

Making Agile Work in Government

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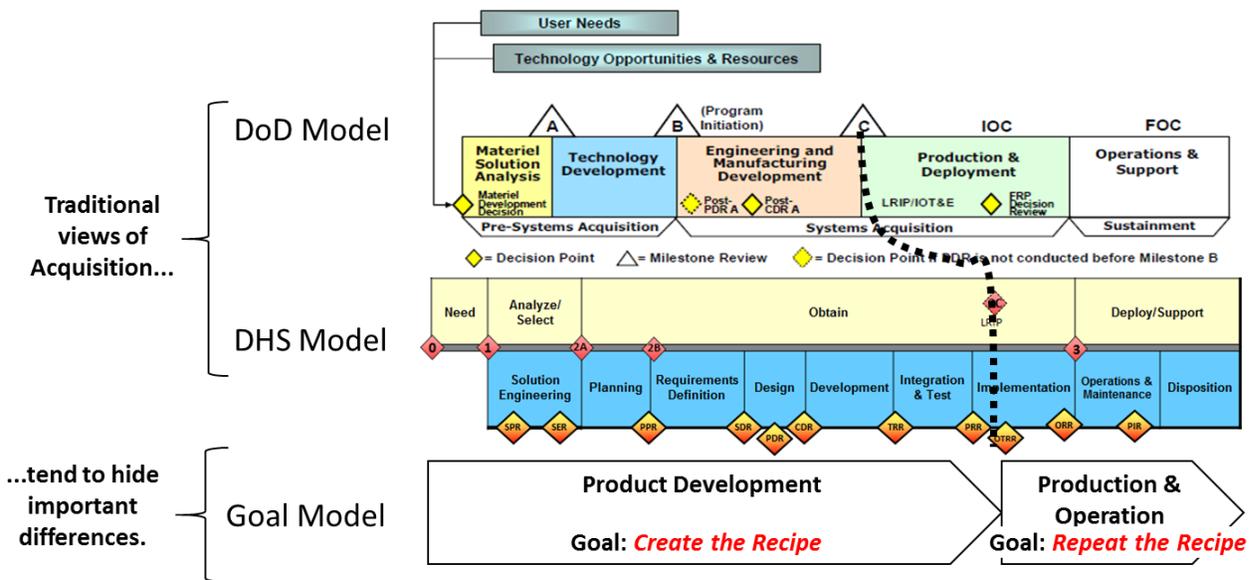
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The Standish Group has collected case information on over 90,000 IT software development projects since 1985. The most recent findings in analyzing this data shows that a large project is 10 times more likely to fail than a small project¹. Agile methods can provide a powerful engine inside of an acquisition program that aligns well with the successful small project model thus drastically improving the program's chances for success. To better understand the advantages offered by Agile methods, and some of the challenges when implementing Agile in government, MITRE offers a different perspective on the Acquisition lifecycle used within the government.

Typical Government Acquisition models generally illustrate a seamless end-to-end process². This view, and the waterfall approach they imply, present a cycle where one phase is completed before moving onto the next. There are many reasons why this view of Acquisition has developed in the Government (e.g., funding constraints, governance at a distance, etc.); however this view of a single, serial Acquisition process hides differences that exist depending upon where you are in the lifecycle. Most importantly, the goal sought at the front of the model (i.e. in concept, development, demonstration) is quite different from the goal sought at the end of the model (in production and operations), as illustrated below.

Different Goals, Different Values...



At the front of the Acquisition model (i.e., in product development) success depends upon rapid cycles through requirements and design which allows designers to quickly and iteratively gather feedback on proposed solutions; and make needed adjustments to the design based on that feedback. This pattern of rapidly iterating through numerous designs is not new. In fact, it has always been the engine of the successful innovator in product

¹ See the Standish Group Report *Chaos Manifesto 2013* for a full discussion of this data

² The Acquisition Model used here is the one traditionally presented in DoD

development³. Many examples can be cited – Thomas Edison⁴, Kelly Johnson⁵, and Steve Jobs⁶.

A challenge in Government Acquisition has been a tendency to apply the methods important at the back end of the life cycle (i.e., methods associated with production) inappropriately to activities at the front end of the model, where the goal of activity (i.e., concept and product development) is quite different. For example, activities such as controlling scope through detailed requirements specifications are effective if one presupposes a production mindset where variability is discouraged. This control mindset is important in manufacturing and production environments since variation interferes with the consistent reproduction of products based on established product quality standards. However, in product design and development, variation, change, and innovation can create real opportunities. Here the ability to rapidly evaluate, react and adapt to change should be valued. It is experimentation that allows innovators to find the best solution design from among many possible designs.

Bringing back focus on the importance of accepting change and encouraging experimentation as a means to achieve greater value when engaged in product development activities, Agile methods have become popular in the last several years. Most of the Agile methods are based on a particular way of thinking, or mindset, as stated by the values and principles in the Agile Manifesto⁷. This Agile mindset serves as a guide when attempting to successfully implement Agile practices. As development and management practices are implemented, they are adapted based on this mindset which recognizes the importance of learning and change, as well as the need for people to work together in a collaborative fashion. Attitudes and opinions on particular practices are guided by the mindset contained in the Agile Manifesto – it is a sort of litmus test applied to gauge the value and practicality of any specific management and development practices being considered.

Government Challenges When Adopting Agile

In 2012, the Government Accountability Office (GAO) identified 14 challenges in adapting and applying Agile in the Federal government⁸. The majority of these challenges can be traced back to the fact that Federal Agencies that have attempted Agile adoption have often approached it as an “add-on” to their existing processes and models of operation. Given the extent of change in mindset and culture that is needed to succeed with Agile methods, MITRE recommends that Federal leaders take a more comprehensive approach. MITRE uses an approach for sustainable Agile adoption based on the International Consortium for Agile which consists of change in four key dimensions – leadership, people, structure, and process – as important to sustain Agile adoption⁹. Federal agencies that attempt to adopt Agile through one or two of these dimensions can experience significant resistance and limited, sub-optimal gains. Often, these organizations regress and drift back to traditional

³ See *The Principles of Product Development Flow: Second Generation Lean Product Development* (2009) by Donald Reinertsen

⁴ See the Harvard Business Review Article on *Design Thinking* (June 2008) for a description of Thomas Edison’s workshop

⁵ See *Skunk Works* by Ben Rich for a description of Kelly Johnson’s development of the U-2 and SR-71

⁶ See Chapter 6 in *Leading Apple with Steve Jobs* by Jay Elliot (John Wiley & Sons, 2012) for a discussion of how Jobs created a Skunk Works similar to the one Kelly Johnson established at Lockheed

⁷ See www.agilemanifesto.org

⁸ <http://www.gao.gov/products/GAO-12-681>

⁹ Adapted from the International Consortium for Agile (ICAgile)

methods, labeling Agile as unsuccessful; however the failure is frequently due to the lack of a corresponding shift in mindset and culture.

Despite the challenges, Agile methods are now being adopted in the Federal government with demonstrated success. The newly released Digital Services Playbook from the Federal Chief Information Officer (CIO) recommends that services be built using Agile and iterative practices¹⁰. Software development is a product development activity¹¹, and Agile values align well with product development. However, to take full advantage of Agile methods, the environment must support the methods and not force the use of processes better suited for highly predictable production methods.

A Sample of MITRE's Solutions for Adopting Agile...

Changing the Mindset

Adoption of Agile requires changes in people's behavior, which is perhaps the most overlooked and difficult dimension to change and affects nearly all of the challenges identified by GAO. Federal leaders, including CIOs, program/project managers, and even senior business leaders must embody continuous learning, transparency, and collaboration in order for the Agile mindset to take hold within the organization. These behaviors are not injected simply through policies and mandates, but rather require direct intervention to shift behaviors, and the underlying mindset.

MITRE has performed environmental assessments to gauge the maturity and readiness of organizations to transition to Agile. Following an initial assessment, Agile coaches are typically deployed to work with teams and leadership to identify and implement specific practices that drive behavioral change, and the necessary shift in mindset.

Optimizing Acquisition Practices

Many Agencies have attempted to use the same waterfall based acquisition models used for large contracts when implementing program and project level Agile practices and processes. Agile often requires an adjustment in procurement processes to reflect shorter, smaller, and more flexible contracts. In addition, sufficient Federal staff (or their representatives) need to be embedded within the teams to provide real-time feedback.

Two of the challenges referenced in the GAO report indicate that procurement practices lack support for Agile acquisitions, and require staff trained to support Agile efforts. In addition to authoring the "Defense Agile Acquisition Guide," MITRE has worked with agencies to develop tailored acquisition strategies and performance work statements for enterprise wide systems development work accomplished using Agile values and principles. As a specific example, MITRE has developed work statements which still provide high level features for the purposes of delineating scope, but they also establish the clear expectation that backlog grooming, and the associated change to scope, will be a necessary and important part of the development process. Work statements also typically state specific iterative development cycles (e.g., 2 week sprints, 12 week increments for

¹⁰ <https://playbook.cio.gov/>

¹¹ In software development, the code itself represents the actual design spec, while compiling the code to an executable represents production.

release, etc.) to ensure bidders understand the importance of regular demonstrations of working software as the key measure of success. Changes such as these are in line with the recently released Federal CIO's Digital Services Playbook, which recommends that agencies "structure budgets and contracts to support Agile and iterative practices."¹²

Evolving Governance and Oversight

Other challenges related to Agile adoption in Government have to do with a lack of sufficient guidance on how to implement Agile given Federal oversight and governance requirements. Despite an emphasis by the Federal CIO through the issuance of guidance on Modular IT Development¹³ and the Digital Services Playbook, many traditional Federal reporting and oversight procedures still exist that can be problematic when using Agile methods. A chief concern here is that Agile processes inherently reflect the idea that requirements may be constantly changing as the customer learns more about the desired product, which often runs counter to reporting and oversight practices. MITRE has worked with Agency oversight functions (e.g., Quality Assurance, Independent Testing, Security, etc.) to recommend changes to the operating model which successfully accommodate Federal oversight requirements without hindering the adoption of Agile methods.

MITRE Can Help

Serving as an independent trusted advisor to Chief Information Officers, Chief Acquisition Executives, program managers, and other acquisition professionals, MITRE has developed significant experience and documented best practices for Agile use and adoption in Government. With over 50 years of experience working with the Federal government on its most complex challenges, MITRE has provided robust strategies that balance operational and technical risk with organizational and budgetary constraints within the context of our sponsors and customers. Specific to Agile, MITRE has advised and assisted executives with leading their organizations and programs in adopting and realizing the benefits of Agile. As Federal executives and program managers look to realize the benefits of Agile, MITRE can help by leveraging the lessons we have learned across multiple Federal agencies.

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¹² <https://playbook.cio.gov/>

¹³ <http://www.whitehouse.gov/sites/default/files/omb/procurement/guidance/modular-approaches-for-information-technology.pdf>

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