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Agile in the Federal Government

Desired Outcomes, Challenges, and Risks

MANAGEMENT CONCEPTS

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Introduction

Before the introduction of Agile, software development was a notoriously painstaking process. In the time it took to develop the desired functionality, one change request after another would be submitted, causing projects to take longer to reach completion, decreasing the end product's effectiveness, and resulting in a price tag that far exceeded the original estimate.

Since the emergence of Agile in 2001, software development has been revolutionized. Now, the process consists of a series of short-term standalone phases that each produce a function that can be presented for review to the stakeholders and then adjusted according to the feedback. This incremental approach enables developers and stakeholders to communicate in near real-time, ensuring that the same understanding of the desired output is held by all parties involved. And, to maintain this agility, processes for addressing roadblocks, changing requirements, and performance improvements are built in. Essentially, Agile mitigated every difficulty that had previously been hindering software development.

Not surprisingly, many other industries have adopted Agile with varying degrees of success. As it turns out, there are many aspects of project design and development that impact the feasibility of applying Agile, the most significant being flexibility. Federal government projects — an environment where cost containment, efficiency, and positive outcomes are crucial – tend to provide an acid test of the effectiveness of Agile methodology. In some cases, these projects were implemented smoothly and delivered successful outcomes, while others were tarnished with short-comings and undesired results.

In this eBook, we will explore the desired outcomes, advantages, challenges, and risks that federal government entities face when they deploy Agile for the management and production of project deliverables. First, let's define the Agile methodology.

agile, adj.

1. Able to move (esp. to climb or maneuver) quickly and easily; nimble, dexterous. Also figurative and in extended use.
2. Of a person, the mind, etc.: able to think, understand, and react quickly; alert, astute, quick-witted; (also) characterized by quick-wittedness.
3. Business. Of a company, business activity, product, etc.: able to change or be changed rapidly in response to customer needs and market forces; adaptable, flexible, responsive.

Source: **Oxford English Dictionary**

What is Agile?

Agile was developed by 17 software engineers and architects and published as the **Agile Manifesto** which lists its values and principles. While the principles of Agile are integral to its commercial application, it would be difficult, if not impossible, to apply the following aspects 'as-is' to the highly restrictive environment of the federal government:

- Change-Friendly Practices
- Frequent release of incremental deliverables
- Involvement of stakeholders throughout the project
- Performance expectations of project teams
- Ability to maintain transparency

Although Agile is highly adaptable, a pseudo-Agile methodology that could be applied to government projects and programs would need to address these challenges. We will now explore each of these concerns in detail.

The Essence of Agile

Be Customer-Centric

- Keep the customer happy
- Welcome change requests
- Involve stakeholders throughout each project
- Communicate in person

Manage the Process

- Establish a measure of progress
- Demonstrate progress incrementally
- Maintain a consistent pace
- Keep it simple

Teamwork

- Trust and support your teams
- Allow teams to self-organize
- Communicate in person

Control Quality

- Strive for excellence
- Reflect and adjust

Source: **Summarized from Principles behind the Agile Manifesto**

Change-Friendly Practices

One of the main advantages that Agile provided to software development was the ability to embrace change requests. Formerly, this aspect of software development often meant that project progress would be diminished or lost because the project plan needed to be reworked. When Agile introduced incremental milestones, any perceived losses could be more easily contained. This advantage is transferrable to many other types of applications if, and only if, the product being developed will not take on a physical shape that has stable requirements.

For example, architects understand that once the foundation of a structure is complete, it is not feasible to change the shape and size of the structure. Aeronautical engineers understand that once production has begun, it is too late to introduce structural changes. However, cloud network engineers are tasked with an intangible outcome – designing, developing, and implementing a secure cloud network that supports the infrastructure – therefore, changes can be made more easily than they can with building construction or product manufacturing.

In addition to the issue of physicality, government entities manage risk by favoring established plans and procedures and, because their projects tend to be large scale, the cost of making changes is much higher than in a typical commercial setting. Some specific concerns about applying Agile's change-friendly practices in a government setting include:

- Project and program managers may embrace a change-friendly mindset, regardless of feasibility
- The individual and cumulative impact of changes may not be considered before implementation
- The cost of change-related rework may be high
- Stakeholders may neglect to define requirements clearly
- Excessive change can lead to chaos

Despite these risks, adapting change-friendly practices to non-physical government projects and programs increases the likelihood of optimal outcomes because, in these cases, stakeholders focus on outcomes and do not typically have a comprehensive understanding of the technology when they provide requirements.

The next Agile issue that we need to address concerning its applicability in federal projects and programs is the frequent release of incremental deliverables.

Agile values...

individuals and interactions over processes and tools

customer collaboration over contract negotiation

working software over comprehensive documentation

responding to change over following a plan

Frequent Release of Incremental Deliverables

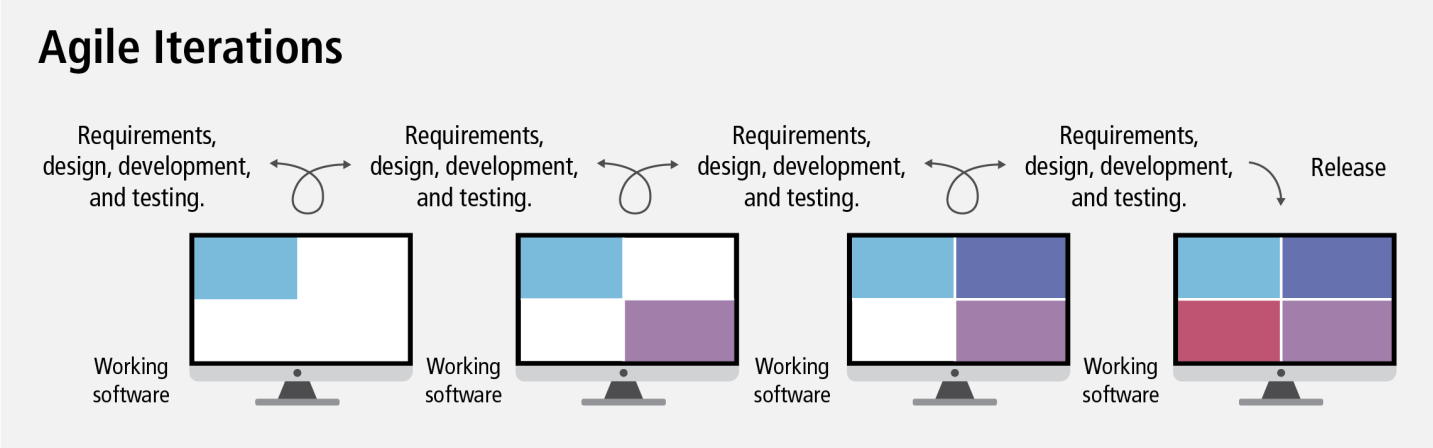
Breaking a project down to standalone units that can be evaluated independently by stakeholders requires a major shift in planning and development. While this **modular approach** represents one of the most valuable differences Agile offers, it is also likely to cause the most distress in the change-resistant environment of government. Achieving this objective involves rethinking the formulation, design, development, production, and deployment of any project. Although this practice typically eliminates undesirable outcomes and delivers production of components with multiple use capability, it requires much more creativity and effort than the accepted norm, Waterfall.

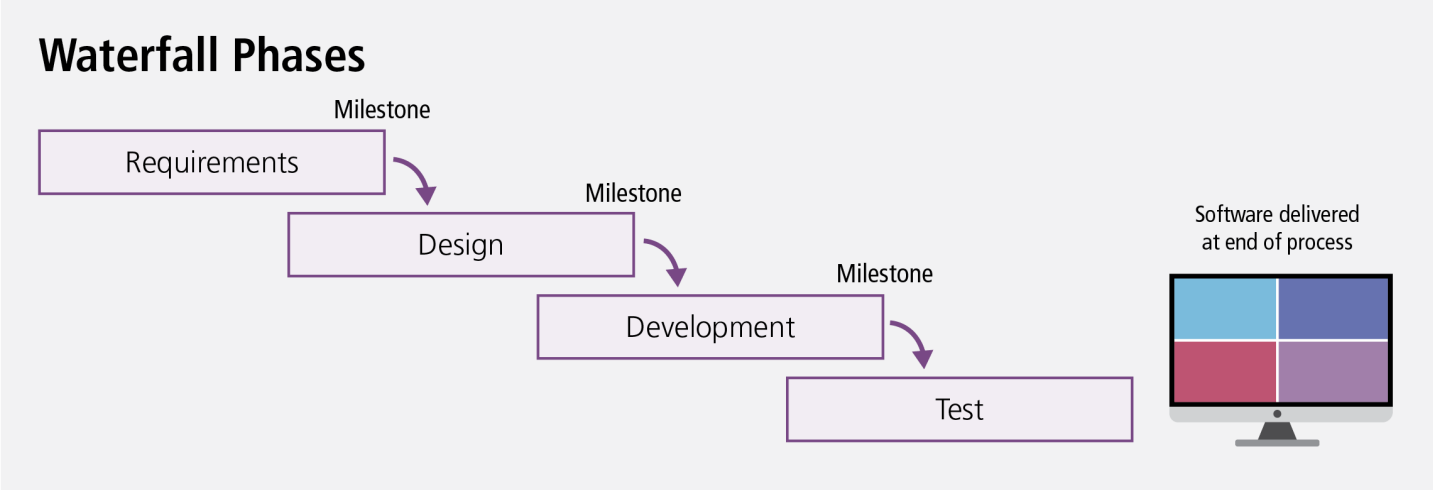
For example, an agency-specific intranet project could be broken down into contact listings, home page navigation, secure messaging, and e-commerce functions that could easily be **replicated for use in other web-based projects**. It may also apply to physical projects, such as vehicle designs that have similar mechanical and electronic components. This practice would potentially reduce costs for originating agencies, smaller agencies, and departments within them, in addition to other government entities. And, building in performance tracking through incremental releases will keep stakeholders informed of the project's status.

Despite the clear advantages associated with frequent release of incremental deliverables, there are several challenges and risks, such as:

- Constructing a logical series of independently working components for each incremental deliverable
- Level of effort required from Subject Matter Experts during the conceptualization and design phases is significant
- Gaining buy-in from traditional acquisition specialists
- Potential for greater complexity in procurement contracts due to incremental delivery of components deliverables

The illustration below showcases the advantages of Agile's incremental approach.





Source: US Government Accountability Office 12-681

Involvement of Stakeholders Throughout the Project

The saying "You may not like it, but it's good for you" sums up the message that stakeholders who have not previously participated in an Agile project may need to hear. The benefits of Agile are many but, like the presidential suite with a view of the city, they do come at a cost. That cost is ongoing time and effort. Without Agile, stakeholders would typically help create the project vision, provide input about how the objectives should be met, and communicate their expectations for time, personnel, and cost. But, once the plan has been established, they are free to move on to other things while they wait for periodic updates and final deliverables.

Agile requires much more from them. While they will still help establish the plan, their role is much more intensive and requires them to share ownership of each incremental step. Some might say to the point of exhaustion. For concrete, tangible projects, such as building and production lines, Agile controls the timeline and keeps stakeholders constantly aware of the project status. Still, their involvement in these projects is not nearly as crucial as it is with a digital project.

Because technology continues to change at breakneck speed, it is not only possible but likely that the vision created at the beginning of the project becomes outdated long before it's done. Decisions will need to be made frequently throughout the project, and, unlike a traditional setting where the project manager would make an educated guess and hope for the best, he will instead call upon the appropriate stakeholder to ask for guidance. In other circumstances, that move may make him appear inept. But, by remaining close to the action, as they are with Agile, project stakeholders can ensure that the direction of the project stays on-track to meet their needs.

While stakeholder engagement is crucial to the success of an Agile project, not every stakeholder will be enthusiastic about dedicating time to a project, particularly if it will last for an extended period. The project management team will need to convince stakeholders that their involvement and input are invaluable and will practically determine the success or failure of the project. One of the best ways to do this is to relay actual success stories from other government agencies — firsthand accounts delivered in-person if at all possible.

As with the other Agile benefits, keeping stakeholders involved throughout the life a project comes with risks and challenges. For example:

- Identification of highly-qualified stakeholders who are willing to commit to intense involvement with projects
- Keeping talented stakeholders engaged in a project from beginning to end, especially during long-term projects
- Educating stakeholders on the pseudo-Agile practices used in government
- Diffusing and resolving disagreements and conflicts that involve project stakeholders

Before launching a government project according to the principles of Agile, there must be confirmed commitment from the stakeholders that they will be willing and able to maintain a high level of engagement throughout the life of the project or the potential benefits will be lost.

And then there is the issue of performance.

Performance Expectations of Project Teams

Under any circumstances, even the best-laid plans will fall short if the people charged with doing the work lack the proper skills and commitment. This is especially true when applying Agile in the federal government. In addition to the standard commitment to the job at hand, government teams must also be committed to their mission, and every project or program that they work on must support that mission.

To that end, the **Capital Programming Guide** (CPG) recommends the following practices for federally funded capital asset production:

- Major capital asset development must need to be performed by the federal government and support mission functions to justify the investment
- The leadership structure of Integrated Product/Project Teams (IPT) is highly effective for project success because it ensures that capital assets are designed and operated for improved program team performance
- Project outcomes must be strategically aligned with the mission goals

The use of IPTs in the federal government began in the mid-1990s with the Department of Defense adopting value-added Lean and Six Sigma practices and quickly spread. Unlike Agile, these methodologies focus on project oversight and not work completion. The **TechFAR Hub** addresses the challenge of transitioning the acquisition development lifecycle from IPT to Agile with the following guidance:

> A key feature of Agile software development is the emphasis on the team approach. The Integrated Product Team (IPT) is integral to the success and administration of Agile software development contracts. The team includes key stakeholders and should be led by a program manager holding the appropriate level of Federal Acquisition Certification in Program/Project Management.
>
> It is essential that the IPT members are champions for Agile, as the cultural change from traditional methods to Agile may be challenging. To make this shift happen as seamlessly as possible, before conducting pre-award activities, the key members of the IPT should be trained in Agile software development.
>
> Source: **TechFAR Hub Handbook**

An important success factor of building and maintaining high-performing teams is the size of the team. Agile recommends that teams consist of five to nine members. If the team were to grow larger than that, the likelihood of communication breakdowns increases and, according to the **Ringelmann Effect**, individual members of a group to become increasingly less productive as the size of their group increases. Therefore, project managers should ensure that the team is appropriately sized for optimal quality of project deliverables.

Some specific risks and challenges that may arise when transitioning federal government teams to an Agile mindset:

- Gaining buy-in from senior leaders
- Allocation of essential resources
- Identification and availability of high performing team members
- Pivots due to organizational changes
- Maintaining intensive engagement among team members for the duration of the project

Qualities of High-Performance Teams

- Autonomous
- Change-friendly
- Collectively accountable
- Committed to serving
- Continuously improving
- Deadline driven
- Effective communicators
- Exceptional camaraderie
- Forward-thinking
- Highly engaged
- Mission focused
- Reliable
- Trustworthy

Ability to Maintain Transparency

The final element of Agile that needs to be considered when working within the federal government is transparency. While there are many benefits to transparency, there are some risks as well. And, within the government, the degree to which a project team can be transparent may be limited.

Through various pro-transparency initiatives, we know that being transparent benefits projects and programs by:

- Highlighting effective decision making
- Ensuring stakeholder engagement
- Reducing duplicative data collection and analysis
- Documenting performance and quality
- Establishing a historical record to guide future projects
- Disseminating risk identification and analysis to mitigate future risk
- Sharing clear and informative communications

The pace, measured progress, and intensive stakeholder involvement of Agile guarantees greater transparency than traditional methods. Instead of monthly or quarterly updates, stakeholders are typically updated every 2-3 weeks. The integral role of the stakeholder necessitates that they are constantly aware of project activities, outcomes, and results so that they may provide effective support and decisions.

The dangers of transparency revolve around the intentions of the people who may have access to the project documentation, and the increased load of communication required by Agile. For example:

- Increased transparency invites increased oversight and governance
- Continuous need to collect and analyze data
- Allocation of funds to support information dissemination through software and digital interfaces
- Potential repercussions due to admission of project short-comings and limitations

Project managers will need to be prepared for stakeholders' demand for detailed explanations about project status to maintain transparency.

Practical Application

Now that we have explained the primary issues that would need to be addressed if a government entity would like to gain the benefits of Agile, we should take a moment to provide some general advice for following through with that intention. Here are some tips:

1. Publish a practice guide that explains how Agile is to be applied in your organization.
2. Educate your teams on the potential benefits they may enjoy from utilizing Agile, if possible, in contrast to current and historical practices
3. Provide detailed explanations and training on how Agile works
4. Study other government entities' use of Agile and apply their lessons learned
5. Review publications and guides prepared by consultancies that cater to the government
6. Reach out to points of contact who have run similar government programs and discuss your program or project with them to understand better how to succeed and avoid difficulties

Once an organization has committed to using Agile, the benefits are plentiful. Even with a modified government-focused variation, the transition will require a period of adjustment, but many agencies have found it to be quite advantageous.

And last, please review resources on Agile implementation published by the following government entities:

18F

Census Bureau

Cloud.gov

Computer Emergency Readiness Team (CERT)

Department of Defense (DoD)

Department of Labor (DOL)

Digital.gov

Earned Value Management (EVM)

Federal Acquisition Institute (FAI)

General Services Administration (GSA)

Geological Survey National Geospatial Technical Operations Center (NGTOC)

Government Accountability Office (GAO)

National Institute of Justice (NIJ)

National Institute of Standards and Technology (NIST)

Occupational Safety and Health Administration (OSHA)

TechFAR Hub

United States Air Force (USAF)

United States Department of Agriculture (USDA)

United States Digital Services (USDS)

United States Geological Survey (USGS)

Veterans Affairs (VA)

ABOUT THE AUTHOR

Paul Lohnes MBA, PMP, MCTS, is a Senior Consultant for Project & Program Management at Management Concepts and Managing Director of **MCLMG, LLC**. In addition to contributing his subject matter expertise, Paul develops Management Concepts course content and teaches Project & Program Management and Acquisition courses. Since serving in the Navy, Paul has become an internationally renowned project and risk management speaker.

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