LEIDOS EVMS/AGILE Management Approach

An Evolution

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Outline

- Assumptions
- Case study of Leidos Agile/EVMS programs
  - Program 1
  - Program 2
- Challenges/Perceived Gaps noted between EVMS and Agile Approach Attributes
- Establishing the Initial Approach
- Identifying Success/Issues in Execution
- Adapting and Improving the solution
- Agile/EVMS challenges to be resolved
- Conclusion
  - Success factors
Assumptions

- Agile is understood by this audience
- EVMS is understood by this audience
- This presentation does not provide a solution, it is a case study and evolution of the solution
- This presentation will provide the key Success Factors required for an Agile/EVMS implementation
- Implementing Agile/EVMS on large programs can be more complex than current industry guidance suggests
- Developing an enterprise solution for Agile/EVMS
- The Leidos solution is tailorable to the needs of the program

Data presented at IDA Agile/EVMS conference in VA on 2/19-20 2015, Associated narrative supplied important context & details
Introduction to Leidos Agile/EVMS programs
Program 1

- Program 1 - Started in July 2012
- $220M, 4 year Software/System Development Program
- EVMS required per DFARS contract clause, Agile technical solution, Leidos replaced prime contractor
  - EVMS needed to control cost/schedule, size and nature of the program ACAT I
  - Agile needed due to type of work
  - Highly complex program
  - 4 cycles of Deliver, Test, Evaluation (DTE); although no quarterly shippable products
- Both approaches EVM & Agile were new requirements due to historical challenges on the legacy program
- Large stakeholder population
- EVMS surveillance required
- 12 Business day EVMS reporting cycle
Program 2 - Started in August 2013, a year after Program 1
- Lessons Learned
$95M, 18 months, Software Development Program
- EVMS required per DFARS contract clause, Agile technical solution
  - EVMS needed to control cost/schedule, size and nature of the program
  - Agile required due to type of work
  - Moderately complex program
  - 1 cycle of Deliver, Test, Evaluation (DTE)
- Additional DCARC cost reporting required
- IMP-structured IMS required
- Large stakeholder population
- EVMS surveillance required
- 12 Business day reporting cycle
Challenges/Perceived Gaps Experienced reconciling EVMS and Agile Approach Attributes

<table>
<thead>
<tr>
<th>EVMS Perceptions</th>
<th>Agile Perceptions</th>
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<tbody>
<tr>
<td>Well defined standard attributes EIA 748</td>
<td>Agile Manifesto Multiple Agile approaches</td>
</tr>
<tr>
<td>Established rigid processes</td>
<td>Flexible processes</td>
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<tr>
<td>*Defined by scope/budget</td>
<td>*Defined by time and resource level</td>
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<tr>
<td>Budget focused processes</td>
<td>Budget tracking not a focus</td>
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<td>Compliance oriented</td>
<td>Freeform</td>
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<td>EVMS Zealots</td>
<td>Agile Purists</td>
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<tr>
<td>Redundant</td>
<td>Lean</td>
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<td>Inorganic</td>
<td>Organic</td>
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Establishing the Initial Approach – Program 1

Issues

- Leidos did not have an Agile/EVMS solution or approach
  - Well-established EVMS
  - Successful Agile implementation on other large programs
  - Strong EVMS Center of Excellence (COE) support; no single COE staff designated lead
  - Strong Agile PM
  - Program Team established early in program lifecycle
- 1st EVMS program in business segment in years
- Agile new to majority of program workforce
- Large, complex program
- Large, integrated subcontract team
Establishing the Initial Approach – Program 1

Issues

- Early decision that EVMSD would be the basis for EVMS implementation (i.e. structure in accordance with EVMS artifacts)
- Perceived gaps affected every element of the set up: OBS, WBS, IMS, PMP, business rhythm…
- Took 5 months to establish baseline with some steps forwards and backwards (needed to reeducate every new Agile/EVMS SME)
  - Agile instinct is to question purpose of all steps (be lean, add value)
  - Preference of organic processes
  - Redefine terms or EVMS requirements
    - Example 1: creating work packages that are 100% done but not closed
    - Example 2: questioning whether some attributes of EVMS can be ignored (e.g. horizontally traceable schedule)
  - How to represent scope in a time box environment
  - How to take credit for work
Establishing the Initial Approach – Program 1 Resolution

- Training, Training, Training in both Agile and EVMS
- Open minded leaders in a dialogue-common goal to make it work
- EVMSD and processes that were flexible, tailorable (pre existed)
  - If you have overly prescriptive EVMSD and processes, they will need to be changed
- Team agreed to work within the existing EVMS and not create an alternate system
- Agile tenets apply to all Control Accounts, Pure Agile applied to development Control Accounts
- EVM acceptance of alternate sources of information
  - Leverage the EVMSD: freeze period not defined, but required
  - Agile dB as Quantifiable Back up Data (QBD) source
  - Roadmap, burndown charts as extension of IMS and status
  - Rolling wave planning with short freeze period (2 weeks) tied to release planning
  - Leveraged EVMSD program directives to tailor processes
Establishing the Initial Approach – Program 1 Resolution

- Agile acceptance of redundancy and inorganic processes
  - Sprint based work packages stay open until original scope completed-*not time boxed
  - Redundant data may exist in both in IMS and roadmap, etc.
  - CAMs were assigned in addition to SCRUM Masters (not the same resource)
  - Sprint scope lock down prior to work start – changes to be documented through a change management process
  - Agile database tracks & maintains where user story starts
  - Standardized interim QBD milestones established for User stories (versus Agile 0-100)
  - *4 week sprint
  - *Capability control accounts, with feature group level sprints as work packages
Adapting and Improving the Solution – Program 1 Execution Issues Related to Agile/EVMS

Separate these items from issues related to any large program that has ECPs, many resources, material management, subcontractor integration, technical challenges

- Completing Planning and authorizing work prior to work start
  - Short freeze period, no time for inefficiency/lack of focus
- Incorporating changes in a timely manner
  - Accepted that current period is not a retroactive change (when sprint boundary does not coincide with accounting period)
- Accurate baseline and forecast of resources to capability/feature group sprint were assigned a level below Scrum team (artificial/inefficient)
- QBD calculation (Agile dB didn’t organically support the process)
- User stories progress milestones (backloaded) and reporting boundaries disconnect
- Analyzing schedule performance- critical path and IMS analysis weaknesses
Adapting and Improving the Solution–Program 1
Resolution to Issues Related to Agile/EVMS

- Team accepted prioritization of planning and change management
  - Training
- Changed the WBS to be component development (based on what code is touched) versus capability – also allowed more integration points along the way
  *EV helped identify a need for change
  - Made planning more efficient
  - Made change management easier
  - Eliminated overlap between control accounts of users stories
- Established work packages at the component (code/node based) level; coincided with new scrum team organization
- Release-based work package level, still not time boxed
  - Eliminated artificial resource estimating
  - Made planning process more efficient
- Refined QBD development process and added mapping fields to Agile dB
- Aligned sprints with accounting calendar to reduce current period changes and QBD barrier issues *could make smaller, shorter user stories/sprints
Adapting and Improving the Solution—Program 1
Resolution to Issues Related to Agile/EVMS

- System engineering team incorporated review/identification of critical feature groups into release planning process to feed IMS critical items through entire roadmap

- Added interdependencies of feature group activities below work package and planning package level based on roadmap in IMS
  - Strengthen schedule analysis
  - Identify a critical items path for SRA

- Updated directives to incorporate the process changes
Adapting and Improving the Solution – Program 2 Initial Approach

Issues and Advantages

- Leidos had an Agile/EVMS solution or approach in process (1 year into Program 1)
  - Same organization
  - Strong Agile PM
  - Same COE staff
  - Lessons Learned available
- 2nd large EVMS program in business segment; leveraged established line support
- Large, moderately complex program
- Large, integrated subcontract team
- IMP requirement, DCARC cost reporting requirement
Adapting and Improving the Solution – Program 2 Initial Approach

Issues and Advantages

- Took 3 months to establish baseline
  - Program team not established (CAMs not available or assigned)
  - IMP-structured IMS
  - Scope and complexity differences from Program 1 (capabilities more code and node specific)
  - DCARC feature group was established one WBS level lower than capability WBS used on the program
Adapting and Improving the Solution – Program 2 Initial Approach Resolution

- Training, Training, Training in both Agile and EVMS
- Open minded leaders in a dialogue-common goal to make it work
- Reuse of tailored processes approaches, directives, Agile databases, QBD calculation, release based work packages (not time boxed)
- Leveraged Agile dB to meet DCARC cost reporting requirements (allocation methodology)
- PM accepted Lessons Learned/COE suggestions
  - Still questioned process steps for value
  - Adjusted IMS to depict IMP structure
  - Accepted more redundancy in IMS roadmap
  - Leveraged EVT weighted milestones that relies on QBD milestones
  - Release-based capability work packages/scrum teams for improved forecast and process efficiency and less artificial resource management
  - Assigned subcontractors as CAMs
  - All areas of program managed as Agile
Agile/EVMS Issues to be Resolved

- Update EVM infrastructure to extend to EVMS/Agile solution to eliminate need for directives to describe tailoring within the system
- New - implications of technical debt in work packages in relation to risk management, backlog, QBD, and schedule analysis
- New - modeling the relationship between QA, DRs and release based planning to create an alternative to critical path analysis using schedule margin
- Determine best approaches to QBD and user stories in relation to EVM reporting boundaries; aligning with accounting periods versus smaller stories/shorter sprints (each are valid)
- Optimising release planning, identifying freeze periods for rolling wave
- Mechanism for taking credit, pulling work into a release (partial solution)
- Resolving issues with SRA tool to represent some probability to complete work on time and complete work early
Success Factors

- EVMS not overly prescriptive—willing to change the approved system and processes
- Do not try and create a separate system
- Establish knowledgeable non-purist EVMS and Agile Leads
- Accept EVMS compliancy requirement
- Accept Agile solution for large program requires inorganic processes and redundancy (Hybrid Scrum)
  - Change management
  - Cost tracking
  - EVT calculation using disposition milestones to user stories
  - IMS redundant to some level of roadmap
  - Added processes to system engineering release planning
- Do not time box the work package
- Very short freeze period
- Customer has daily access to Agile dB
Follow up

EVMS and Agile EVMSD changes and implications

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Specifics to Agile and EVMS solution

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Questions?