PARCA EVM

DoD EVM POLICY
Using EVM and Agile Together

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PARCA Deputy Director for EVM

▶ Today's List

- ■ PARCA

- ■ EVM and Agile Questions

- ■ Managing the Work

- ■ Recap

DoD EVM Policy
OSD AT&L PARCA Organization and Guidance

Director, Performance Assessments and Root Cause Analyses (PARCA)
Mr. Gary R. Bliss

OSD EVM Policy Holder	Nunn McCurdy Breach Analysis	Program Assessments and DAES Selection	Analysis Team
Mr. John McGregor **Deputy Director for Earned Value Management**	*Mr. Dave Cadman* **Deputy Director for Root Cause Analyses**	*Dr. Peter Eggan* **Deputy Director for Performance Assessments**	*Dr. Philip Anton* **Deputy Director for Acquisition Policy Analysis Center**

PARCA was brought into existence via the reforms in the Weapon Systems Acquisition Reform Act (WSARA) of 2009

The EVM Division of PARCA is responsible and accountable for EVM performance, oversight, and governance across the Department

| Policy and Guidance	EVM Competency	Program Interface	EVM Central Repository	Communications and Outreach
Develop, publish, and maintain DOD policy and guidance on EVM	Serve as DoD EVM Functional Lead to influence EVM competency requirements; Coordinate with Defense Acquisition University (DAU)	Review and approve EVM data requirements for MDAP programs in coordination with Services and Defense Agencies; Resolve interpretive differences in EVM policy, practice, and requirements	Responsible for the Earned Value Mgt Central Repository (CR) and maintenance of CR data alignment with the Acquisition Visibility framework; Report EVM data compliance, integrity, and quality to AT&L	Maintain communications with Government and Industry on EVM policy

▶ **Agile & EVM PM Desk Guide** – Provides overview of relationship between Agile and EVM in DoD
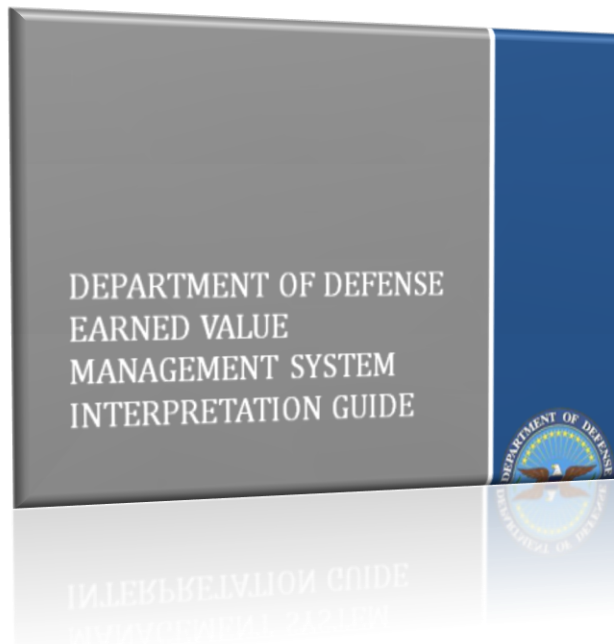
▶ **EVMS Interpretation Guide (EVMSIG)** – Provides the overarching DoD interpretation of the 32 EVMS Guidelines

OMB Capital Programming Guide

▶ Update of OMB Capital Programming Guide provides link between EVM and Agile:

*"EVM is not tied to any specific development methodology and does not prevent the use of other risk management techniques such as agile development. **EVM and agile development are complementary** and can be used on the same project. Agile development can be used to incrementally deliver functionality to the customer while EVM provides a standard method for measuring progress."*

EVM & Agile

Questions on Agile Management and Earned Value Management

▶ How does an IBR differ when using Agile with EVM?

  ▪ How does a PM determine if a baseline is achievable?

  ▪ What are the key questions to ask?

▶ How are Agile metrics used to underpin EVM performance?

▶ How does Agile status manifest in performance status, analysis, and variance reporting?

▸ How does program management change in an Agile environment?

▸ Has anyone worked on EVM and Agile on the same contract?

■ What are the benefits of using EVM in an Agile environment?

▸ What is the Government's role when Agile is implemented?

■ Are there any implications using EVM within an Agile environment that should be addressed in DoD EVM System or other Guidance?

Managing the Work
Organizing, Planning, Measuring, and Change Management

▸ **Organizing** - Develop and maintain relationship between Agile backlog and Work Breakdown Structure (WBS)

▸ **Planning & Scheduling** - Planning and scheduling with Agile can align to EVM System guideline criteria; Agile underpins IMS

▸ **Measuring Progress** - Agile system must support the EVMS, demonstrating that all objective technical completion criteria have been met

▸ **Baseline Maintenance** - Agile product backlog, at the feature level (i.e., work package) or higher, have an assigned budget under baseline control

▸ EVM and Agile both support effective and proactive program management

▸ Planning, forecasting, and estimating are large parts of both disciplines

▸ Change control, while not identical between the disciplines, is crucial to the reliability of performance metrics

▸ Key is linkage with completion of technical criteria

Questions Contact Us

PARCA AEP Program

PARCA EVM Website:
http://www.acq.osd.mil/evm/

PARCA EVM Email:
osd.dodevm@mail.mil

PARCA Acquisition Exchange Program (AEP) provides a unique career-development experience for high-caliber Government civilians or military personnel interested in acquisition and/or EVM.

http://www.acq.osd.mil/evm/aep.program.html

BACK-UP
Additional Information / Reference

GL	GL Description	GL	GL Description
1	Define the Project Work Scope	17	Summarize direct costs by WBS elements
2	Define the Project Organization	18	Summarize direct costs by OBS elements
3	Integrate Subsidiary Processes	19	Record/allocate indirect costs
4	Identify Overhead Management	20	Identify unit and lot costs as needed
5	Integrate WBS/OBS to Create Control Accounts	21	Track and report material costs/quantities
6	Schedule with network logic	22	Calculate Schedule Variance & Cost Variance
7	Set measurement indicators	23	Identify significant variances for analysis
8	Establish the CBB/PMB	24	Analyze indirect Cost Variance
9	Budget by cost elements	25	Summarize information for management
10	Create work/planning packages	26	Implement corrective actions
11	Sum WP/PP budgets to the Control Account	27	Revise Estimate At Completion
12	Level of Effort planning	28	Incorporate changes in a timely manner
13	Set overhead budgets	29	Reconcile current to prior budgets
14	Identify MR and UB	30	Control retroactive changes
15	Reconcile CBB to target values	31	Prevent unauthorized revisions
16	Record direct costs	32	Document PMB changes

▶ There are many different implementations of Agile, so for ease of discussion the following terms will be used:

- **Feature** – A clearly defined technical work scope requirement of an Agile project. Features are decomposed by the development team into Stories

- **Stories** – Individual pieces of work scope that can be completed within a Sprint. Stories are defined by the development team as a result of the decomposition of Features.

- **Sprint** – A fixed time box for development which results in a working increment of software. Sprints are usually 2 to 4 weeks in duration.

- **Story Points** – A measure of a Story's estimated value as perceived by the development team. The number of Story Points is an abstraction of the effort, complexity, and risk of the Story.

Earned Value

- Organizing the workscope & teams in a product oriented, hierarchical manner

Develop and maintain relationship between Agile backlog and Work Breakdown Structure (WBS)

- Agile teams utilizing a product backlog

Agile Methodology

Definition of Work Scope

Events Drive Schedule

WBS#	WBS Description
1.0	Electronic System
1.1	Prime Mission Product (PMP)
1.1.1	PMP Subsystem
1.1.1.1	PMP Subsystem Hardware
1.1.1.2	PMP Subsystem Software Release
1.1.1.3	Subsystem Integration, Assembly, Test and Checkout
1.1.2	PMP Software Release
1.1.2.1	Software Product Engineering
1.1.2.2	Computer Software Configuration Item (CSCI)
1.1.2.3	Subsystem Integration, Assembly, Test and Checkout
1.1.3	PMP Integration, Assembly, Test and Checkout

From Appendix B of MIL-STD-881C

Product Backlog

STORIES

FEATURES (Work Package Level)

EPICS (Control Account Level)
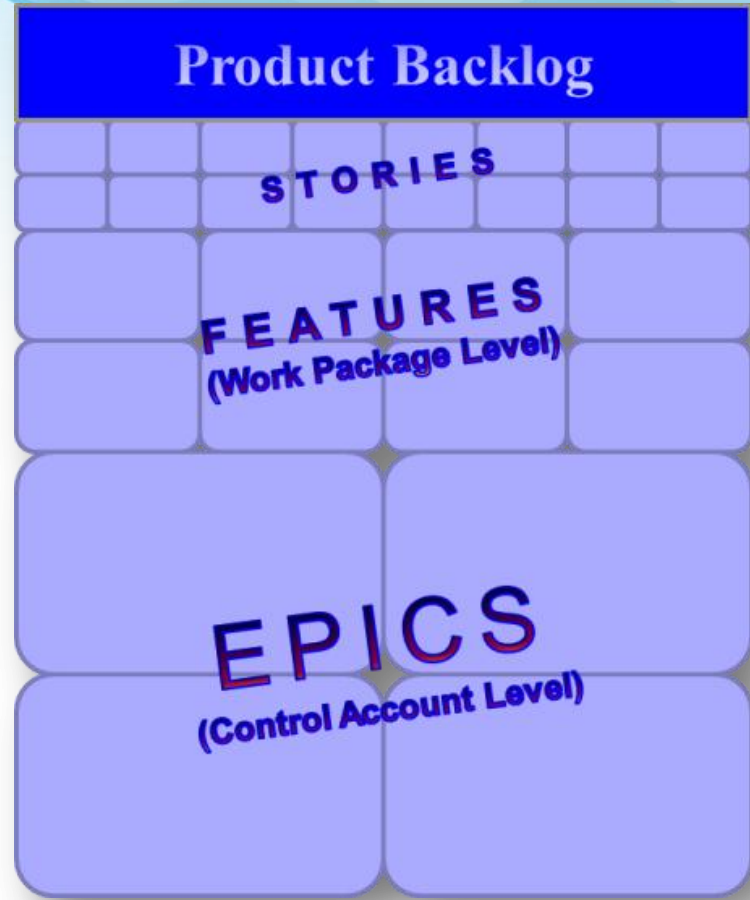
Priority Drives Schedule

Earned Value

- Planning work in the baseline and IMS, time-phased in a rolling-wave, 6 month window

Planning and scheduling with Agile can align to EVM System guideline criteria

- System requirements decomposed into capabilities, features, and stories thru sprints

Agile Methodology

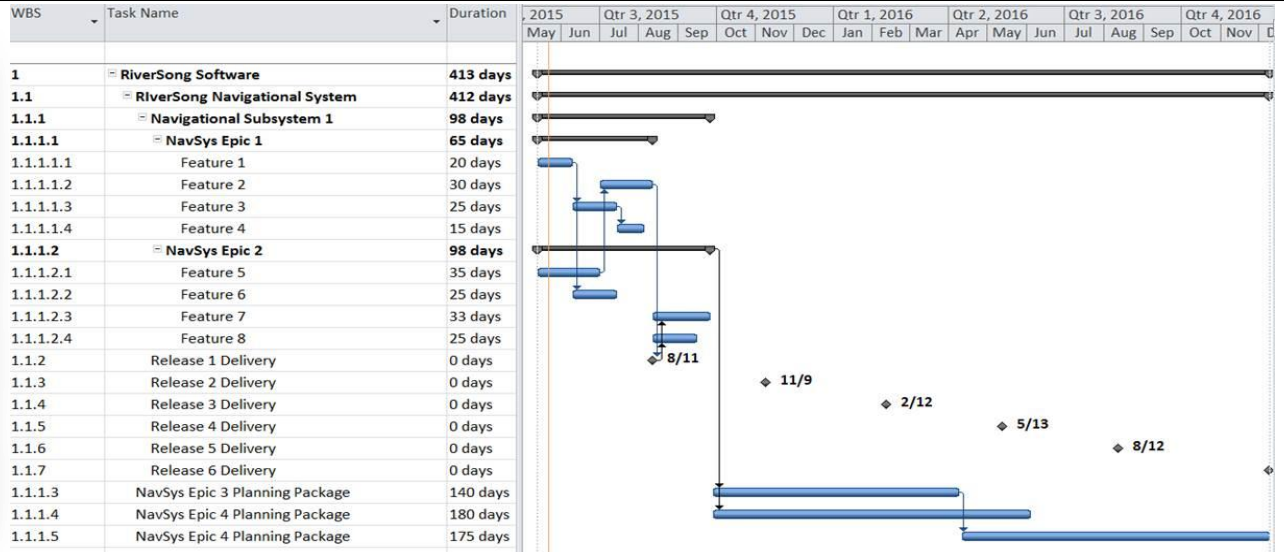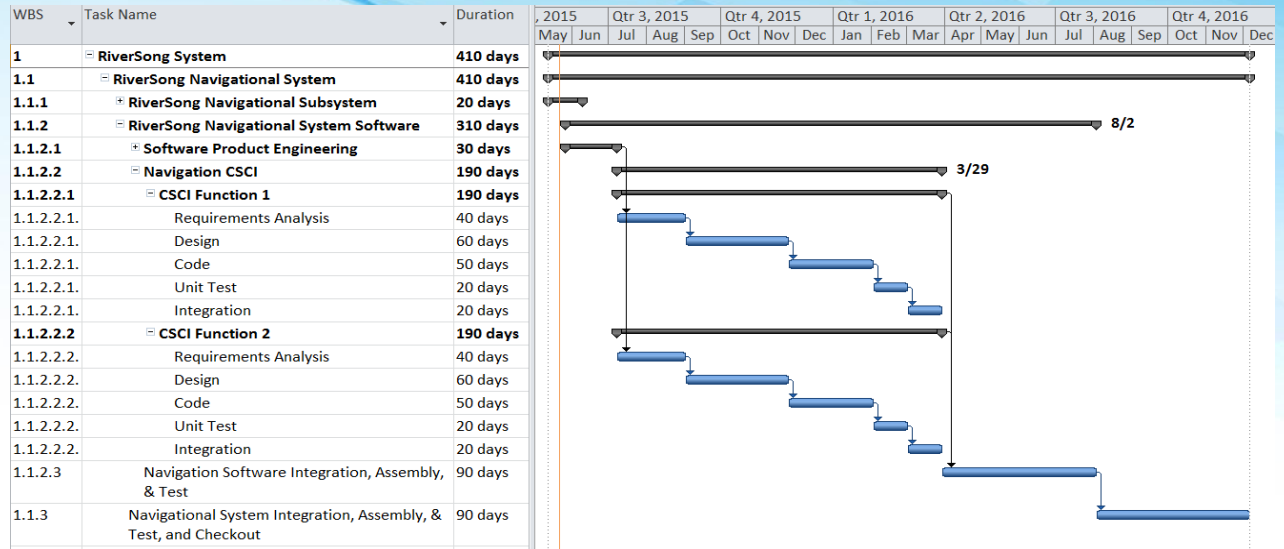| WBS#	WBS Description
1.0	Electronic System
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1.1.1.2	PMP Subsystem Software Release
1.1.1.3	Subsystem Integration, Assembly, Test and Checkout
1.1.2	PMP Software Release
1.1.2.1	Software Product Engineering
1.1.2.2	Computer Software Configuration Item (CSCI)
1.1.2.3	Subsystem Integration, Assembly, Test and Checkout
1.1.3	PMP Integration, Assembly, Test and Checkout

WBS	Task Name	Duration
1	RiverSong System	410 days
1.1	RiverSong Navigational System	410 days
1.1.1	RiverSong Navigational Subsystem	20 days
1.1.2	RiverSong Navigational System Software	310 days
1.1.2.1	Software Product Engineering	30 days
1.1.2.2	Navigation CSCI	190 days
1.1.2.2.1	CSCI Function 1	190 days
1.1.2.2.1.	Requirements Analysis	40 days
1.1.2.2.1.	Design	60 days
1.1.2.2.1.	Code	50 days
1.1.2.2.1.	Unit Test	20 days
1.1.2.2.1.	Integration	20 days
1.1.2.2.2	CSCI Function 2	190 days
1.1.2.2.2.	Requirements Analysis	40 days
1.1.2.2.2.	Design	60 days
1.1.2.2.2.	Code	50 days
1.1.2.2.2.	Unit Test	20 days
1.1.2.2.2.	Integration	20 days
1.1.2.3	Navigation Software Integration, Assembly, & Test	90 days
1.1.3	Navigational System Integration, Assembly, & Test, and Checkout	90 days

Product Backlog

STORIES

FEATURES
(Work Package Level)

EPICS
(Control Account Level)

WBS	Task Name	Duration
1	RiverSong Software	413 days
1.1	RiverSong Navigational System	412 days
1.1.1	Navigational Subsystem 1	98 days
1.1.1.1	NavSys Epic 1	65 days
1.1.1.1.1	Feature 1	20 days
1.1.1.1.2	Feature 2	30 days
1.1.1.1.3	Feature 3	25 days
1.1.1.1.4	Feature 4	15 days
1.1.1.2	NavSys Epic 2	98 days
1.1.1.2.1	Feature 5	35 days
1.1.1.2.2	Feature 6	25 days
1.1.1.2.3	Feature 7	33 days
1.1.1.2.4	Feature 8	25 days
1.1.2	Release 1 Delivery	0 days
1.1.3	Release 2 Delivery	0 days
1.1.4	Release 3 Delivery	0 days
1.1.5	Release 4 Delivery	0 days
1.1.6	Release 5 Delivery	0 days
1.1.7	Release 6 Delivery	0 days
1.1.1.3	NavSys Epic 3 Planning Package	140 days
1.1.1.4	NavSys Epic 4 Planning Package	180 days
1.1.1.5	NavSys Epic 4 Planning Package	175 days

Earned Value

- Progress tied to scope completion based on quantifiable backup information/data

Agile system must support the EVMS, demonstrating that all objective technical completion criteria have been met
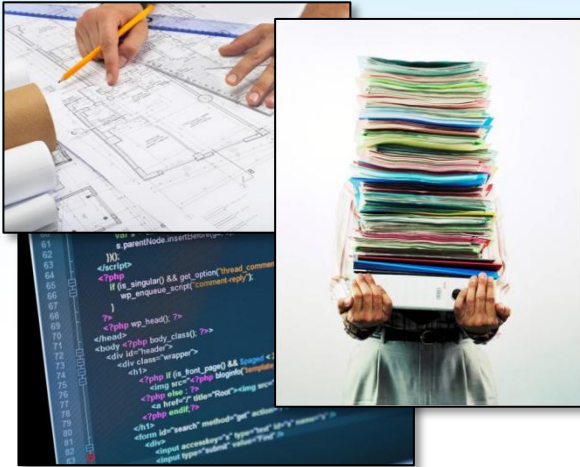
- Progress based on accomplishment of feature acceptance criteria

Agile Methodology

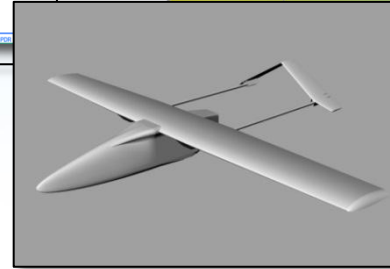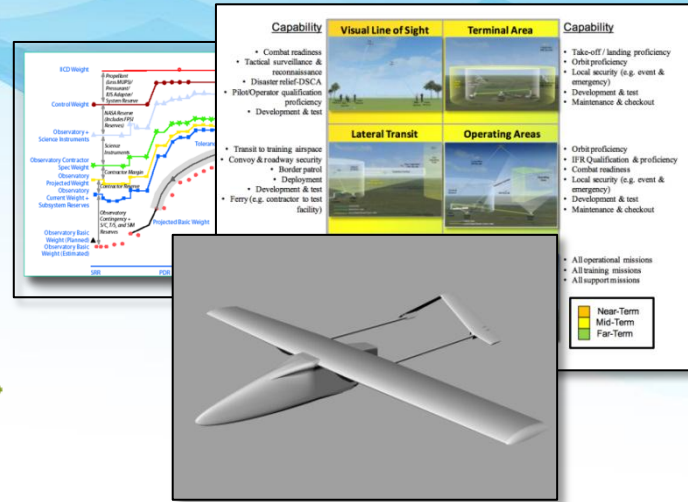# Task Completion and Measuring Progress

Task Completion

- Drawings Completed
- Lines of Code Written
- Work Products Produced
- Reviews completed

Agile is tailor-made for measuring progress this way!

Measuring Design Effectiveness

- Critical TPM Achievement
- System Capabilities Met
- Quality of Work Products
- System Under Review Acceptable

Progress is measured by *effectiveness* of outcomes to the end user

Earned Value

- Changes follow rules for work authorization, baseline management, and change control

Agile product backlog, at the feature level (i.e., work package) or higher, have an assigned budget under baseline control

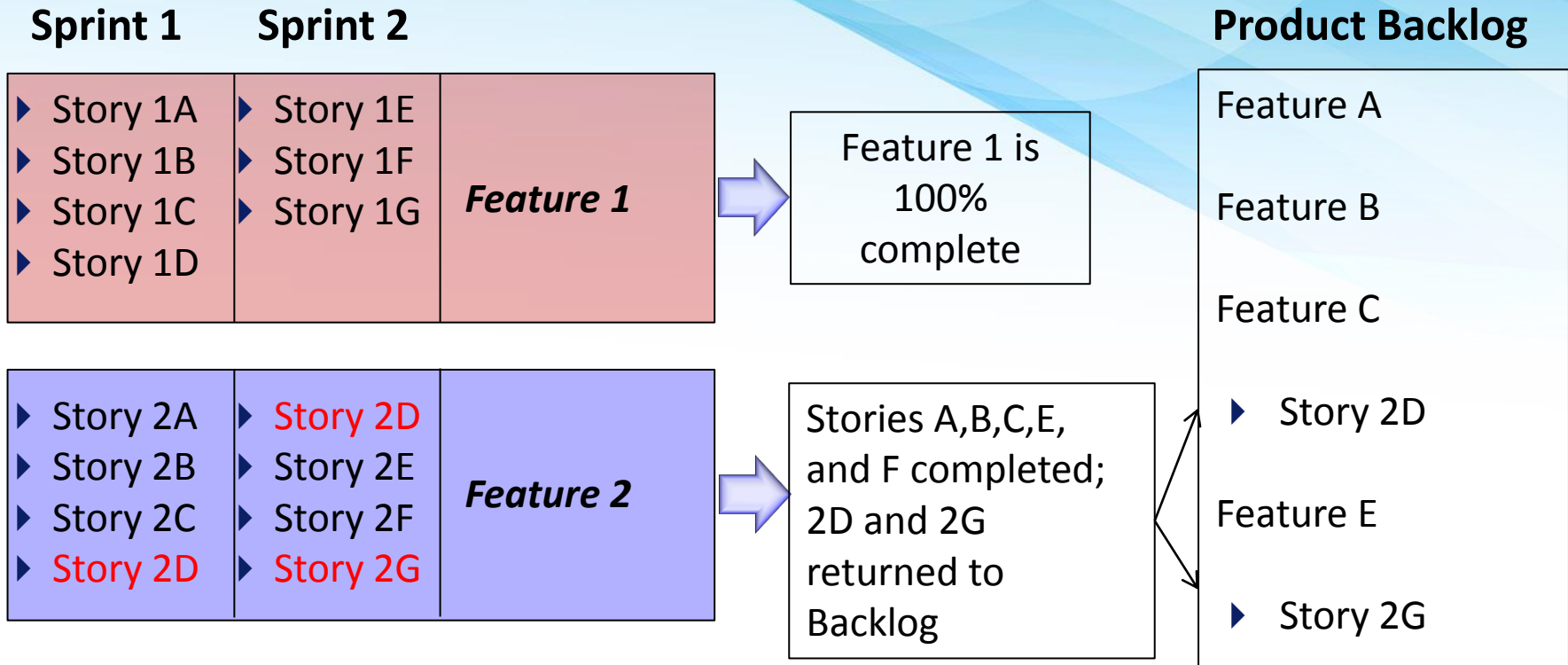- Backlog maintenance is critical to the effective management of an Agile program

Agile Methodology

Sprint 1	Sprint 2		

Product Backlog

Story 1A	Story 1E		
Story 1B	Story 1F	*Feature 1*	
Story 1C	Story 1G		
Story 1D			

→ Feature 1 is 100% complete

Story 2A	Story 2D		
Story 2B	Story 2E	*Feature 2*	
Story 2C	Story 2F		
Story 2D	Story 2G		

→ Stories A,B,C,E, and F completed; 2D and 2G returned to Backlog

Product Backlog:
- Feature A
- Feature B
- Feature C
  - Story 2D
- Feature E
  - Story 2G

- Fixed "time boxes" (i.e., Sprints) force incomplete work to be put back on the product backlog or rolled over to next Sprint

- Forecasting and change control processes are required to maintain EVM baseline as items are returned to Product Backlog and used in subsequent Sprints