



# **SCEA Conference Integrated Critical Scheduling (ICS)**

Jared Mathey  
Dustin Sexton  
Donna Pucciarello

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## Outline

- ▶ THE NEED - *a changing Acquisition landscape*
- ▶ METHODOLOGY - *a phased approach for managing schedule performance*
- ▶ ADVANTAGE - *a superior means of planning, implementing and executing*
- ▶ SUMMARY - *Looking Forward and Continuous Improvement*

## New Acquisition Reform Shifts Program Burden

- ▶ Acquisition Improvement and Accountability Act of 2008
  - This Act seeks to improve the acquisition system and increase the accountability of government contractors
    - Department of Defense (DoD)-specific provision prohibits the use of Lead Systems Integrators (LSIs) on any new programs after 2010 and limits the use of LSIs on existing programs beyond initial production
  - In light of the aforementioned reform, the government will absorb many of the LSI functions
    - Joint Light Tactical Vehicle (JLTV) Product Management Office (PMO) assumed the system integrator role by developing a uniquely integrated Earned Value Management (EVM) and Integrated Master Scheduling (IMS) process
    - This unique process can be leveraged to engage and collaborate with other government PMO's, conduct independent analyses and deliver timely, impactful reports back to the government leadership



**New Acquisition reforms are aimed at the Government assuming inherently more government control over program execution, cost, schedule, and performance**

## New DoD 5000.02 adds to program complexity



Department of Defense  
**INSTRUCTION**

NUMBER 5000.02  
December 2, 2008

- ▶ DoD Instruction 5000.02
  - Among the most notable changes is the requirement for “competitive prototyping” for defense acquisition programs
    - Intended to manage and mitigate technical and financial program risks in subsequent development phases
  - Compliance with the competitive prototyping provision presents additional complexity to the program office
    - Cost and Schedule data for multiple contractors will need to be effectively integrated and managed

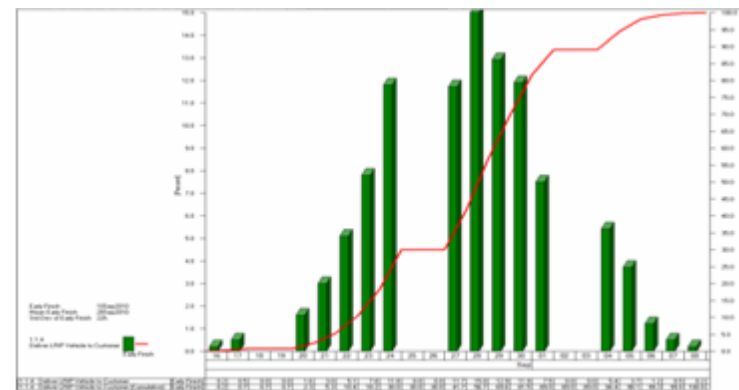
**The Pentagon “should re-launch the Army’s vehicle modernization program, including a competitive bidding process” – Secretary of Defense Robert Gates**

April 16<sup>th</sup> 2009

## Additional Program Requirements

### ▶ Data Item Description (DID)-81650 Requires Schedule Risk Analysis (SRA)

- A new emphasis has been placed on SRAs
  - Advanced statistical functions are employed to ultimately, derive the probably of completing the project on time
  - The findings of this analysis divulges the level of risk that a contractor is assuming, shows the impact of the contractor's current cost and schedule performance and exposes the validity and realism of the baseline
- JLTV PMO SRAs quarterly
  - Common SRA process across all Original Equipment Manufacturer (OEM) contractors ensures equitable measurements, early identification and mitigation of schedule risk
  - Allows JLTV PMO a means to objectively compare the cost, schedule and performance risks of the multiple competing contractors



**Common processes across multiple schedules will increase the accuracy of the reports and equitability of assessing competing OEMs' cost and schedule risk**

## Additional Program Requirements (continued)

- ▶ Defense Contract Management Agency (DCMA) has establish Schedule Assessment Guidelines
  - DCMA developed key schedule requirements to improve oversight and DID compliance
  - Dedicated DCMA support continuously monitors contractors' performance
  - Development of a schedule health metrics tool that is based on the DCMA Schedule Assessment Guidelines. A report is generated weekly to ensure continuous compliance with these and other program-specific requirements
  - This tool has facilitated open lines of communication between the JLTV PMO, DCMA and the contractors



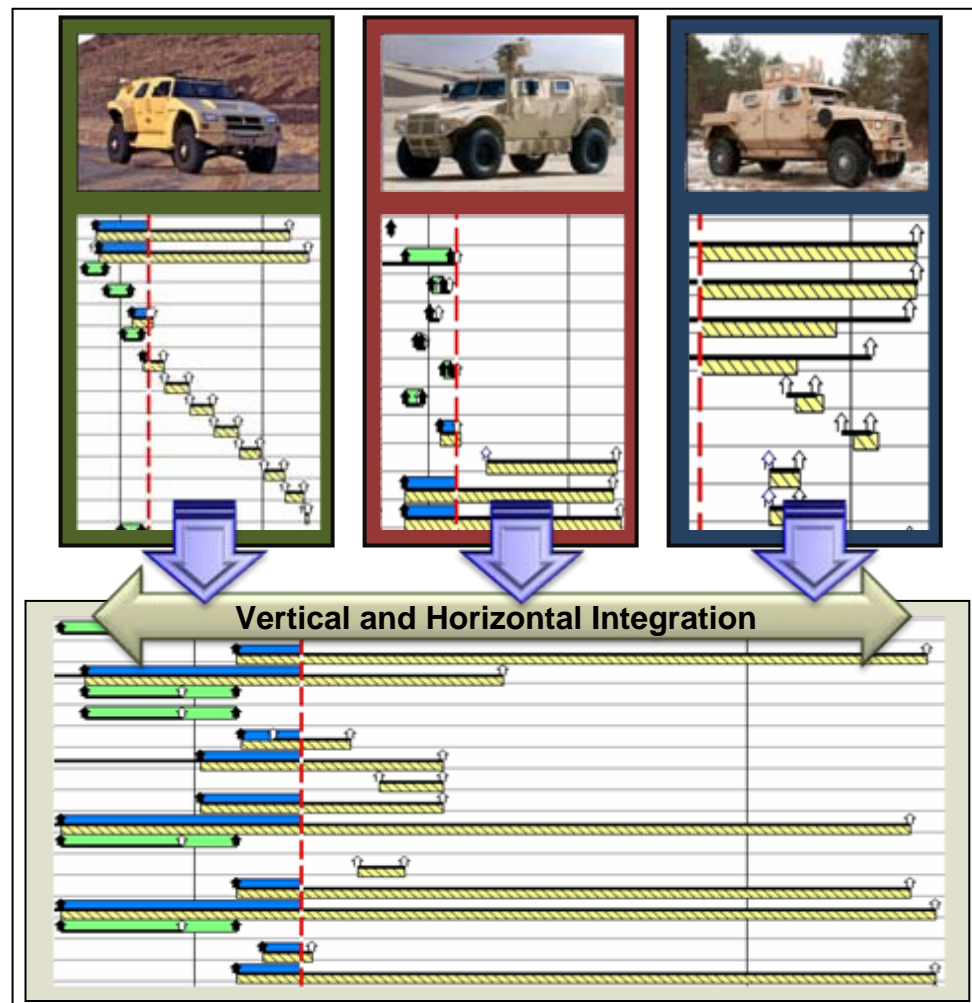
**ICS utilizes automated health and quality metrics that reduce the quality control process and ensure the integrity of the cost and schedule data and subsequent analyses**

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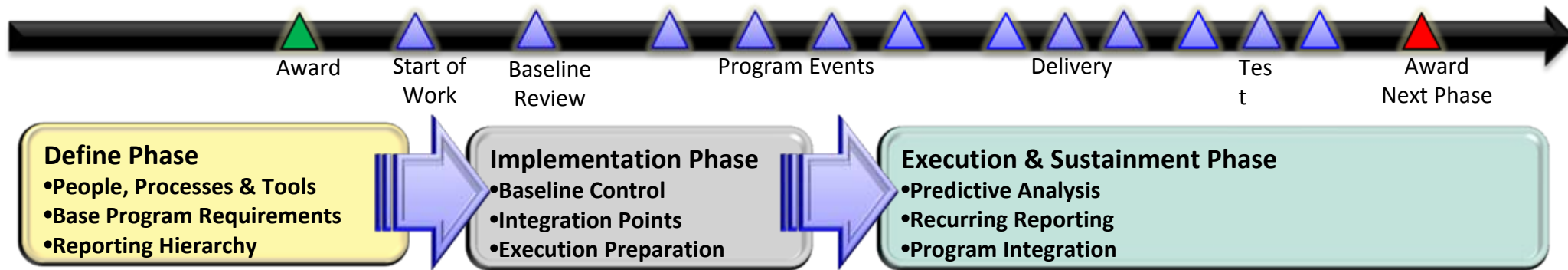
## Integrated Critical Scheduling (ICS) Solution

- ▶ The processes and products derived from the ICS have been founded upon sound principles and proven methodologies
  - The lessons learned and associated insights have been critical in conceptualizing and implementing the ICS methodology on the JLTV Program
  - It offers a comprehensive documentation for defining IMS requirement, provides a superior means to implement an IMS and associated processes, and sets a new precedent for analyzing an IMS
  - The methodology is intended to be scalable to manage any acquisition program
  - The ICS methods are a compilation of industry best practices, government standards, and experience within both



## Integrated Critical Scheduling (ICS) Solution

- ▶ ICS is divided into three phases 1.) Define; 2.) Implementation; 3.) Execution and Sustainment
- ▶ Each phase specifies the key elements and requirements upon which the subsequent phases are built
- ▶ The ICS is applicable to all phases of the Acquisition Lifecycle



**Simple, executable approach that clearly defines needed support through the lifecycle of the program**

## Phase 1: Program Definition

- ▶ Define Program: People, Requirements & Processes – Initiate the necessary steps to establish teams, data/tool requirements and associated processes to meet and exceed program objectives
- ▶ Define Scheduling Organization
  - Define authorities, responsibilities, key performance indicators, reporting requirements, and any other team deliverables
  - Define staffing requirements
  - Author charter with Program Management and stakeholders to promote and define organizational strategy, responsibilities, and performance



### Define Phase



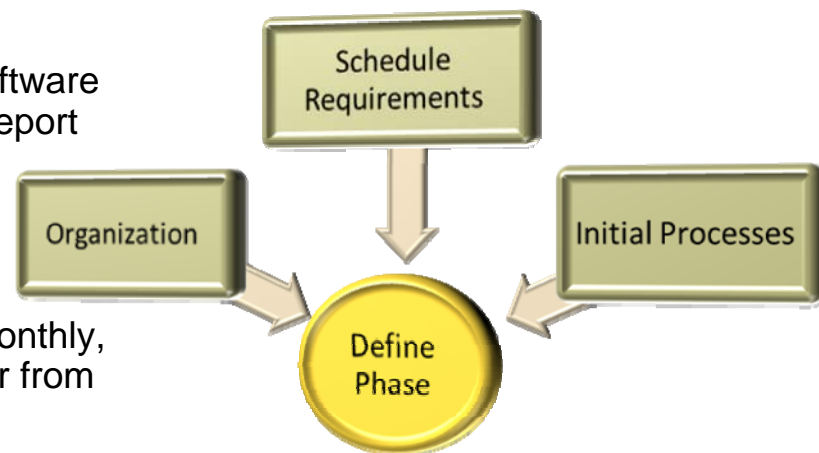
## Phase 1: Program Definition

### ▶ Define Schedule Requirements

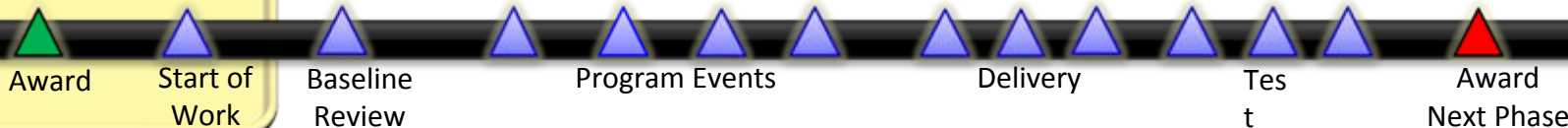
- Define submittal frequency, data field requirements and format of scheduling data within the Contract Data Requirements List (CDRL)
- Evaluate and Define the commercial-off-the-shelf (COTS) software that the organization will be using to integrate, analyze and report schedule performance data

### ▶ Define Initial Scheduling Processes

- Define the multiple documents needed to conduct weekly, monthly, and quarterly integration. Also, any integration products to or from other teams should be included
- Define the process for Change Control within the schedule
- Define the reporting requirements that the Government Product Managers (PMs) and Integrated Product Teams (IPTs) will need to successfully execute the program

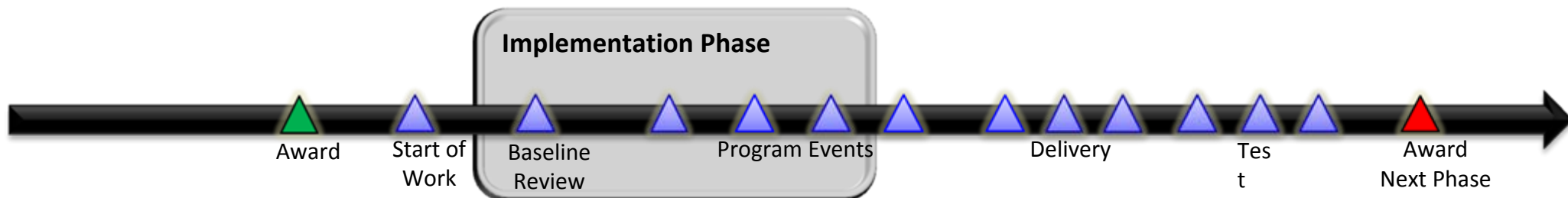


### Define Phase



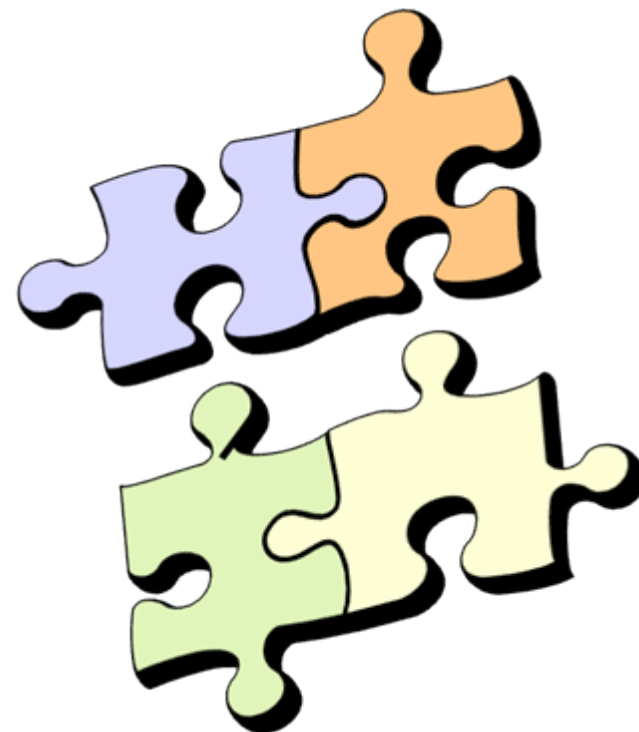
## Phase 2: Program Implementation

- ▶ Define Remaining Schedule Elements – Ensure that all of the data elements required for vertical and horizontal traceability have been defined
  - Review and discuss organizational structure alignment, technical performance and contractual requirements, and program execution plans for all facets of the program
  - Additional clarifying details should be provided regarding format, frequency and quality expectations for contractor-provided products and reports associated with the IMS
  - Changes to the overarching scheduling methodology and processes must be recorded and updated accordingly in the charter and process documentation



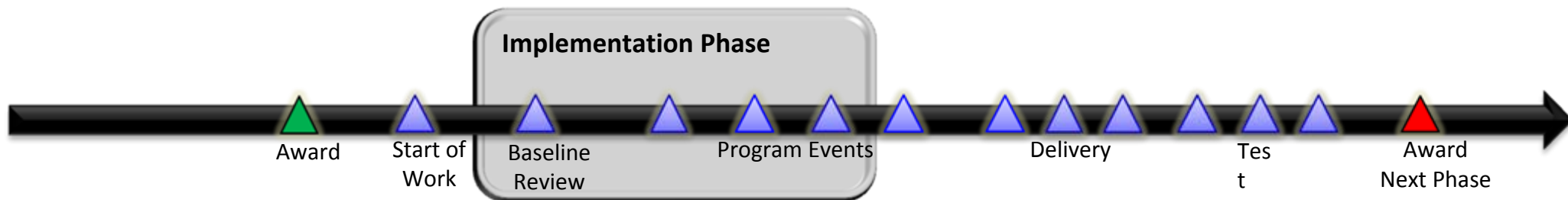
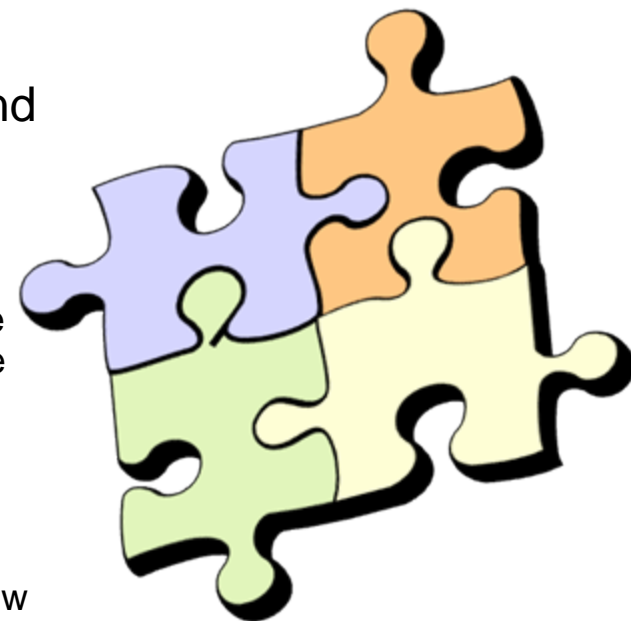
## Phase 2: Program Implementation

- ▶ Finalize Schedule Structure – Refinement and validation of all scheduling elements required to establish an initial baseline for program execution
  - An Integrated Baseline Review (IBR) is conducted with each of the winning contractors. At this meeting, the government validates that the initial Program Management Baseline (PMB) and all of its process are integrated and of acceptable quality
  - The primary role of the cost and scheduling teams will be to assess the validity of the PMB. There are many different approaches to assessing contractors baseline all aimed at detecting a reporting issues within the cost and schedule
  - This assessment should utilize the DCMA 14 point assessment, the schedule risk assessment, the development of an Integrated Critical Schedule, an Issues Resolution Log, and Comprehensive report of findings and actions



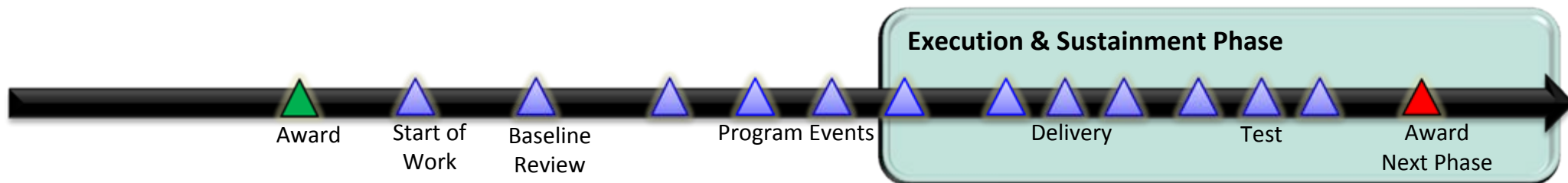
## Phase 2: Program Implementation

- ▶ Implement Baseline Change Control – Commence the baseline change control process for the initial baseline and all subsequent baseline changes
  - Either weekly or monthly change control in which the changes to the contractor baseline will be required
  - At the highest level, it is critical that the contractors understand that the Program Events and other predetermined program milestone dates are held by program management and, in some cases, the contract
  - These milestones should not be changed in the contractor's baseline without prior review and approval from the program manager and the change board
  - Depending on the program, the change board may be required to review all of the changes proposed by the contractor, which would be the highest level of oversight



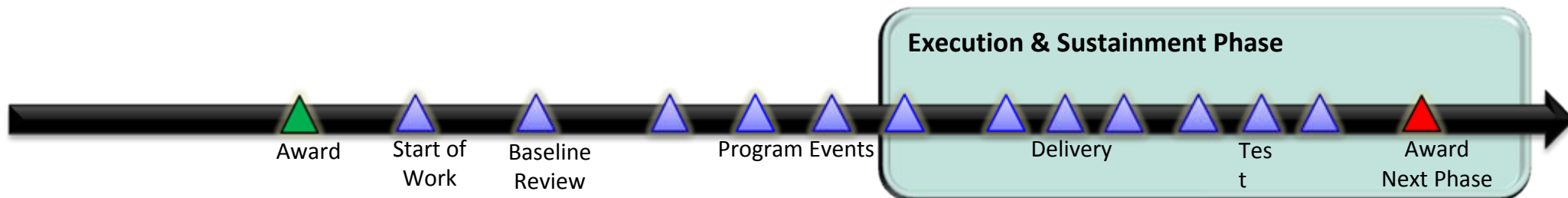
## Phase 3: Program Performance

- ▶ ICS Execution Analysis – Integrate status, conduct cost and schedule analyses, and report results in accordance with the Integrated Critical Scheduling Methodology
  - ICS Execution Analysis consists of five main segments 1.) Critical Path Analysis; 2.) Near Critical Path Analysis 3.) Dead Start Analysis; 4.) Program Milestones/Key Dates and 5.) Reporting
  - The combination of these elements provides a specific set of criteria at which schedule integration and analysis intersect. Once these elements of the schedule structure are defined, the ICS methods can be implemented
  - The methodology can be used before the initial baseline is set to ensure the validity of the critical path and highlight any dead starts defined as integration points that may impact the schedule



## Phase 3: Program Performance

- ▶ **Baseline Maintenance** – Implementing changes to the schedule as necessary
  - Revisions to the baseline require detailed documentation in order to attain program management's approval and maintain historical records of these changes
  - Revisions to program budget, schedule, and estimate at complete should all be tracked through the program's change control process
- ▶ **Predictive Analysis** – Conducting schedule simulations to forecast project performance
  - Generally, there are two different types of predictive analysis models the Schedule Risk Assessment (SRA) and What-if models

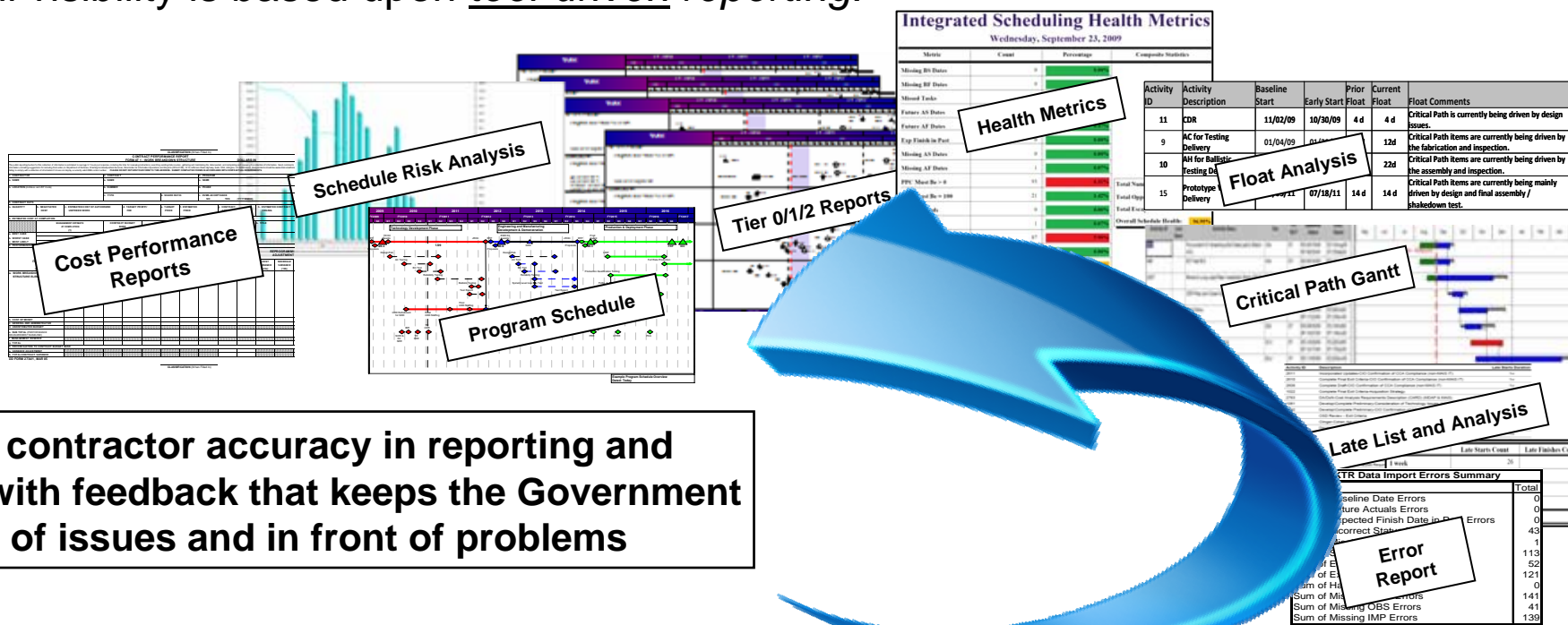


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# Integrated Critical Scheduling (ICS) Impact

- ▶ The implementation of the ICS will have significant improvements in overall visibility into contractor performance, facilitate active collaboration and afford a consistent approach to analyzing schedule performance
- ▶ Overall visibility is based upon tool-driven reporting:



**Ensures contractor accuracy in reporting and integration with feedback that keeps the Government aware of issues and in front of problems**

## Integrated Critical Scheduling (ICS) Impact

- ▶ Active Collaboration is facilitated by:
  - Advanced analysis tool automation that processes, analyzes, and reports
  - Ability to run these processes and reports on every CDRL submittal with same day feedback to OEM contractors and PM leadership
- ▶ Consistent approach is afforded by:
  - Ability to equitably assess multiple OEM contractors on a predetermined set of expectations
  - Automated reporting utilizes objective analysis of multiple integrated master schedules
  - This approach is replicable to any PMO that needs a reliable set of standard reporting and analysis tools



**Automation and Commonality drive an approach that can be trained, recognized and quickly implemented**

## Integrated Critical Scheduling (ICS) Solution

- ▶ Collectively, the integration, change control and reporting processes with supporting documentation provides transparency into the means by which raw cost and schedule data is converted into information that can be used to manage the program's cost, schedule and performance
- ▶ The ICS also contains the *means to automate* many of the reports listed to streamline the weekly and monthly reporting process which allows time for analysis, integration, corrective action, and results
- ▶ The implementation of the ICS will have significant improvements in overall visibility into contractor performance

**More Value Added: Less time executing reports; more time integrating and analyzing cost and schedule performance, risks, and issues**

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## Summary

- ▶ In Depth Guide: Provides superior methods of cost and schedule integration management
- ▶ Applicable: ICS can be utilized in all phases of the Acquisition Lifecycle.
- ▶ Flexible: can be used to manage large acquisition programs or be peered down to fit specific client and program needs
- ▶ Acquisition Directive 5000.02: competitive prototyping requirements set forth by the DoD are challenging. The ICS methods will insure that all necessary cost and schedule requirements are met
- ▶ Mitigate Risks: helps Program Management address these new challenges
- ▶ Timely: improves program visibility, collaboration, and consistency that will provide program management timely information to make knowledgeable decisions