

# 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

# Introduction to Leidos Agile/EVMS programs

## Program 2

- ▶ 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

EVMS Perceptions	Agile Perceptions
Well defined standard attributes EIA 748	Agile Manifesto Multiple Agile approaches
Established rigid processes	Flexible processes
*Defined by scope/budget	*Defined by time and resource level
Budget focused processes	Budget tracking not a focus
Compliance oriented	Freeform
EVMS Zealots	Agile Purists
Redundant	Lean
Inorganic	Organic

VS

# 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
- ▶ 1<sup>st</sup> 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
- ▶ 2<sup>nd</sup> 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?