Virtual Learning Package 8: Agile & Contracting/Acquisition Strategies

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Meeting Conventions for Today

Please stay on mute for the lecture portion of the course module. If all goes according to plan, you will be muted automatically when you come into the Skype meeting (both web and dial-in participants).

If you are “in” the Skype meeting via web or app, please ask questions via the Chat window.

- A facilitator will collect the questions and either pass them to the facilitator if something immediate, or organize them for the Q&A portion of the course module

Those on dial in will enter questions via email to Dave Walbeck -- dtwalbeck@sei.cmu.edu

Instructor will call for participation and discussion at various points. Please remember to come off mute before talking.

When you are done talking, before going back on mute, please say “Over” so others know you are finished.

The lecture part of this session is being recorded. Recording will be turned off during discussions.

Topics the SEI will address in this module include:

- **Agile Acquisition Context in DoD**
- **Why Contracting for Agile is Challenging**
- **Agile Acquisition Strategy**
- **Agile Contracting Strategies That Have (and Haven't!) Worked**
- **Summary**

BLUF on Agile Acquisition Context

You still have to look around, but there is a LOT more information for contracting officers and program office staff looking for useful ways to bring an Agile mindset into almost any type of acquisition

Adaptive Acquisition Pathways suggestion to “break up/break out” large program software into separate contracts that are more tuned to Agile mindset and practices is one way that legacy systems are seeking the benefits of collaborative iterative, incremental development when the larger system is not moving away from a waterfall mindset.

OSD is trying to reduce the administrative burden on iterative, incremental development life cycles to gain the benefits of early feedback and delivery

- Tailoring to improve delivery outcomes and cadence has never been so well received

To take advantage of these opportunities, all staff involved in moving to an Agile acquisition posture need to be involved: contracting staff, finance staff, engineering staff, management staff, configuration management staff, logistics staff, certification staff……<I’m sure I’ve missed someone, but you get it!>

Agile Acquisition Context in DoD

This Section Was Quite Different Only a Year Ago…

<Note: details on items on this slide are addressed in more depth in LP1: Agile in the DoD Context. Summaries provided here as reminders…>

A Few of the Things True a Year Ago:

- "Adaptive Acquisition Pathways" for software were just starting to become something real
- Section 873/874 pilots were in the process of getting started and executing, but lessons learned weren't yet broadly available
- DoD 5000.02 instruction revision had begun but hadn't gone far yet
- USAF Chief Software Officer appointment had just recently been made
- Cloud-based unclassified/classified infrastructure was being discussed, but hadn't been realized
- Software Development as a Service contracting was still a "head scratcher" concept in most DoD settings
- Collaborative Contracting was starting to be talked about seriously
- Contracting guidance was sparse and spotty

What is Different Today

Adaptive Acquisition Pathways Initial Guidance released in Dec 2019

“Software is never done” sentiment from the DSB and DIB SWAP is making its way into 5000.02 rewrite and local (service) guidance

USAF Chief Software Office is active in offering suggestions on a number of Agile fronts:

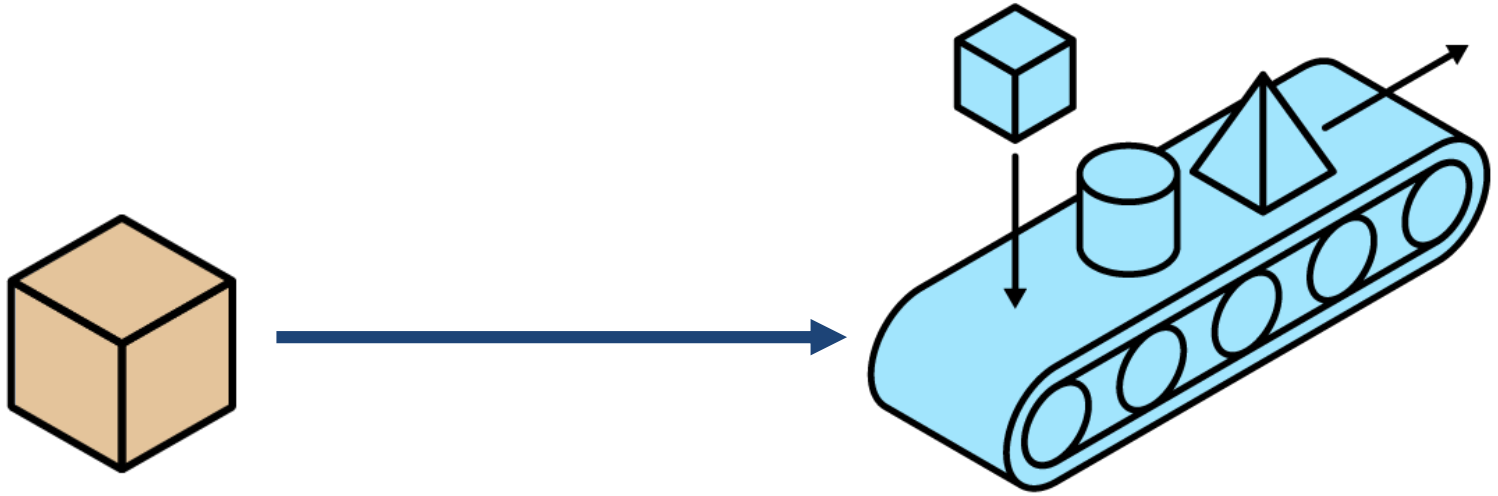
- Contracting
- DevSecOps pipelines
- Development tooling platforms

DAU is actively updating its Agile-related offerings:

- DevSecOps Academy for both technical and non-technical staff
- ISA 230 (for mostly software systems) is available and includes some contracting guidance
- ACQ 1700 is a more general Agile acquisition course addressing multiple dimensions of acquiring software from contractors using Agile
- Lessons learned from Section 873/874 pilots are starting to be made public

Why Contracting for Agile is Challenging

It Isn’t Just the Requirements That Change!



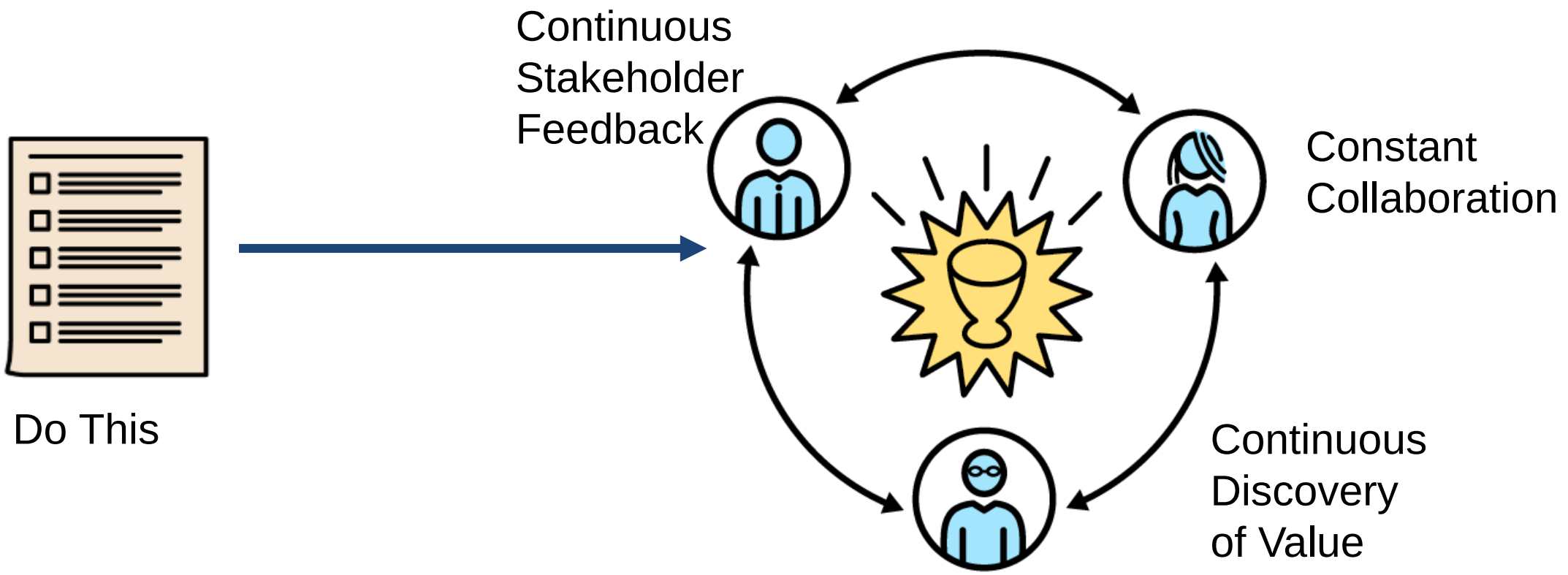
Buying a Box

Contracting for a (most of the time) single product defined in one large batch and delivered one time

Buying an ongoing delivery stream

Contracting for a product that is not completely defined at the start, and explicitly evolves and is delivered multiple, potentially many times

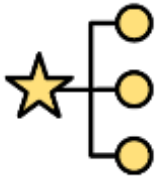
Different Vendor Interactions are Needed to Support Evolving Products Delivered Multiple Times



Different Artifacts Needed Means Different Ways CDRLs are Described and Delivered

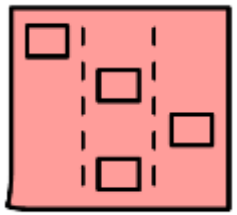
Epics

Stories

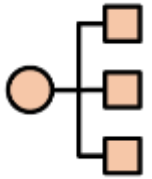


Capabilities

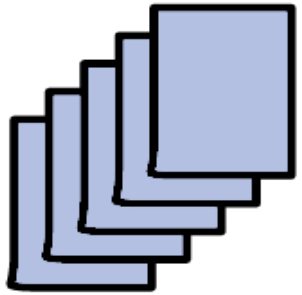
Single Spec Delivered "Complete" Before Implementation



Kanbans

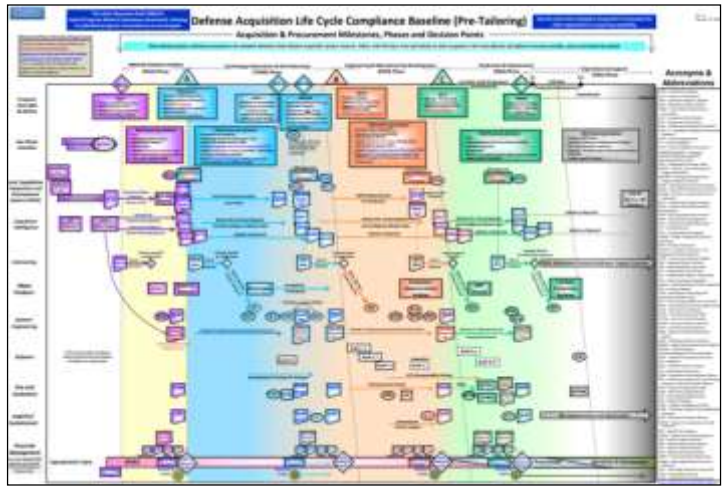


Features



Backlogs that Evolve and are Frequently Reprioritized

Different Delivery Modes/Cadence Mean Different Management and Oversight Strategies



Date-based Milestones Emphasizing Completion of Activities

Increment-Based Demos
Definition of Done
Continuous Integration & Test

Flow-based Milestones Emphasizing Completion of Product Elements

Team Increment

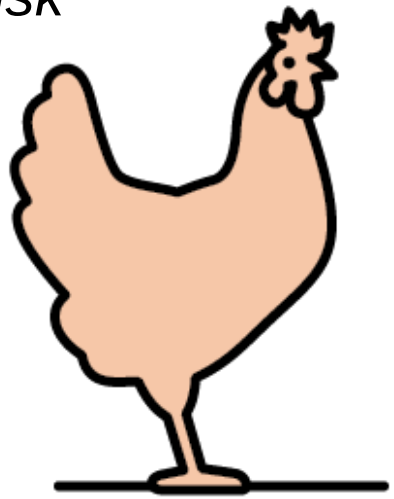
System Increment

Solution Increment

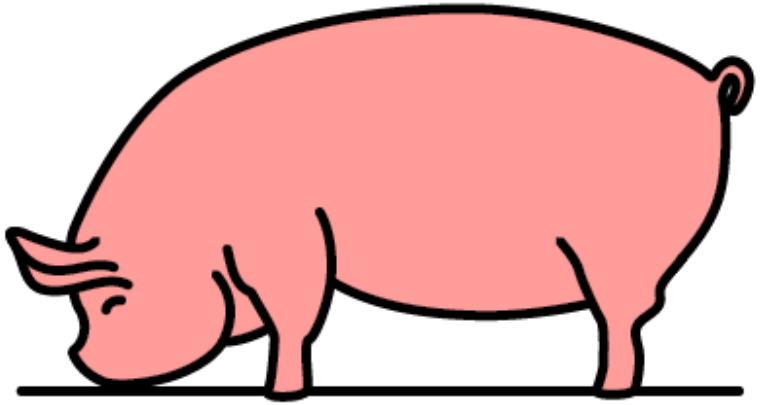
Release/ Deployment to Stakeholders

The Risk Fallacy

Product-based contracting had us thinking gov't took less risk



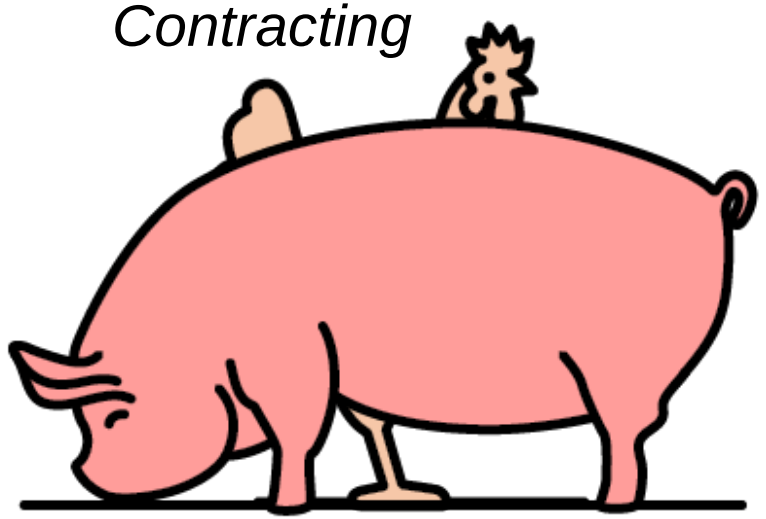
Product-based contracting had us thinking contractor took more risk



The Risk Fallacy-2

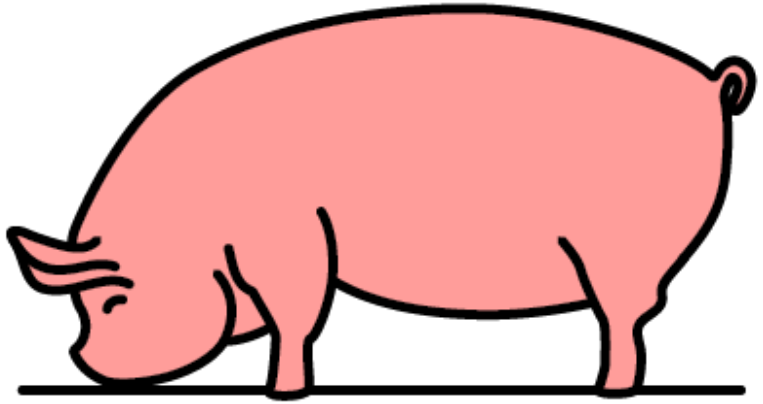
By the time acquisitions hit Integration/Test, the Gov't is experiencing negative results of product-based Contracting

Product-based contracting DELAYED the point where Gov't experienced risk, but didn't really eliminate it



Moving to Government “Owning” the Technical Baseline

Gov’t is “All In” All along the way



If this is where we are, let’s make sure our acquisition strategy and contracting practices support the collaborative relationships needed for this to work!

Adopting an Agile Acquisition Strategy

STRATEGY and strategy….

Either recently (or perhaps in the distant past), each program has provided their acquisition authority with a document (sometimes a slide deck) called an *Acquisition Strategy*

- DAU has a template (of course!) on this tools list https://www.dau.edu/tools/Pages/AllTools.aspx
- Contains things like the sourcing strategy (competitive vs single source), tailorings to 5000.02, expectations like whether or not bidders expected to use Agile methods, etc
- On long programs, there may be updates to the strategy at major milestones (when using a waterfall life cycle model)
- Being familiar with your program's approved Acquisition Strategy is a necessary step in changing your contracting approach

The rest of this section is NOT about the Acquisition Strategy document (STRATEGY)

Beyond that, there is the thinking about how to achieve the goals of the program in multiple dimensions

- In this case, focusing on how we can achieve the goals typical in Agile settings

A Few Context Considerations to Get Started Thinking About Contracting Strategy for Agile

Are we contracting for:

- Major hw/sw system, complex system of systems (implying dependencies with other DoD programs)?
- COTS/GOTS solutions that need to be configured/glued together?
- Existing legacy system enhancements and transition to modernized system?
- Transitioning the system and program from traditional development to Agile development, including leveraging existing acquisition artifacts (CDD, etc.)?
- Govt as integrator with Govt owning the technical baseline?
- Services to provide enhancements of legacy system and development of replacement modernized system, rather than contracting for an end product?
- Contractor to provide Agile development and DevOps as part of an end product delivery?

Contracts (PK) Government Role Often One of the "Business Owner" Roles in SAFe

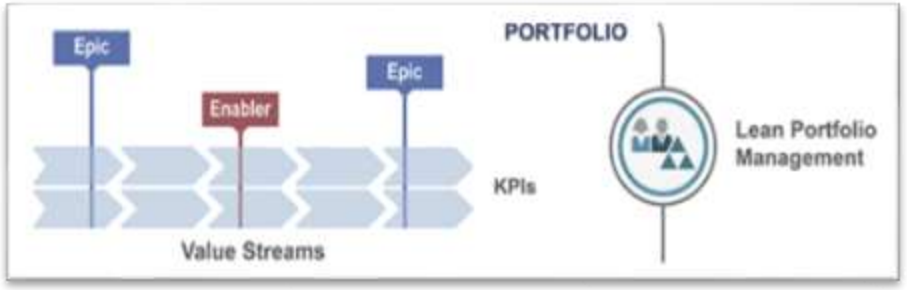
The contracts analyst role is not explicitly called out in any Agile methodology SEI has seen.

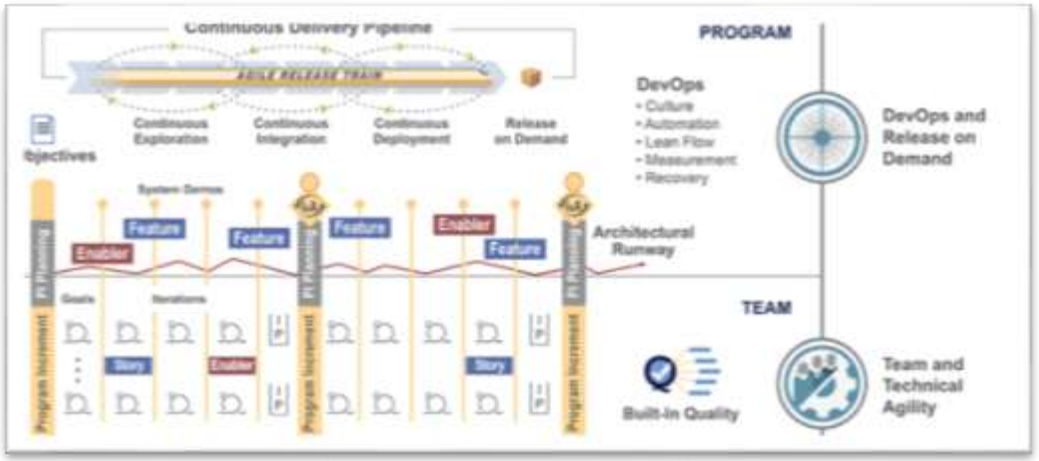
- At the team level, assumption is that contracting actions have already been taken and Agile is focused on software development execution
- In scaling frameworks, emphasis for practices and principles are again, mostly focused on the developer, rather than the acquirer

Where does that leave the Contracting Specialist?

- Contracting is a CRITICAL role in enabling Agile development to actually occur
- Acquisition Strategy drives some of the choices that will be available for contracting
- Lots of considerations

Where Do Contracting Staff Fit in the SAFe View of Roles?





Portfolio: *no specific roles; contracting staff may be part of the Lean Governance aspect*

Lean System/Solution: (SPO/MAJCOM are primary actors). Contracting staff likely to be involved with Solution Management team and part of the ECP process that often occurs in this layer

Program/Features: (SPO, Contractor, and their Suppliers are primary actors at Release Train level) Contracting staff are almost always one of the stakeholders fulfilling a *Business Owner* role. They may also be their own Team within an Agile Release Train.

Team: (Contractor and their Suppliers are primary actors at Team level. Contracting staff typically not involved at this level unless they have they own Team, in which case members of their staff would perform Scrum Master, Product Owner, and team members for that team.

Summary Considerations for Your Agile Contracting Strategy

What types of contracting vehicles are available to you?

- Some types need to have more specific Agile language than others

Single source or competitive?

- If single source, is *collaborative contracting* available to you?

What is the desired/available incremental delivery strategy?

- Focus on delivery to certifiers/gov't testers?
- Continuous ATO that allows incremental delivery to the field?

What is the desired/available incremental technical review strategy?

- Are we bound to big batch technical reviews? (PDR, CDR, etc)

Are we large enough to have to adapt our EVM strategy to Agile?

What are our options for incentive fee/award fee strategies?

- Agile settings often benefit from a combined incentive/award fee strategy

What are our options for delivery of documentation?

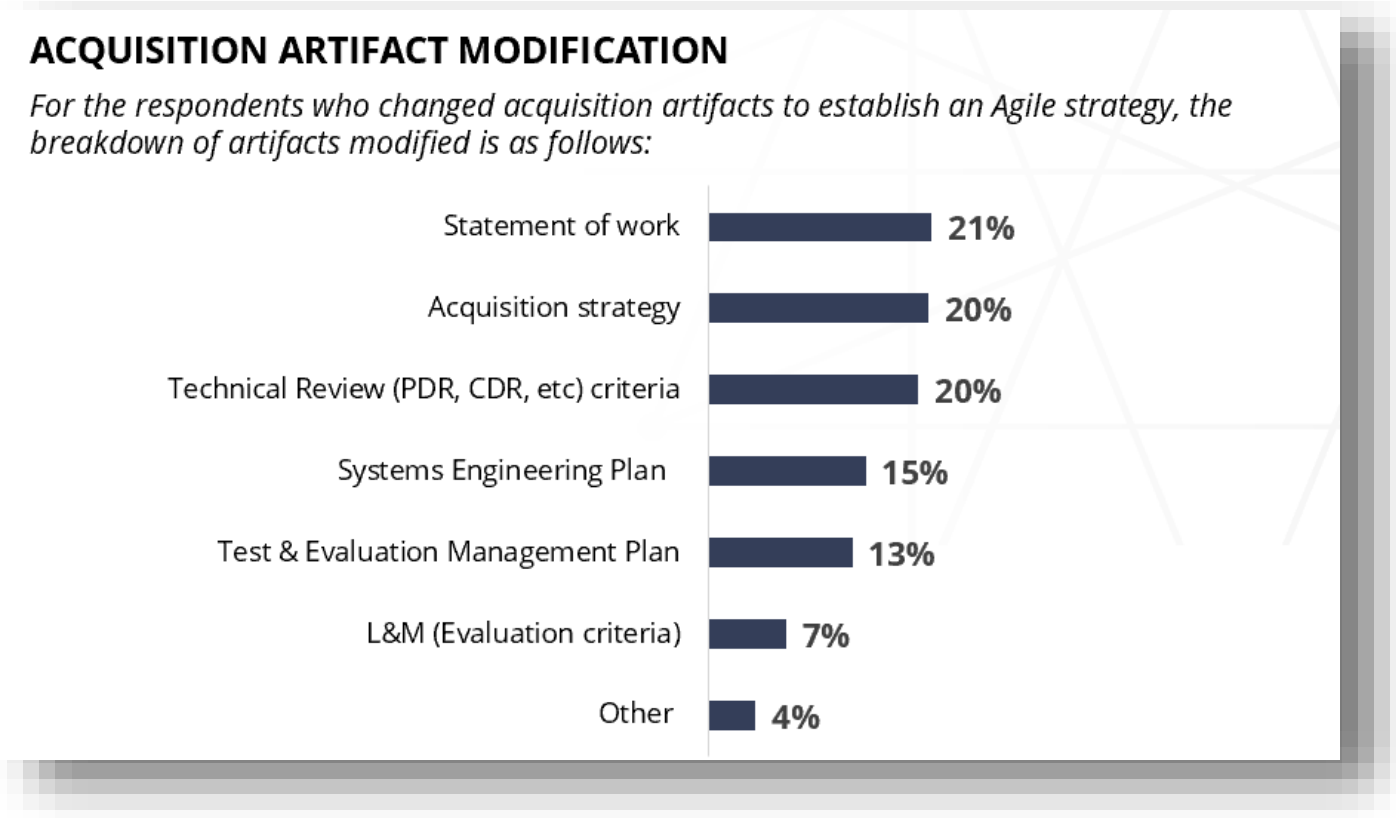
- What artifacts can we move from CDRLs to DAL items?

What is the desired/available level of abstraction of our allocated baseline?

Data from SMC

In their first State of Agile report, they asked programs (who are using Agile) which acquisition artifacts they needed to change to achieve their Agile goals

- ***Note that the SOW was not the only artifact they needed to change!!!!***



Agile Contracting Strategies that Have (and Haven't!) Worked

No Contract Type is Perfect….

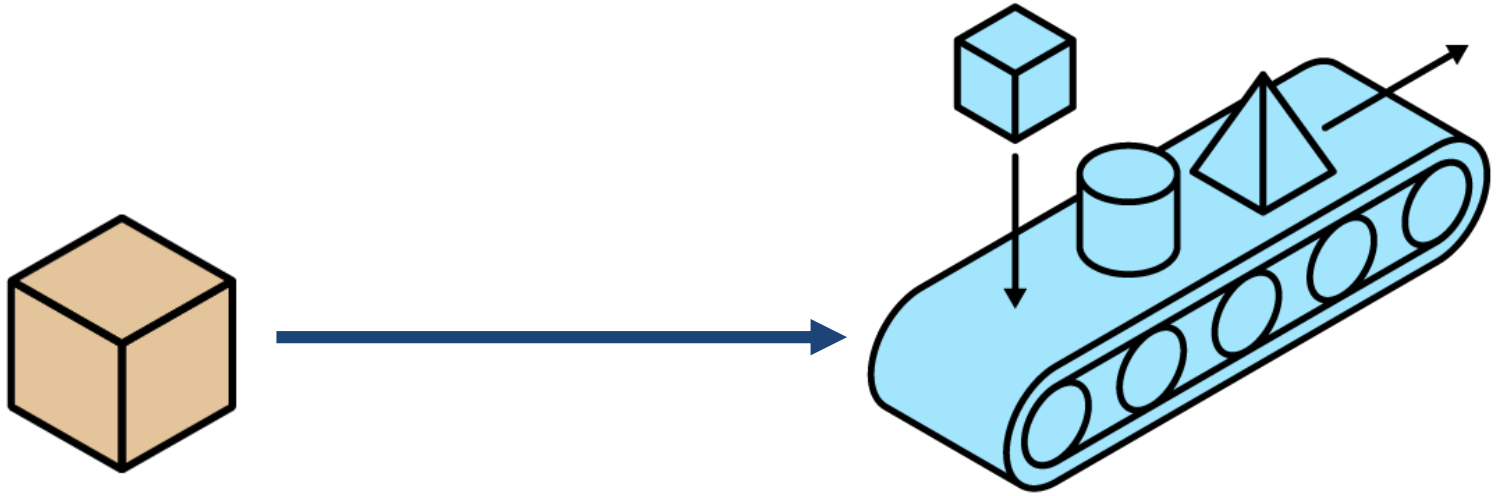
Differences in difficulty of administering contracts of different types varies depending on (at least!)

- Experience of both the acquisition organization and the contractor organization in participating in Agile programs
- Whether the software is the “whole” acquisition or if custom hardware is also involved
- What kind of program it is and how it fits in the larger DoD budgeting/POM cycle

What DOESN’T work:

- *Adding a statement in the SOW/RFP package saying “Contractor shall execute the contract using Agile methods” and leaving the rest of the package “as was”*

Can You Use the Same Contracting Vehicles for Both Types of Buying Strategy?



Buying a Box

Typical contract types:

- *Cost Plus X Fee*
- *Firm Fixed Price*

Buying an ongoing delivery stream

Contract types to Consider:

- Cost Plus X Fee
- Incentivized Level of Effort
- IDIQ (Indefinite Delivery, Indefinite Quantity

“Software Development as a Service” Contracting

In DHS and other Federal/non-DoD settings, contracting for software development using service contracts is becoming a mainstream approach (not prevalent in DoD yet):

- DHS limits projects to a 6 month time frame, forcing the government program offices into an incremental/iterative mindset
- Pools of contractors skilled in different domains and pre-qualified in Agile methods bid on task orders within a project
  - Depending on size of project, more than one contractor may contribute to the project
- Government is primary Product Manager and has primary responsibility for backlog management
- Contractors who miss 3 sprint goals (2 week sprints) in a row are barred from bidding on the next 6 month project cycle (idea is to give them time to fix whatever is wrong with their staffing/process)

Look for presentations by William Pratt of DHS for more information about how this is working for them

Incentivized Level of Effort Strategy?

Problems a complex airframe acquisition was experiencing related to contracting:

- Modernization and Sustainment Delivery Orders (their contract vehicle) had different profit structures, and long lead times to get to contract award
  - Modernization activities had more profit for the contractor
  - When squeezed in capacity (sometimes due to government changes in priority), contractors made the logical, but not useful, decision to prioritize modernization activities
    - Sustainment activities struggled to achieve their goals

Program has consolidated from dozens of Delivery Orders to a small number that span modernization and sustainment

Government now manages a single modernization and sustainment backlog:

- Government stakeholders manage the mix of modernization and sustainment
- Much faster additions to the pipeline of work now possible (hours vs months) to account for changing stakeholder needs

Government and contractor are able to execute in a more collaborative fashion

A Few Words About Collaborative Contracting

Also called alpha contracting or shoulder-to-shoulder contracting

2020 NDAA “Section 800 requires the Secretary of Defense to establish “pathways” to provide for the efficient and effective acquisition, development, integration and timely delivery of secure software. These pathways are to have tailored requirements relating to, among other things: rapid contracting procedures, including expedited timeframes for making awards, …”

Available for use primarily in Sole Source settings

- IDIQ – can use for task/delivery orders
- Existing contracts – can use for ECPs/other changes

Allows for communication across govt/contractor boundary while the RFP is being constructed and while the contractor is preparing the proposal-

- Typically only hours are discussed – not cost

Your contracting officer **must** be on-board with this

Benefits of Collaborative Contracting

Collaborative contracting can be very helpful for contracts where they are transitioning from waterfall to agile

- Allows for discussion to ensure expectations are the same for both the contractor and the government
- Allows discussions on government involvement (or lack thereof)

Areas like logistics and test should be involved and can work out how these area will fit into the contractor's agile processes

The RFP process and the proposal process may take a little longer, but the Technical Evaluation process should be much faster

This process can help build trust and understanding between the contractor and the government which is important for agile development to succeed

Don’t Ignore the Importance of an Agile-Aware Incentives Strategy

For several contract types, Incentive Fees (more common) or Award Fees (less common) need to be defined and evaluated

- Incentive fees typically derived from objective, quantitative data (how many defects delivered post-delivery, how close to committed schedule contractor came)
- Award fees typically involve some more subjective criteria, often used for evaluating collaborative and other Agile behaviors

Fee periods are important to consider –

- Shorter fee periods allow for evolving targets, but require more attention from evaluators
- Longer fee periods are easier to administer, but could create “unintended consequences” like gaps between discovery of a failing execution strategy and its redress

Sole source contracts complicate incentive/award fee construction

Incorporating DevSecOps Thinking into Agile-Aware Contracting

The latest challenge for contracting specialists in an evergrowing list is how to contract for DevSecOps (DSO) processes and technology pipelines:

- The technology pipeline needed for DSO typically crosses several organizational boundaries:
  - The contractor development and local integration environments
  - The government or government/contractor SIL (System Integration Lab(s))
  - Government flight, operational, certification testing labs
  - Government, government/contractor, or contractor sustainment environment
  - Government operational environment
- Decisions about who needs to "own" which pieces of the technology pipeline affect contracting:
  - Intellectual property, data rights, and licensing of tools all have to be considered as part of contracting
  - Often complicated by a multi-tier supply chain
- A key implication is that the *sustainment* strategy needs to be understood when contract is being constructed
  - Remember "software is never done" thinking – how will the initial delivery evolve over time?

Resources to Help in Different Contracting Situations Becoming More Available

July 2018“Contracting Huddle” (video of summary):
https://media.dau.edu/media/USAF+Agile+Acquisition+Contracting+Outbrief+Maj+Gen+Zabel+v180723/1_tmdwx0bp

“873/874 Pilots” – mandated by 2018 NDAA, administered out of OSD – more resources from them becoming available – search on “DoD 873/874 Pilots”
https://www.dau.edu/cop/it/DAU%20Sponsored%20Documents/AgilePilotsGuidebook%20V1.0%2027Feb20.pdf

SEI Technical Note: Introduction to Agile in Contracting
https://resources.sei.cmu.edu/asset_files/TechnicalNote/2015_004_001_442515.pdf

DAU document on Agile contracting considerations (primarily for IT software contexts)
https://www.dau.edu/cop/it/DAU%20Sponsored%20Documents/Contracting%20Considerations%20for%20Agile%20Solutions%20v1.0.pdf

SEI Technical Note that includes Appendix on interpreting FARs for Agile (Appendix F, p. 63) – note that it is based on 2015 version of 5000.02 and doesn’t address changes due to SW Acquisition Pathways:
https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=484649

More and more resources are popping up all the time…

Summary

Contracting Can't "Make" Agile Work

BUT, an Agile Aware Contract can ENABLE Agile mindsets and practices to be adopted across the government and contractor sides of the Program

Remember the Manifesto tenet: "Collaboration over Contract Negotiation"

- Good contracting enables Collaboration and reduces the need for Contract Negotiation as the primary communication mechanism to account for and accommodate inevitable changes in the program context and execution

Agile-aware contracting is just the start of a successful program execution using Agile mindsets and methods

- All staff (Program Office, contractor, government stakeholders, suppliers) need to aligned to the Agile/Lean mindset, trained in how to execute in an Agile way, and equipped with the processes and tools to be efficient and effective
- Look back at our "Oversight and Insight" learning package for execution aspects to keep in mind
- In Agile and Measurement and Agile and Systems Engineering learning packages, we'll add to the execution strategies already discussed (and in Agile & Measurement we'll briefly address EVM)

Backups

Nineteen Questions Answered in the TechFar Guidebook

Question 1

Question – Generally speaking, what is Agile software development, and how does it fit into the acquisition development lifecycle?

Answer – Agile software development is a method of software development that utilizes an iterative development process, designs products and services based on real user needs, and constantly improves software from user feedback. Agile software development principles apply to both pre-award and post-award contexts.

Source: TechFAR

Question 2

Question – Are agencies authorized to shape their IT software acquisitions around Agile principles? The FAR does not expressly speak to Agile concepts such as refining technical solutions after contract award based on testing and customer feedback or buying a product with a process rather than an identified solution.

Answer – The principles of Agile software development are consistent with modular contracting, which is discussed in FAR Part 39, Acquisition of Information Technology. In addition, as a general matter, an agency may pursue acquisition practices that are not expressly endorsed in the FAR, including Agile software development, as long as they are not expressly prohibited by law.

Source: TechFAR

Question 3

Question – FAR 15.203 requires agencies to identify requirements in their requests for proposals (RFPs). How does this requirement fit with Agile processes, which are based on the premise that it is not realistic to expect users to know exactly what they need before they see it and rely on refinement of system requirements based on testing and customer feedback after the contract is awarded?

Answer – Agencies using Agile software development can meet the requirements of FAR 15.203 by identifying a Product Vision and coupling it with an explanation of how the Agile process will be used to achieve the Product Vision. Rather than providing a set of "how to specifications" (or Requirements Traceability Matrix), the Product Vision will focus on a desired outcome, similar to performance-based contracting, which has been permitted by the FAR for many years.

Source: TechFAR

Question 4

Question – Without having detailed system requirements documented up front, how will the Government ensure it has appropriate documentation and know whether a contractor is performing?

Answer – Agile software development requires documentation for user stories, acceptance criteria, tasks to be completed to fulfill the “definition of done,” code quality, and standards compliance. Because the Government is able to monitor progress, it will know whether a contractor is off track. The Agile software development approach involves a highly disciplined process with Government representation on the team to set priorities and ensure whether working software is compliant with contract or system requirements. Progress will be monitored by the delivery of deployable code on time.

Source: TechFAR

Question 5

Question – FAR Subpart 7.5 states that contractors cannot perform inherently Governmental work. Because software requirements are refined after contract award, would the use of a contractor in an Agile IT development contract be considered inherently Governmental?

Answer – Using the contractor to provide assistance to the Government with Agile software development is not, in itself, inherently Governmental work. With Agile, the contractor provides suggestions for the system through a highly defined and disciplined process that is driven by user needs established and monitored by the Government.

Source: TechFAR

Question 6

Question – Under FAR 9.504, agencies are required to avoid, neutralize or mitigate significant potential conflicts of interest. FAR 9.505 addresses the underlying principle of preventing unfair competitive advantage for any given vendor. By having a close relationship with the contractor on the Agile team, is the Government inviting a conflict of interest?

Answer – The contractor's involvement on the Agile team is used only to help define software requirements in accordance with a highly defined and disciplined process that is driven by user needs established by the Government. There are certainly situations where a contractor working on one contract may create an OCI for another procurement, but the nature of the Agile methodology does not, per se, create a conflict of interest. Whether a conflict may exist depends on the specific circumstances of the acquisition; confer with your Office of General Counsel for specific guidance.

Source: TechFAR

Question 7

Question – Are IDIQ contracts the only contract vehicle responsive enough to support the flexibility needed in Agile software development processes?

Answer – No. Contracts utilizing an Agile software development methodology may be used with any contract type, subject to limitations permitted by the contract vehicle (e.g., FAR Part 12).

Source: TechFAR

Question 8

Question – To avoid duplication, are agencies limited to only using existing enterprise-wide contracts for IT? What happens when existing contract vehicles do not provide for Agile software development services?

Answer – COs need to make a determination whether an existing contract vehicle supports Agile software development. If existing contract vehicles do not support Agile software development or have limitations, the CO is encouraged to use other contract vehicles.

Source: TechFAR

Question 9

Question – Because Agile software development is heavily process-driven, must agencies only use fixed-price contracts to get the desired result?

Answer – The selection of a contract pricing structure for acquisitions using Agile software development is no different than those for any other contract. Contracts utilizing Agile software development are not limited to fixed-price arrangements; the CO is encouraged to select the pricing structure that will result in reasonable contractor risk and provide the contractor with the greatest incentive for efficient and economical performance.

Source: TechFAR

Question 10

Question – When using a FP contract, how could the line items be structured?

Answer – In a FP contract, the line items may be structured by iterations (sprint cycles) with the unit of measure being the iteration. The Government may also use optional line items to account for additional work if needed.

Source: TechFAR

Question 11

Question – Do incentives under FAR Part 16 work with contracts for Agile software development?

Answer – Yes, the Government is highly encouraged to use incentives in contracts for Agile software development, if appropriate, to motivate contractor performance.

Source: TechFAR

Question 12

Question – How does the Government ensure fair and reasonable prices when acquiring a process such as Agile software development?

Answer – The Government may determine whether prices are fair and reasonable in a contract utilizing an Agile software development methodology by requesting and evaluating pricing of the effort as a unit of measure that is equivalent to the proposed sprint/release cycle and demonstrating the correlation between the proposed technical solution in the PWS and the pricing.

Source: TechFAR

Question 13

Question – FAR 11.002 states that agencies should specify needs in a manner that promotes competition. Given that requirements may not be fully defined when the agency solicits offers and that not every offeror knows how to perform Agile software development, what is the best way to ensure effective use of competition?

Answer – The Government ensures effective competition by applying a similar process used for performance-based contracting by identifying the desired outcome rather than the details of the design for how to perform the work. There are many vendors that are well-versed in Agile software development, and that number will likely increase as agencies become more familiar with Agile processes and gain experience.

Source: TechFAR

Question 14

Question – If system requirements are refined after the contract has been awarded, how can an agency ensure work was evaluated as part of the initial competition and is not considered an out of scope modification in violation of FAR 6.001(c)?

Answer – To ensure that all work is within the scope of the contract, as requirements are refined, the software releases (including the end product) must fall within the scope of the Product Vision described in the statement of work, and the agency must give offerors reasonable notice that the scope of the project includes using Agile techniques.

Source: TechFAR

Question 15

Question – Doesn't the fact that technical requirements are not defined substantially increase the risk of a protest?

Answer – The fact that technical requirements are developed through an Agile process should not increase the risk of a protest.

Source: TechFAR

Question 16

Question – Will small businesses be disadvantaged because they will not know Agile software development and will not be able to submit a proposal for Agile software development contracts?

Answer – The opportunity to award to small businesses exists and many small businesses have the expertise and capacity to perform Agile software development.

Source: TechFAR

Question 17

Question – FAR 42.302 lists the contract administration functions to be performed by the Government. When performing contract administration, agencies have noted challenges in committing staff to support Agile software development. Is Agile software development feasible given agencies' limited resources?

Answer – Agencies need to ensure adequate resources are applied to manage their contracts irrespective of the strategy used; Agile software development is no exception. While the process is highly interactive, the overall amount of work is not greater - just applied differently - to produce quicker results.

Source: TechFAR

Question 18

Question – Because Agile software development is a fluid process with technical requirements that are refined as part of the process, how can the Government hold contractors accountable in an Agile environment?

Answer – Even though a key principle of Agile software development is that working software is the primary measure of progress, contractors are still responsible for meeting cost and schedule goals. The Government holds the contractors accountable for producing working software consistent with the set sprint/release schedule and within budget.

Source: TechFAR

Question 19

Question – Because Agile software development is a fluid process with technical requirements that are refined as part of the process, how can the Government track contractor progress? Are there consequences for situations in which contractors fall behind?

Answer – The Government tracks progress by tracking completed work; in Agile, project status is evaluated based on software demonstrations, and if the contractor is not producing the releases with the required features, the CO should use discrepancy reports or other measures to put the contractor on notice and enforce consequences for poor performance. As stated in FAR 34.2, when an Earned Value Management System is required, the EVMS data also should be used to track progress.

Source: TechFAR