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Software Engineering Institute

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## Agile Methods: Tools, Techniques, and Practices for the DoD Community

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See her full bio at:

[www.sei.cmu.edu/go/agile-research-forum/](http://www.sei.cmu.edu/go/agile-research-forum/)



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# Agenda

The Problem

Setting the context

Our Journey

Solving the problem

Differences Between Traditional and Agile Methods

Comparing cultural elements



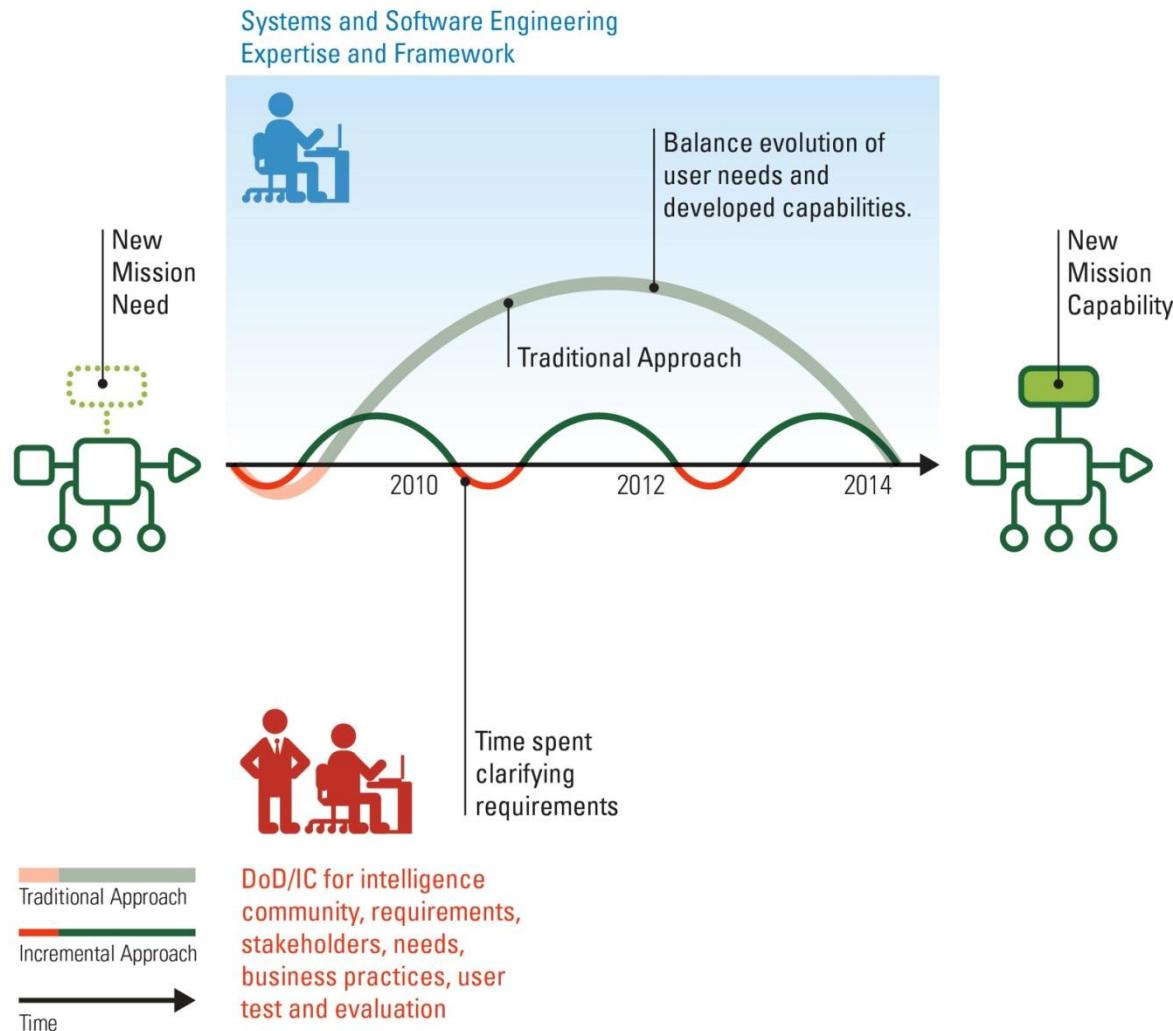
# Polling Question

**Please identify yourself as one of the following:**

- DoD Program Office
- Federal Program Office (non-DoD)
- Contractor – Federal or DoD
- Commercial
- Consultant for tools/process
- Other

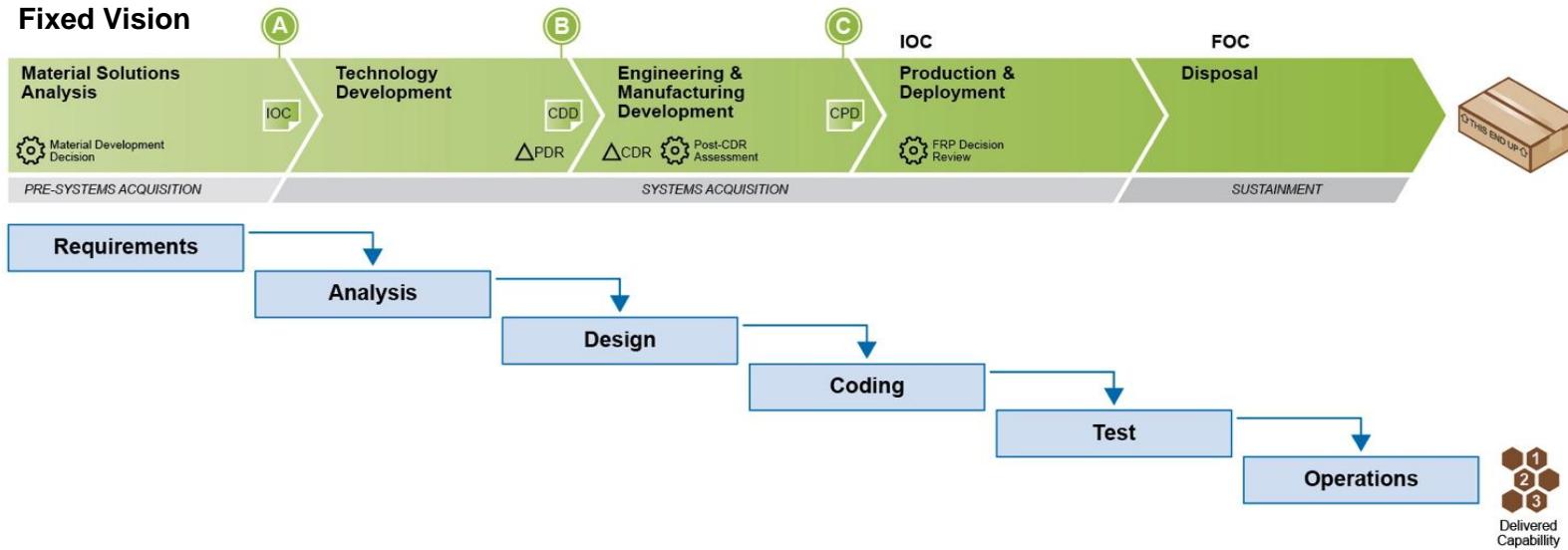


# Acquisition and Innovation

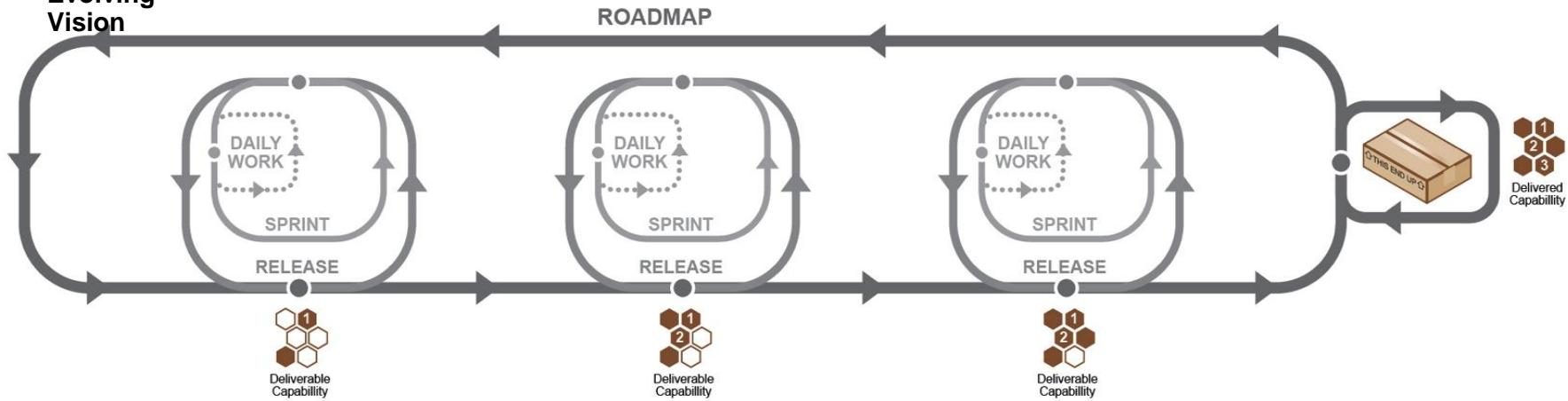


# Alternate Worlds

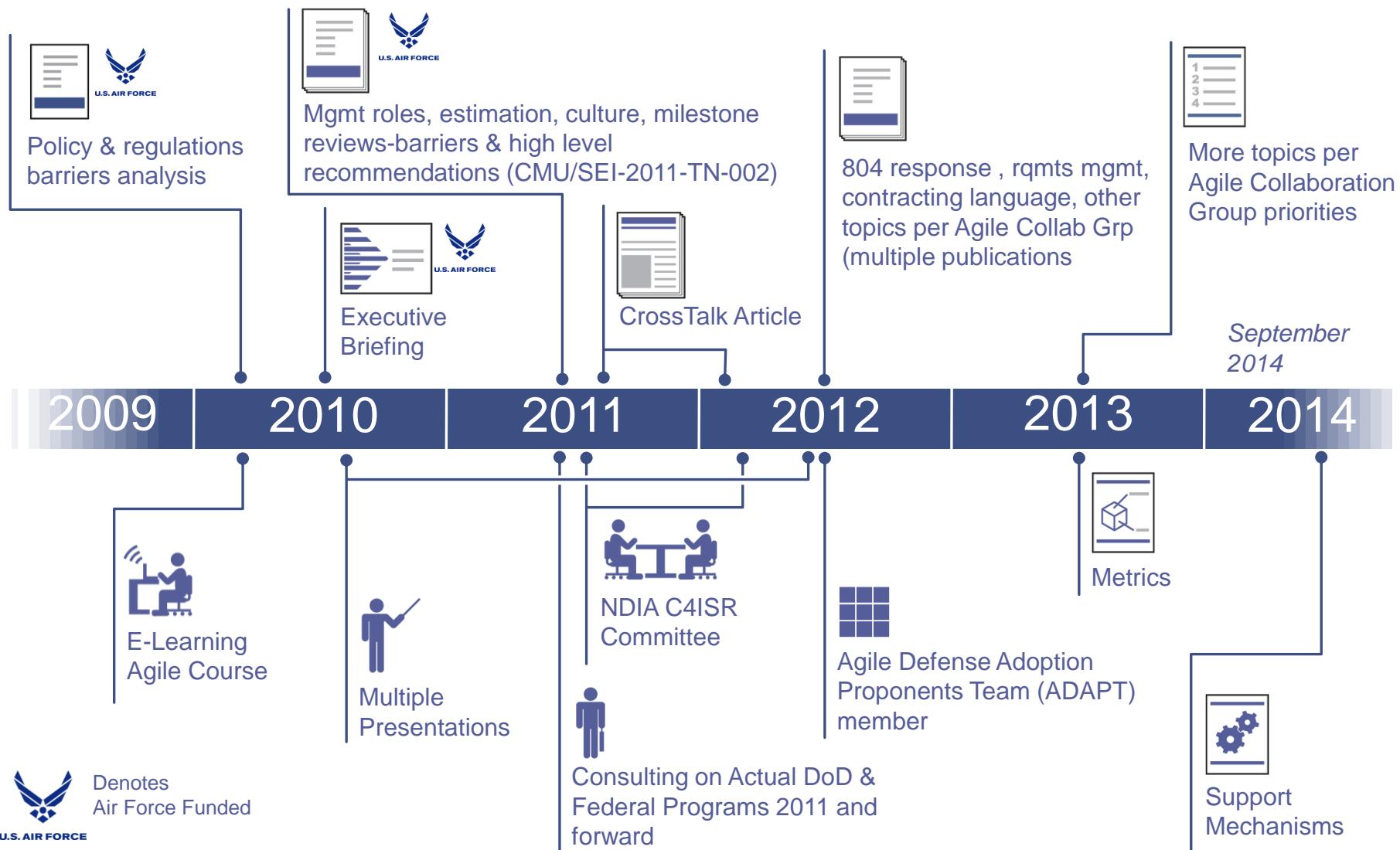
## Fixed Vision



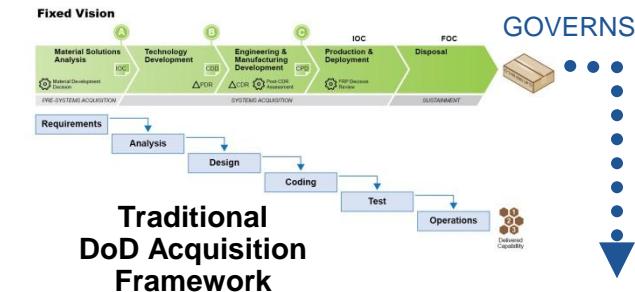
## Evolving Vision



# SEI ASP Agile Portfolio FY10 -14 (Our Journey)

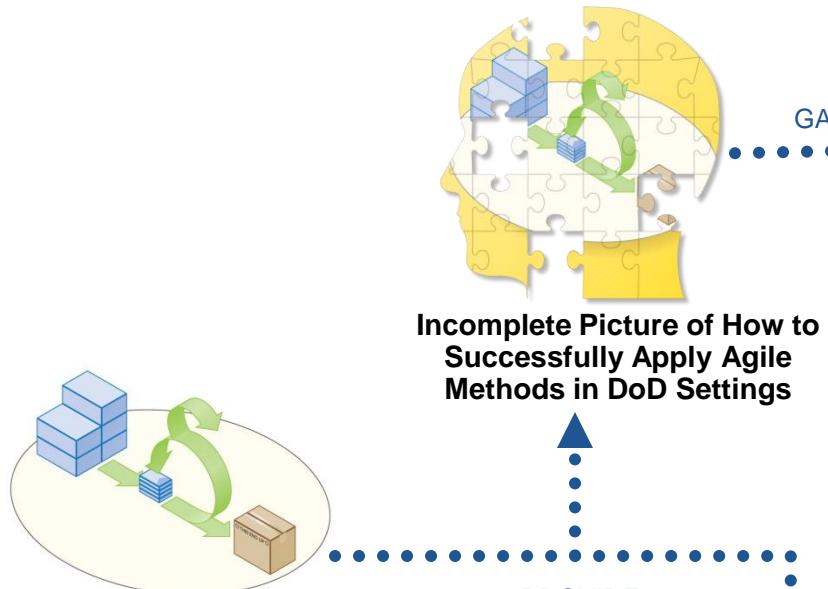


# Guiding Scenario



Traditional  
DoD Acquisition  
Framework

Using elements of grounded theory  
and action research



Agile & Lean Principles from  
Successful Commercial Use

Incomplete Picture of How to  
Successfully Apply Agile  
Methods in DoD Settings

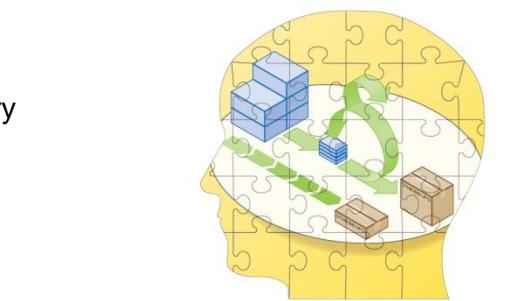
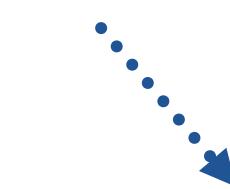
PROVIDE  
POTENTIAL  
IMPROVED  
PRACTICES

GAPS

DoD Stakeholders

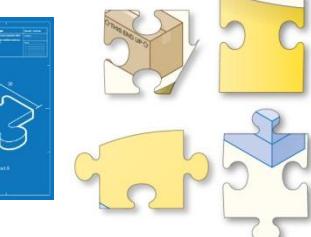
CHARACTERIZE  
GAPS AND NEEDS

SEI Candidate Tools,  
Techniques, Models, Practices



Actionable DoD-centric  
Agile Methods for  
Acquisition Practitioners

PILOT/DISSEMINATE



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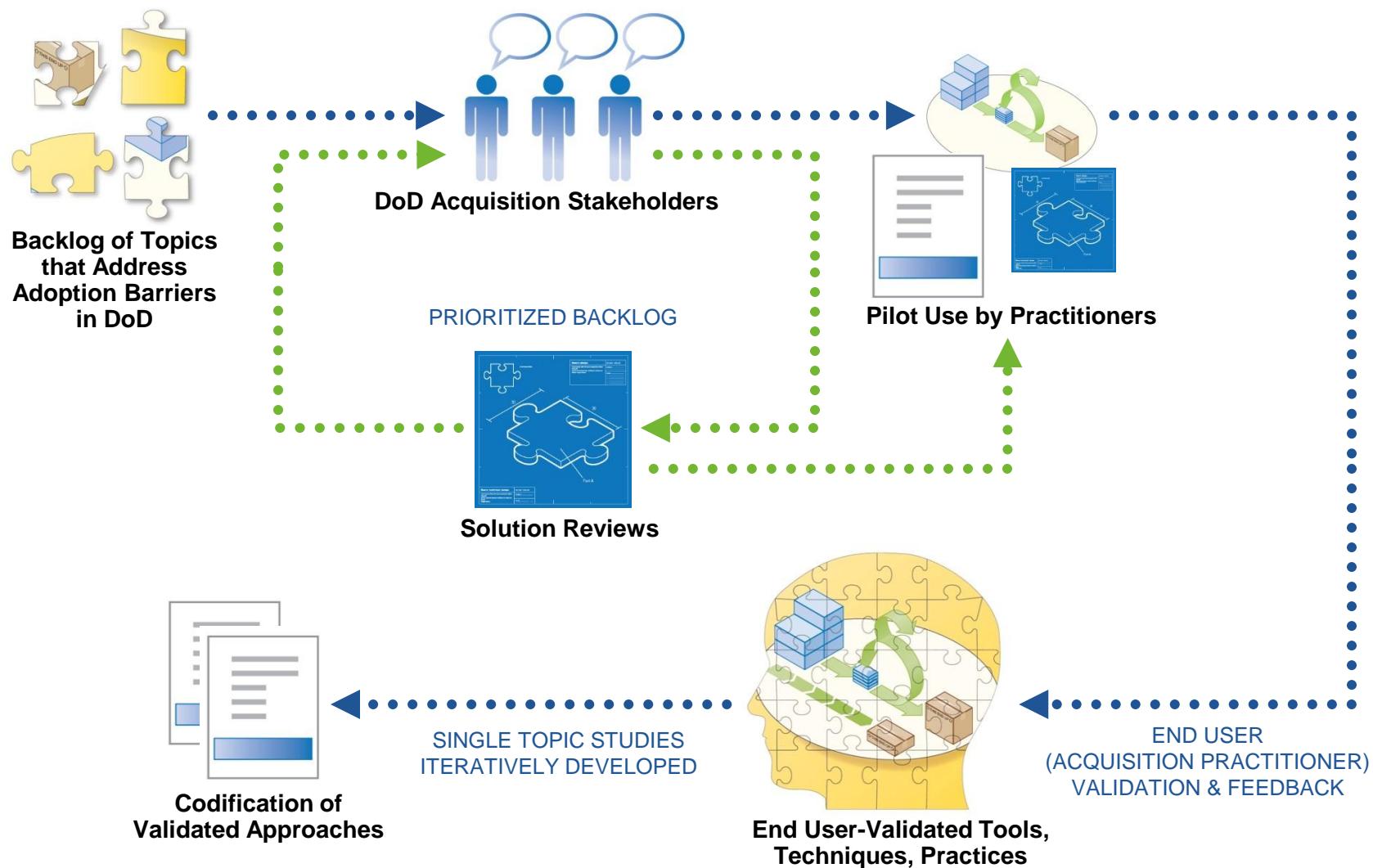
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# Using Agile Methods to Study Agile Methods



# What is different about lean/agile methods from basic incremental delivery?

## Traditional Incremental Delivery

Developer-Acquirer relationship at arm's length

Hierarchical, command-and-control based teams

Leader as keeper of the vision and primary source of authority to act

Traditional, representational documents used by PMO to oversee the progress of the developer

Lifecycle model with separate teams, particularly for development and test; some IPTs to involve multiple functions

## Agile Methods

Develop-Acquirer-End User collaboration

Collocated teams or strong communication mechanisms when teams are distributed

Facilitative leadership and leader as champion and team advocate

“Just enough” documentation, highly dependent on product context

Cross-functional teams including all roles across the lifecycle throughout the lifespan of the project

<http://www.sei.cmu.edu/library/abstracts/reports/11tn002.cfm?DCSext.abstractsource=SearchResults>



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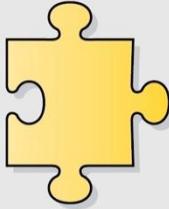
# Polling Question

## How Big a Challenge is Your Adoption of Agile Practices?

- large, we need a culture change
- medium, we are running into issues
- small, we are mostly ready
- no challenge at all



# Comparison of Agile and Traditional DoD Cultural Elements<sub>1</sub>

Knowledge Piece	Method	
<b>Organizational Structure</b> 	<b>Agile DoD</b> <ul style="list-style-type: none"><li>• Flexible and adaptive structures</li><li>• Self-organizing teams</li><li>• Collocated teams or strong communication mechanisms when teams are distributed</li></ul>	<b>Traditional DoD</b> <ul style="list-style-type: none"><li>• Formal structures that are difficult to change</li><li>• Hierarchical, command-and-control-based teams</li><li>• Integrated product teams that have formal responsibilities</li></ul>
<b>Leadership Style</b> 	<b>Agile DoD</b> <ul style="list-style-type: none"><li>• Facilitative leadership</li><li>• Leader as champion and team advocate</li></ul>	<b>Traditional DoD</b> <ul style="list-style-type: none"><li>• Leader as keeper of vision</li><li>• Leader as primary source of authority to act</li></ul>

<http://www.sei.cmu.edu/library/abstracts/reports/11tn002.cfm?DCSext.abstractsource=SearchResults>



# Comparison of Agile and Traditional DoD Cultural Elements<sub>2</sub>

Knowledge Piece	Method	
<b>Rewards System</b> 	<b>Agile DoD</b> <ul style="list-style-type: none"><li>• Team is focus of reward systems</li><li>• Sometimes team itself recognizes individuals</li></ul>	<b>Traditional DoD</b> <ul style="list-style-type: none"><li>• Individual is focus of the reward system</li></ul>
<b>Staffing Model</b> 	<b>Agile DoD</b> <ul style="list-style-type: none"><li>• Cross-functional teams including all roles across the life cycle throughout the lifespan of the project</li><li>• Includes an Agile advocate or coach who explicitly attends to the team's process</li></ul>	<b>Traditional DoD</b> <ul style="list-style-type: none"><li>• Uses traditional life-cycle model with separate teams, particularly for development and testing</li><li>• Different roles are active at different defined points in the life cycle and are not substantively involved except at those times</li></ul>

<http://www.sei.cmu.edu/library/abstracts/reports/11tn002.cfm?DCSext.abstractsource=SearchResults>



# Comparison of Agile and Traditional DoD Cultural Elements<sub>3</sub>

Knowledge Piece	Method
<p><b>Communications &amp; Decision Making</b></p> 	<p><b>Agile DoD</b></p> <ul style="list-style-type: none"><li>• Daily stand-up meetings</li><li>• Frequent retrospectives to improve practices</li><li>• Information radiators to communicate critical project information</li><li>• Evocative documents to feed conversation</li><li>• “Just enough” documentation, highly dependent on product context</li></ul> <p><b>Traditional DoD</b></p> <ul style="list-style-type: none"><li>• Top-down communication structures dominate</li><li>• External regulations, policies and procedures drive the focus of work</li><li>• Indirect communications, like documented activities and processes, dominate over face-to-face dialogue</li><li>• Traditional, representational documents used by the PMO throughout the development life cycle to oversee the progress of the developer</li><li>• PMO oversight tools focused on demonstrating compliance vs. achieving insight into progress</li></ul>

<http://www.sei.cmu.edu/library/abstracts/reports/11tn002.cfm?DCSext.abstractsource=SearchResults>



# Agile Work – Published and in Process

## Published

- **Considerations for Using Agile in DoD Acquisition**  
<http://www.sei.cmu.edu/library/abstracts/reports/10tn002.cfm?DCSext.abstractsource=SearchResults>
- **Agile Methods: Selected DoD Management and Acquisition Concerns**  
<http://www.sei.cmu.edu/library/abstracts/reports/11tn002.cfm?DCSext.abstractsource=SearchResults>
- **A Closer Look at 804: A Summary of Considerations for DoD Program Managers**  
<http://www.sei.cmu.edu/library/abstracts/reports/11sr015.cfm?DCSext.abstractsource=SearchResults>
- **DoD Agile Adoption: Necessary Considerations, Concerns, and Changes**  
<http://www.crosstalkonline.org/issues/janfeb-2012.html>

## In Process Topics

- Information Assurance
- Requirements
- Contracting language and contract types
- Contingency Model (Readiness and Fit to use agile)
- Programmatic
- Guide to Agile terminology from a traditional viewpoint



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# Q&A

Acquisition Support Software Product Lines  
System of Systems

Performance & Dependability  
Security & Survivability Risk & Opportunity Management  
**Ultra-Large-Scale Systems**

Smart Grid

**Explore Our Work**

Digital Intelligence and Forensics  
Measurement & Analysis  
Process & Performance Improvement

