Introduction to Earned Value Management (EVM)

TOPIC LEARNING OBJECTIVES

Upon successful completion of this topic, the student will be able to:

1. Recognize the concept of Earned Value Management (EVM).
2. Recognize how EVM fits into the defense acquisition process.
    a. Recognize under which conditions EVM is required based on governing EVM statutes, regulatory policy, and DoD implementation guidance.
    b. Recognize the value and benefits of EVM in the defense acquisition process.
3. Recognize the importance of Earned Value as a management tool.
4. Recognize the management processes associated with EVM.
5. Recognize the key processes in the development and management of a Performance Measurement Baseline (PMB).
    a. Identify the relationship of the PMB to program objectives.
    b. Identify the sequence of steps in the development of the initial PMB.
6. Identify the three major reasons for PMB changes, their impact, and the approval authority for each.
7. Identify the benefits of reviewing the PMB at the Integrated Baseline Review (IBR) to evaluate its validity.
8. Identify the DoD offices and agencies responsible for EVM.

STUDENT PREPARATION

Student Support Material

1. DAU EVM Gold Card https://www.dau.edu/tools/t/EVM-General-Reference-(Gold-Card)
2. KMSG Webinar EVMS Requirements (watch until 24:11) https://www.youtube.com/watch?v=CqAVOu-yyk8
3. DAU To EVM or NOT https://cdnapisec.kaltura.com/index.php/extwidget/preview/partner_id/2203981/uiconf_id/39804931/entry_id/0_a90emupc/embed/dynamic
4. Basic EVM Parts 1, 2 and 3 https://media.dau.edu/media/t/0_ohsk5llw https://media.dau.edu/media/t/0_quugon3w https://media.dau.edu/media/t/0_xi9enlj5

Primary References

1. DFARS 252.234-7002 Earned Value Management System https://www.acquisition.gov/dfars/252.234-7002-earned-value-management-system.
2. DFARS 252.242-7005 Contractor Business Systems https://www.acquisition.gov/dfars/252.242-7005-contractor-business-systems.
3. DFARS 252.234-7001 Notice of Earned Value Management System https://www.acquisition.gov/dfars/252.234-7001-notice-earned-value-management-system.

TOPIC LEARNING OBJECTIVES

Upon successful completion of this topic, the student will be able to:

9. Recognize required EVM implementation activities.
10. Recognize the purpose of EVM reviews (Integrated Baseline Review (IBR), Initial Compliance Evaluation, and Post Acceptance Review) and when they must be completed.
11. Identify performance report tailoring considerations and their effect on reporting.
12. Identify and understand the purpose, formats, and content of the Integrated Program Management Data Analysis Report (IPMDAR).
13. Identify the primary factors that the government should review to evaluate the contractor's PMB during an IBR.
14. Recognize the importance of Earned Value data in external reporting.
15. Recall the importance of the Contractor Funds Status Report (CFSR) and the differences between the CFSR and the IPMDAR.

STUDENT PREPARATION

Additional References

1. NDIA IPMD Earned Value Management Systems ANSI/EIA-748-C Intent Guide
2. DAU EVM 101 Fundamentals of Earned Value Management

Overview

- Purpose and concept of EVM
- DoD policy
- EVMS guidelines
- Principal players
- Implementation activities
- Performance Measurement Baseline (PMB)
- Reviews
- Reporting

Purpose of EVM in DoD

- EVM is a ***management tool*** that helps to:
  - Establish performance standards for Federal budget expenditures
  - ***Monitor, control, and report the contract and/or project performance***
  - Emphasize planning and integration of cost, schedule, and performance factors
- EVM has many benefits for DoD including:
  - Ensuring that Contractors have and use adequate management systems that integrate cost, schedule, and technical performance
  - Enabling better overall planning and control discipline on Government contracts by providing the PM with valid cost, schedule, and technical progress information needed for proactive ***decision-making*** and ***risk management***

EVM is a recognized function of program management which applies throughout the acquisition process

EVM Concept

- Authorized work is planned, budgeted, and scheduled in time-phased, dollar value or labor hour increments – called a baseline
- Dollars or labor hours are allocated to the schedule for planned work accomplishment
- As work is performed and measured against the baseline, planned dollars are “earned” for work accomplished
- From this “earned” value metric, cost and schedule variances can be determined and analyzed
- From the cost and schedule variance measurements, the PM can:
  - Evaluate overall performance and trend analysis to identify issues
  - Forecast future cost and schedule performance
  - Make corrective actions to get the program back on track

EVM is a program management tool for integrating cost, schedule, and technical parameters of a contract

EVM Concept Illustration

1. Define work
(into work packages)

A

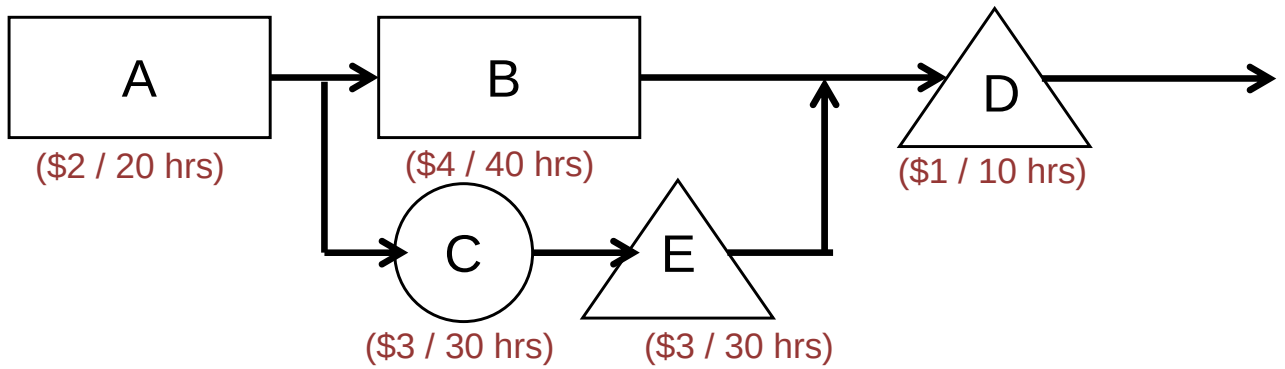
B

C

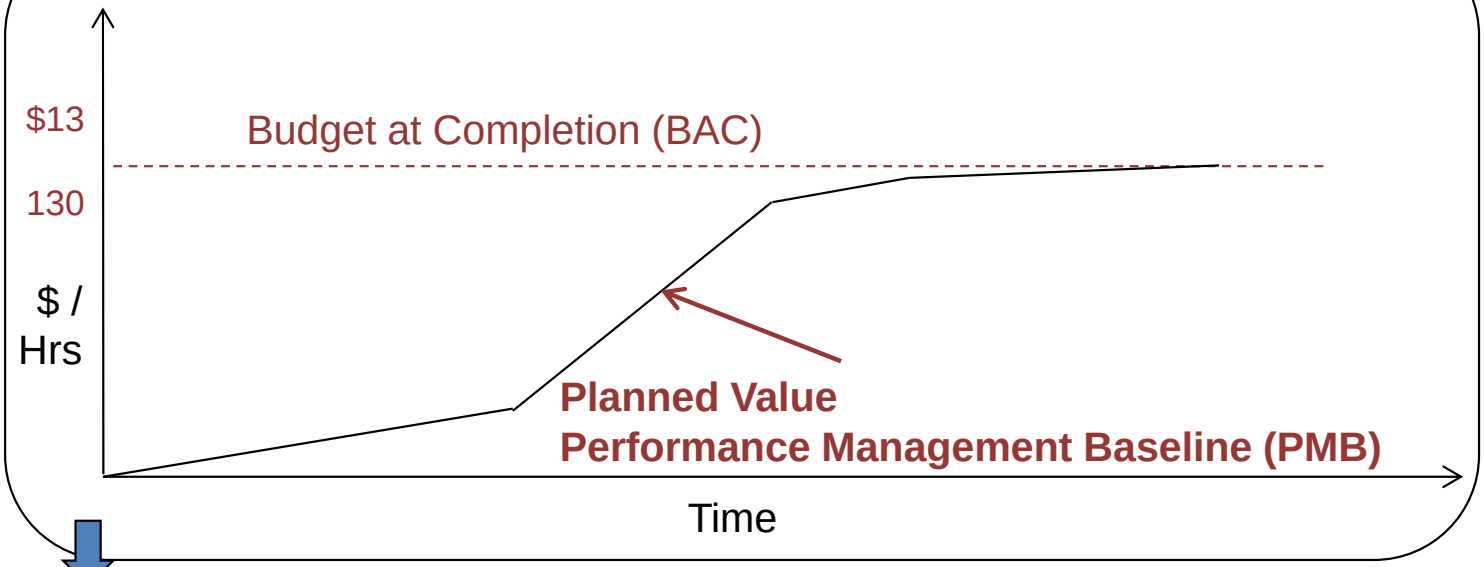
D

E

2. Schedule work → **3. (Budget work)**



4. Build EVM baseline (based on schedule and budget)



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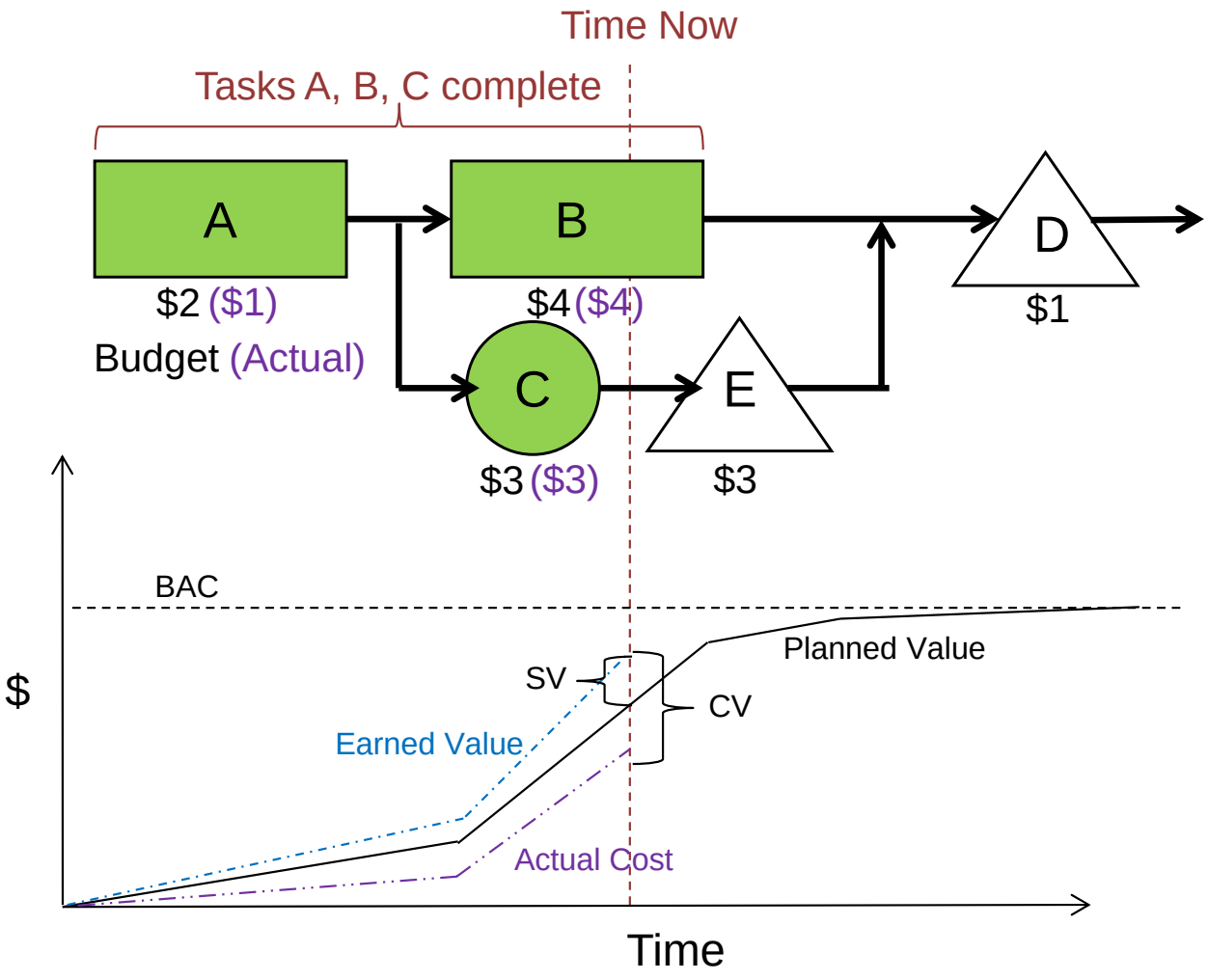
EVM Concept Illustration
(in dollars)

5. Track progress against the baseline



Planned Value
PV = Budget A + Budget C
= $2 + $3
= $5

Earned Value
EV = Budget A + Budget B + Budget C
= $2 + $4 + $3
= $9

Schedule Variance
SV = EV - PV
= $9 - $5
= $4

>0 means ahead of schedule

Actual Cost
AC = Actual A + Actual B + Actual C
= $1 + $4 + $3
= $8

Cost Variance
CV = EV - AC
= $9 - $8
= $1

>0 means under budget

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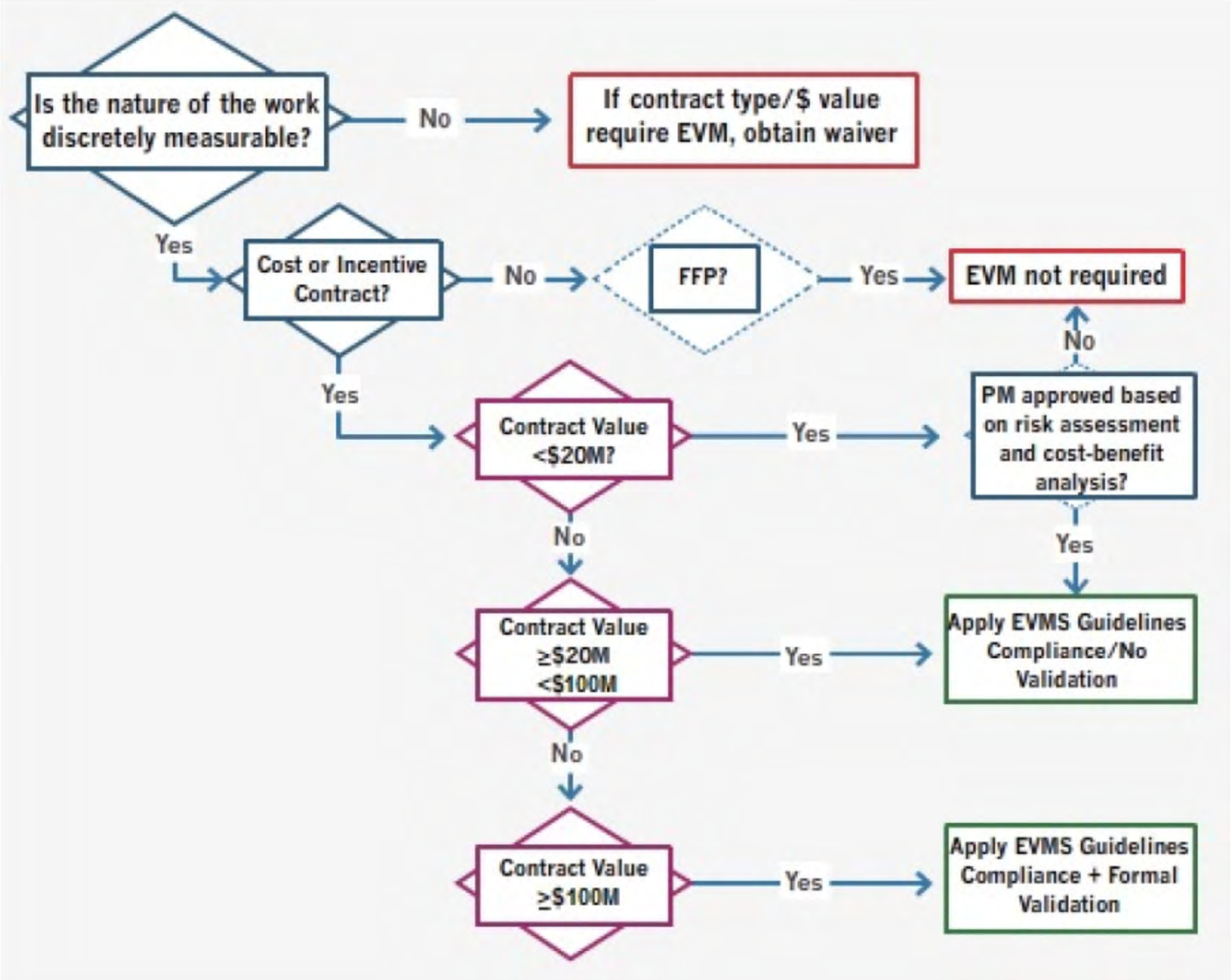
EVM Policy

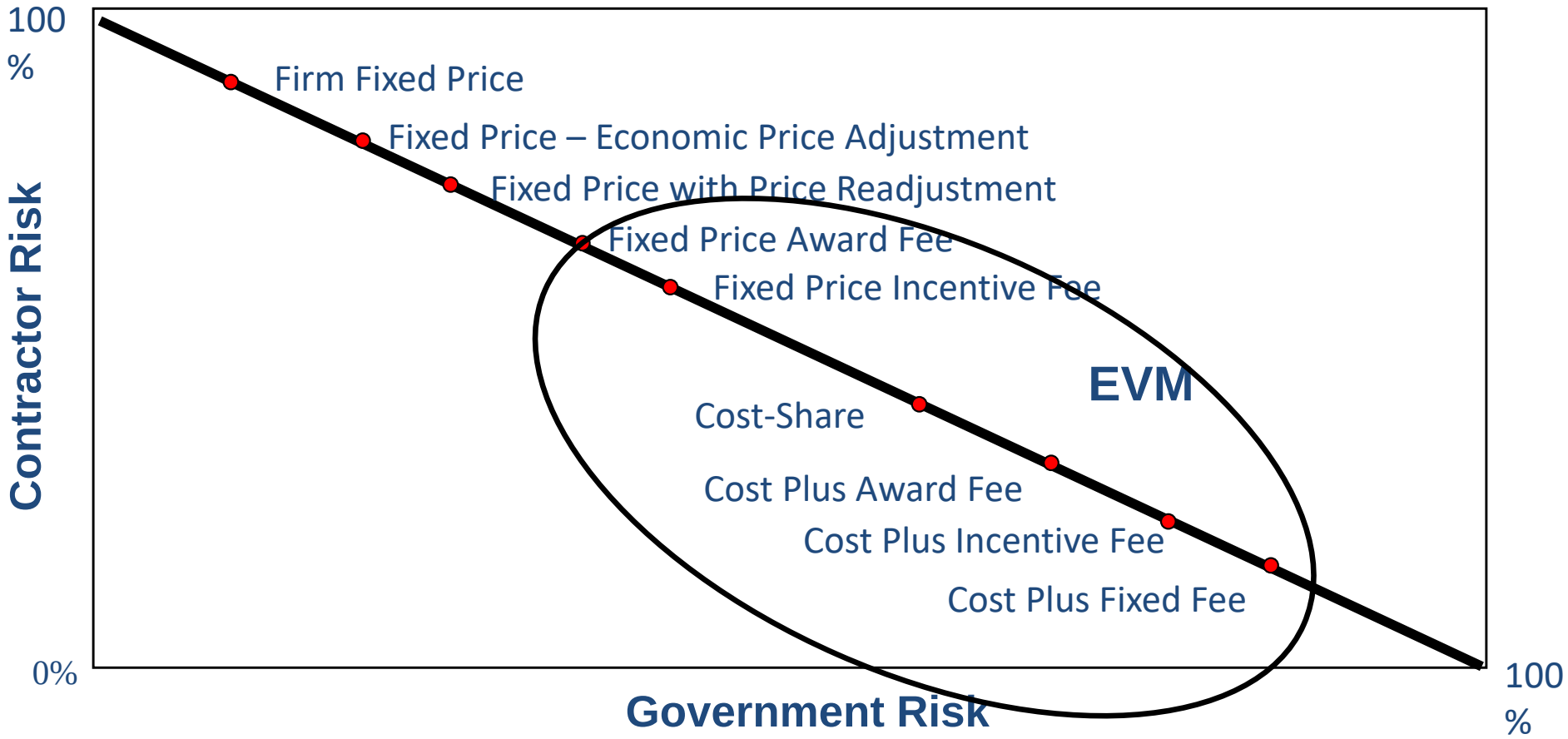
- When we must use EVM
  - Nature of work is discretely measureable and…
  - Cost or incentive contracts & subcontracts greater than ***$20 million*** in then-year dollars
    - Implement the ANSI/EIA-748 guidelines
  - Cost or incentive contracts & subcontracts greater than ***$100 million*** in then-year dollars
    - Implement the ANSI/EIA-748 guidelines
    - ***EVMS must be formally validated by DCMA***
  - An Integrated Program Manager's Data Analysis Report (IPMDAR) and Integrated Baseline Review (IBR) are required when EVM is required

- When we might use EVM
  - EVM is discouraged for (but can be used with MDA approval):
    - FFP
    - Time & materials
    - Level-of-effort contracts
  - For contracts < $20 million:
    - Application of EVM is optional and is a risk-based decision that is at the discretion of the Program Manager
    - Cost-benefit analysis must be conducted before implementing EVMS

EVM Policy


Is the nature of the work discretely measurable?
No
If contract type/$ value require EVM, obtain waiver
Yes
Cost or Incentive Contract?
No
FFP?
Yes
EVM not required
No
Yes
Contract Value <$20M?
Yes
PM approved based on risk assessment and cost-benefit analysis?
No
Yes
Contract Value ≥$20M <$100M
Yes
Apply EVMS Guidelines Compliance/No Validation
No
Contract Value ≥$100M
Yes
Apply EVMS Guidelines Compliance + Formal Validation

EVM Policy



EVM required for cost and incentive contracts over $20 million

EVM Policy

- OMB Circular A-11 Part 7: Capital Programming Guide
  - Agencies must establish cost, schedule, and performance goals for major acquisitions and then achieve, on average, 90% of those goals
  - Requires use of earned value performance-based management system
  - Applies to all executive agencies of the Federal Government
    - NASA, DoD, FEMA, IRS, etc.

EVM is required throughout the Government

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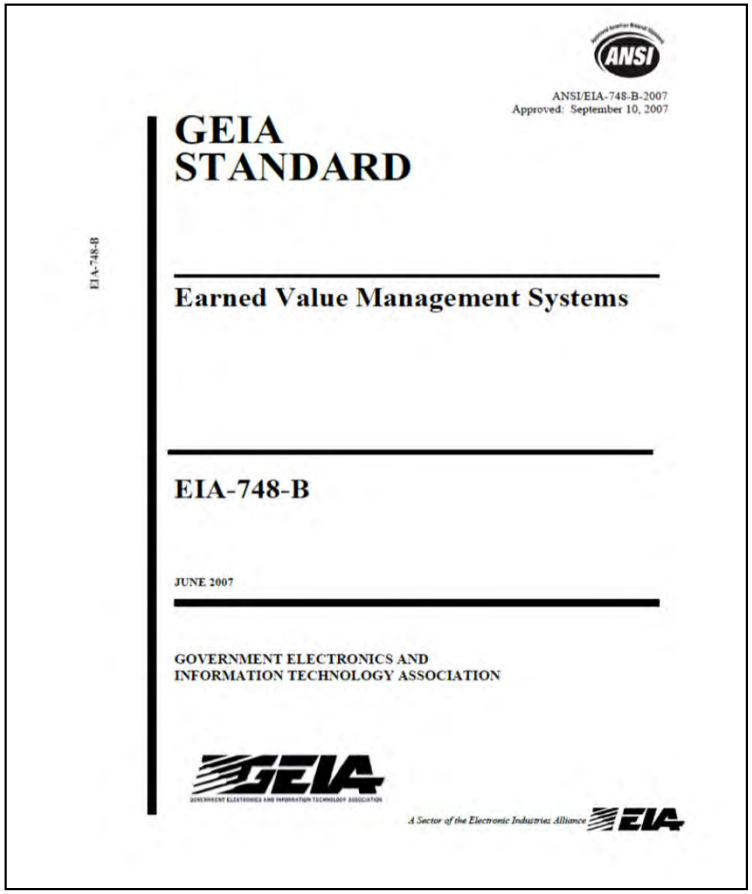
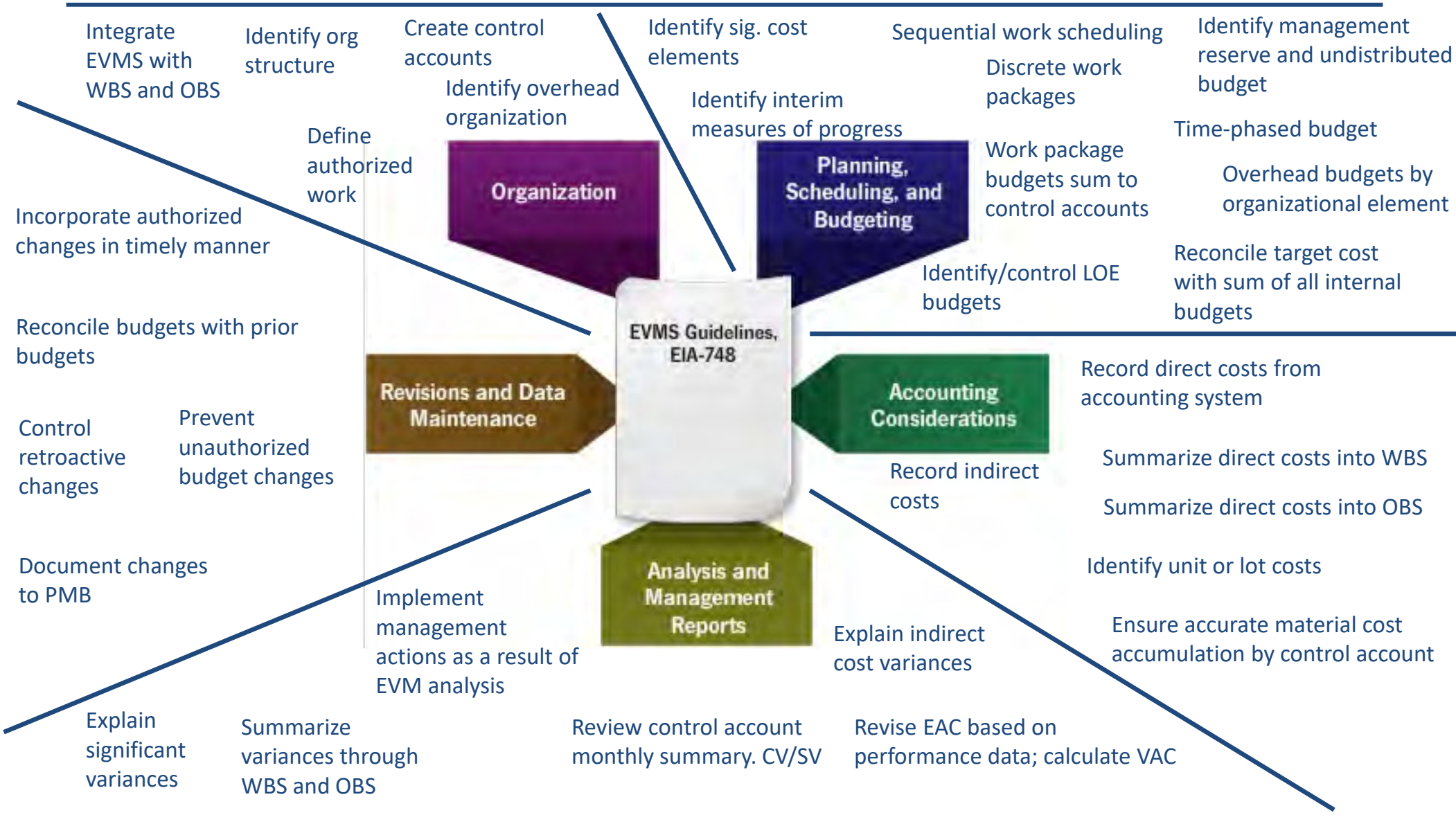
EVMS Guidelines Concept



- An EVM System (EVMS) is
  - A Contractor-specific internal control system that implements EVM
  - Planning and reporting tool
  - No single universal system could meet every management need for performance measurement
- EVMS Guidelines provide a framework
  - 32 EVMS Guidelines defined in the American National Standards Institute/Electronics Industries Alliance (ANSI/EIA) Standard 748 (ANSI/EIA-748-D)
  - Establish outcomes broad enough for tailoring rather than prescribing a specific system
  - DoD requires Contractor EVMS to comply with the guidelines

DoD formally adopted ANSI/EIA-748 in 1998 for MDAPs

EVMS Guidelines in 5 Categories



EVMS Compliance

- Contractors must comply with the EVMS guidelines and use EVM as an integrated management tool
- DCMA enforces compliance for DoD using two processes:
  - Validation (prior): Formal, independent initial recognition that Contractor processes and policies meet EVMS guidelines
  - Surveillance (during): Ongoing review process in which DCMA evaluates the Contractor's EVMS implementation against the guidelines
- Program Office, Defense Contract Audit Agency (DCAA), and other specialists are also involved

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EVM Principal Players

- Procurement Activity – Program Management Office (PMO)
- DoD EVM Executive Agent – Defense Contract Management Agency (DCMA)
- Contract Auditor – Defense Contract Audit Agency (DCAA)
- Acquisition Data and Analytics (ADA) – Focal point for all policy, guidance, and competency relating to EVM
- Department of the Navy Center for Earned Value Management - Navy's central point of contact and authority for all matters concerning implementation of EVM on Navy acquisition programs

EVM Principal Players

- DCMA
  - Ensures the integrity and effectiveness in application of processes related to EVM
  - Maintains information related to Contractor system acceptance and review schedules
  - Performs detailed analysis of IPMDAR data to help focus PMO attention to problem areas
  - Performs 14-Point analysis of Integrated Master Schedule
- DCAA
  - Responsible for conducting audit reviews of the Contractor's accounting system policies, procedures and activities
  - Participates in surveillance and earned value management system reviews
- SUPSHIP
  - Many DCMA/DCAA roles are fulfilled by Supervisor of Shipbuilding (SUPSHIP) for Navy activities

DCMA ensures EVMS surveillance and compliance with DoD directives and contractual requirements; DCAA assists with audits

EVM Principal Players

- Program Management Office (PMO)
  - Responsible for implementation of EVM on a contract
  - Responsible for ensuring all solicitations and contracts contain the correct requirements for EVMS and the Integrated Master Schedule appropriate for that program
  - Assisted by contracting activity (usually a SYSCOM contracting office)
- Acquisition Data and Analytics
  - Serves as the DoD focal point for all policy, guidance and competency relating to EVM and Integrated Program Management
  - Responsible for EVM interpretation and communication to facilitate timely, accurate and equitable EVM implementation across the DoD

EVM Principal Players

- Center for Earned Value Management
  - DoN central point of contact for all EVM matters
  - Coordinates adjudication of Applicability Determinations with Deputy Assistant Secretary of the Navy for Acquisition Policy and Budget (DASN (AP&B)) and Office Secretary of Defense (OSD)
  - Chair of the Integrated Program Management Stakeholders Group

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EVM Implementation Activities

- The DOD Earned Value Management Implementation Guide (EVMIG)
  - ***DoD's interpretation of the Electronic Industries Alliance (EIA) EVM Standard Guidelines***
  - Serves as the authoritative source for DoD interpretations of the Guidelines
  - Forms the basis for DoD compliance assessments of the Guidelines
  - Provides guidance regarding procedures for government implementation of Earned Value Management, to include:
    - Planning for the solicitation: determine if EVMS is required
    - Solicitation, Evaluation & Award: include EVMS requirements in Request For Proposal (RFP) and evaluate Contractor's EVMS proposals
    - Post contract award activities: Contract Work Breakdown Structure (WBS), Integrated Baseline Review (IBR), and EVMS Certification

EVM Implementation Activities Solicitation

- When it is determined a contract requires EVM, there are several EVM related requirements which must be included in the RFP:
  - Section C - Include EVM in Statement of Work
  - Section I - Include EVMS FAR/DFAR Clauses
  - Section J - Include the EVMS Data Items
    - Contract Performance Report
    - Integrated Master Schedule
    - Contract WBS
  - Section L - Include EVMS descriptions in proposal
  - Section M - Include EVMS as an evaluation factor

EVM Implementation Activities
Proposal Evaluation

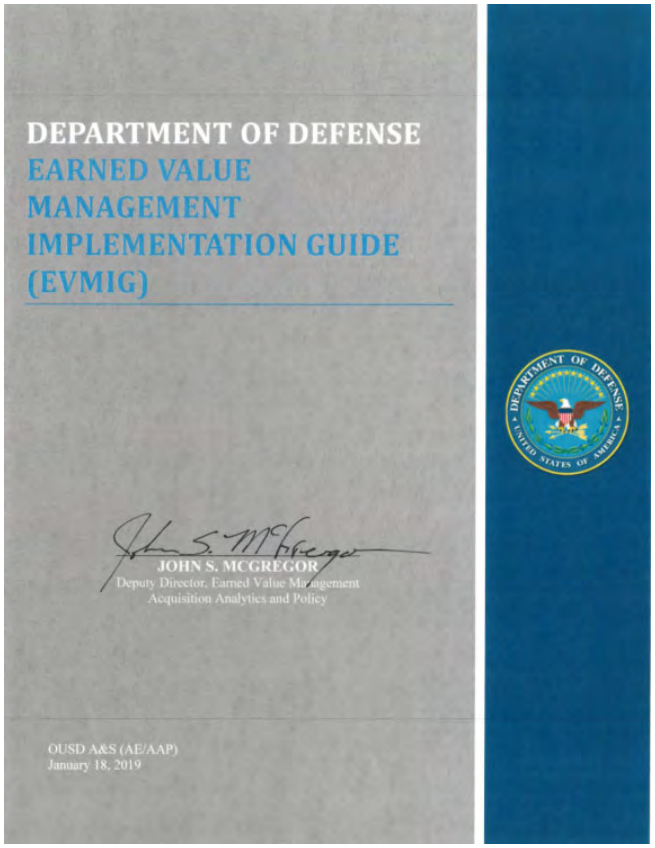
- Evaluation of the proposed EVMS and the 5 EVM management processes is normally undertaken as part of the proposal evaluation process. This evaluation is an assessment to determine the probability of the Contractor's system meeting the ANSI/EIA-748 guidelines

EVM Implementation Activities
Contract Award

- The Statement of Work (SOW), FAR/DFAR contract clauses, and the Contract Data Requirements List (CDRL) items from the solicitation become part of the contract. The EVMS FAR/DFAR contract clauses require the Contractor to:
  - Use and maintain an EVMS that meets the ANSI/EIA-748 guidelines
  - Notify the Government of any EVMS changes
  - Provide the Government with access to EVMS pertinent records and data
  - Require EVMS on selected subcontractors
  - Support a Government - Contractor Integrated Baseline Review (IBR)

EVM Implementation Activities
Post Contract Award

- The EVMIG describes a variety of post contract award activities:
  - EVMS Validation
  - EVMS Surveillance
  - Integrated Baseline Review (IBR)



DoDI 5000.85 requires EVMS validation for all DoD EVM contracts exceeding $100M; DCMA is responsible for EVMS Validation

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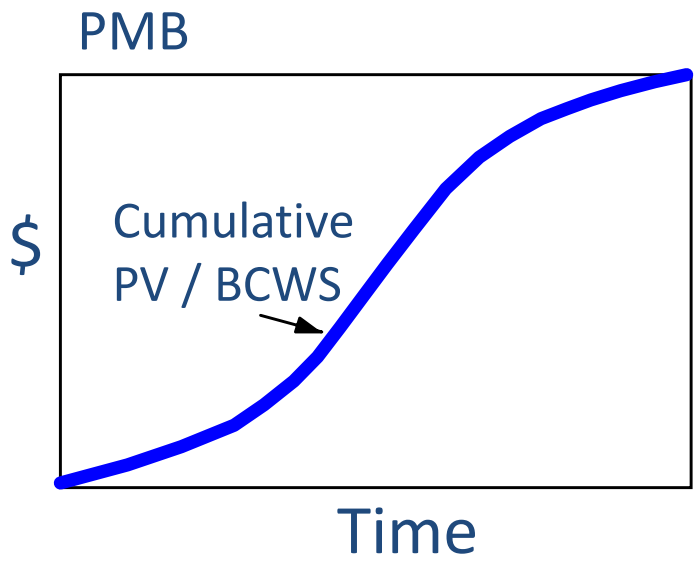
Performance Measurement Baseline (PMB)

- The PMB is:
  - A scoped, scheduled, and budgeted work plan estimated early in the project by the Contractor
    - Initial baseline tied to the negotiated cost of the contract
  - A ***time-phased*** plan for accomplishing each piece of ***authorized work***
  - A basis for evaluating cost and schedule performance by measuring progress
  - Contractor's path for executing the project
  - Planned Value (PV) or Budgeted Cost of Work Scheduled (BCWS) for the entire project/contract
  - Usually "S" shaped



Development & Management of PMB

- Scope of work is defined by the Government in the SOO or SOW via the RFP
- The Contractor submits proposal
  - Then Contractor and Government negotiate contract price and schedule
  - Negotiated contract price & schedule become initial basis for PMB
- After contract award, the revision-controlled PMB is the plan reviewed at the IBR and is used to manage the program
- Continued management of Contractor performance to PMB is delivered to the Government via an Integrated Program Management Data Analysis Report (IPMDAR)

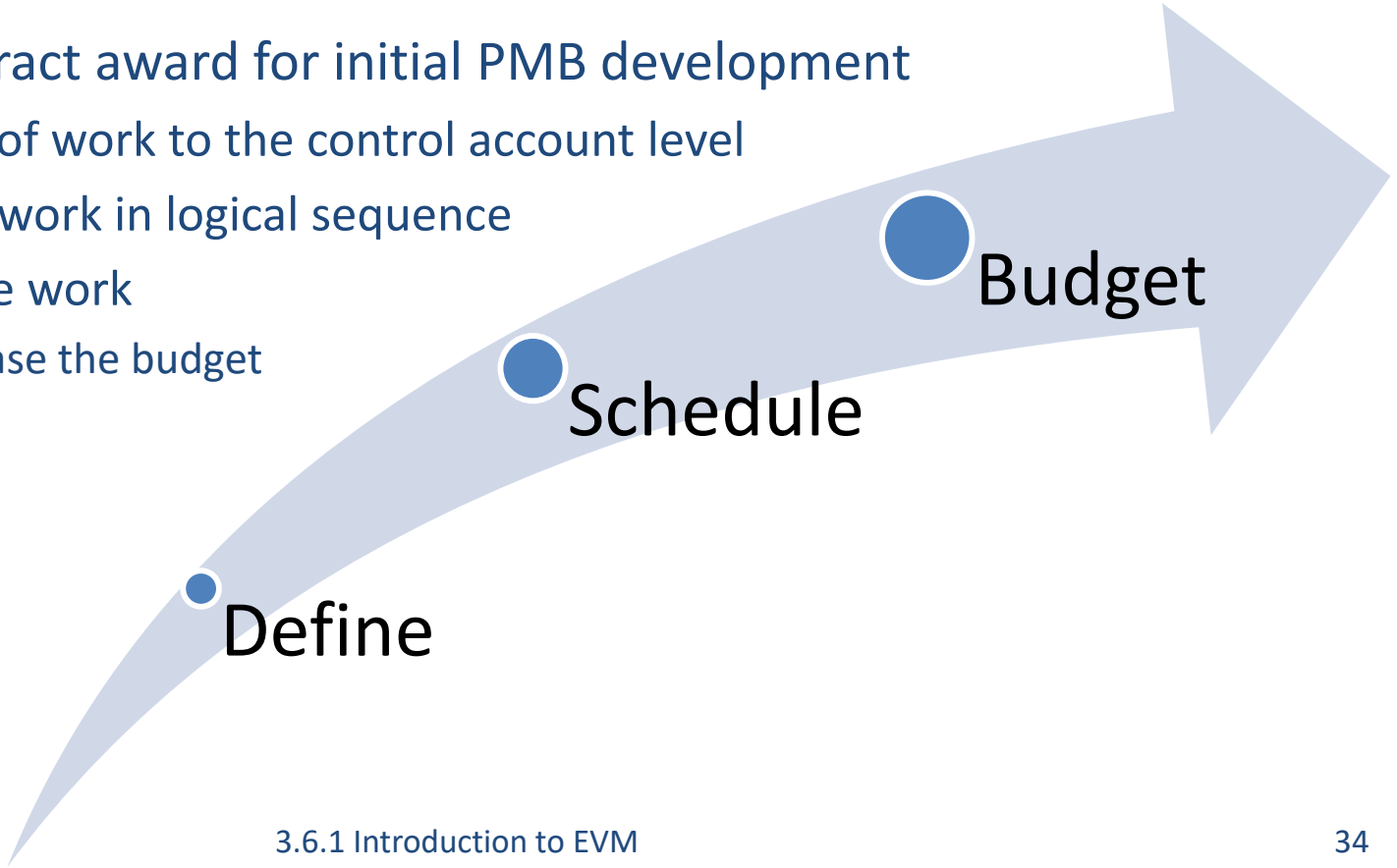
PMB Relationship to Program Objectives

- All programs have the same objective: deliver a useable end product on budget and on schedule
- The PMB is a graphical depiction of the time phased work needed to achieve the program's objective; it:
  - Represents all work on the contract
  - Is time-phased to contract milestones
  - Must be a participative process using an IPT
  - Must be realistic and achievable
  - Must be objective and measurable
- Schedule considers scope, risk, and available resources
- Budget considers scope and risk

The PMB represents the time-phased performance needed to achieve the objective

PMB Development Steps

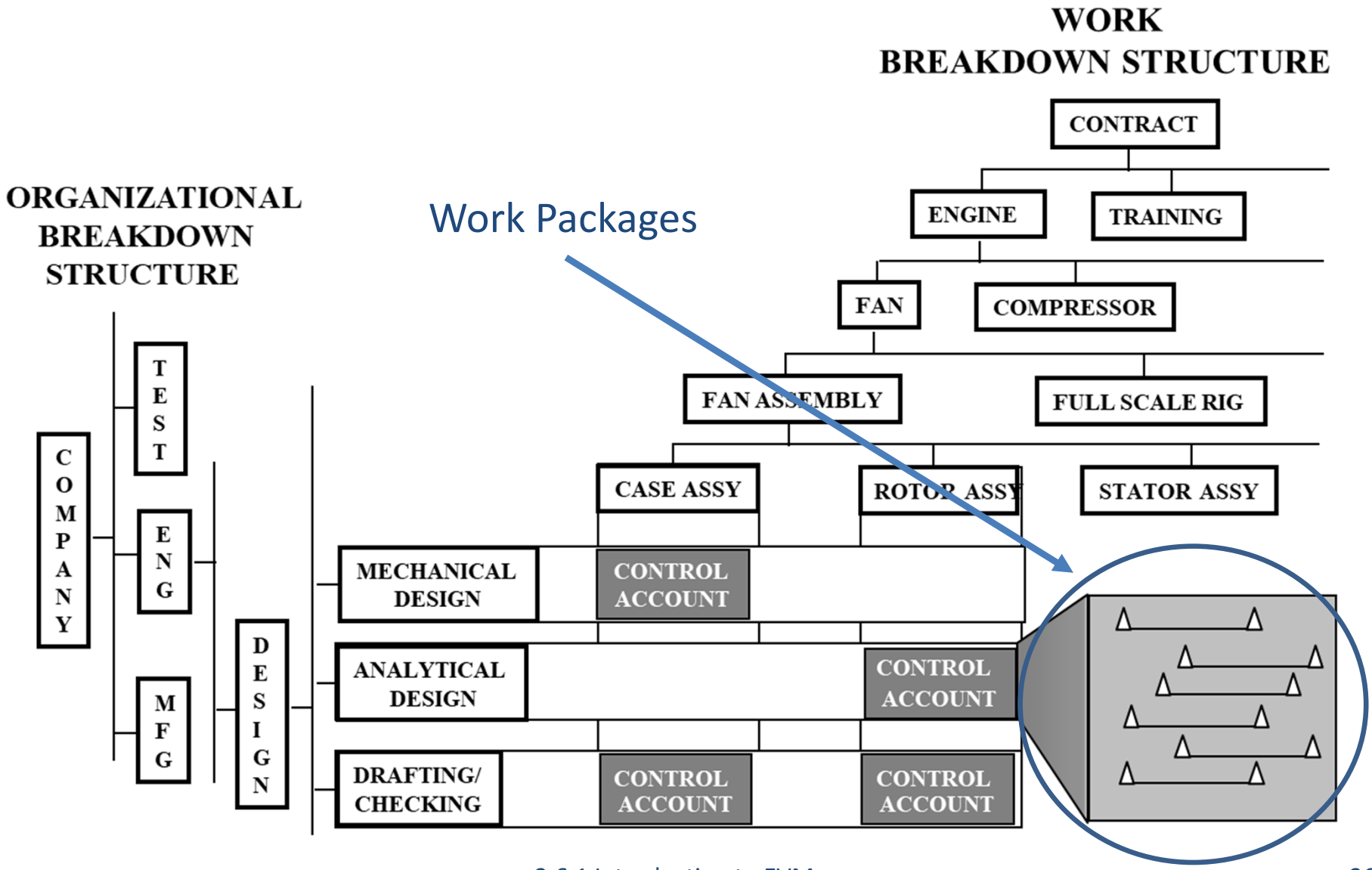
- Before contract award
  - Develop preliminary schedule and estimate of resources required to do the work
  - May build in cushion for risk
- Steps after contract award for initial PMB development
  1. Define scope of work to the control account level
  2. Schedule the work in logical sequence
  3. Budget for the work
     a. Time-phase the budget



PMB Development
STEP 1: Define All Work

- WBS and Organizational Breakdown Structure (OBS) are intersected to form a Responsibility Assignment Matrix (RAM)
- Control accounts are established where an organizational element intersects with a WBS element
  - They are natural management points because they represent the work assigned to one responsible organizational element on one program WBS element
- Control Account Managers (CAMs) are assigned to each control account
  - CAMs are responsible for planning work and reporting EVM measures and metrics for work in their control account
- Each control account contains:
  - Work packages: Work that has been planned out in detail
  - Planning packages: Work that has not yet been planned in detail
    - Converted into work packages over time, often in a process called rolling wave planning

PMB Development
STEP 1: Define All Work

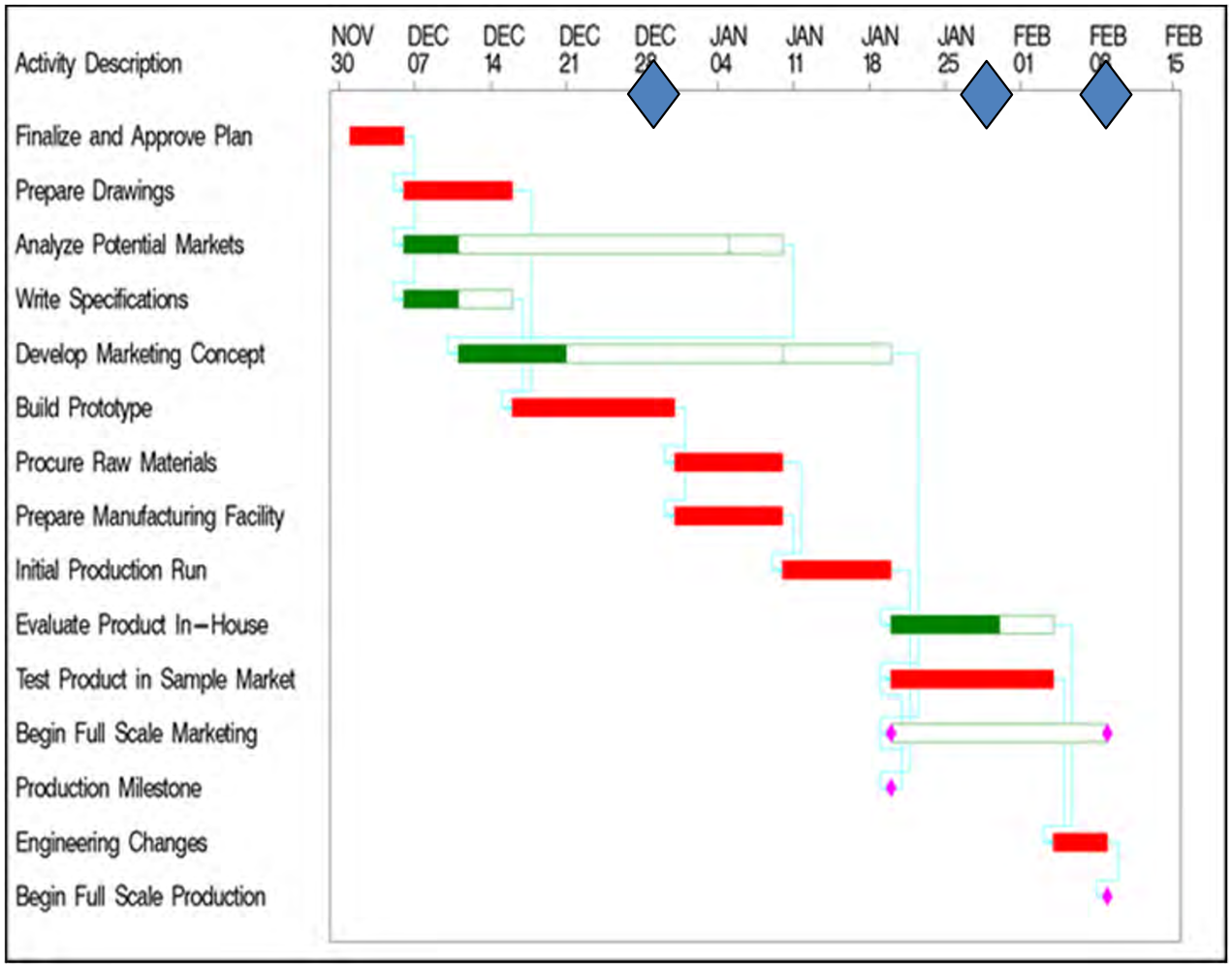


PMB Development
STEP 1: Define All Work

- Control Accounts
  - Intersection of the lowest level WBS (the what) and the Organization's Chain of Command structure (the who). This matrix is often referred to as a Responsibility Assignment Matrix (RAM)
  - Identify specific task and associated responsible party (e.g., control) for schedule, time-phasing the budget, EV measures and metrics, corrective actions, etc.
- Work Packages (WP)
  - Subdivision of a control account
  - Consist of a discrete task that has been planned and budgeted in detail
  - Basic building blocks used in planning, measuring accomplishing, and controlling work

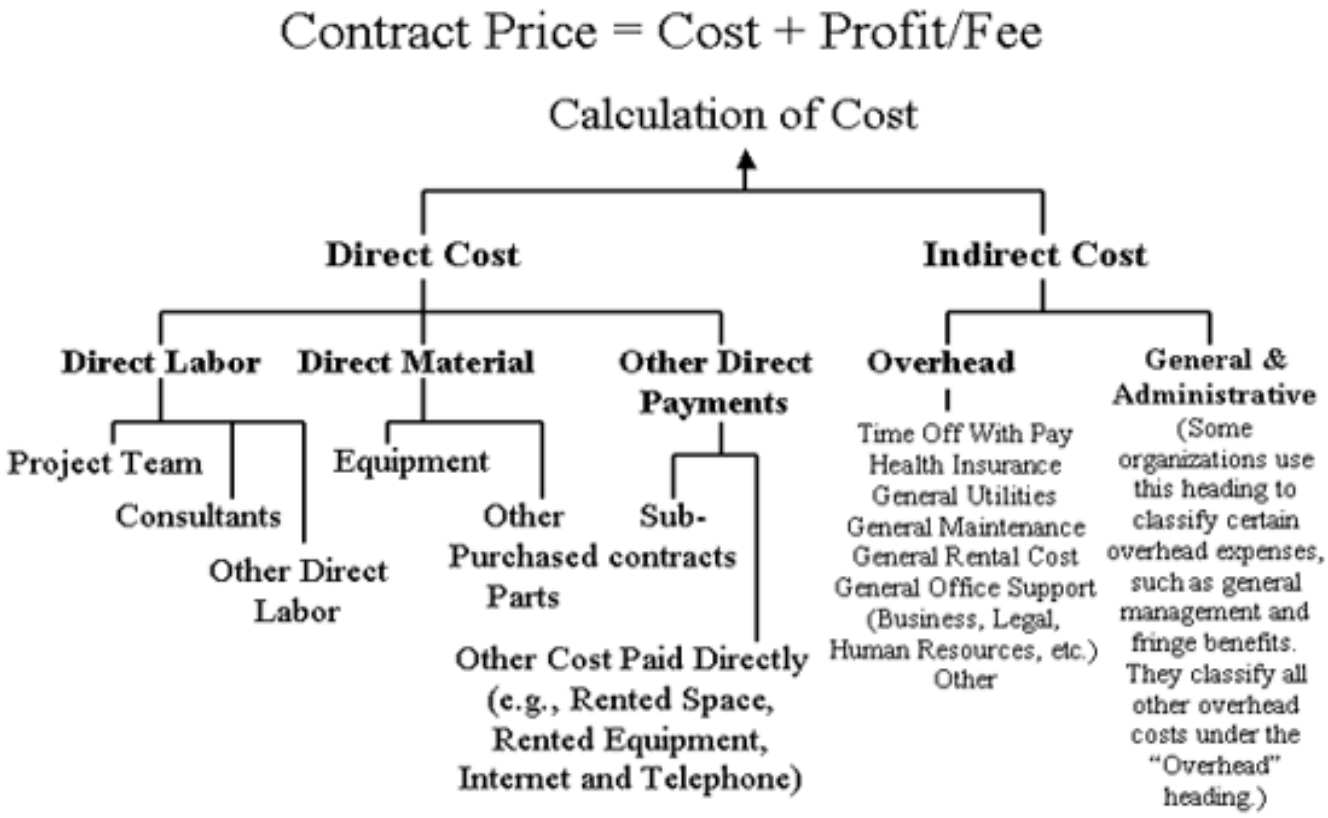
PMB Development
STEP 2: Schedule The Work

- Basis of the time-phased budget
- Master schedule shows contract milestones
- Work broken into individual jobs to get detailed schedules
- Note proper sequences and interrelations
- Often illustrated as Gantt charts

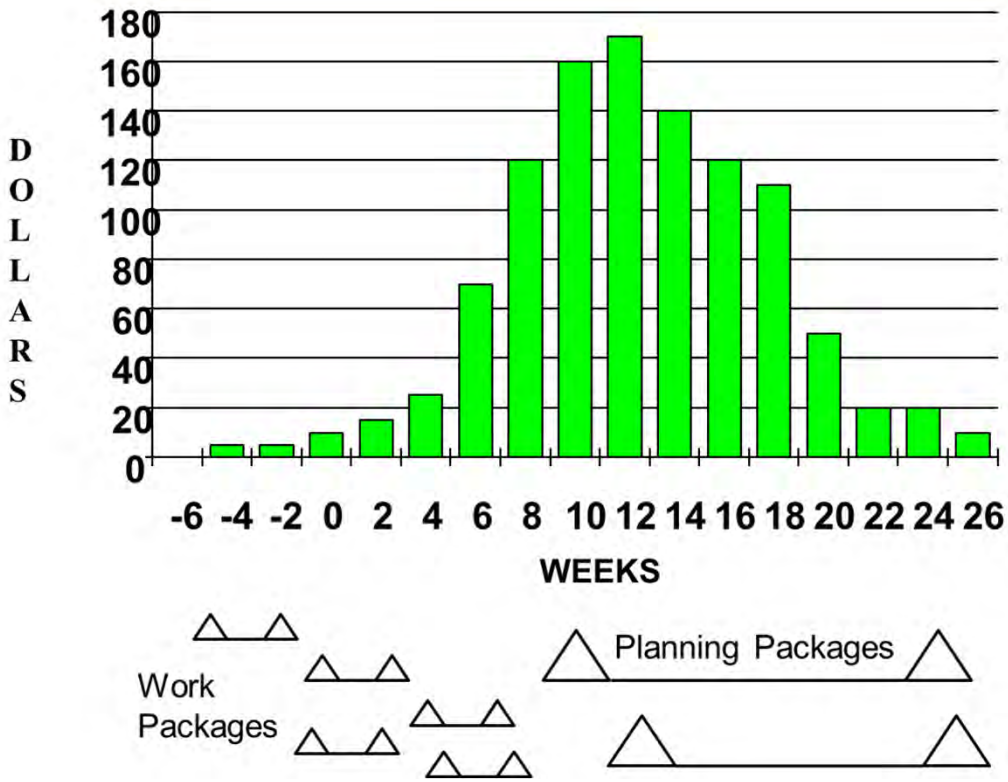


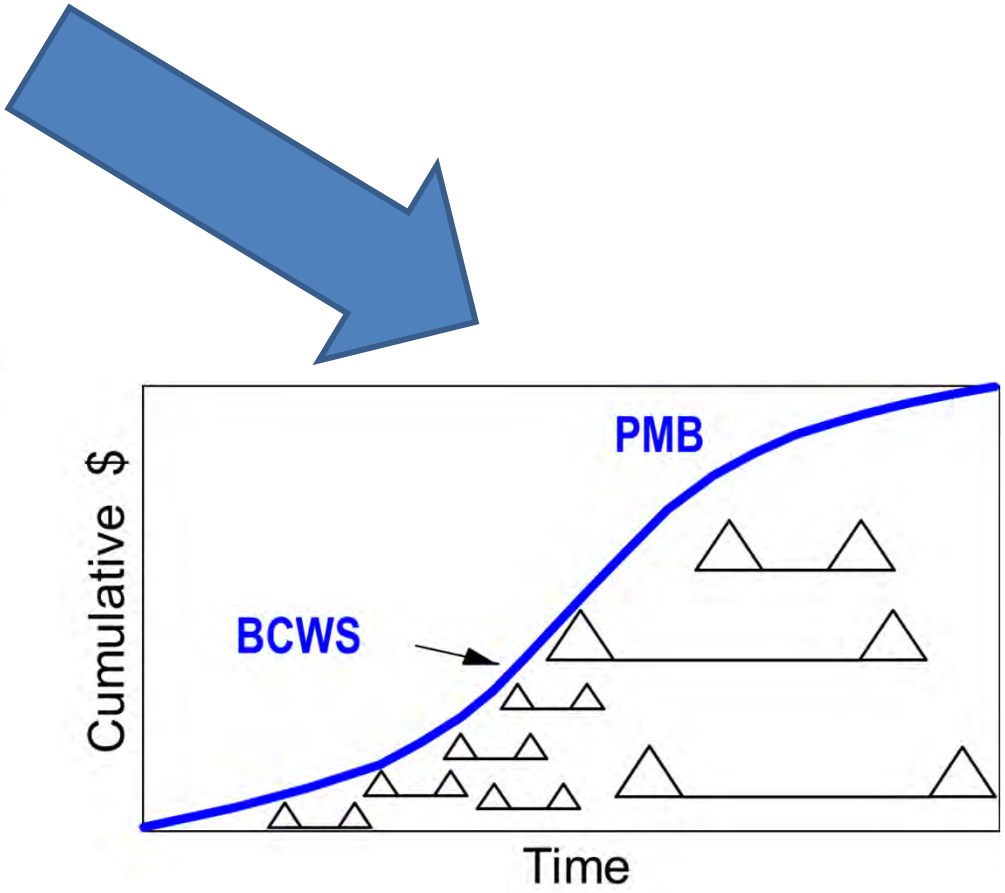
PMB Development
STEP 3: Budget The Work

- Each piece of the work has a budget
- Distribute budget based on contract cost
  - Ensure authorized work not yet negotiated is included
- ***Hold back management reserve for unknown (but in-scope) tasks***



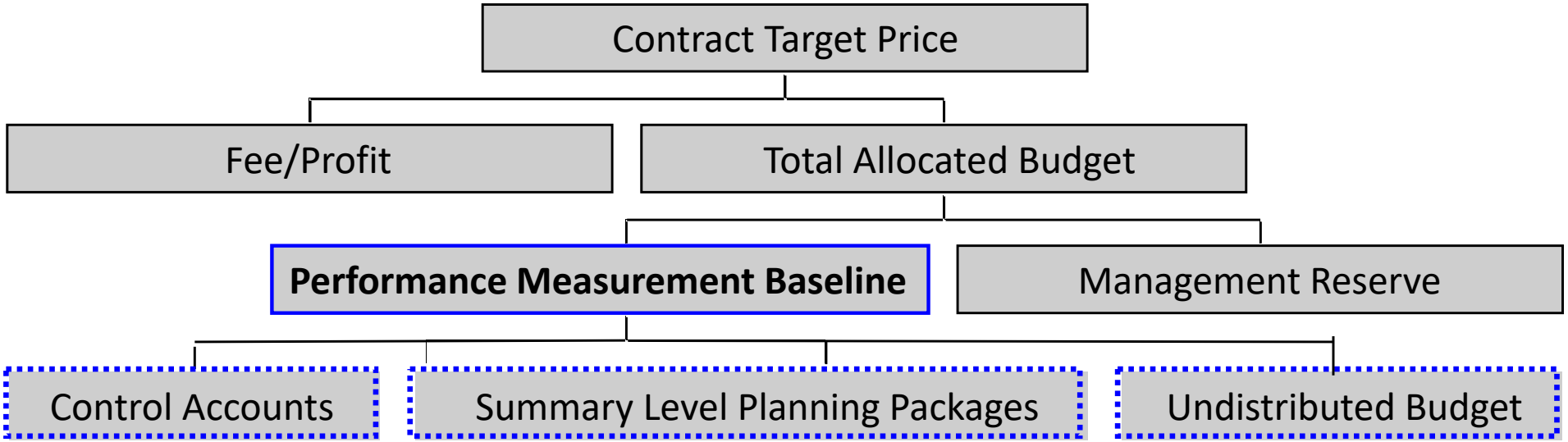
PMB Development
STEP 3a: Time-Phase the Budget





PMB is the cumulative budgeted cost of the work that has been scheduled across time

PMB in Context of the Project Budget

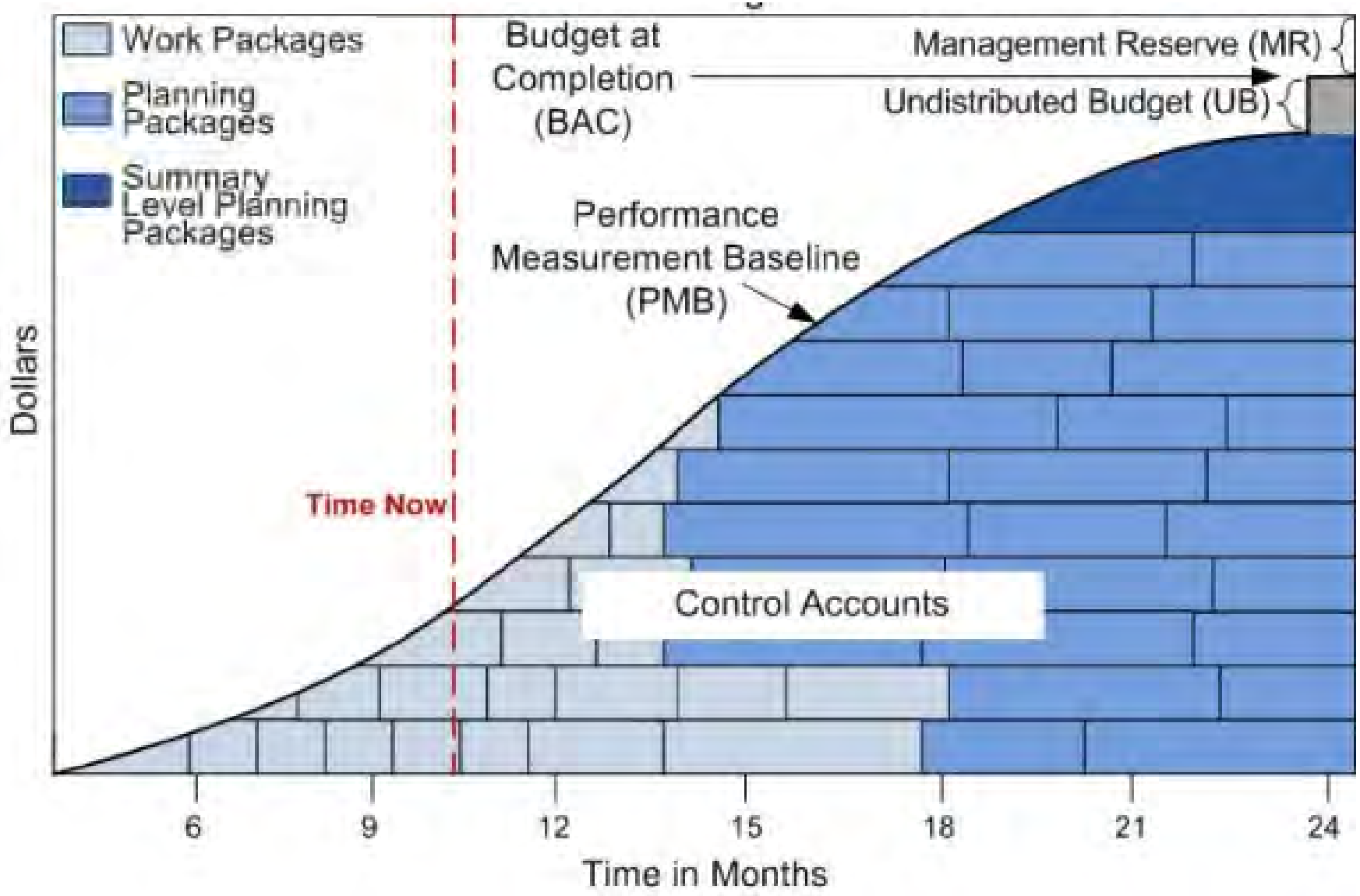


- Budget integrated with scope and schedule
- Contains work packages (near-term) and planning packages (far-term)

- Aggregation of work for far-term efforts not yet planned in detail
- Cannot be identified at control account level but can be assigned to reporting level WBS elements

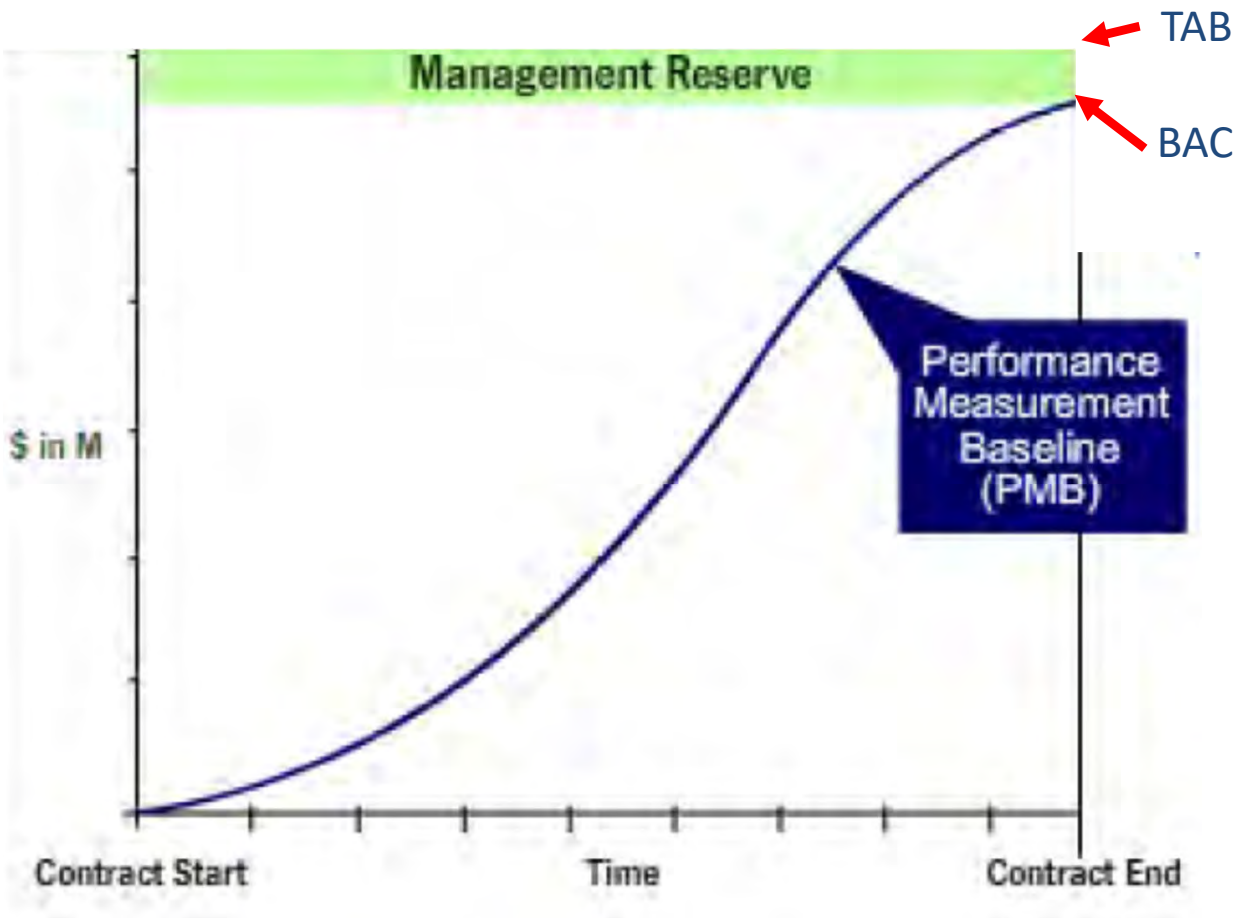
- Temporary holding account for authorized but unplanned work
- Not yet scoped to WBS elements

PMB in Context of the Project Budget



Management Reserve

- ***Funds set aside for unknown, but in-scope tasks***
- Amount based on risk assessment
- Part of contract value, but not part of PMB
  - Total Allocated Budget (TAB) is sum of PMB and management reserve
- Becomes part of PMB when unknowns become known and Contractor transfers funds from MR to accounts in PMB



*Management Reserve should be tied to **risk areas***

Revision and Data Maintenance: PMB Changes

- Any changes to the PMB must be formally controlled and properly documented using a systematic approach
- Reasons for Baseline Changes
  - Formal contract changes
    - Causes plan (BCWS) to change
    - Contract change between the Contractor and the Government
  - Internal replanning
    - Total work scope remains unchanged
    - Replan within control accounts
    - Replan future work
    - Apply management reserves
    - Government approval not required
  - Formal reprogramming (Over Target Baseline)
    - When baseline not useful for management control
    - Government approval required

Changes to the PMB may be needed to keep it accurate and useful as a management tool, but changes to historical data must be well understood due to impacts on reported performance

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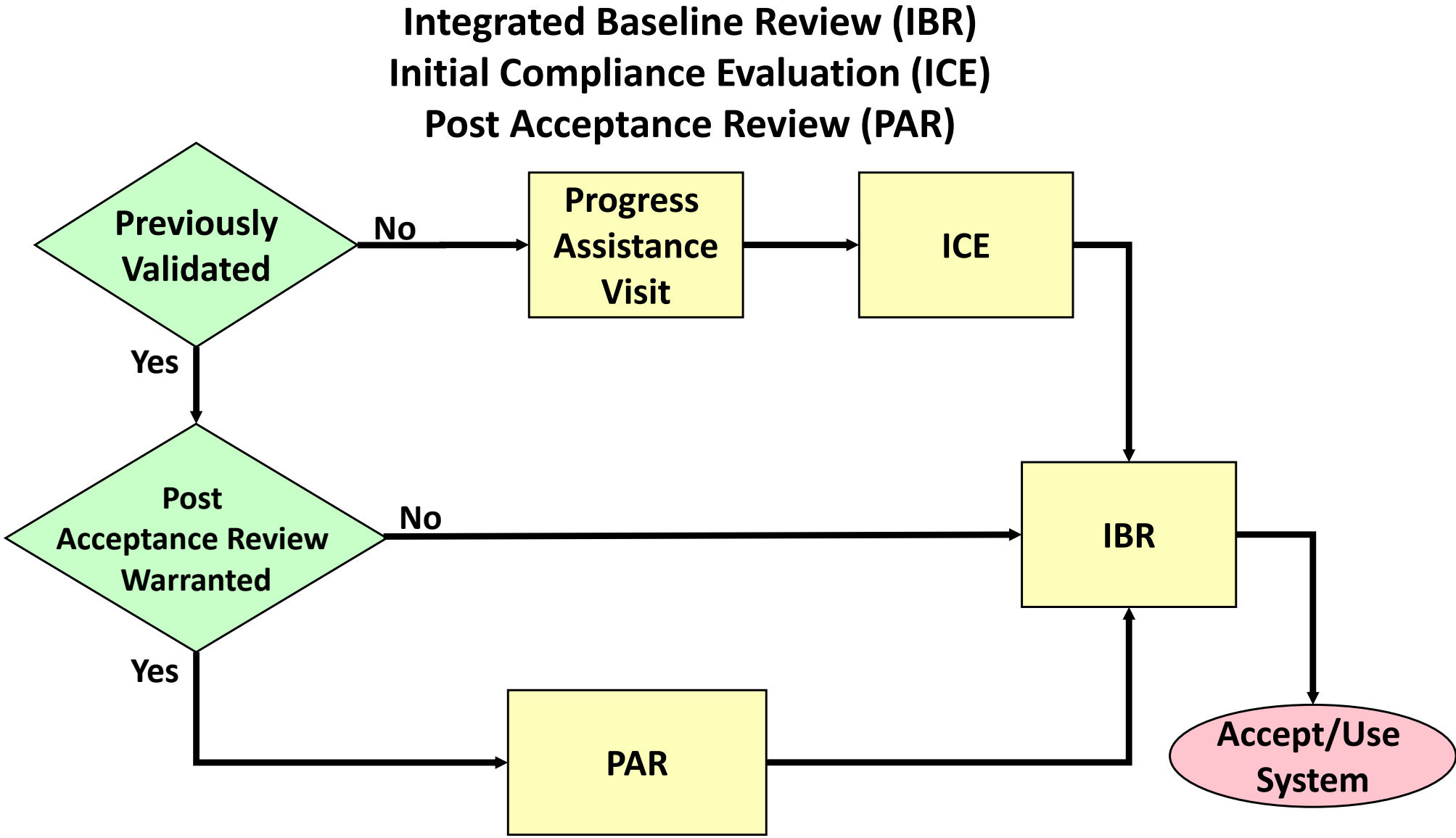
EVMS Government Reviews



Reviews

- Post-Acceptance Review
  - Objective: To ensure accuracy of performance data generated, to identify actions required to reaffirm system acceptability, or to respond to Contractor requests for assistance in changing processes
  - Timing: Prior to the IBR, then only as needed
  - Team members: Led by Review Director (usually DCMA), membership dependent on purpose
  - Report: Prepared by Review Director
- Initial Compliance Evaluation
  - Objective: Performed to validate the Contractor's EVM system meets the EVMS criteria and that the Contractor's description of its system is accurate
  - Timing: Prior to the IBR, then only as needed
  - Team members: Led by DCMA Review Director, membership dependent on purpose
  - Report: Prepared by Review Director

Integrated Baseline Review (IBR)

- Who: The Contractor, PM and/or Deputy PM, DCMA/DCAA/SUPSHIP personnel, and technical staff as appropriate
- What: Joint assessment conducted by the Government PM and Contractor to verify realism and accuracy of the PMB; ensuring it captures the entire technical scope, schedule requirements, and is ***adequately resourced***
- When: ***Within 6 months of contract award***
- Where: Contractor's facility
- Why: To ensure planning & budgeting are accurate at the control account levels
- How: Per guidance in Earned Value Management Implementation Guide and service policy

Integrated Baseline Review (IBR)

- Primary factors to review to evaluate the PMB
  - Technical scope of the work is fully included
  - Key schedule milestones are identified
  - Supporting schedules reflect a logical flow for accomplishing the technical work scope
  - Resources (budgets, facilities, personnel, skills, etc.) are adequate and available for the assigned tasks
  - Tasks are planned and can be measured objectively, relative to technical progress
    - No unauthorized scope is planned
  - Managers have appropriately implemented required management processes
  - Management Reserve has been assessed with respect to program risk

Integrated Baseline Review (IBR)

- Benefits of the IBR
  - Tests the relationship between the Statement of Work (SOW) and the WBS
  - Assures planning and budgeting are accurate at the control account level
  - Available performance information reviewed to assure objective and meaningful reporting of technical status
  - Joint understanding of program risks
  - Management insight into the planning assumptions and resource constraints of the baseline
  - Comparison of expectations so differences can be addressed early in the planning phase
  - Correction of baseline planning errors and omissions
  - Early warning and better understanding of significant variances
  - Targeting of resources to address challenges and mitigate risks
  - Mutual commitment by the joint team to manage to the baseline

Overview

- Purpose and concept of EVM
- DoD policy
- EVMS guidelines
- Principal players
- Implementation activities
- Performance Measurement Baseline (PMB)
- Reviews
- Reporting

Integrated Program Management Data Analysis Report (IPMDAR)

- A contractually required report, prepared by the Contractor, containing performance information derived from the internal EVMS
- Provides status of cost, schedule, and technical status
- Enables PMO to identify the magnitude and impact of performance problem areas that can cause significant cost and schedule variances
- Required on any contract where EVM is required
  - Provided monthly at a minimum
- Six formats
  - ***Format 1 Work Breakdown Structure*** (most requested format)
  - Format 2 Organizational Categories
  - Format 3 Program Management Baseline
  - Format 4 Staffing
  - Format 5 Explanation and Problem Analyses (Narrative)
  - Format 6 Integrated Master Schedule (IMS)

Integrated Program Management Data and Analysis Report (IPMDAR)

- Not all formats are required for every contract — the requirement should be tailored to:
  - Risk: Cost, technical, and schedule
    - A good risk assessment can pinpoint specific WBS elements with the highest risk which can be highlighted for more detailed reporting
  - Size of the contract
    - Too much or too little information could prevent the PMO from seeing actual trends
    - You pay for what you get - extra data requirements drive up cost
  - Complexity of integration with other contract efforts
    - You pay for what you get - complex data requirements drive up cost
  - Technology maturity
    - Immature technology may require more reporting
  - Reliance on Government Furnished Equipment (GFE)
    - More GFE may require less reporting by the Contractor

FORMAT 1 - WORK BREAKDOWN STRUCTURE | DOLLARS IN *Thousands* | OMB No. 0704-0188

1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME Shipbuilder	a. NAME Hull 9Detail Design & Ship Construction (CLIN 0001)		a. NAME Hull 9	a. FROM (YYYYMMDD) 2019-08-19
b. LOCATION (Address and ZIP Code) Dock Street	b. NUMBER		b. PHASE Ship Construction FY15 - Delivery	b. TO (YYYYMMDD) 2019-09-22
	c. TYPE FPIF	d. SHARE RATIO 70/30 to 103%, 65/35 >103% to 110%, 50/50 > 110%	c. EVMS ACCEPTANCE NO X YES 2015-07-28	

5. CONTRACT DATA

a. QUANTITY	b. NEGOTIATED COST	c. ESTIMATED COST OF AUTHORIZED UNPRICED WORK	d. TARGET PROFIT/ FEE	e. TARGET PRICE	f. ESTIMATED PRICE	g. CONTRACT CEILING	h. ESTIMATED CONTRACT CEILING	i. DATE OF OTB/OTS (YYYYMMDD)
N/A	$2,836,774	$2,092	$386,165 14%	$3,225,031	$3,364,126	$3,505,199	$3,525,560	N/A

6. ESTIMATED COST AT COMPLETION

	MANAGEMENT ESTIMATE AT COMPLETION (1)	CONTRACT BUDGET BASE (2)	VARIANCE (3)
a. BEST CASE	$2,983,836		
b. WORST CASE	$3,151,485		
c. MOST LIKELY	$3,042,513	$2,838,866	-$203,647

7. AUTHORIZED CONTRACTOR REPRESENTATIVE

a. NAME (Last, First, Middle Initial)	b. TITLE	c. SIGNATURE	d. DATE SIGNED (YYYYMMDD)
XX	Program Director, Hull 9Program		2019-10-21

8. PERFORMANCE DATA

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION		
	BUDGETED COST WORK SCHEDULED	BUDGETED COST WORK PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	VARIANCE COST	BUDGETED COST WORK SCHEDULED	BUDGETED COST WORK PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	VARIANCE COST	COST VARIANCE	SCHEDULE VARIANCE	BUDGET	BUDGETED	ESTIMATED	VARIANCE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12a)	(12b)	(13)	(14)	(15)	(16)
a. WORK BREAKDOWN STRUCTURE ELEMENT *Man-hours*																
TOTAL MATERIAL	9,290	11,620	15,293	2,330	(3,674)	239,083	223,882	240,680	(15,201)	(16,798)				396,528	486,651	(90,123)
DIRECT LABOR	20,553	15,273	20,843	(5,279)	(5,570)	599,027	496,283	525,013	(102,744)	(28,730)				983,919	1,010,026	(26,107)
OVERHEAD	29,774	22,128	35,771	(7,646)	(13,643)	867,021	718,312	847,061	(148,710)	(128,749)				1,424,107	1,519,079	(94,973)
TOTAL COST (less FCCM)	59,616	49,021	71,907	(10,595)	(22,886)	1,705,131	1,438,476	1,612,753	(266,655)	(174,277)				2,804,554	3,015,757	(211,203)
b. COST OF MONEY	575	427	666	(148)	(239)	16,757	13,883	16,155	(2,874)	(2,273)				27,524	26,756	768
c. GENERAL AND ADMINISTRATIVE	10,024	10,024	10,024	0	0	242,133	242,133	242,133	0	0				434,008	434,008	0
d. UNDISTRIBUTED BUDGET														4,743	0	4,743
e. SUB TOTAL (PERFORMANCE MEASUREMENT BASELINE)	60,191	49,448	72,573	(10,743)	(23,125)	1,721,888	1,452,359	1,628,909	(269,529)	(176,549)				2,836,821	3,042,513	(205,691)
f. MANAGEMENT RESERVE														2,045	0	2,045
g. TOTAL	60,191	49,448	72,573	(10,743)	(23,125)	1,721,888	1,452,359	1,628,909	(269,529)	(176,549)				2,838,866	3,042,513	(203,647)
9. RECONCILIATION TO CONTRACT BUDGET BASE																
a. VARIANCE ADJUSTMENT																
b. TOTAL CONTRACT VARIANCE																

(1) Target Profit/Fee includes Incentive Fee

(2) G&A is included in Total Overhead. This data is provided for information purposes only.

**EVM reporting for Material is based on incurred material dollars only. Current Commitment Value: $296M*

CONTRACT PERFORMANCE REPORT
FORMAT 2B - Direct Labor

DOLLARS IN *Thousands*

FORM APPROVED
OMB No. 0704-0188

1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME Shipbuilder	a. NAME Hull 9Detail Design & Ship Construction (CLIN 0001)		a. NAME Hull 9	a. FROM (YYYYMMDD) 2019-08-19
b. LOCATION (Address and ZIP Code) Dock Street	b. NUMBER		b. PHASE Ship Construction FY15 - Delivery	b. TO (YYYYMMDD) 2019-09-22
	c. TYPE FPIF	d. SHARE RATIO 0 70/30 to 103%, 65/35 >103% to 110%, 50/50 > 110%	c. EVMS ACCEPTANCE NO X YES 2015-07-28	

5. PERFORMANCE DATA

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					REPROGRAMMING ADJUSTMENTS			AT COMPLETION		
	BUDGETED COST		ACTUAL COST	VARIANCE		BUDGETED COST		ACTUAL COST	VARIANCE							
	WORK SCHEDULED	WORK PERFORMED	WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED	WORK PERFORMED	WORK PERFORMED	SCHEDULE	COST	COST VARIANCE	SCHEDULE VARIANCE	BUDGET	BUDGETED	ESTIMATED	VARIANCE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12a)	(12b)	(13)	(14)	(15)	(16)
a. ORGANIZATIONAL CATEGORY																
ASSEMBLY	13,202	10,429	13,130	(2,773)	(2,701)	375,410	294,176	290,089	(81,234)	4,087	0	0	0	621,703	625,453	(3,750)
Fitters	980	943	1,050	(38)	(108)	51,094	46,605	38,213	(4,489)	8,393	0	0	0	55,933	51,668	4,264
Ship Welders	496	644	1,227	149	(583)	51,843	47,569	47,074	(4,274)	495	0	0	0	55,909	58,487	(2,578)
Pipe Welders	176	271	231	94	39	10,919	8,786	7,432	(2,134)	1,354	0	0	0	12,207	11,346	860
Electrical	2,605	2,933	2,560	328	373	65,847	56,345	44,010	(9,502)	12,335	0	0	0	121,684	113,703	7,981
Sheet Metal	2,220	870	1,404	(1,350)	(533)	34,802	17,641	21,427	(17,161)	(3,786)	0	0	0	65,862	79,791	(13,929)
Cleaners	659	339	323	(320)	17	11,134	8,610	6,823	(2,525)	1,787	0	0	0	18,830	19,118	(289)
Painters	1,168	810	963	(358)	(153)	28,112	19,010	15,850	(9,101)	3,161	0	0	0	66,906	51,637	15,269
Insulation	780	469	387	(311)	82	13,409	8,110	5,512	(5,299)	2,599	0	0	0	36,419	27,423	8,995
Piping	1,152	1,252	1,363	100	(112)	43,761	35,320	32,733	(8,441)	2,587	0	0	0	64,120	68,266	(4,146)
Machinery Installation	710	354	765	(356)	(410)	15,194	9,533	11,146	(5,661)	(1,612)	0	0	0	35,569	42,619	(7,050)
Hull 9Construction	440	258	429	(183)	(171)	10,497	9,335	22,747	(1,163)	(13,412)	0	0	0	17,898	25,944	(8,046)
Subcontract Management	14	16	19	2	(3)	355	225	248	(130)	(23)	0	0	0	742	899	(157)
Hull 9Production	1,801	1,270	2,409	(532)	(1,139)	38,443	27,088	36,876	(11,355)	(9,788)	0	0	0	69,626	74,550	(4,924)
TRADES SUPPORT	185	119	109	(65)	10	4,880	3,373	4,078	(1,507)	(705)	0	0	0	7,095	7,656	(561)
STRUCTURAL FABRICATION	1	0	2	0	(2)	290	259	213	(31)	46	0	0	0	310	216	94
COMPONENT FABRICATION	0	0	2	0	(2)	6	2	37	(4)	(35)	0	0	0	9	41	(32)
INTEGRATED PLANNING & PRODUCTION CONTROL	880	776	854	(104)	(78)	42,239	40,948	44,445	(1,291)	(3,497)	0	0	0	60,459	62,973	(2,514)
PROGRAM PROD INTEGRATION	263	123	143	(140)	(20)	4,086	2,899	2,749	(1,188)	150	0	0	0	6,283	6,299	(16)
FACILITIES	1,398	780	1,611	(617)	(830)	36,970	28,748	30,881	(8,222)	(2,133)	0	0	0	53,065	55,660	(2,595)
MATERIAL DIVISION	912	484	576	(428)	(92)	17,841	14,985	18,141	(2,856)	(3,155)	0	0	0	28,421	33,680	(5,259)
QUALITY & PROCESS	509	335	834	(174)	(499)	16,431	13,375	18,486	(3,056)	(5,111)	0	0	0	23,466	25,528	(2,062)
ENGINEERING TECHNOLOGY	145	116	101	(28)	15	3,383	3,516	4,192	133	(675)	0	0	0	6,273	7,242	(969)
PLATFORM ENGINEERING	1,449	790	1,340	(660)	(550)	57,715	57,359	63,417	(356)	(6,058)	0	0	0	86,646	87,024	(377)
PROPULSION ENGINEERING	150	86	227	(64)	(141)	5,314	4,860	6,139	(454)	(1,279)	0	0	0	8,213	8,113	99
TEST ENGINEERING	165	190	218	26	(27)	2,389	3,137	3,903	748	(766)	0	0	0	20,293	19,497	796
NUCLEAR ENG, TEST, &	863	774	1,394	(89)	(620)	20,733	18,358	28,529	(2,376)	(10,171)	0	0	0	42,158	52,957	(10,799)
BUSINESS MGMT/PROGRAM	432	269	302	(162)	(33)	11,338	10,289	9,717	(1,050)	571	0	0	0	19,524	17,687	1,838
b. COST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c. GENERAL AND ADMINISTRATIVE																
d. UNDISTRIBUTED BUDGET														1,869	0	1,869
e. SUB TOTAL (PERFORMANCE	20,553	15,273	20,843	(5,279)	(5,570)	599,027	496,283	525,013	(102,744)	(28,730)	0	0	0	985,788	1,010,026	(24,238)
f. MANAGEMENT RESERVE														836	0	836

CONTRACT PERFORMANCE REPORT FORMAT 3 - BASELINE			DOLLARS IN *Thousands*	FORM APPROVED OMB No. 0704-0188
1. CONTRACTOR	**2. CONTRACT**		**3. PROGRAM**	**4. REPORT PERIOD**
a. NAME Shipbuilder	**a. NAME** Hull 9Detail Design & Ship Construction (CLIN 0001)		**a. NAME** Hull 9	**a. FROM (YYYYMMDD)** 2019-08-19
b. LOCATION (Address and ZIP Code) Dock Street	**b. NUMBER**		**b. PHASE** Ship Construction FY15 - Delivery	**b. TO (YYYYMMDD)** 2019-09-22
	c. TYPE FPIF	**d. SHARE RATIO** 70/30 to 103%, 65/35 >103% to 110%, 50/50 > 110%	**c. EVMS ACCEPTANCE** **NO** X **YES** 2015-07-28	

5. CONTRACT DATA

a. ORIGINAL NEGOTIATED COST	b. NEGOTIATED CONTRACT CHANGES	c. CURRENT NEGOTIATED COST	d. ESTIMATED COST OF AUTHORIZED UNPRICED WORK	e. CONTRACT BUDGET BASE	f. TOTAL ALLOCATED BUDGET	g. DIFFERENCE
$2,807,046	$29,728	$2,836,774	$2,092	$2,838,866	$2,838,866	$0

h. CONTRACT START DATE	i. CONTRACT DEFINITIZATION DATE	j. PLANNED COMPLETION DATE	k. CONTRACT COMPLETION DATE	l. ESTIMATED COMPLETION DATE
12/8/2010	6/3/2015	6/24/2022	6/24/2022	6/24/2022

6. PERFORMANCE DATA

ITEM	BCWS CUMULA-TIVE TO DATE	BCWS FOR REPORT PERIOD	BUDGETED COST FOR WORK SCHEDULED (BCWS) (Non-Cumulative)											UNDIS-TRIBUTED BUDGET	TOTAL BUDGET
			SIX MONTH FORECAST						ENTER SPECIFIED PERIODS						
			Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20 - Jun-20	Jul-20 - Sep-20	Oct-20 - Dec-20	Jan-21 - Mar-21	Apr-21 - Jul-23		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
a. PERFORMANCE MEASUREMENT BASELINE (Beginning of Period)	1,661,697	61,254	48,810	46,180	51,338	38,838	41,925	48,071	137,910	125,427	121,410	92,918	354,616	3,251	2,833,645
b. BASELINE CHANGES AUTHORIZED DURING REPORT PERIOD		(1,063)	(743)	(315)	254	244	459	(5,774)	3,000	1,565	237	762	3,060	1,492	3,177
c. CHANGES IN MANAGEMENT RESERVE															
d. PERFORMANCE MEASUREMENT BASELINE (End of Period)	1,721,888		48,067	45,865	51,592	39,081	42,384	42,297	140,910	126,992	121,647	93,681	357,675	4,743	2,836,822
7. MANAGEMENT RESERVE															2,045
8. TOTAL	1,721,888		48,067	45,865	51,592	39,081	42,384	42,297	140,910	126,992	121,647	93,681	357,675	4,743	2,838,867

CONTRACT PERFORMANCE REPORT
FORMAT 4 - STAFFING
MAN-HOURS IN *Thousands*

FORM APPROVED
OMB No. 0704-0188

1. CONTRACTOR	2. CONTRACT	3. PROGRAM	4. REPORT PERIOD
a. NAME Shipbuilder	a. NAME Hull 9Detail Design & Ship Construction (CLIN 0001)	a. NAME Hull 9	a. FROM (YYYYMMDD) 2019-08-19
b. LOCATION (Address and ZIP Code) Dock Street	b. NUMBER N00024-15-C-2114	b. PHASE Ship Construction FY15 - Delivery	b. TO (YYYYMMDD) 2019-09-22
	c. TYPE FPIF / d. SHARE RATIO 70/30 to 103%, 65/35 >103% to 110%, 50/50 >110%	c. EVMS ACCEPTANCE NO X YES 2015-07-28	

5. PERFORMANCE DATA

ORGANIZATIONAL CATEGORY (1)	ACWP FOR REPORT PERIOD (2)	ACWP CUMULATIVE TO DATE (3)	FORECAST (Non-Cumulative) SIX MONTH FORECAST BY MONTH (Enter Names of Months) Oct-19 (4)	Nov-19 (5)	Dec-19 (6)	Jan-20 (7)	Feb-20 (8)	Mar-20 (9)	ENTER SPECIFIED PERIODS Apr-20 - Jun-20 (10)	Jul-20 - Sep-20 (11)	Oct-20 - Dec-20 (12)	Jan-21 - Mar-21 (13)	Apr-21 - Jun-23 (14)	AT COMPLETION (15)
ASSEMBLY	**472**	**10,486**	**444**	**432**	**491**	**334**	**414**	**402**	**1,278**	**1,125**	**1,064**	**885**	**3,171**	**20,527**
Fitters	37	1,453	25	18	21	12	13	12	33	24	21	16	47	1,696
Ship Welders	42	1,692	31	27	28	18	21	15	26	14	9	7	33	1,920
Pipe Welders	8	248	8	8	10	5	6	5	15	10	10	8	39	372
Electrical	103	1,808	85	85	98	68	85	85	272	243	224	202	474	3,732
Sheet Metal	58	877	63	63	73	53	70	73	242	231	225	164	486	2,619
Cleaners	13	266	15	13	15	10	12	12	37	36	37	33	141	627
Painters	37	592	25	25	29	20	26	24	76	77	89	83	628	1,695
Insulation	17	239	25	25	26	15	19	19	61	60	67	66	278	900
Piping	53	1,301	56	56	64	46	55	51	185	132	89	54	152	2,240
Machinery Installation	29	434	32	33	41	30	37	37	119	98	99	92	347	1,399
CVN79 Construction	10	566	15	15	17	8	10	10	31	30	31	27	92	851
Subcontract Management	0	5	1	1	1	0	1	1	2	2	2	3	13	30
CVN79 Production	65	1,004	64	62	69	48	59	59	181	168	162	130	441	2,447
TRADES SUPPORT	3	130	6	6	6	5	6	6	18	14	12	9	34	251
STRUCTURAL FABRICATION	0	7	0	0	0	0	0	0	0	0	0	0	0	7
COMPONENT FABRICATION														1
INTEGRATED PLANNING & PRODUCTION CONTROL	28	1,404	21	21	24	16	20	20	64	62	64	56	294	2,067
TFW SHOPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MANUFACTURING PLANNING	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROD CONTROL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGINEERING & PRODUCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROGRAM PROD INTEGRATION	5	101	4	4	4	3	3	3	11	11	11	10	42	207
FACILITIES	50	1,058	42	42	52	33	38	35	93	76	70	55	232	1,827
MATERIAL DIVISION	21	612	20	21	24	17	22	21	68	63	61	48	126	1,105
QUALITY & PROCESS EXCELL	25	563	18	18	19	9	10	10	32	29	30	25	74	838
ENGINEERING TECHNOLOGY	2	108	6	6	7	4	5	5	16	14	14	11	42	238
PLATFORM ENGINEERING	39	1,838	39	38	43	27	33	33	104	102	105	92	402	2,856
PROPULSION ENGINEERING	5	149	4	3	4	3	4	4	12	11	12	10	51	266

Reports staffing forecasts by functional category

CONTRACT PERFORMANCE REPORT
FORMAT 5 - EXPLANATIONS AND PROBLEM ANALYSES

Form Approved
OMB No. 0704-0188

1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME	a. NAME		a. NAME	a. FROM *(YYYYMMDD)*
b. LOCATION *(Address and ZIP Code)*	b. NUMBER		b. PHASE	b. TO *(YYYYMMDD)*
	c. TYPE	d. SHARE RATIO	c. EVMS ACCEPTANCE [ ] NO [ ] YES *(YYYYMMDD)*	

5. EVALUATION

Discussion should include but is not limited to:

Summary Analysis:

- Summary of Overall Contract Variances
- Differences between EAC's (Blocks 6.a., 6.b., 6.c., or Block 8.15)
- Changes in Undistributed Budget
- Changes in Management Reserve
- Significant timephasing shifts in Baseline (BCWS) (Format 3)
- Significant timephasing shifts or overall changes in Forecasted Staffing (Format 4)
- Discussion of Over Target Baseline and/or Over Target Schedule incorporation

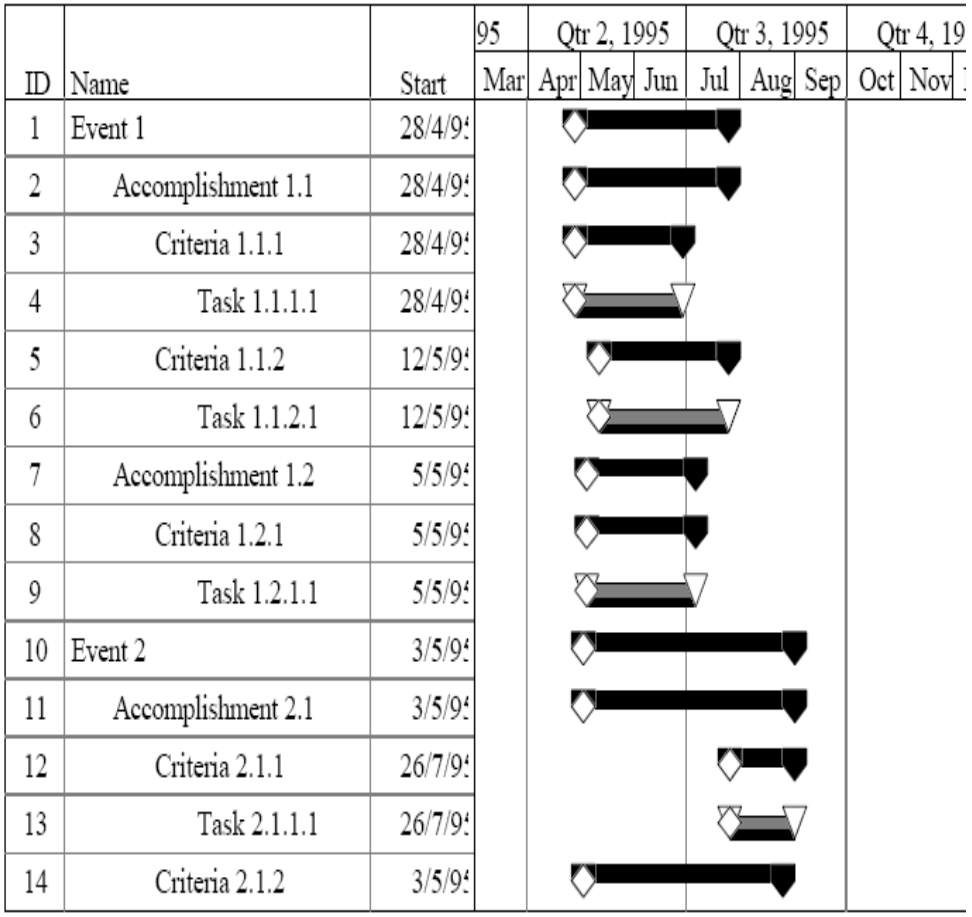
Analysis of Significant Variances (identify and describe each):

- Type and Magnitude of Variance
- Explanation of Significant Reasons
- Effect on Immediate Task
- Effect on Total Contract
- Corrective Actions Taken or Planned

DD FORM 2734/5, APR 2005 PREVIOUS EDITION IS OBSOLETE. LOCAL REPRODUCTION AUTHORIZED.

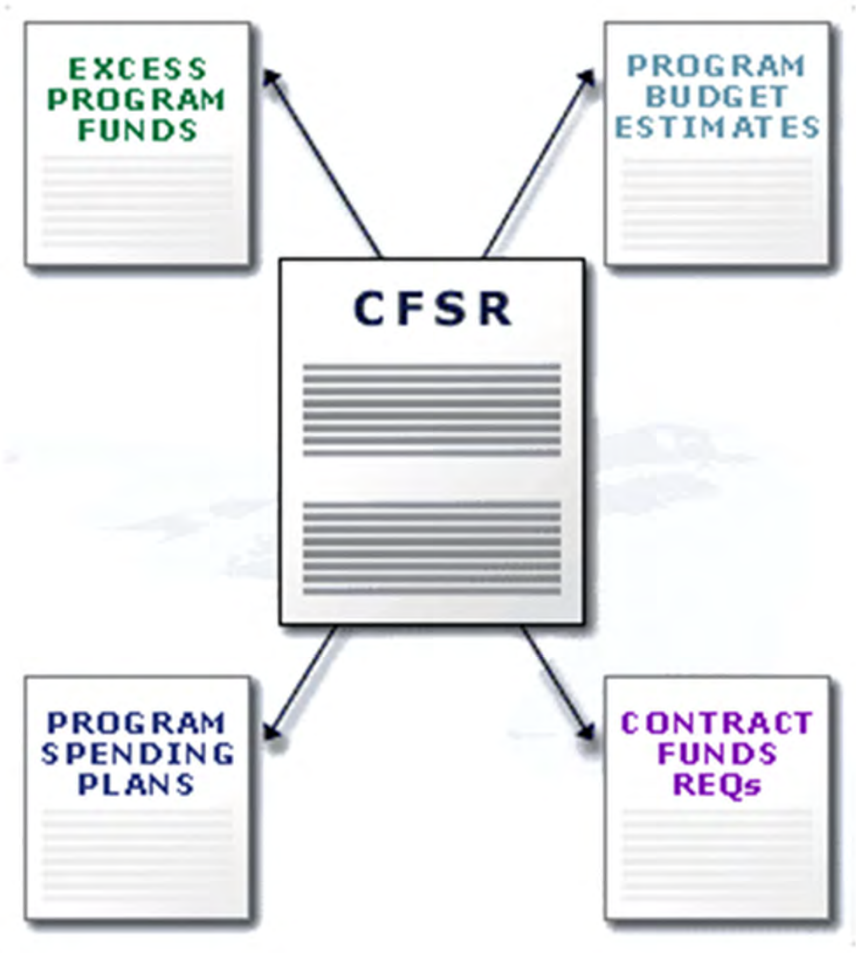
Format 6: Integrated Master Schedule

- The purpose of the IMS is to enable the PMO to:
  - Verify attainability of objectives
  - Evaluate progress towards meeting those objectives
  - Integrate program scheduled activities with all related components



Contract Funds Status Report

- Designed to supply funding data about project/contract to Government PM's
- Contains:
  - Updated and forecasted funds requirements
  - Planned or requested funding changes
  - Budget estimates
  - Projected funds in excess of contract needs available for de-obligation
  - Rough estimates of termination costs
  - Funds availability determination by fiscal year to execute the contract
- Based on IPMDAR data, but CFSR presents ***price information rather than cost*** (price includes profit/fee) which must be reconciled by the PM
- Can be applied to contracts over 6 months in duration
- No specific dollar thresholds apply



CLASSIFICATION

CONTRACT FUNDS STATUS REPORT *(Dollars in)*

Form Approved
OMB No. 0704-0188

1. CONTRACT NUMBER	3. CONTRACT FUNDING FOR FOR FY	5. PREVIOUS REPORT DATE	7. CONTRACTOR *(Name, address and zip code)*	9. INITIAL CONTRACT PRICE a. TARGET b. CEILING
2. CONTRACT TYPE	4. APPROPRIATION	6. CURRENT REPORT DATE	8. PROGRAM	10. ADJUSTED CONTRACT PRICE a. TARGET b. CEILING

11. FUNDING INFORMATION

LINE ITEM/WBS ELEMENT a	APPROPRIATION IDENTIFICATION b	FUNDING AUTHORIZED TO DATE c	ACCRUED EXPENDITURES OPEN COMMITMENTS TOTAL d	CONTRACT WORK AUTHORIZED			FORECAST			TOTAL REQUIREMENTS k	FUNDS CARRY-OVER l	NET FUNDS REQUIRED m
				DEFINITIZED e	NOT DEFINITIZED f	SUBTOTAL g	NOT YET AUTHORIZED h	ALL OTHER WORK i	SUBTOTAL j			

12. CONTRACT WORK AUTHORIZED *(With Fee/Profit)* - ACTUAL OR PROJECTED

	ACTUAL TO DATE									AT COMPLETION
a. OPEN COMMITMENTS										
b. ACCRUED EXPENDITURES										
c. TOTAL *(12a + 12b)*										
13. FORECAST OF BILLINGS TO THE GOVERNMENT										
14. ESTIMATED TERMINATION COSTS										

15. REMARKS

Reporting Program Status to Upper Management

- Program Status Report
  - Service specified report submitted monthly to the PEO and/or Service Acquisition Executive (SAE)
- Defense Acquisition Executive Summary (DAES)
  - Submitted quarterly to DAE
  - Requires summary data and PMO estimates from IPMDAR
- Selected Acquisition Report (SAR)
  - Submitted annually to Congress
  - Requires summary data and PMO estimates from IPMDAR

EVM cost and schedule variance trends are used in contract performance reporting and forecasting

Summary

- What is the PMB?
- What are the steps in developing the PMB?
- What are the three reasons for PMB changes that we discussed?

Summary

- When is EVM required in DoD?