

Conference Paper

A New Cost Management Policy for Your Organization: An Integrated Approach

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Introduction

- ▶ **Developing and adhering to a robust Cost Management Policy is a key driver to the success of any organization, regardless of size or industry**
- ▶ **Institutionalizing is not daunting or difficult**
 - Can be implemented to existing or new organizations
- ▶ **Integrating stove-piped disciplines drives towards better procedures that lead to more successful program outcomes**
 - Ensures cost control measures are valid and effective, risk are identified and mitigated, solutions are delivered on time, and profits/ROIs are maximized
 - Systematic cost management approach applies cost engineering and cost management principles
- ▶ **Incentives to all Levels of the Organizations**
 - Rewards include cost containment, continuous improvement and efficiencies
- ▶ **Three simple principles**
 - Common stable program/project structure
 - Institutional and enforced process
 - Applied throughout the lifecycle, from cradle to grave



Common Stable Program/Project Structure

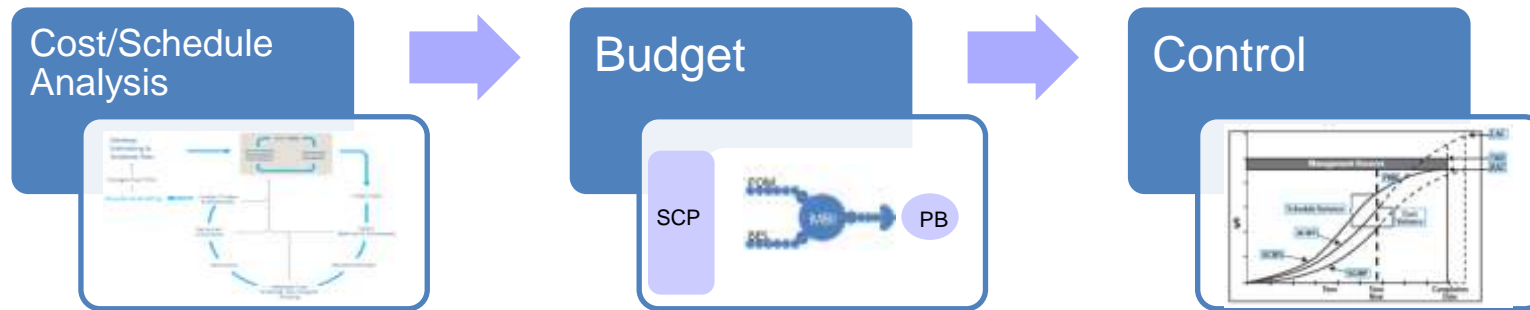
▶ A common stable structure:

- Provides a framework for defining and capturing the work on a project
- Identify contractual tasks and deliverables (if it's not in the structure, it's not in the project)
- Provides a framework for and facilitates planning, estimating, and scheduling of a project
- Provides a basis for data monitoring and historical data collection
- Consolidates information from disparate sources into one organized format

▶ Start with a program/project structure (e.g. WBS) that will be used across the artifacts

- Encompasses all the aspects of the project, from cradle to grave
 - If it takes time and/or money, it needs to be captured
- Detailed enough to track progress (useful) but not necessarily too detailed to become cumbersome (manageable)
- Compliant to organizational standards if they exist

Institutional And Enforced Process



► Planning (Cost/Schedule Analysis)

- Developing a robust cost estimate with uncertainty
- Developing a robust, detailed schedule with critical paths, predecessors and successors, and uncertainty
- Identified and quantified risks in terms of time and costs, linked to tasks with probabilities of occurrence

► Programming (Budget)

- Schedule and risk-adjusted cost estimate become the program budget or program of record
- Phased over the the life cycle

► Control (Earned Value)

- Effort expended, both time and costs, tracked against plan
- Metrics applied to gauge program progress, health, and potential areas of focus
- Actual costs and time required collected

Process Steps

- 1. Start with the common structure**
- 2. Iteratively build schedule and costs against all life cycle tasks**
 - Schedule against the structure with tasks, durations, and linkages
 - Estimate costs against each element of the structure, to as low a detail as possible or feasible
- 3. Determine uncertainties and risks against tasks**
 - Establish budgets for elements of the structure based on cost/schedule/risk analysis
- 4. Build budget profile against the structure**
- 5. Report progress against schedule and costs**
- 6. Update risks (realized, mitigated, didn't happen)**
- 7. Update schedule to reflect progress**
- 8. Feed actuals costs to next iteration of estimate**
- 9. Repeat**

Planning

▶ Planning Team

- Cost Analysts/Estimators
- Schedulers/Schedule Analysts
- Risk Analysts

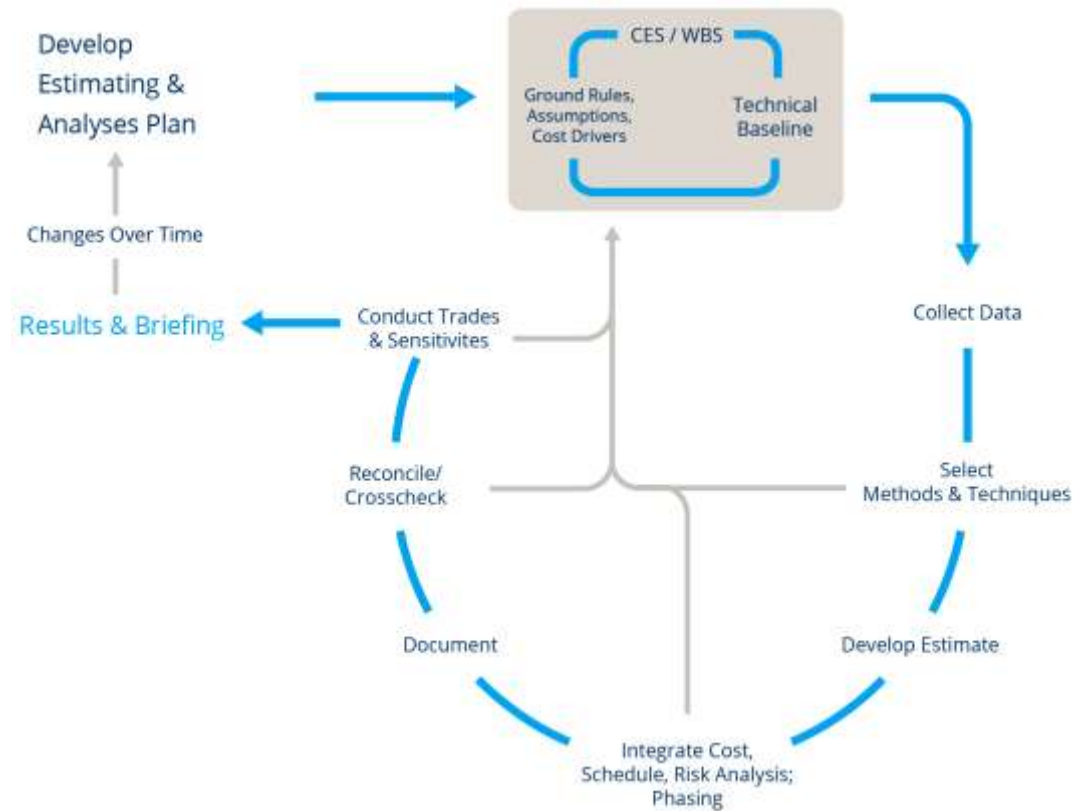
▶ Conducted in the early stages of a program life and throughout

▶ Robust, credible, accurate, defensible, and repeatable

▶ Updated to reflect any progress and changes

▶ Serves as the baseline for the budget and control

▶ Integrates cost, schedule, and risks



Integrated Cost Schedule Risk Analysis

▶ **New** – Integrated Disciplines and Organizations

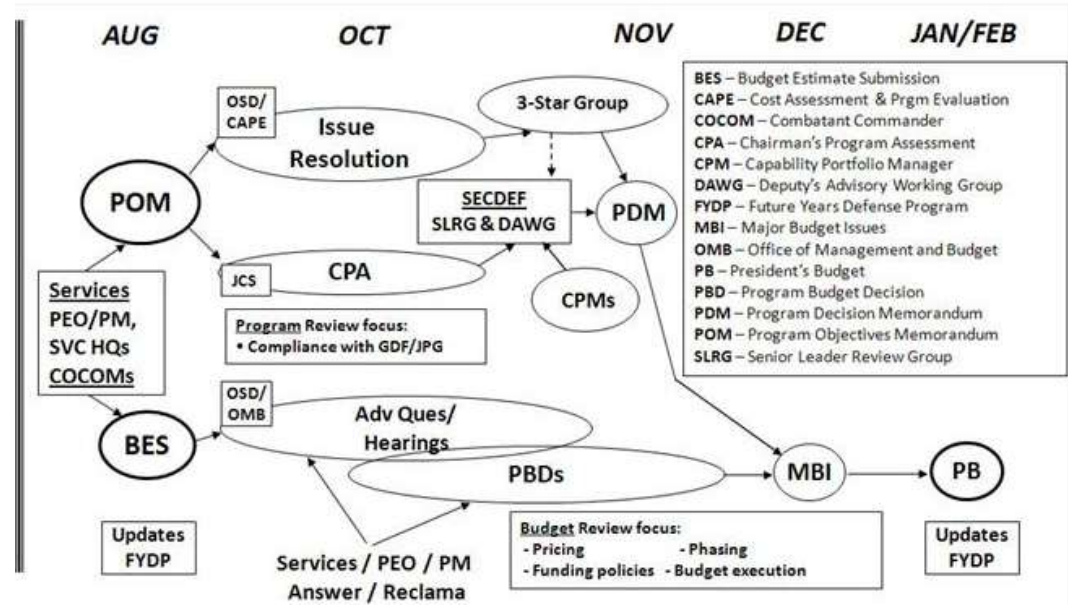
- Systematic approach to managing cost, schedule, and risk through-out the life cycle
- Integrating cost estimates, schedule, budgets and risk registers
 - Increase the quality of each artifact and ensure compatibility
 - Open the lines of communication between these disciplines
- Provides data driven solutions to key management issues (budget cuts, UFRs, technical issues)
- Cost Estimating/Analysis
 - Apply guiding principles and processes to meet the 5 key tenets of a sound cost estimate
 - Detailed analyses helps identify variances from planned cost and benefits
- Schedule/EVM
 - Schedule risk analysis, critical path insights, program performance tracking
 - Use risks to establish suitable and sufficient management reserves to handle high probability of risks
- Risk Register
 - Insight into cost and schedule impacts of risks and opportunities
 - Risks are quantified and mapped to a task in the schedule which will reveal where risks may not have been sufficiently identified



**UNTIL RECENTLY, THIS
COULD NOT BE
ACCURATELY AND EASILY
ACCOMPLISHED**

Programming

- ▶ **Programming Team**
 - Budget Analysts
 - Financial Analysts
 - Contract Specialists
- ▶ **Based on the schedule and estimate from Planning**
- ▶ **Budgets developed to determine funding needs by appropriation and by fiscal year**
- ▶ **Annual budget submission, funding constraints, and execution realities can affect the cost estimate**
- ▶ **Updated to reflect progress and changes**



WEAPONS SYSTEM REFORM ACT OF 2009 CHANGES PA&E TO CAPE (COST ASSESSMENT & PROGRAM EVALUATION)

Control



▶ Control Team

- Integrated Master Schedulers
- Earned Value Management Analysts
- Risk Management Analysts

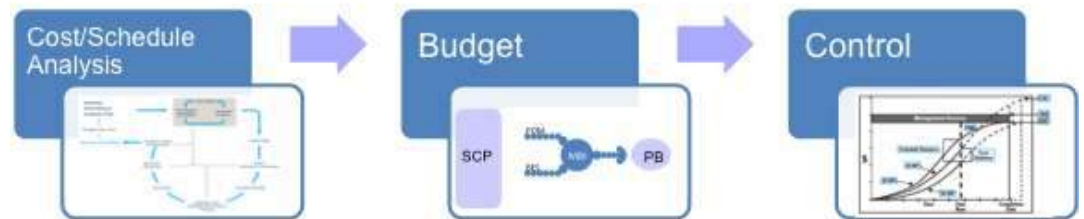
▶ Mechanisms to track and analyze actual program performance

- Integrated Master Schedule
 - Used to actively maintain and manage to ensure timely completion
 - Attention to critical path and risk items to manage potential cost and schedule growth effectively
- Earned Value Management
 - Calculates cost and schedule variances, EACs and provides earned schedule metrics
 - Validates that the program baseline is adequate and realistically portrays all authorized work
- Risk Management
 - Risks are identified, prioritized and tracked
 - Ensure the program baseline adequately plans for and manages risk and opportunities



Potential Pitfalls

- ▶ **Separate individual processes performed by separate organizations with limited interactions**
- ▶ **Inconsistency of work mapping between work artifacts even with shared data resources**
- ▶ **Inconsistency of work product maturity**
- ▶ **Assumed mutual understanding of all requirements, technical parameters and risks**
- ▶ **Information is passed on sequentially when activities are completed (system engineering to cost estimating to the budget process and finally to the PM)**
- ▶ **Cost Analysts may update the estimate without fully understanding what the earned value represents**
- ▶ **Control team tends to start monitoring programs without adequate knowledge of risks**



Organizational Structure

▶ Roles and perspectives at various levels of an organization differ

– Program Office (Optimistic)

- Responsible for day to day program management and execution
- Program advocate responding to technical, budgetary, and schedule challenges while meeting mission needs

– Corporate/Enterprise (Realistic)

- Consists of internal groups of the organization
- Challenged with balancing priorities across the entire portfolio of programs

– Oversight (Pessimistic)

- Governing body charged with balancing priorities within available resources across a group of organizations

▶ Key to success is clear definition of program costs, schedules, budgets, and risks, coupled with ability to communicate effectively among stakeholders

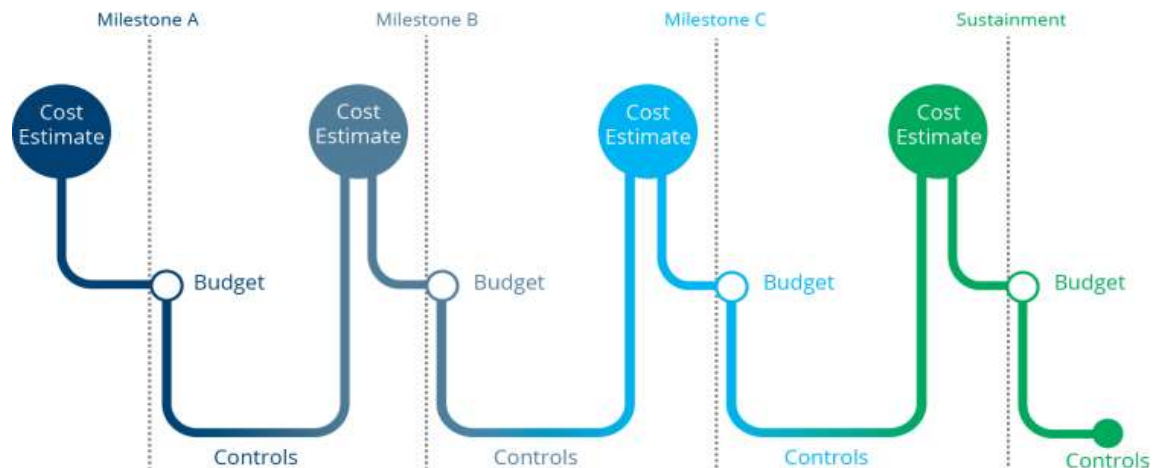
▶ Advocate or non-advocate, goals and objectives are the same – Mission Success

- Produce and validate a sound estimate and schedule with identified risks
- Ensure decision-makers' project surveillance controls are optimized
- Impacts of near-term decisions are understood in the long run
- All entities involved in all phases of the acquisition cycle



Periodicity

- ▶ **Cost Management is iterative; when underlying assumptions change the artifacts should be refined and updated to reflect those changes**
- ▶ **Project Plan is a living document so cost estimates, schedules, and risks change**
 - Updates occur through-out the program life cycle based on critical review points
 - Refinement of program definition, milestone/annual reviews, contract negotiations, program maturation
 - Budget realities or incorporation of actual program performance data part of management
 - Continuous updates enable rapid and data-driven defense of the program over time and determine cost/schedule/risk impacts quickly
- ▶ **Refreshed program artifacts are easily defensible**
 - As project matures and moves through the life cycle phases, estimated costs, schedules, and risks are replaced with actuals
 - Updates to artifacts (estimate, schedule, risks) should be prepared with the process described in the previous sections and should be documented as thoroughly as the original artifacts



Incentives

▶ Total Ownership Model

- Program managers, organization, and program success all linked
- Shared success, shared failure

▶ Monetary awards

- Team bonus ensures program success by incentivizing team effort versus individual contributions
- Deferred bonus for PM/Management
 - Deferring bonuses/compensation until after a successful program milestone
 - Clear entrance and exit program criteria will eliminate the common practice of executing program success for only near term decisions

▶ Non-Monetary Incentives

- PM's participation in an oversight capacity (enterprise level) as a condition of a job role
 - Corporate board of current and future PM's to review programs
 - Encourages ownership at the enterprise level
 - Eliminate PMs focusing on success for his/her tenure only
 - Future PMs have a vested interest in the successful of the acquisition, because they may be the successor to the current PM
- This team approach or collaboration at both the program and enterprise level will enhance the success of all program



Benefits

- ▶ **An integrated cost management policy controls cost and schedule growth, and provides clear insight into impacts and tradeoffs**
- ▶ **Can't eliminate cost and schedule growth, but an integrated cost management approach gives the highest probability of success**
- ▶ **Actively working from the beginning of a program to track potential risks mitigates and avoids potential problems and surprises**
- ▶ **Decision makers have clearer insight into the impact of near term decisions**
 - Able to see the potential for cost and schedule growth and take corrective actions
 - Program/budget accordingly
- ▶ **Tradeoffs can be made in line with program and organization goals in mind**



Conclusion

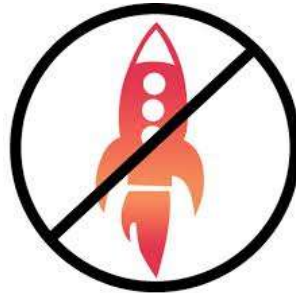
▶ It's Not That Difficult to Implement

- Apply the three principles
 - Common structure
 - Process
 - Repeat throughout the life cycle
- Make it policy
- Integrate the teams
- Establish organizational buy-in/total ownership

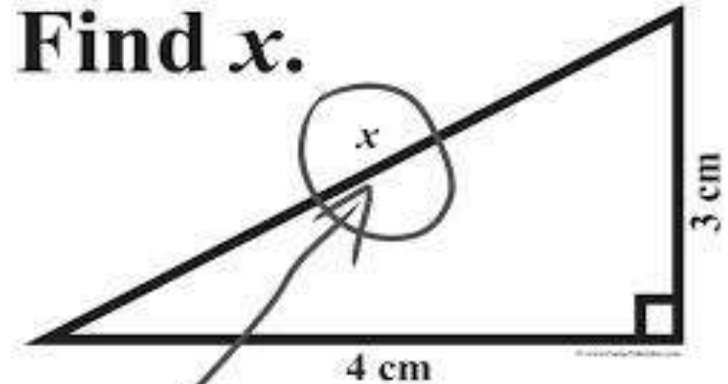
▶ It's not rocket science, requires investigating and understanding the technology, collecting data methodically and as a normal way of doing business, math and statistics

▶ The benefit of saving thousands/millions far outweighs the cost and effort

▶ Significant amount of training and resources available, including open source data on factors, rules of thumb, etc.



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For further information . . .

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