

National Defense Industrial Association Systems and Mission Engineering Conference

October 2023

Mission Engineering Panel: Mission Engineering Implementation – Impacts & Challenges

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Mission Engineering: Statute & Policy

Statute:

NDAA 2017 Sec. 855. (10 USC 2358) Mission Integration Management (MIM). The Secretary of Defense shall establish MIM activities for each mission area specified in subsection (b)

(d) RESPONSIBILITIES: The MIM activities for a mission area under this section shall include ...

5) Developing mission-based inputs for the: requirements process, assessment of concepts, prototypes, design options, budgeting and resource allocation, and program and portfolio management...



Policy:

DoDD 5000.01

The Defense Acquisition System

Conduct System of Systems (SoS) Analysis. Capability portfolio management, mission engineering, and integration analysis using an effects/kill chain framework will be employed to assess the integration and interoperability of the SoS required to execute critical mission requirements. The objective is to identify operational gaps and develop SoS employment concepts in order to develop system capabilities that improve the warfighters' ability to execute critical mission threads.

DoDI 5000.88 Engineering

The DoD will conduct a comprehensive engineering program for defense systems, including the engineering management activities necessary to guide the development of defense systems.

- The engineering management activities include, but are not limited to: (1) Mission engineering (ME), (2) Systems engineering, ...

DoDD 5137.02 (USD(R&E)) Charter

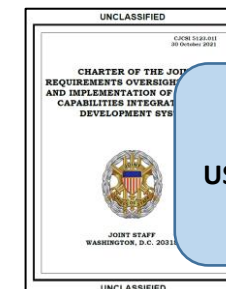
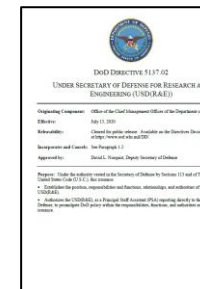
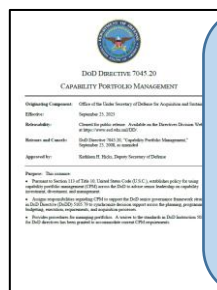
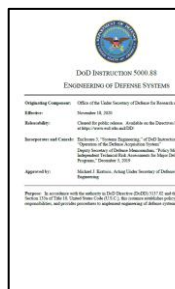
Lead DoD, in coordination with USD(A&S), in mission engineering policy, practices, and tools for analysis of warfighting concepts of operation, functions, systems, and technologies in an end-to-end mission context

DoDD 7045.20 CPM

USD(R&E) Leads execution of MIM and provides guidance on mission engineering activities, pursuant to the Mission Engineering Guide. Develops mission threads and identifies capability assessment criteria to enable portfolio management.

CJCSI 5123.01J

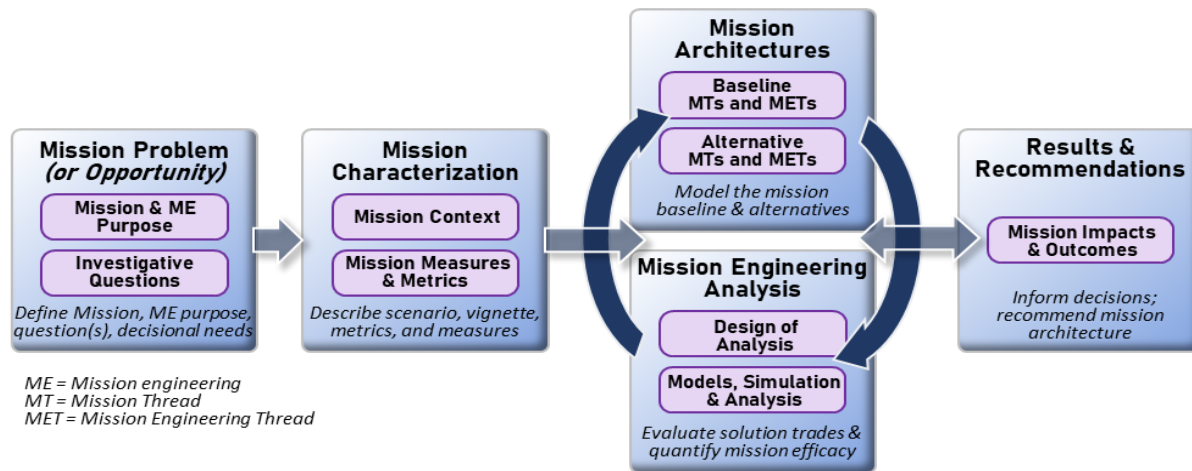
The JROC Charter
USD(R&E) Roles include Principal advisor to the SecDef on MIM activities IAW Section 855 of FY17 NDA





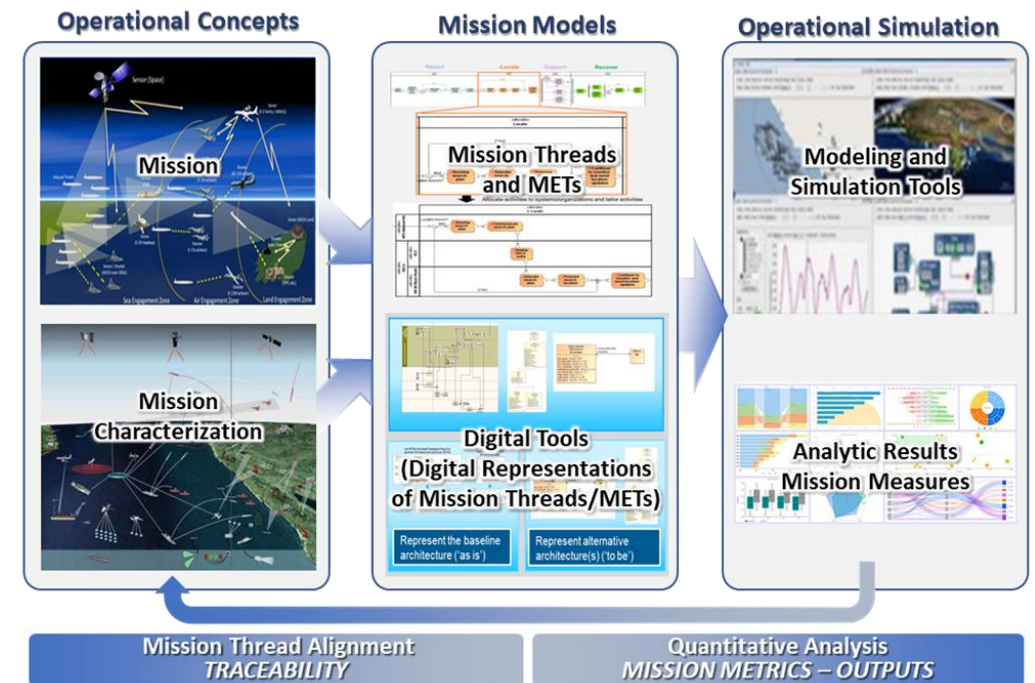
What is Mission Engineering?

Mission engineering is more than just M&S!



Focus on “engineering” the missions

Develops and analyzes “kill chains” / “kill webs” using advanced modeling, simulation, and analysis methods and tools





OUSD(R&E) Mission Integration

R&E Mission Integration: Implements ME to Support R&E Rapid Defense Experimentation Reserve (RDER) Initiative

1. *Inform RDER Data Call*
2. *Inform RDER Selection*
3. *Inform Design of RDER Experimentation*
4. *Inform RDER Transition Decisions*



- Baseline**
- Digital representation of the baseline [Mission Threads](#) (MTs) scenario independent activities and [Mission Engineering Threads](#) (METs) adding scenario specific organizations and activities
- Alternatives**
- [Updated MTs and METs](#) with proposed changes
- Representation of the baseline MTs/METs within [scenario](#) including threat, systems' attributes and behaviors – conduct baseline analysis of [mission metrics](#)
 - Update the systems' attributes and behaviors as specified in [the updated METs](#) and [assess impact on mission metrics](#)

**MISSION THREAD ALIGNMENT
[TRACEABILITY]**

**QUANTITATIVE ANALYSIS
[MISSION METRICS – OUTPUTS]**



Mission Integration—Mission Engineering Efforts

2024 Mission Integration Goals:

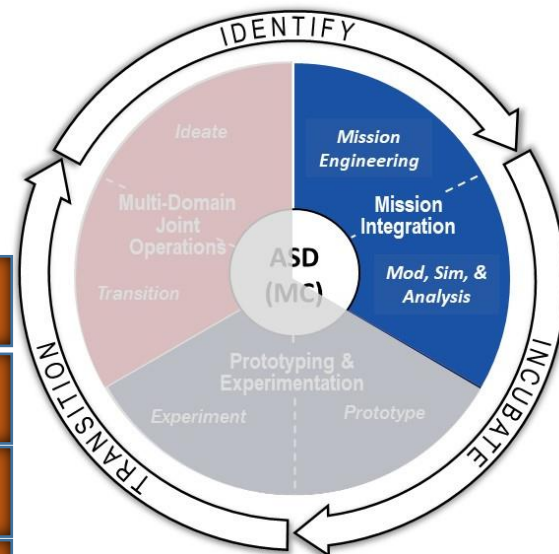
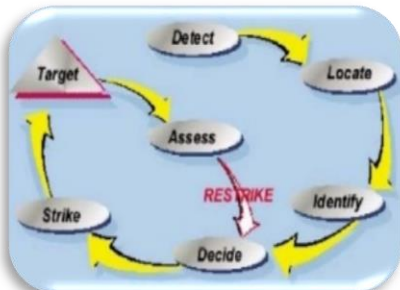
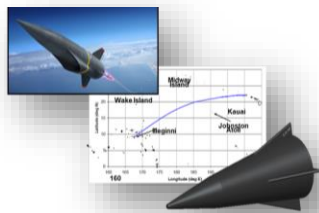
Goal 1: Execute Mission Engineering Analyses and Studies

Goal 2: Construct the Design for Joint Experimentation Series (“Kill Webs”)

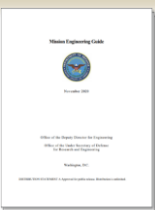
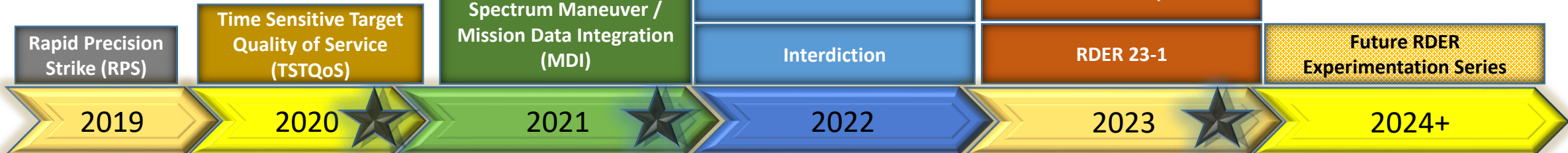
Goal 3: Enhance the Mission Engineering Digital Ecosystem

Goal 4: Advance the State of Practice for Mission Engineering

Goal 5: Foster Industry Collaboration



Rapid Precision Strike, Next (RPS,n)	Partner Nation Study Pt 1	Green Emerging Technologies
High Energy Lasers (HEL)	Nuclear Command, Control, and Communication	Partner Nation Study Pt 2
Position, Navigation, and Timing (PNT)	Air and Missile Defense	RDER 25-1
Electromagnetic Spectrum Maneuver / Mission Data Integration (MDI)	Non-Kinetic Fires	RDER 24-1 / 2
	Interdiction	RDER 23-1
		Future RDER Experimentation Series



DoD Mission Engineering Guide v1 Released

Rapid Defense Experimentation Reserve (RDER)

DoD Mission Engineering Guide v2 Released

Mission Engineering Digital Ecosystem (Technical Infrastructure)

Mission Engineering Practitioners Forum Established



Mission Engineering Challenges

Establishment of a comprehensive Mission Engineering curriculum for the DoD Acquisition Workforce:

Initiatives:

1. Defense Acquisition University ME Credentialing courses: Fundamental, Intermediate, and Advanced
2. Mission Engineering Practitioners Forum (MEPF)
3. Mission Engineering Academic Workshop

Instantiation of a Digital Engineering collaborative environment across the DoD Enterprise:

Initiatives:

1. OUSD R&E Digital Mission Engineering Environment (MEDE)
2. Digital Engineering Environment (DEE) for Mission Architectures



Summary

- Statute and policy provides clear direction and the need to execute and implement Mission Engineering
- MI is applying Mission Engineering around joint missions in support of RDER and other DoD priorities
- R&E leads the community in guidance and advancing the state of practice for Mission Engineering
 - Released updated DoD Mission Engineering Guide (MEG) 2.0
 - Chairs the MEPF (ME Executive Steering Council & ME Working Group)



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