Developing an Effective Integrated Master Schedule

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“...in almost every EIR, PPR, EVMS review, etc., an inadequate IMS is highlighted as a major finding, or finding.”

- Customer comment to our FY2018 Project Delivery Working Group Work Plan
EFCOG Challenge...
How do we turn this around?
What is an IMS?

- IPMR DID – DOE Version October 2017, Section 3.7.1.1
  - The IMS shall include, at a minimum, discrete tasks/activities, consistent with all authorized work, and relationships necessary for successful contract completion . . . The IMS is a single integrated network that also contains significant external interfaces, Government furnished equipment/information/property and relationship dependencies for the entire contractual effort.
What is an IMS?

• Planning and Scheduling Excellence Guide (Version 3.0)
  • IMS provides the program team with a program execution roadmap of meaningful progress and realistic forecasts against a resource-loaded performance measurement baseline.
  • The primary purpose of any IMS is to help the Program Manager and the Program Team optimize the overall execution strategy of a program, coordinate workflows, and assist in the decision making processes to mitigate risks and resolve challenges on a day-to-day basis.
Build Compliant Integrated Master Schedules

IMS Building Blocks:
• *Start with the NDIA EIA-748 Intent Guide*
  • Guideline 6 – *Schedule with Network Logic*
    • “a) Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program.”
    • Time-phasing of authorized discrete work for use as a performance measurement baseline.
Build Compliant Integrated Master Schedules

IMS Building Blocks:

• Understand and employ the applicable tenants of the:
  • NDIA Planning & Scheduling Excellence Guide (PASEG) and
  • GAO Schedule Assessment Guide Best Practices

• Align contractor schedule guidance to the body of knowledge
Leverage Available Industry Guidance

• NDIA Planning & Scheduling Excellence Guide (PASEG)
  • Generally Accepted Scheduling Principles (GASP)
  • Leadership, Buy-In, Commitment
  • Schedule Architecture
  • Standard Modeling Techniques
  • Cost & Schedule Resource Integration
  • External Schedule Integration
  • Horizontal & Vertical Traceability
  • Schedule Maintenance
  • Schedule Analysis
  • Business Rhythm & Submittal
  • Training
  • Program & Contract Phase Considerations
Incorporate Industry Assessment Guidance

• GAO Schedule Assessment Guide Best Practices
  • Capturing All Effort
  • Sequencing All Activities
  • Assigning Resources to All Activities
  • Establishing the Duration of All Activities
  • Verifying That the Schedule Can Be Traced Horizontally and Vertically
  • Confirming That the Critical Path Is Valid
  • Ensuring Reasonable Total Float
  • Conducting a Schedule Risk Analysis
  • Updating the Schedule Using Actual Progress and Logic
  • Maintaining a Baseline Schedule
Focus on Eliminating Recurring IMS “Findings”

Recurring EIR, PPR, EVMS review findings as provided by PM-30 and EFCOG:

1. Lack of Planning
2. Lack of Detail/Fidelity in the Schedule
3. Lack of Baseline Schedule Management
4. Lack of Forecast Schedule Management
5. Lack of Process & Management Buy-in
Focus on Eliminating Recurring IMS “Findings”

1. Lack of Planning
   • Utilize an Integrated Master Plan / Integrated Master Schedule (or like) approach
   • To the extent practical, ensure all known deliverables are included during the schedule development process
   • Ensure risk mitigation activities are integrated into the schedule
   • Resource allocation
Focus on Eliminating Recurring IMS “Findings”

1. Lack of Planning (continued)

- Overly optimistic
  - Schedules should be aggressive yet achievable.
  - Durations are based on “most likely” estimates, opposed to best or worst case.
- Successful schedules include margin to account for risks/uncertainty, based on the results of a Schedule Risk Assessment (SRA).
- Avoid building schedules with reduced durations or incomplete logic with the intent of meeting management or customer imposed schedule or budget targets.
2. Lack of Detail/Fidelity in the Schedule
   • Not enough detail / excessive durations
   • Too much detail, especially far-term effort

So . . .
Focus on Eliminating Recurring IMS “Findings”

2. Lack of Detail/Fidelity in the Schedule (continued)
   
   - *Utilization of Rolling Wave planning:* Over time, more is known about the project. The schedule is continually monitored and detail planned to reflect the increased knowledge.
     
     - Increased schedule detail: Planning Package to Work Package conversion.
     
     - Updates to Schedule Risk Assessments: SRA should included any new, revised or mitigated risks.
     
     - Revised estimates: Estimates are updated as necessary in parallel with revisions to schedule detail and SRA results.
2. Lack of Detail/Fidelity in the Schedule (continued)

- Missing logic or incorrect logic
- Redundant logic
- Excessive logic (merge bias)
- Out of Sequence Logic
- Lags and Constraints
- Avoid over-reliance on supplemental schedules
Focus on eliminating recurring IMS “Findings”

3. Lack of Baseline Schedule Management
   • **Not maintaining the baseline schedule invalidates the PMB and any association of performance measurement.** A Baseline schedule which no longer accurately reflects the execution strategy fails to provide management with a meaningful basis for performance management
     • Examples: Significantly behind (or ahead) of schedule, make vs. buy decisions, significant change (additions, elimination, revisions) to requirements.
3. Lack of Baseline Schedule Management (continued)
   • Baselining to late dates in order to report favorable metrics.
   • Lack of integration of subcontractor schedules into the baseline to reflect negotiated start and finish dates and hour/dollar spreads to align with schedule of values.
4. Lack of Forecast Schedule Management
   • Updates to the forecast schedule follow a consistent business rhythm
     • Consistent status dates
     • Allows time for review
Focus on Eliminating Recurring IMS “Findings”

4. Lack of Forecast Schedule Management (continued)
   • Not maintaining the forecast schedule with updated status and ETC time-phasing:
     • The forecast schedule includes accurate progress to date (actual starts, finishes, and percent complete).
     • All future durations and forecasted resource needs are updated as necessary to reflect the most up to date information.
     • Adjustments to logic are made to reflect work around strategies in the forecast schedule.
Focus on Eliminating Recurring IMS “Findings”

5. Lack of Process & Management Buy-in
   • Ensure CAM understanding on the differences between the Baseline and Forecast schedules and their roles and responsibilities throughout the process.
   • The WBS, Schedule and Cost Estimate align with each other.
   • Integrate Cost Estimating and Schedule Risk into the schedule development process.
5. Lack of Process & Management Buy-in (continued)
   • Utilize standardized processes: Data dictionary, reporting calendar, common durations/templates when applicable.
   • Perform frequent analysis of schedule health and document results.
   • Continually review processes and procedures against evolving industry guidance.
     • Provide continued training on changes to process or to reinforce existing requirements
     • Leverage on results of schedule health analysis to ensure compliance to processes and procedures
5. Lack of Process & Management Buy-in (continued)

• “A poorly constructed schedule is a program management problem, and not a planner/scheduler problem. A poorly constructed schedule is a result, not a cause. Find the root cause” (PASEG V3.0)

• Schedules which do not provide management value will be replaced by auxiliary tools which voids the IMS.
Utilize Peer Reviews to Assess Compliance

• EFCOG Proposes utilization of the Project Delivery Working Group Scheduling Task Team
  • Task team would operate under the “Poneman” Project Peer Review Memorandum
  • Coordinated with and by the EFCOG Scheduling Lead
Utilize Peer Reviews to Assess Compliance

• Review team would be available to provide schedule analysis to assess the compliant condition of schedules in support of and in advance of scheduled:
  • EIR’s
  • IPR’s
  • IBR’s
  • PPR’s
  • EVMS Certifications and Surveillances
  • Or other activities as requested by DOE or EFCOG contractors
Utilize Peer Reviews to Assess Compliance
“...in almost every EIR, PPR, EVMS review, etc., an inadequate IMS is highlighted as a major finding, or finding.”

- Customer comment to our FY2018 Project Delivery Working Group Work Plan
Effective IMS Implementation Process Summary

• Leverage on Industry and internal guidance when building an IMS
  • NDIA EIA-748 Intent Guide Guideline 6 – “Schedule with Network Logic”
  • NDIA PASEG
  • GAO Schedule Assessment Best Practices
  • Align contractor IMS schedule implementing policy, procedures, guides, processes, tools, and training with the industry guidance (above).
Effective IMS Implementation Process Summary

- **Focus on Eliminating Recurring Findings**
  - Lack of Planning
  - Lack of Detail/Fidelity in the Schedule
  - Lack of Baseline Schedule Management
  - Lack of Forecast Schedule Management
  - Lack of Process & Management Buy-in
Effective IMS Implementation Process Summary

• Assess Compliance
  • Routinely assess schedule health metrics.
  • Routinely assess implementation procedures, guides, processes and schedules to assure continued alignment.
  • Consider an EFCOG Schedule Peer Review to validate compliance and guard against bias.
  • Share peer review results with EFCOG members to provide lessons learned, reinforcing self-governance.
Effective IMS Implementation Process Summary

• **Use the IMS**
  • An effective IMS is used in the decision making process.
  • When the IMS is not used to make decisions, identify and address the cause.
  • As the causes are addressed the IMS will begin to build credibility, thus increasing its use as a management tool
Discussion and Ideas!