Mission Engineering Initiative Briefing to NDIA SED

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Core Industry Team

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Approach

- ✓ **Establish Industry Team for Phase 2 study**
- ✓ **Weekly meetings (Thursdays 2 PM EDT)**
- **Workshop #1: 4 – 5 September (Innovative Decisions; Vienna, VA)**
- **Workshop #2: 25 – 26 September (Lockheed Martin; Bethesda, MD)**
- **Workshop #3: 22 October (NDIA SE Conference; Tampa, FL)**

Issues for the Team to Address

- **Issue # 1**
  - 1A: Role of Industry
  - 1B: Industry IR&D on Innovative Mission Approaches & Systems Technologies
- **Issue # 2:** Facilitating Cross-Industry ME Engagement
- **Issue # 3:** Technical Approaches to Mission Engineering and Analysis
- **Issue # 4:** Government Actions to Incentivize Industry ME Engagement

Workshop #1 - Agenda (1 of 2)

4 SEPTEMBER: Day 1

1300 – 1315	**Welcome & Introductions**
1315 – 1330	**Setting expectations; ME Industry Initiative Goals & Agenda Overview**
1330 – 1400	**Short review of read-ahead material** **- Industry Development Planning (2011 & 2012)** **- Industry Support to Mission Analysis & Mission Engineering (2016)** **- Mission Engineering Competency Model by SERC (2018)** **- Contextual Value Model Review (from 7/26 Meeting)** **- ME Issues/ Questions (from ME share site discussion threads)**
1400 – 1415	**Workgroup Breakouts – Ground rules** **- Three workgroups, each with a team discussion leader** **- Four ME Issues defined. Each team to analyze the four issues**
1415 – 1630	**Workgroups analyze Issues 1A and 1B**
1630 – 1700	**Day 1 Wrap-Up/ Plan for Day 2**

Workshop #1 - Agenda (2 of 2)

5 SEPTEMBER: Day 2

0800 – 0815	**Reconvene/ Kickoff Day 2** **Workgroups reconvene/ rotate Issues 2 - 4**
0815 – 0945	**1st Morning Session**
0945 – 1000	**BREAK**
1000 – 1130	**2nd Morning Session**
1130 – 1230	**LOCAL LUNCH**
1230 – 1400	**3rd Afternoon Session**
1400 - 1530	**Reconvene larger team for Workgroup out briefs (30 minutes each)**
1530 – 1630	**Synergize recommendations of the workgroups**
1630 – 1655	**Preparations for 2nd Workshop** ▪ What do we want to get out of the 2nd workshop to be ready for the 3rd workshop at the NDIA SE Conference? ▪ Are we missing anyone we should invite to the 2nd & 3rd workshops? ▪ Discussion to shape agenda / discussions for the 2nd workshop ▪ What homework is needed by who to be ready for 2nd workshop ▪ What is a proposed agenda for the 3rd workshop?
1655 – 1700	**Wrap-up/ adjourn**

Workgroup Expectations

- **Homework completed before the workshop**
  - Review three studies (Industry Development Planning, Mission Engineering Survey, Mission Engineering Competency Model)
  - Questions and discussion threads for each issue
  - Handouts with highlights of the material will be available
- **Workgroup activities/ deliverables**
  - Discuss issue, questions, and discussion threads
  - Develop recommendations to answer questions
  - Present results during out brief
- **Planned breakout sessions for the four issues**
  - "Carousel brainstorming"
  - Tuesday 4 Sep PM (2 hours): All groups issues 1A & 1B
  - Wednesday 5 Sep: Small group rotate issues
    - 1st Morning (1 ½ hours)
    - 2nd Morning (1 ½ hours)
    - 3rd Afternoon (1 ½ hours)
    - Outbriefs (30 minutes for each small group)

Backup

Action Items

1. **Mission Engineering SharePoint Site**
   - Structure set up and establishing permissions (TBR)
   - Bill M. will send a link to everyone when it's set up
2. **Reach out to the following for our team membership:**
   - ✓ L3 – Joe Elm (NDIA SE Division Co-Chair)
   - BAE – Don Wang. Bill will ask Alan Harding for contact info
   - GD – ~~Pete Larkin~~ Rob Garabed (GD rep to NDIA SED). Ed will ask Rob for the right POC.
   - Mission Engineering Phase 1 Study Team Members
   - Other industry invitees (action for all team members)
3. **Finalize agenda for Workshop #1 (4 – 5 September)**
4. **Finalize a DC location for Workshop #2 (25 - 26 September)**
5. **Set up discussion threads on ME SharePoint site for pre-meeting data gathering**
6. **Post the Workshop #1 read-ahead material on the ME SharePoint**

Workshop #1 (September 4 – 5)

Innovative Decisions, Inc.
8230 Old Courthouse Road
Suite 460
Vienna, VA 22182
Telephone (703) 854-1130

Hotels (Tysons Corner walking distance):
Residence Inn
Hilton Garden Inn
Extended Stay America

DRAFT CONTEXTUAL VALUE MODEL

TRIAL BALLOON: ADAPTATION of commercial customer value analysis as the basis of a value model for industry role in support of DoD mission engineering

Questions for the Team to Address (1 of 4)

- **Role of Industry**
  - Under what circumstances will it be critical to have industry input to understand options and implications of making changes in how a system is used to support changes in the SoS supporting a mission?
  - How would this type of engagement be structured?
  - What would incentivize industry to participate?
- **Industry IR&D on Innovative Mission Approaches & Systems Technologies**

  Industry has demonstrated the capability to investigate innovative approaches to addressing challenging defense problems bringing a fresh perspective and novel approaches. This opens the possibility of industry contributions to new ways to improve mission effectiveness or new systems approaches to support mission adaption under the Industry IR&D efforts.
  - How could industry IR&D contribute to new mission concepts and approaches or new systems techniques to foster improved mission effectiveness?
  - What information or insights would industry need to enable this?
  - What would incentivize industry to invest IR&D in these areas?
  - What are the risks to industry (competition; IP)?

Questions for the Team to Address (2 of 4)

- **Facilitating Cross-Industry ME Engagement**

  Missions are supported by systems of systems which are developed by different industry providers. Mission engineering efforts involving industry will naturally need to include teams from different, often competing companies. To effectively engage industry in ME activities, there needs to be a way to facilitate constructive cross-industry engagement with a focus on operational mission outcomes.

  - What are the issues in getting industry teams drawn from multiple companies to work together to support ME initiatives?
  - What are the incentives for industry?
  - What models (e.g. MDA National team) exist and how could these be adapted to support ME?
  - What are the pros and cons of different approaches?
  - What are the risks to industry?

Questions for the Team to Address (3 of 4)

- **Technical Approaches to Mission Engineering and Analysis**

  The 2016 Industry Task Force report on ME indicated that industry conducts ME for various purposes and has a base of experience in ME technical modeling and analysis approaches which could benefit DoD ME efforts. These include environments which could be used for ME experimentation and analysis, technical digital approaches for representation of SoS, and analysis of mission impacts. This industry technical base could form a focus for government industry ME technical exchange and implementations.

  - What type of ME related technical experience and resources does industry have which could benefit DoD ME efforts?
  - How can industry progress in digital engineering provide a foundation for ME?
  - How could these be shared with government?
  - What is the incentive for industry to share these? What are the risks?

Questions for the Team to Address (4 of 4)

- **Government Actions to Incentivize Industry ME Engagement**

  For industry to engage in an activity like ME, there needs to be some clear potential benefits. It has been noted that if industry perceives that the government is committed to implementation of MIM and fund industry to develop capabilities resulting from MIM/ME efforts, they will be encouraged to commit time and effort to engage and support government efforts. Questions of incentives have been raised for all the topics above, which could usefully be summarized under this topic, but beyond this, there may be general actions the government could take which would incentivize industry to support new ME efforts.

  - What set of incentives have been identified for the set of topics related to industry's role in ME?
  - What type of information or insights could government provide which would motivate industry to engage in ME?
  - What can government do to reduce risks for industry to engage in ME?

Draft Contextual Value Model -- Context

- **2009 WSARA – real or perceived OCI of non-SETA contractors**
- **2017 NDAA – mission engineering**
- **2018 Reorganization of OSD separating research & engineering from acquisition & sustainment**

Phase I Accomplishments

- **Developed understanding of current state of play in DoD Mission Engineering**
  - Rob Gold presentation on Mission Integration Management/Mission Engineering in DoD Today
  - Garry Roedler and Bill Miller presentation on 2016 industry task force on Mission Engineering
  - Marsha Mullins presentation on Digitally Aided Close Air Support (DACAS) coordinated implementation
- **Rob Gold informed his leadership that the initiative is underway and is committed to supporting**

Phase II Approach

- **Approach**
  - Determine the appropriate formulation for the industry team (NDIA, INCOSE, MORS… others?). We already have these partners committed to be part of the team
  - Coordinate with SED and industry team members to kick off Phase II activities by the end of June; initiate Phase II bi-weekly meetings
  - Determine methods for collecting industry data and positions (potential focus groups, workshops, survey) and work these June – September
  - Review / refine the data (September – October)
  - Present summary findings at the NDIA SE Conference end of October
  - Potential for a workshop to be held on the Monday prior to the SE Conference
  - Potential topic for an INCOSE Webinar
- **Topics for Consideration**
  - In-depth industry knowledge of current systems
  - Industry R&D on innovative mission approaches and systems technologies
  - Approaches to facilitate cross-industry Mission Engineering engagement

In-depth Industry Knowledge of Current Systems – Key Considerations

- **Under what circumstances will it be critical to have industry input to understand options and implications of making changes in how a system is used to support changes in the SoS supporting a mission?**
- **How would this type of engagement be structured?**
- **What would incentivize industry to participate?**
- **Technical approaches to mission engineering and analysis**
- **Government actions to incentivize industry Mission Engineering engagement**

Industry IR&D on Innovative Mission Approaches and System Technologies

- **How could industry IR&D contribute to new mission concepts/ approaches or new systems techniques to foster improved mission effectiveness?**
- **What information or insights world industry need to enable this?**
- **What would incentivize industry to invest IR&D in these areas?**
- **What are the risks to industry (competition)?**

Approaches to Facilitate Cross-Industry Mission Engineering Engagement

- **What are the issues in getting industry teams drawn from multiple companies to work together to support ME initiatives?**
- **What are the incentives for industry?**
- **What models (e.g. MDA National team) exist and how could these be adapted to support ME?**
- **What are the pros and cons of different approaches?**
- **What are the risks to industry?**

Technical Approaches to Mission Engineering and Analysis

- **What type of ME-related technical experience and resources does industry have which could benefit DoD ME efforts?**
- **How can industry progress in digital engineering provide a foundation for ME?**
- **How could these be shared with government?**
- **What is the incentive for industry to share these? What are the risks?**

Government Actions to Incentivize Industry Mission Engineering Engagement

- **What set of incentives have been identified for the set of topics related to industry's role in ME?**
- **What type of information or insights could government provide which would motivate industry to engage in ME?**
- **What can government do to reduce risks for industry to engage in ME?**