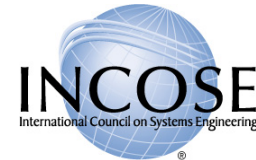




Promoting National Security Since 1919



# Industry Support to Mission Analysis and Mission Engineering

Briefing to NDIA SE Division  
20 April 2016



- DoD SE Forum – 16 Feb 2016
  - Mission Engineering and Analysis Focus
  - Presentation from Navy
    - Focus on mission objectives
    - Integration and interoperability necessary
    - Mission Engineering
    - Mission Effect chains
  - Announcement of multiple-part DoD roundtable meetings
- Meeting in Pentagon on 26 Feb 2016
  - INCOSE (Roedler); NDIA (Serna); DoD (Gold, Dahmann)
  - Industry offer to work collaboratively to put together industry perspective on Mission Engineering and Analysis
  - Agreed to form Industry Task Team across multiple orgs to inform DoD

# Mission Engineering and Analysis DASD(SE) Tasking

- To identify policy, organizations, methods, tools, challenges and opportunities for Mission Engineering enterprise improvements.

*Mission Engineering is the deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects.*

- **GOAL:** To synthesize common approaches, challenges, and potential recommendations for the acquisition community.

# Objectives of the task team

- Determine the state of practice in the defense industry regarding Mission Engineering and Analysis
  - 15288 Business or Mission Analysis
- Determine how industry can help improve the state of the practice for Mission Engineering and enhance collaboration, which is used by the government and industry during development planning to determine the best solution to address a needed capability.
- Determine if there is a way to increase the industry involvement in the mission analysis.



# Mission Engineering and Analysis Industry Task Team



**Greg Parnell, Team lead – Representing MORS and INCOSE (Univ of Arkansas)**  
**Bill Miller, Team co-lead – Representing INCOSE and NDIA (Stevens Institute, ...)**  
**Judith Dahmann – NDIA SoS Committee – DoD Liaison**  
**Kirk Michealson – Representing MORS (Tackle Solutions)**  
**Frank Salvatore – Representing INCOSE (Engility)**  
**Jon Backhaus – Representing AIA (Lockheed Martin)**  
**NDIA SoS Committee Co-Leaders**  
**Frank Serna – NDIA SED Chair, Draper Lab – co-sponsor**  
**Garry Roedler – INCOSE President-Elect – co-sponsor**  
**Dan Strosnider – Boeing**  
**Bob Scheurer, Boeing**  
**Rich Pohl, Boeing and NDIA SOS**  
**Jeff Bergenthal, NDIA, JHAPL**  
**Jeff Wolske, NDIA SOS and Raytheon**  
**Andron Creary, Northrop Grumman**

# Meeting Objectives: Answers To

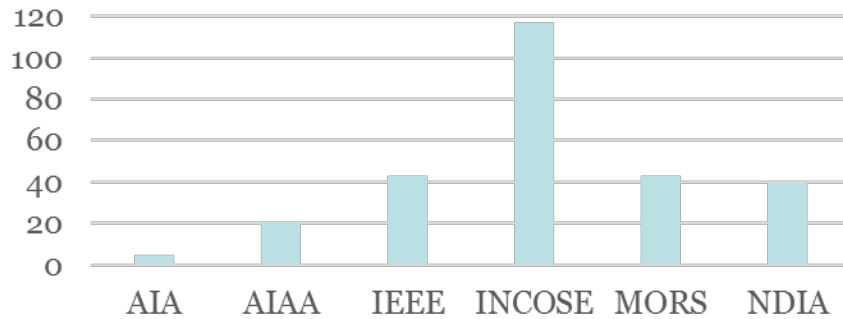
- What is the industry doing in Mission Engineering and Analysis?
- What is different about it from the traditional perspective?
- How does it integrate with the rest of Systems Engineering, Systems Architecture, and Operations Analysis? Is it merely a more focused and structured look at the problem space?
- Why is it needed? (from the industry perspective)
- What are the challenges?
- What does industry bring to addressing the need and the challenges?
- What are the recommendations?
  - Future Direction
  - How to overcome the challenges

# Workshop Agenda

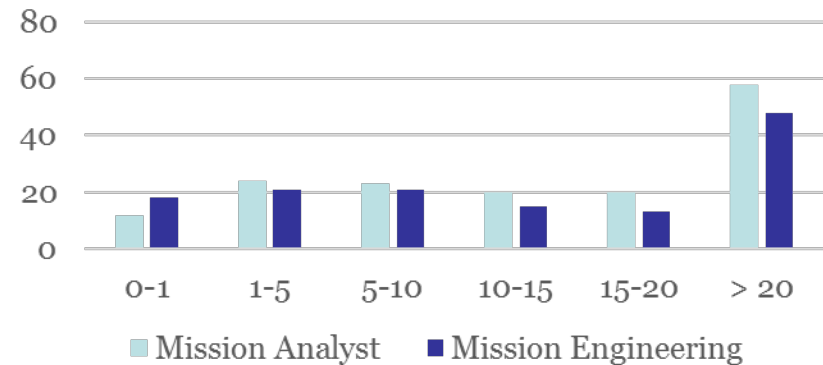
- 8:30-8:45 AM: Welcome & Introductions (Greg & Garry)
- 8:45-9:00 AM: Project Overview Review (Garry & Frank)
- 9:00-10:20 AM: Survey/Stakeholder Results Review (Kirk)
- **10:20-10:40 AM: BREAK**
- 10:40 AM–12 PM: Studies Overview (Various)
  - A review of the related studies with a highlight of important related points
- **12-1 PM: Lunch**
- 1:00-2:50 PM: Working Session
  - 1-2 Breakout groups discussing same items in smaller groups
- **2:50-3:10 PM: BREAK**
- 3:10-4:00 PM: Breakout Session Reports
- 4:00-4:30 PM: Wrap-Up & Next Steps (Greg, Bill, Garry & Frank)

## Demographics

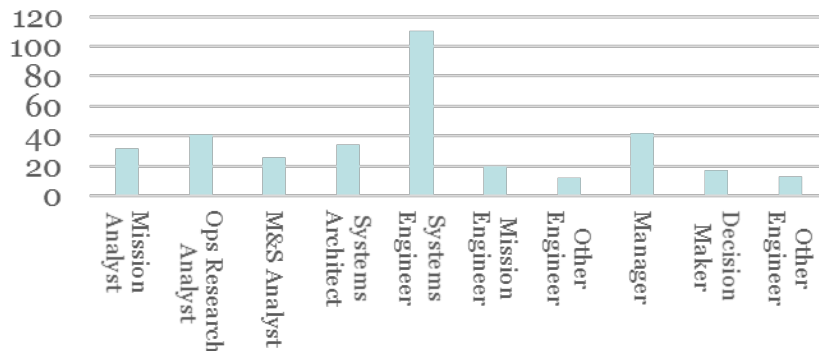
### Professional Societies



### Years Experience



### Role





- **SURVEY GOAL:** To obtain a brief assessment of mission analysis as a baseline to compare to the new mission engineering.
- From the Systems Engineering Body of Knowledge (SEBoK),
  - “The purpose of Mission Analysis is to understand a mission problem or opportunity, analyze the solution space, and initiate the life cycle of a potential solution that could address the problem or take advantage of an opportunity.
  - Mission Analysis is a type of strategic or operations analysis related to needs, capability gaps, or opportunities and solutions and may include mathematical analysis, modeling, simulation, visualization, and other analytical tools to characterize the intended mission and determine how to best achieve the needs/objectives.
  - Mission Analysis evaluates alternative approaches to determine which best supports the stakeholder needs (among both materiel and non-materiel solution alternatives, also known as product solutions and service / operational solutions).”

# Mission Engineering

- **SURVEY GOAL:** It is believed industry has a perspective to offer in this area and can offer some ways to increase industry involvement informing the government in Mission Engineering of enterprise improvements.
- **OSD(ATL) Definition**
  - “The deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects.”
  - The difference between mission engineering and mission analysis is that the new mission engineering goes beyond mission analysis and focuses on actions to design or adapt systems of systems to meet the mission outcomes, hence the "planning, analyzing, organizing, and integrating" of current and emerging operational and system capabilities.
  - Therefore, mission engineering includes but goes beyond traditional mission analysis to drive the systems (and Systems of Systems) engineering.

- **Present brief overview of the study with**
  - High-level overview of the study
  - How the results relate to this task
- **Develop a 1-page overview as a handout**
  - Attendees can refer to study in breakout session

# Studies Overview Schedule

- NDIA Development Planning: Report / Role of Architect
- Draft report AIA on MBSE: Early interaction with the Customer
- NDIA report on MBE and M&S Study
- INCOSE SE Handbook Chapter on Mission Analysis
- SOS references
- Decision Analysis / Decision Analysis book
- SE Bok
- Studies Wrap-up Discussion