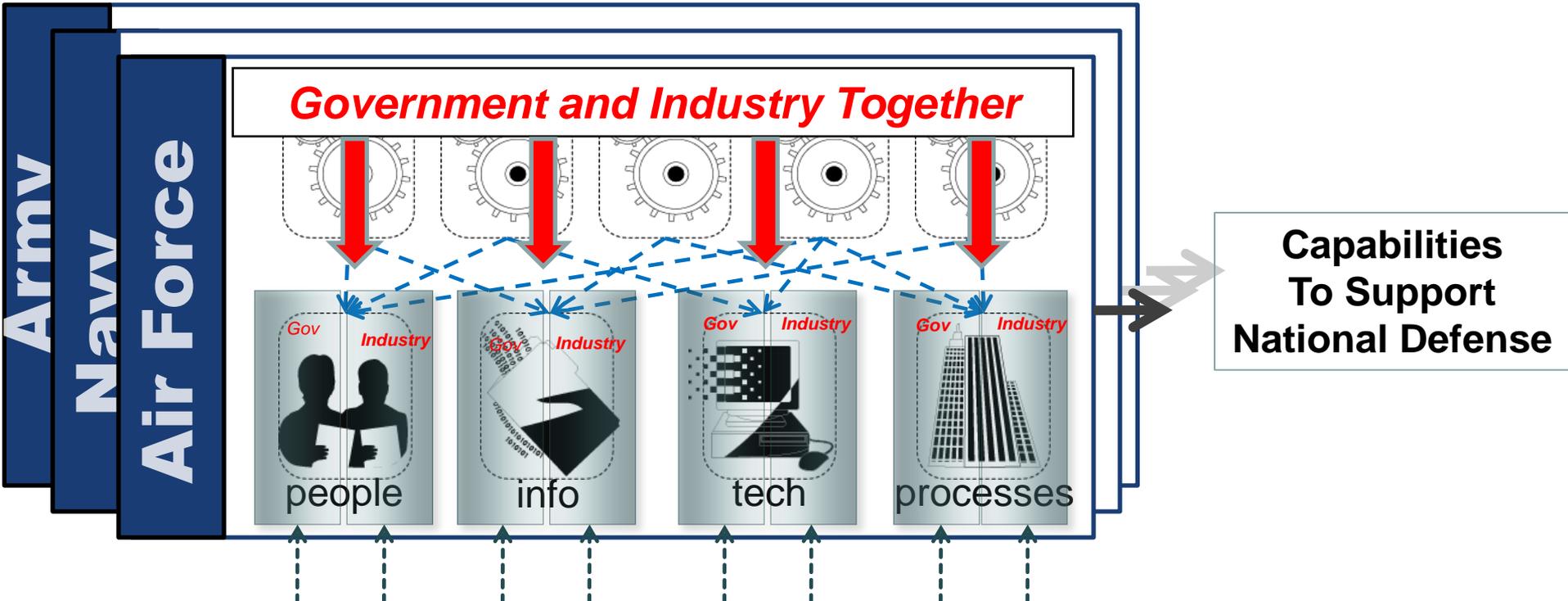
DSB Task Force Recommended Scope





Adopting Agile in DoD

When is it Right, Why is it Hard



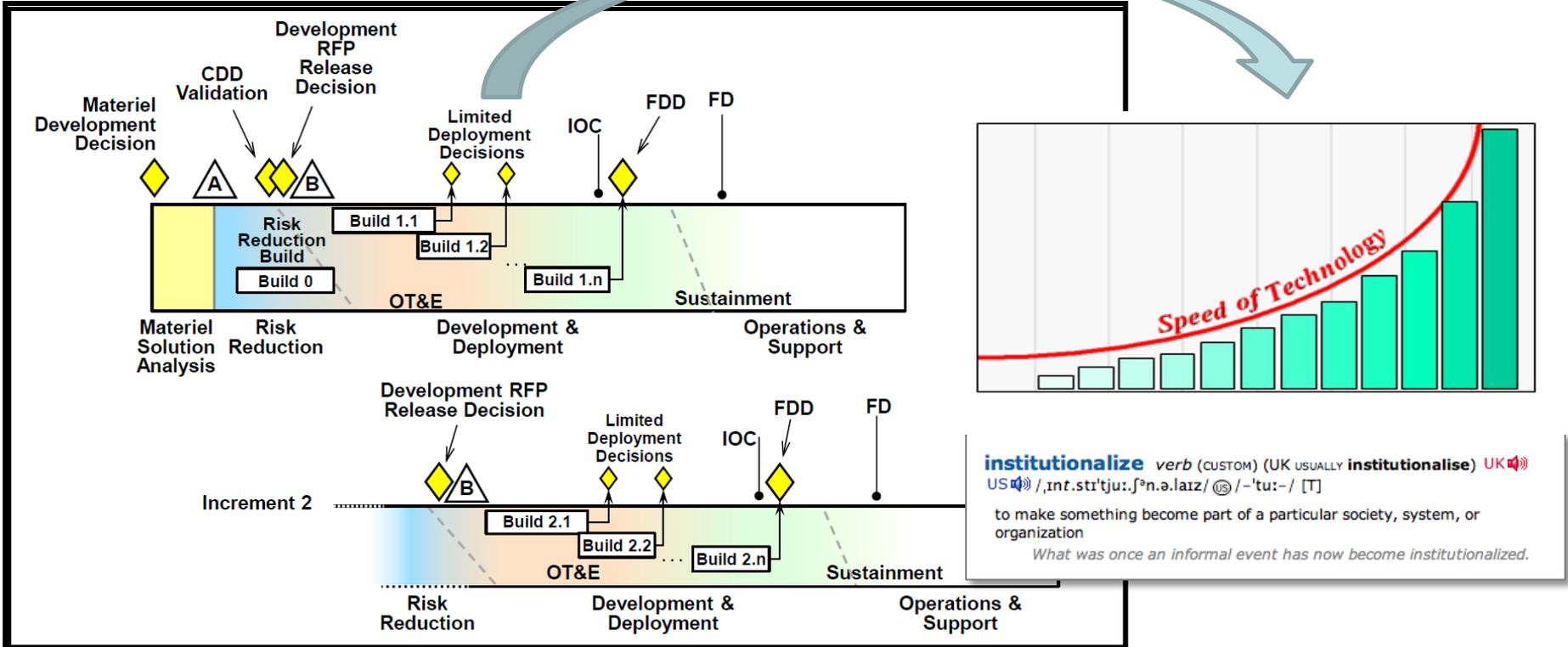
Key Factors Key Factors (& Possible Barriers) Driving Reform

- ✓ ~~Law~~ - Critical input that drives priorities and change across eco-system (e.g. WSARA)
- **Policy** - Creates new processes and institutionalizes new approaches (e.g. IT process)
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Today's DoD Landscape

DoD 5000.02 Embraces Agile Concepts as One of Several Templates



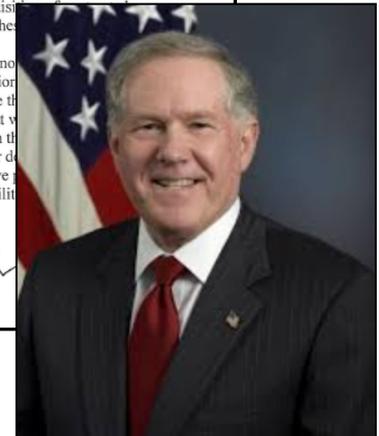
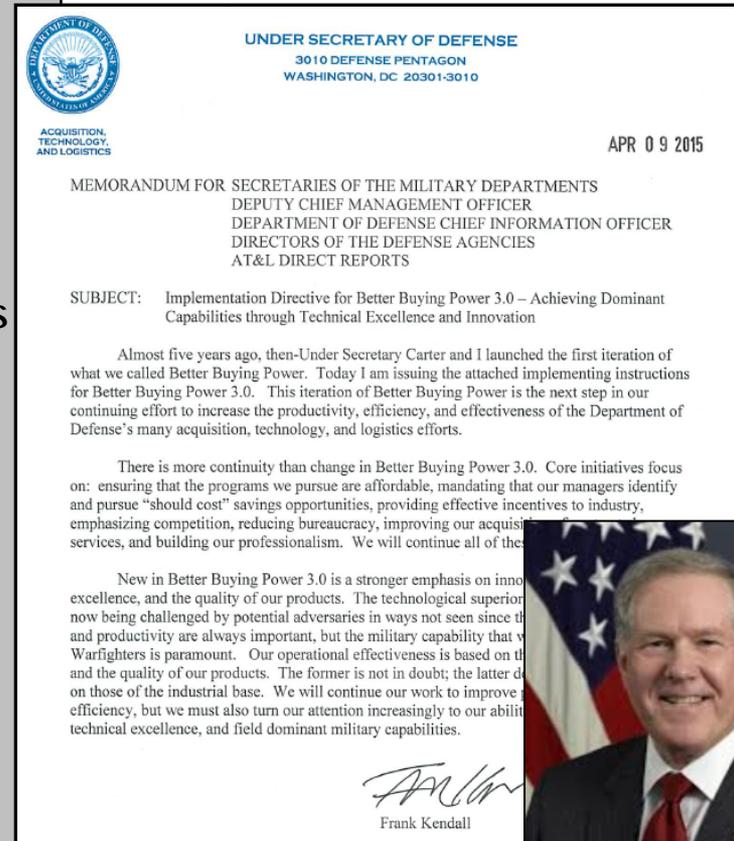
The central feature of this model is the planned software builds – (1) **a series of testable, integrated subsets of the overall capability** – which (2) **together with clearly defined decision criteria**. Several builds and deployments will typically be necessary to satisfy approved requirements for an increment of capability.



Does Agile Have a Role in the Defense Acquisition System?

Today's DoD Landscape Better Buying Power (BBP)

- Strengthen should cost to incentivize productivity
- Reduce cycle times - ensure sound investments
- Eliminate unproductive processes and bureaucracy
- Incentivize innovation
- Achieve affordable programs
- Remove barriers to commercial technology utilization
- Streamline documentation requirements and staff reviews
- Anticipate and plan for responsive & emerging threats
- Emphasize technology insertion and refresh in program planning
- Improve our leaders' ability to understand and mitigate technical risk
- Anticipate and plan for responsive & emerging threats
- Promote effective competition
- Improve the professionalism of the acquisition workforce



Federal Acquisition Regulation (FAR), DoD 5000, BBP and Emphasis Areas are Consistent With Agile



Inspiring New Test Processes

- It is expected a large portion of the test strategy for Information and Business Systems will utilize an integrated test approach.
- The degree of independent operational testing appropriate for each software increment or capability can be tailored by using the risk analysis described in the attached guidelines.
- The guidelines also permit delegation of test plan approval using the same criteria
- Continuous test a new normal
- Capability bundles to be tested, recombined and retested
- Emphasis on enterprise evaluation (aka program of record within the ecosystem)



OPERATIONAL TEST
AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE
1700 DEFENSE PENTAGON
WASHINGTON, DC 20301-1700

SEP 14 2010

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF THE ARMY, TEST & EVALUATION COMMAND
DEPUTY, DEPARTMENT OF THE NAVY TEST & EVALUATION EXECUTIVE
DIRECTOR, TEST & EVALUATION HEADQUARTERS, U.S. AIR FORCE
TEST AND EVALUATION EXECUTIVE, DEFENSE INFORMATION SYSTEMS AGENCY
COMMANDER, ARMY TEST AND EVALUATION COMMAND
COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE
COMMANDER, AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER
DIRECTOR, MARINE CORPS OPERATIONAL TEST AND EVALUATION ACTIVITY
COMMANDER, JOINT INTEROPERABILITY TEST COMMAND

SUBJECT: Guidelines for Operational Test and Evaluation of Information and Business Systems

To support **agile acquisition of** Information and Business Systems, guidelines may be substituted in place of the traditional operational test approach described in DoD Instruction 5000.02 of December 8, 2008, *Defense Acquisition System*.

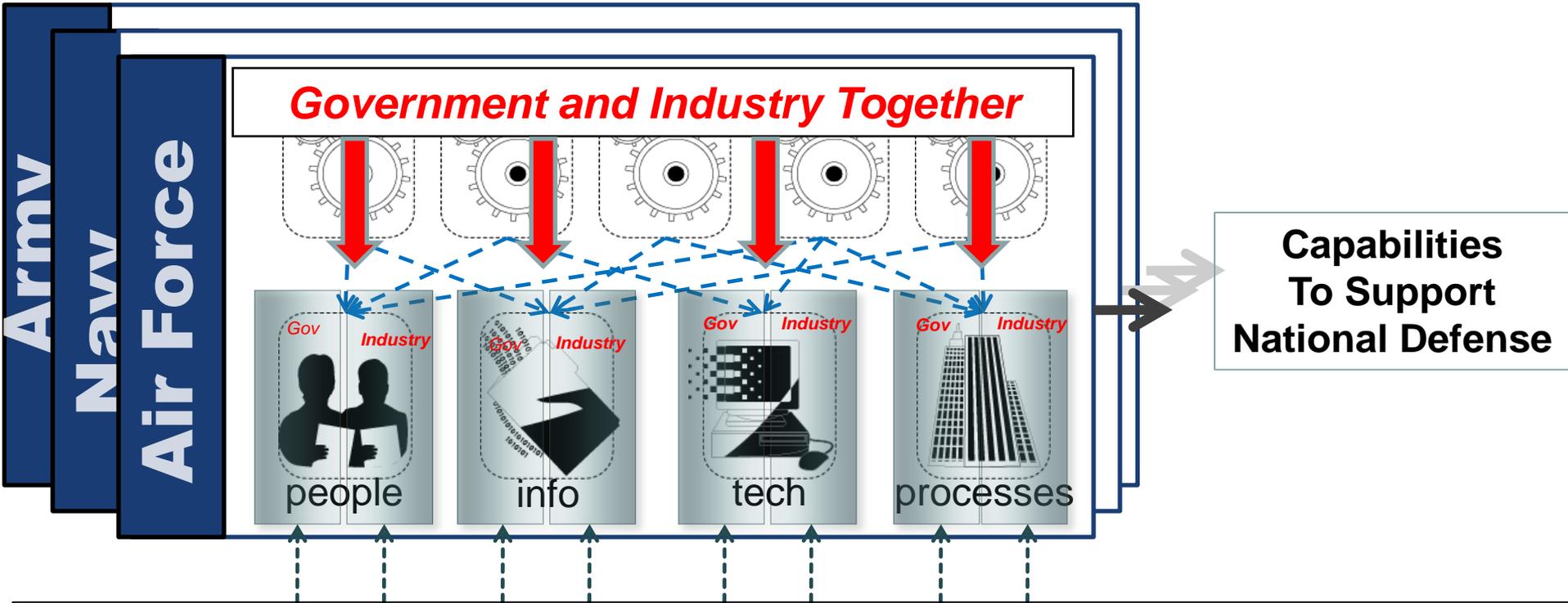
It is expected a large portion of the test strategy for Information Systems will utilize an integrated test approach. The degree of independent testing appropriate for each software increment or capability can be tailored by using the risk analysis described in the attached guidelines. The guidelines also permit delegation of test plan approval using the same criteria. These guidelines do not apply to systems or strategic and tactical command and control systems.





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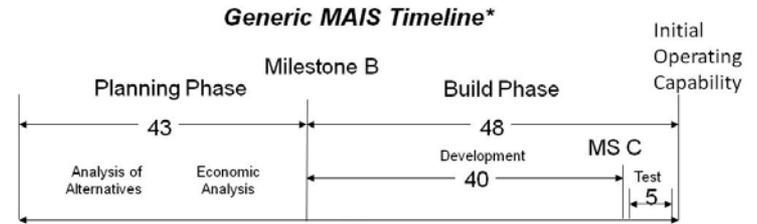
Key Factors Driving Reform Across Government & Industry

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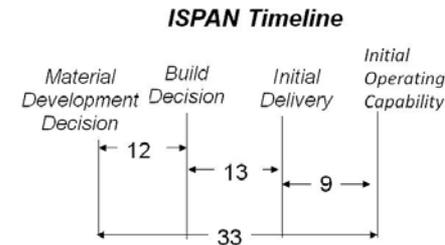


Feedback on 1st Section 804 Pilot – Employing Agile Principles

- Approved by USD(AT&L) (Dr Carter) in 2010 and results summarized in SAF/AQ White Paper in 2013
- 1st “IT Box” JROC delegated requirements validation authority to a Combatant Command
- Created DEVOPS Environment
 - Co-located PMO and Users leveraging both development and sustainment to add value
 - Not about constraining req'ts growth but understanding ops environment and priorities
- Created a Functional Manager (peer to PM)
- Created annual Expectation Management Agreements & Capability Roadmaps
 - Planning for change within development
 - Approved by PEO and peer his within using community
- Eliminated milestones, OIPT, etc. and replaced with a regular cadence of stakeholder reviews
 - Capability adoption and requirements oversight became core oversight topics equal to cost/sch/perf



* DSB Report, 2009, Average of 32 MAIS



Numbers represent time in months

- Time between MS B and IOC reduced 5x from Increment 1 program to Increment 2 program
- Partnership (PMO, FMO, KTR) understood and communicated the consequences of change
- Provided enhanced visibility into metrics and communications across all levels
- Demonstrating that eliminating Milestone C (and its documentation requirements) did not increase the program risk

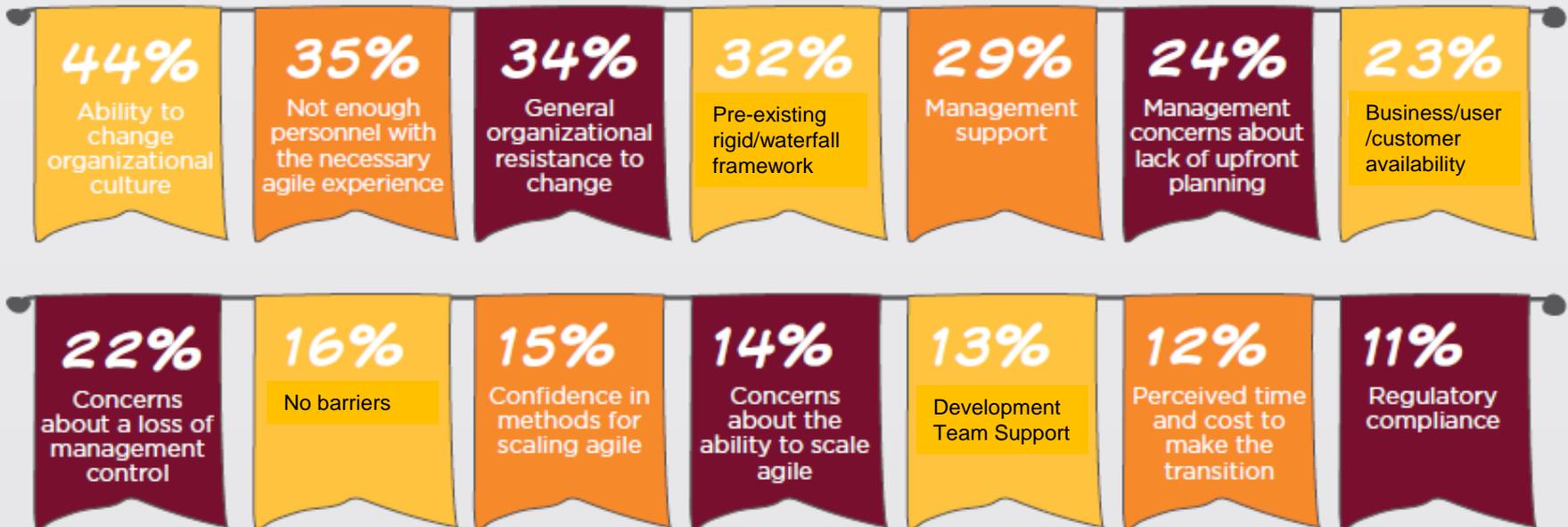
Tomorrow's Breakout Barrier to Further Agile Adoption

From the perspective of the Agile community...

BARRIERS TO FURTHER AGILE ADOPTION

At the agile initiative level, respondents cited organizational culture or a general resistance to change as their biggest barriers to further agile adoption, followed by not having the right skill set.

*Respondents were able to make multiple selections.



VersionOne: 9th Annual State of Agile Survey (2015)



Tomorrow's Breakout

Barrier to Further Agile Adoption With DoD

From my perspective ...

Barriers to Change ...





Where is DoD Heading ?

- **Innovation driven by commercial sector for IT**
 - **Dynamic cyber threat – sophisticated, always present, and indiscriminate**
 - **Expectations for enhanced efficiency**



In Future, Expect Agile to Play A Larger Role in DoD