

# August DoD Agile Meeting Integrated Program Management Division Agile EV Working Group Update 9/22/15

**There are differences in managerial approach and lifecycle development in the application of Earned Value (EV) and Agile software development**

## Overview

**Focus on the application of EVM in an Agile development environment. The group works to advance the understanding and use of Agile and EV to increase the probability of program cost, schedule, and technical success.**

## Leadership

**Chair - Kathy Dailey  
WBS/IMS Subgroup Lead – AnnMarie Oien  
Data Dictionary Subgroup Lead – Heidi Crookston  
Change Management Subgroup Lead – Howard Leibowitz  
Data Analysis Subgroup Lead – Kevin McKenna**

- **Forum to exchange views and information and provide guidance and direction for projects that use Agile development methodology and EVM**
- **Contribute to efforts defining optimal Agile and EV practices**
- **Highlight successes and failures and provide a information on the use of Agile and EV**
- **Current subgroups include Data Dictionary, WBS/IMS, Change Management & Data Analysis**
- **Guide describing the application of EVMS in an Agile development environment in subgroup areas**
- **Guidance will be released in interest areas as available**

- **Participation is voluntary and open to representatives from industry, government and academia**
- **Members expected to actively participate in working group**
- **Cost of participation responsibility of participants and/or their sponsoring organizations**

# Objectives

- **Contribute to efforts defining optimal EVM for Agile Program practices**
- **Highlight successes and failures and provide a information on the use of EV on Agile programs**
- **Provide guidance on the use of EVM on Agile programs**

- **Data Dictionary – Amy Martz**
- **WBS/IMS – Rob Eisenberg**
- **Change Management – Ron Terbush**
- **Data Analysis – Kathy Dailey**
- **What's Next – Barbara Phillips**

- **Produce an EVM Agile data dictionary and thesaurus of Agile terms and rationale that will create a common vernacular and a method to harmoniously blend EVM and Agile project management practices.**
- **Produce visual aids to further help with the understanding based on the data dictionary identified integration points and rationale for a common approach to integrate Agile Scrum practices into EVM across a product lifecycle.**

# Data Dictionary Subgroup Members

- **Heidi Crookston – Subgroup Lead, GE Aviation**
- **David Bulkin - Grow-Lean, LLC**
- **Matthew Kennedy - DAU**
- **Amy Martz - Raytheon**
- **Larry Mattivi - Navy**
- **Leo Rodriguez - AISC**
- **Dave Scott - KM Systems Group**
- **Bob Ternes - Rally Development**
- **Dave Tervonen - Navy**
- **Jeffery Thomas - Raytheon**

# Data Dictionary Activities Completed

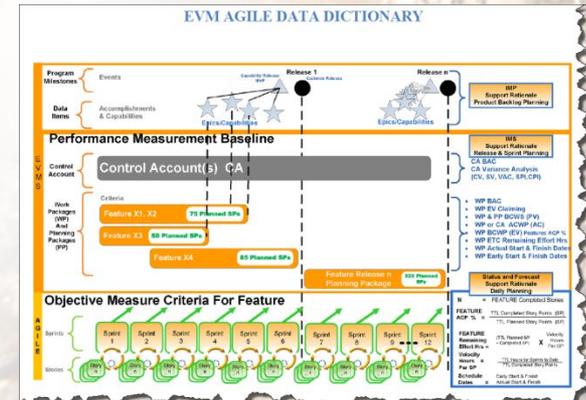
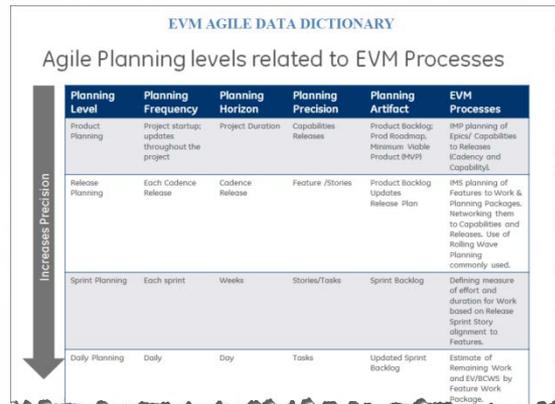
- Identified common EVM Agile terms based on industry definitions
- Defined rationale for the identified common terms
- Drafted the Data Dictionary and identified common terms and rationale
- Peer reviewed draft copy of Data Dictionary and consolidated peer review responses (86 comment items)
- Disposition (86/86) comments from peer review feedback
- Updated definition for major and minor comment dispositions
- Developed visual aids to support dictionary concepts and terms and submitted to committee for peer review
- Final updates and release of Data Dictionary and visual aids to committee for white paper

# Data Dictionary Subgroup Status

- **Achieved**: Data Dictionary is baselined, released and under change control
- **Release plan near term**: Anticipate broader release to PARCA/Government baselined, releases and under change control.
- **Management longer term**: Will become part of the NDIA IPMD Agile/Earned Value Guide to Earned Value Management for Agile Programs: Industry Best Practice

**EVM AGILE DATA DICTIONARY**

EVM Abv.	EVM Link Term Definition	Rationale to Agile/Scrum Term	AGILE Link Related Term
AC	Actual Cost	Synonymous with ACWP	
ACWP	Actual Cost of Work Performed	Cumulative hours and/or direct cost to time now for sprint, feature, story, epic/capability, and work package, as collected by contractor's corporate accounting system.	Sprint, Feature, Story, Epic/Capability
ASD	Actual Start Date	The start date for the work package is when work starts on the earliest story in work package	Story
AFD	Actual Finish Date	The finish date for the work package is when work ends on the latest story in work package	Story
BAC	Budget At Complete	Summary of the work and planning package budgets	Story, Feature, Epic/Capability
BAC WP	Budget At Complete for Work Package	Total planned Story Points for the work package translated to hours, dollars, or other measurable terms	Story Points
BCWP	Budgeted Cost for Work Performed	Expressed in dollars or as a percentage at the work package. The percent complete for work performed is calculated by (story points complete in the WP) / (current best estimate of total story points in the WP) See Diagram 1. Feature ACP%. This can also be the bump metric for all the stories associated to the	Story Points, Definition of Done, Bump metric, Story



# WBS/IMS Subgroup Objectives

- **Provide guidance on performing EVM on Agile programs by describing industry best practices for**
  - Agile Project Planning
  - Work breakdown structure (WBS)
  - Integrated Master Plan (IMP)
  - Integrated Master Schedule (IMS)
  - Establishing Control Accounts and Work Packages
  - Measuring Performance
- **Best practices will be based on actual lessons learned across multiple companies and many years of applying Agile practices on programs with EVM requirements**
- **The described practices and examples should be generic enough to apply across different product types and scale to different contract sizes.**

# WBS/IMS Subgroup Members

- **AnnMarie Oien – Subgroup Lead, Lockheed Martin**
- **Juana Collymore – GAO**
- **Heidi Crookston – GE**
- **Greg Davis – IDA, formerly PARCA**
- **Jim Duffy – Ratheon**
- **Rob Eisenberg – Lockheed Martin**
- **Renee Frazier – Rockwell Collins**
- **Dennis Hall – NDU**
- **Melissa Slaughter – Navy**
- **Jim Taylor – Raytheon**
- **Brian Valenti – Rockwell Collins**
- **Robin Yeman – Lockheed Martin**

# WBS/IMS Activities

- **Completed 50 page document, including 25 pp data dictionary:**  
**Earned Value Management for Agile Programs: Industry Best Practices**
  - Document developed collaboratively and iteratively, with multiple levels of review
  - Collated with Data Dictionary and Released to NDIA IPMD lead & subgroup

## Earned Value Management for Agile Programs: Industry Best Practices

Guidance on Agile implementation on EVMS-applicable programs drawing from lessons learned and best practices

Authored by members of the National Defense Industry Association Integrated Program Management Division (NDIA IPMD) Agile EVM Working Group

Revision Date: 14<sup>th</sup> July 2015

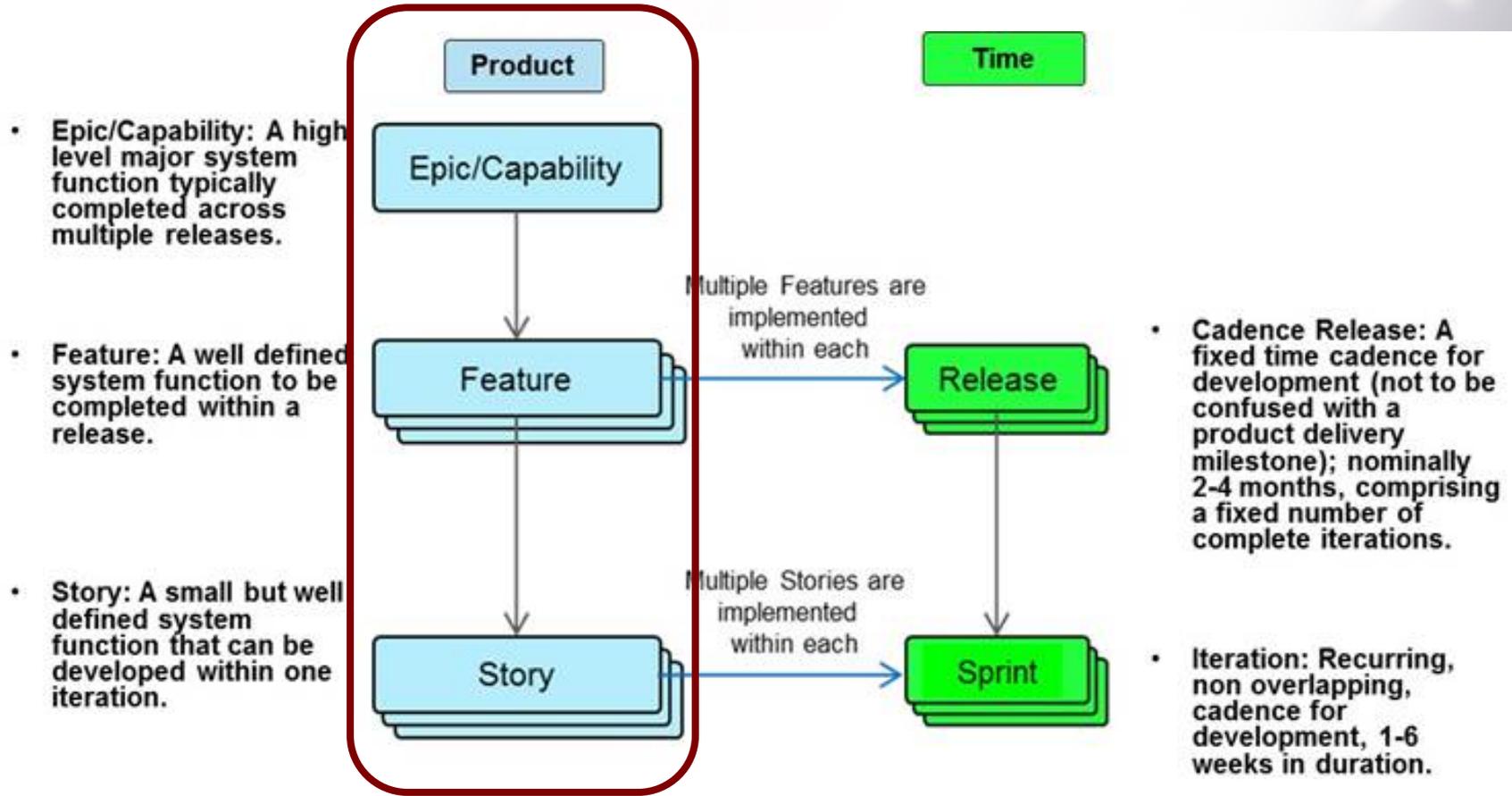
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# WBS/IMS Status

- **Philosophy was to create a best practices guidebook, not compliance guidance and not “promotional” material. Hence tool and company agnostic approach with examples rather than requirements**
- **Best practices includes not only the WBS, IMS and IMP recommendations, but guidance on how to use them along with supplemental Agile information to measure and manage Earned Value**
- **Anticipate broader release to PARCA/Government and NDIA IPMD communities shortly**
- **Will become part of the NDIA IPMD Agile/Earned Value Guide to Earned Value Management for Agile Programs: Industry Best Practice**

# WBS - Products and Cadence



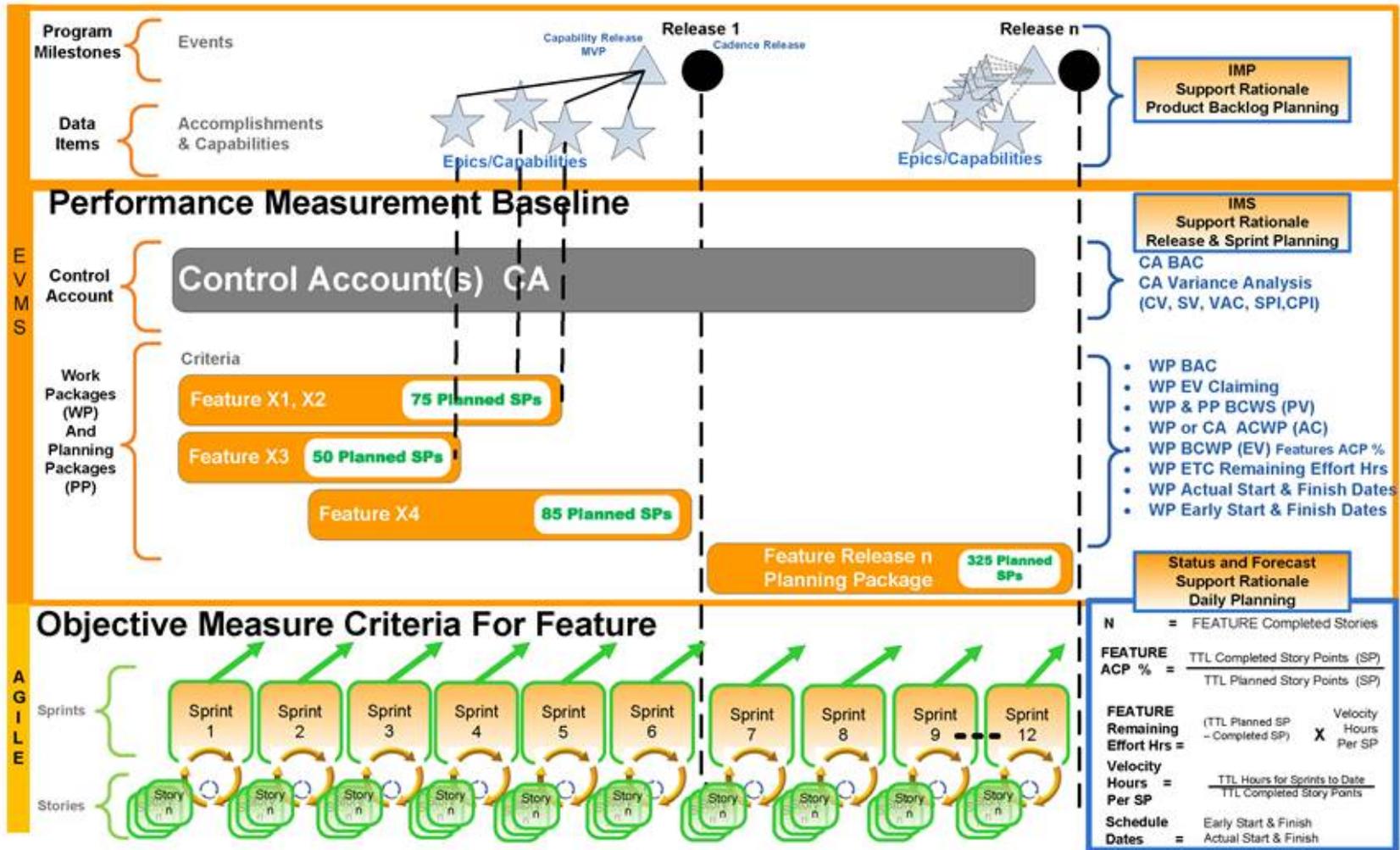
**A product oriented WBS organized around Agile products is totally compatible with MIL-STD 881.**

# Agile Planning

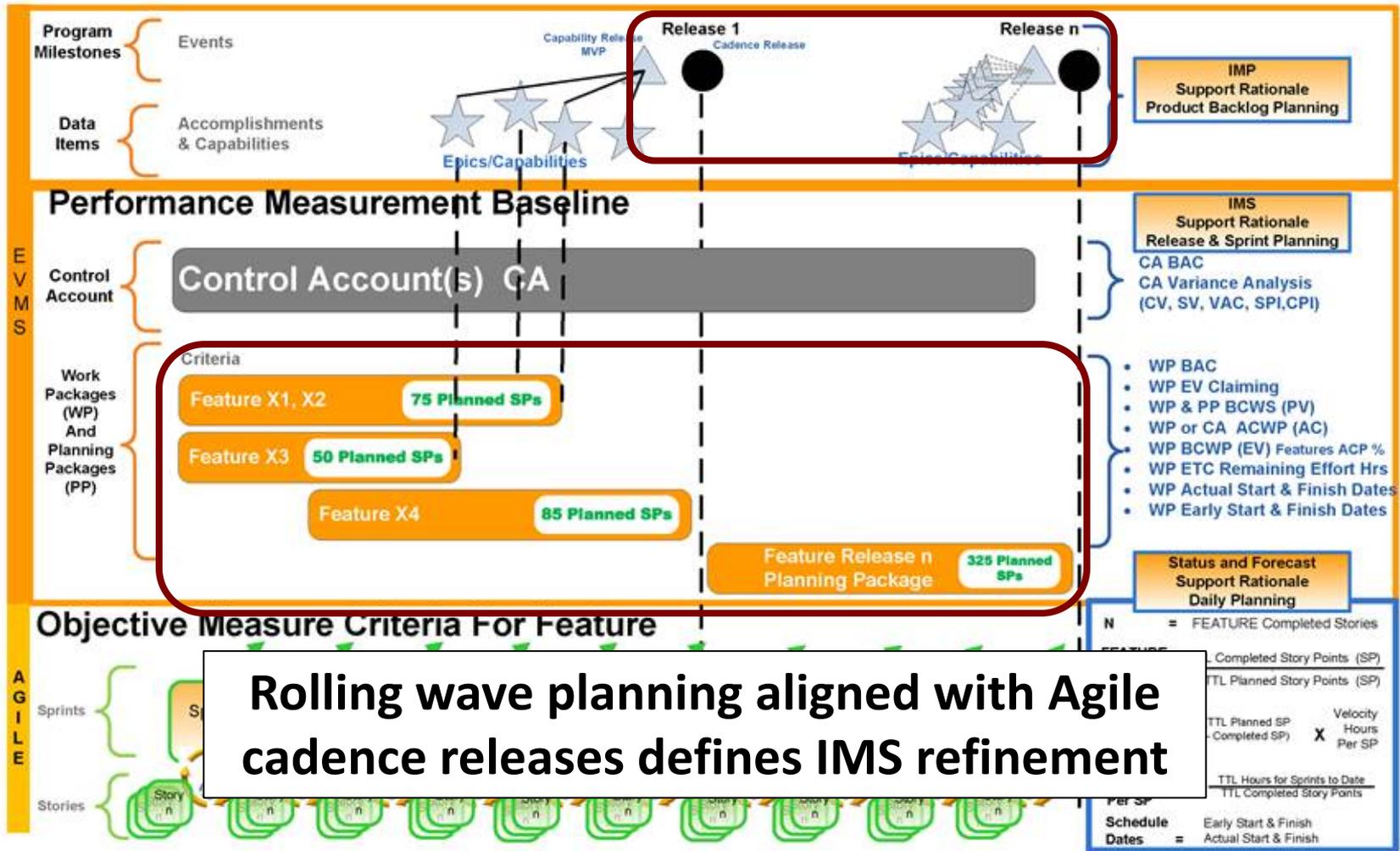
## Agile Planning levels related to EVM Processes

Increases Precision	Planning Level	Planning Frequency	Planning Horizon	Planning Precision	Planning Artifact	EVM Processes
	Product Planning	Project startup; updates throughout the project	Project Duration	Capabilities Releases	Product Backlog; Prod Roadmap, Minimum Viable Product (MVP)	IMP planning of Epics/ Capabilities to Releases (Cadency and Capability).
	Release Planning	Each Cadence Release	Cadence Release	Feature /Stories	Product Backlog Updates Release Plan	IMS planning of Features to Work & Planning Packages. Networking them to Capabilities and Releases. Use of Rolling Wave Planning commonly used.
	Sprint Planning	Each sprint	Weeks	Stories/Tasks	Sprint Backlog	Defining measure of effort and duration for Work based on Release Sprint Story alignment to Features.
	Daily Planning	Daily	Day	Tasks	Updated Sprint Backlog	Estimate of Remaining Work and EV/BCWS by Feature Work Package.

## EVM and Agile Framework ( From Guidebook )



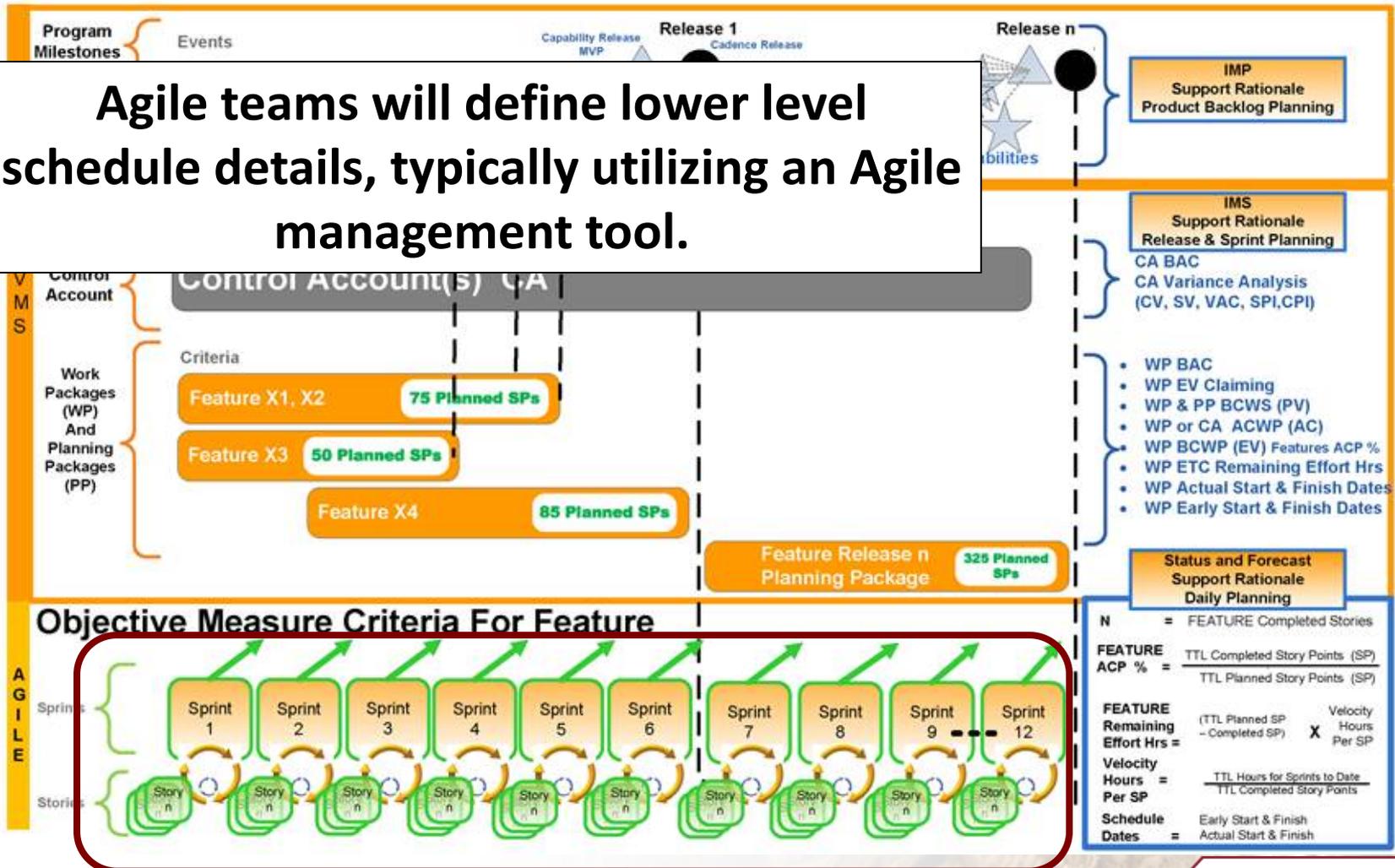
## EVM and Agile Framework ( From Guidebook )



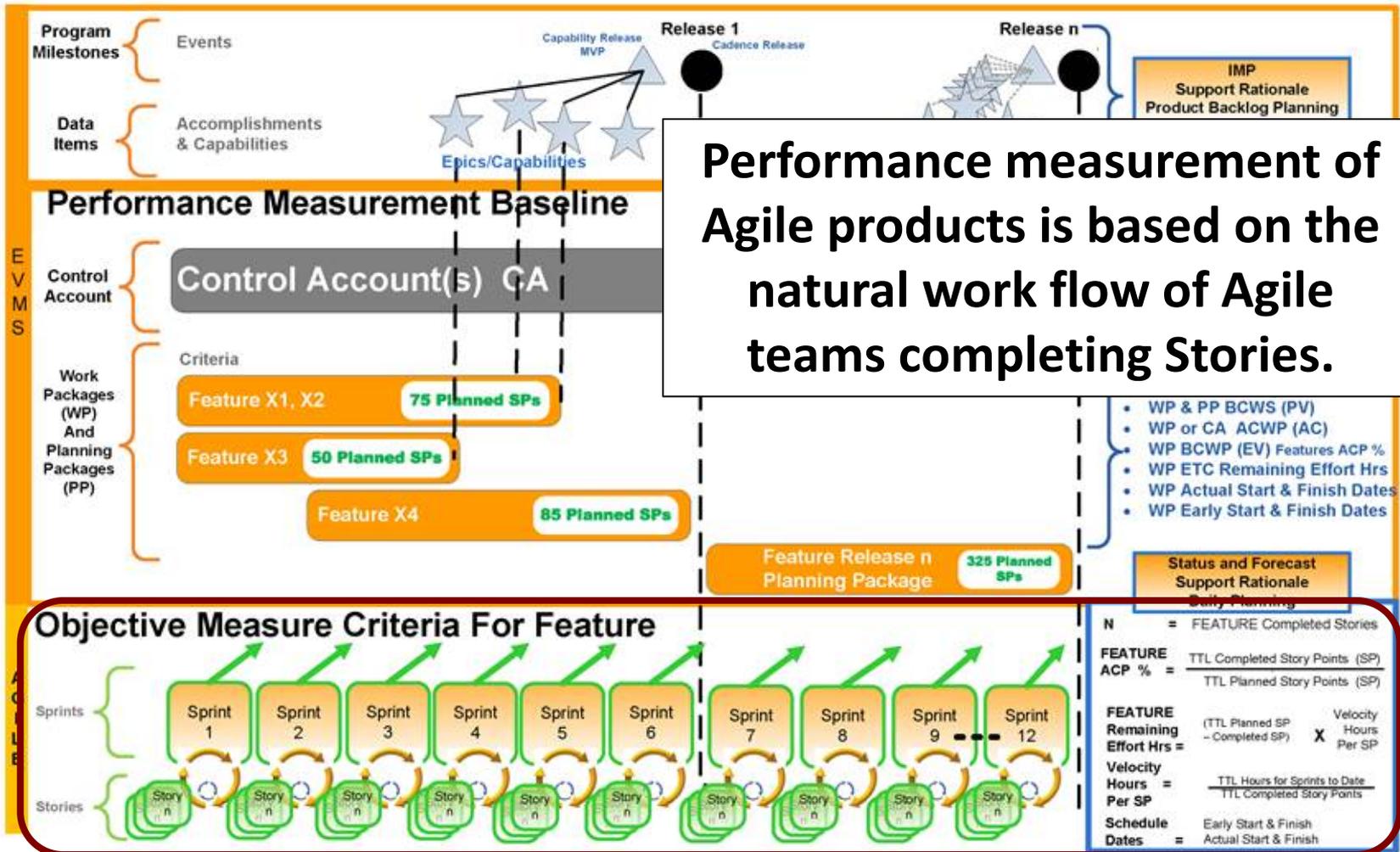
**Rolling wave planning aligned with Agile cadence releases defines IMS refinement**

## EVM and Agile Framework ( From Guidebook)

Agile teams will define lower level schedule details, typically utilizing an Agile management tool.



## EVM and Agile Framework ( From Guidebook)



Performance measurement of Agile products is based on the natural work flow of Agile teams completing Stories.

## Managing Change Subgroup Objective

- **Provide guidance on managing baseline changes for programs following Agile Software Development methodology**
- **Provide program scenarios for baseline changes and forecast changes that illustrate Earned Value PMB actions along with agile Product Backlog actions and the relationship between the two**

- **Howard Leibowitz – Subgroup Lead – SGT**
- **Ivan Bembers - Government**
- **Kimberly Davis – ASRC Federal**
- **Singi DeSilva – Delta Resources**
- **Jessica Kaspari – Rockwell Collins**
- **Amy Martz - Raytheon**
- **Andrea Nibert - Leidos**
- **Barbara Phillips – Eagle One Solutions**
- **Ron Terbush – Lockheed Martin**
- **Pam Walter - Leidos**

# Managing Change Subgroup Accomplishments

- **Completed “white” paper outlining best practices for managing baseline changes on EVMS programs that follow an agile development methodology**
  - Created draft document in a collaborative team effort across industry team members
  - Incorporated accepted Agile NDIA IPMD total team comments into draft paper
  - Incorporated Government advisor comments from government/industry meeting into draft paper
  - Team review of all final comments discussed and agreed upon amongst industry team members to create a Final Release 1 document

## Managing Baseline Change on an Agile Software Development program

The purpose of this paper is to document industry best practices for managing baseline changes on an Agile Software Development program utilizing EVMS. Developed by the NDIA “Agile Managing Change Working Group”, these best practices represent a knowledge network of Earned Value and Agile practitioners promoting a consolidated paper.

- **Section 1 – Scope of the Paper:**
  - Establishes boundaries of the paper – software development
  - Recognizes that many valid approaches may exist, we are describing one approach that represents a best practice
- **Section 2 – Baseline Assumptions:**
  - Establishes a construct for mapping scope to budget (essential for managing change)
    - EVM Reporting levels
    - Exit criteria established for PMB work package / IMS task
    - Product backlog documents the technical baseline and maps to the PMB
- **Section 3 – Baseline & Forecast Change scenarios:**
  - **Baseline Change scenarios:** Shows how change is manifested in the PMB as well as in the agile technical database and shows the movement of scope with budget
  - **Forecast Change Scenarios:** Scenarios that change program status or reprioritize tasks, but do not result in a baseline change. These are included to clarify how a program utilizing agile methodology tracks the movement of work-in-progress in the agile tool and keeps the correlation of scope and budget in the PMB.
- **Section 4 – Recommendations**
  - Recommendations on establishing program “EVM” parameters that facilitate managing an agile development baseline
    - Freeze period
    - Customer engagement defining flexibility of program scope/requirements

# Managing Change Paper - Content

BASELINE CHANGE SCENARIOS		
Scenario	PMB Action	Product Backlog Action
1. Feature work package is not open and has not started. The feature is not needed for the current release.	Baseline Change: Re-plan work package budget to future release planning package. If the baseline start of the feature is inside the program's "freeze period" customer approval is required	Feature and related stories are returned to product backlog and mapped to future release. The Planning Package identifier is updated.

- ▶ The backlog includes a coding structure that traces to the CAP. (WP's and PP's)
- ▶ Budgets for Features are allocated based on complexity of the effort
- ▶ The Control Account BAC represents the planned cost for completing the product (EPIC)

Product Backlog				Control Account Plan	
Release	User Stories	Features	Work Pkg / Planning Pkg	Work Pkg / Planning Pkg	BUDGET
A	X1	X	A00X	A00X	\$ 8,000
	X2				
	X3				
	X4				
	X5				
	Y1	Y	A00Y	A00Y	\$ 7,000
	Y2				
	Y3				
	Y4				
	Y5				
Z1	Z	A00Z	A00Z	\$ 10,000	
Z2					
Z3					
Z4					
Z5					
B	N1	P	B00PP	B00PP	\$ 25,000
	N2				
	N3				
	N4				
	N5				
	TBD Q				
	TBD R				
TBD S					
TBD T					
C	TBD	U-W	C00PP	C00PP	\$ 25,000
				BAC	\$ 75,000



Feature "Y" moved from Release A to Release B

Product Backlog				Control Account Plan					
Release	User Stories	Features	Work Pkg / Planning Pkg	Work Pkg / Planning Pkg	BUDGET				
A	X1	X	A00X	A00X	\$ 8,000				
	X2								
	X3								
	X4								
	X5								
	Y2	Y	A00Y	A00Y	\$ 7,000				
	Y3								
	Y4								
	Y5								
	Z1					Z	A00Z	A00Z	\$ 10,000
Z2									
Z3									
Z4									
Z5									
B	N1	P	B00PP	B00PP	\$ 25,000				
	N2								
	N3								
	N4								
	N5								
	Y1					Y	A00Y	A00Y	\$ 32,000
	Y2								
Y3									
Y4									
Y5									
TBD Q									
TBD R									
TBD S									
TBD T									
C	TBD	U-W	C00PP	C00PP	\$ 25,000				
				BAC	\$ 75,000				

- \$7,000

+ \$7,000

The Product Backlog traces to the Control Account Plan

## Change Management Paper

- **Philosophy was to create a best practices guidebook, not a compliance document and not “promotional” material.**
  - tool-agnostic approach with examples rather than requirements
  - Expected to evolve and expand with industry application and lessons learned
- **Anticipate broader release to PARCA/Government and NDIA IPMD communities shortly**
- **Will become part of the NDIA IPMD Agile/Earned Value Guide to Earned Value Management for Agile Programs: Industry Best Practice**

# Data Analysis Subgroup Objective

**Explore and analyze how Agile projects plan and report with traditional EVM metrics, and how Agile metrics can support performance assessment against an EVM baseline.**

# Data Analysis Subgroup Members

- **Kevin McKenna– Subgroup Lead**
- **Jim Duffy**
- **Renee Frazier**
- **Jason Kautz**
- **Jennifer Leotta**
- **Audrey Mahoney**
- **Julianne Miller**
- **Scott Rummel**
- **Tom Shanahan**

# Data Analysis Activities

- **Identified several topics for exploration**
  - Leveraging Agile metrics and EVM metrics for program analysis
    - Devising a uniform way to perform data analysis
  - Milestones in an Agile environment
    - How do they manifest in an IMP?
    - Using milestones for progress payments
  - Impact of low value-added but necessary requirements on performance

# Data Analysis Status

- **Meeting held to re-align the subgroup and discuss potential objective going forward**
  - July 28
- **Identified the need for a data collection plan**
  - Need to analyze real-world data and metrics to gather valuable conclusions
  - Would like to have a large enough sample size to be able to identify trends in:
    - Schedule data granularity
    - Variability of cost/schedule data over time
- **The subgroup will also explore the best acquisition practices for programs that use Agile and EVM**

# What's Next

- Working group members reviewing draft
- Comments will be adjudicated
- Document will be submitted to IPMD Board for approval to release to larger community
- There will be a minimum of a 30 comment period
- Comments will be adjudicated
- Version 1.0 of the Guide will be published
- Updates will be published as needed, minimally every three years
- Anticipate more updates based on work from Data Analysis Subgroup

# Ongoing Community Activities

- **GAO Cost, Schedule and EVM Expert Meeting**
  - September 29 from 2:00 to 4:00 at GAO Headquarters, Staats Briefing Room (7<sup>th</sup> Floor)
  - Agenda Item #1: Discuss the applicability of EVM reporting for Agile programs.
    - What, if any, value is added by imposing this type of reporting?
    - Are Agile and EVM in conflict with one another? and the topics the agile and EVM and are they compatible
- **CPM Integrated Program Management Workshop (IPMW)**
  - November 16 to 18, 2016 in Bethesda, MD
  - Practice Symposia Track: Agile Integration
- **CPM's Measureable News (MN) next issue (October 2015) will have several agile related articles**
- **PARCA DoD White Paper – ongoing interaction**
- **NDIA Agile Committee is not going away. Looking for inputs on what's next**
- **CPM WDC has held many meetings on the subject and plans to hold future meetings. Plus more CPM Chapters are starting and consider Agile the hot topic**

# Questions???