Developing an Effective Integrated Master Schedule

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Problem Statement

"…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.

Focus on Eliminating Recurring IMS "Findings"

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.

Focus on Eliminating Recurring IMS "Findings"

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.

Focus on Eliminating Recurring IMS "Findings"

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.

Focus on Eliminating Recurring IMS "Findings"

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.

Focus on Eliminating Recurring IMS "Findings"

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

Focus on Eliminating Recurring IMS "Findings"

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.

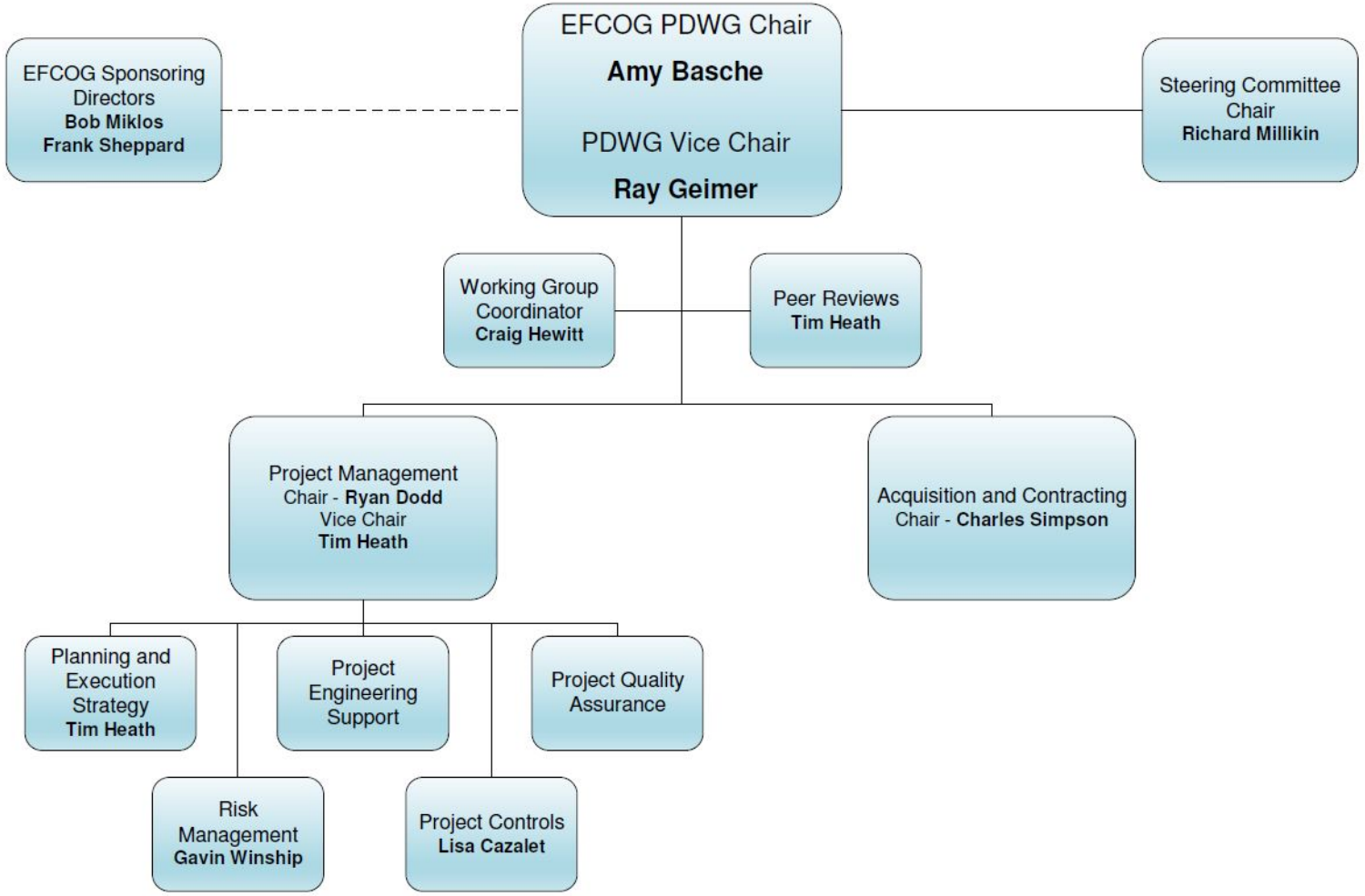
Utilize Peer Reviews to Assess Compliance

- **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



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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!