MODEL BASED SYSTEMS ENGINEERING PANEL

The Promise and the Challenge

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What is Model-Based Systems Engineering?

"Model-based systems engineering (MBSE) is the ***formalized application of modeling*** to support system requirements, design, analysis, verification and validation activities beginning in the conceptual design phase and continuing throughout development and later life cycle phases."

INCOSE International Council on Systems Engineering

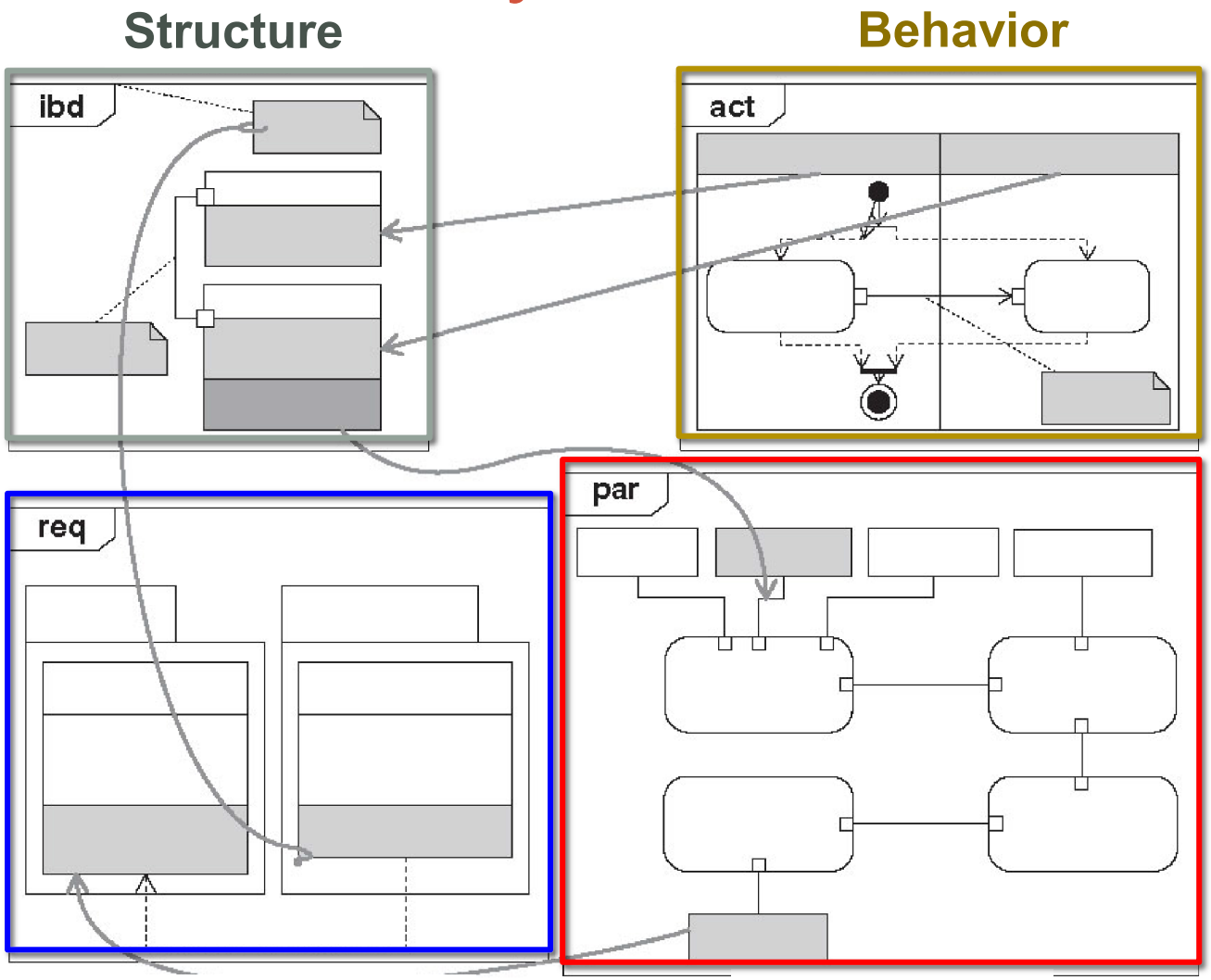
INCOSE SE Vision 2020 (INCOSE-TP-2004-004-02, Sep 2007)

"Model-Based Engineering (MBE): An approach to engineering that ***uses models as an integral part of the technical baseline*** that includes the requirements, analysis, design, implementation, and verification of a capability, system, and/or product throughout the acquisition life cycle."

NDIA NATIONAL DEFENSE INDUSTRIAL ASSOCIATION STRENGTH THROUGH INDUSTRY & TECHNOLOGY

Final Report, Model-Based Engineering Subcommittee, NDIA, Feb. 2011

The Centrality of the System Model

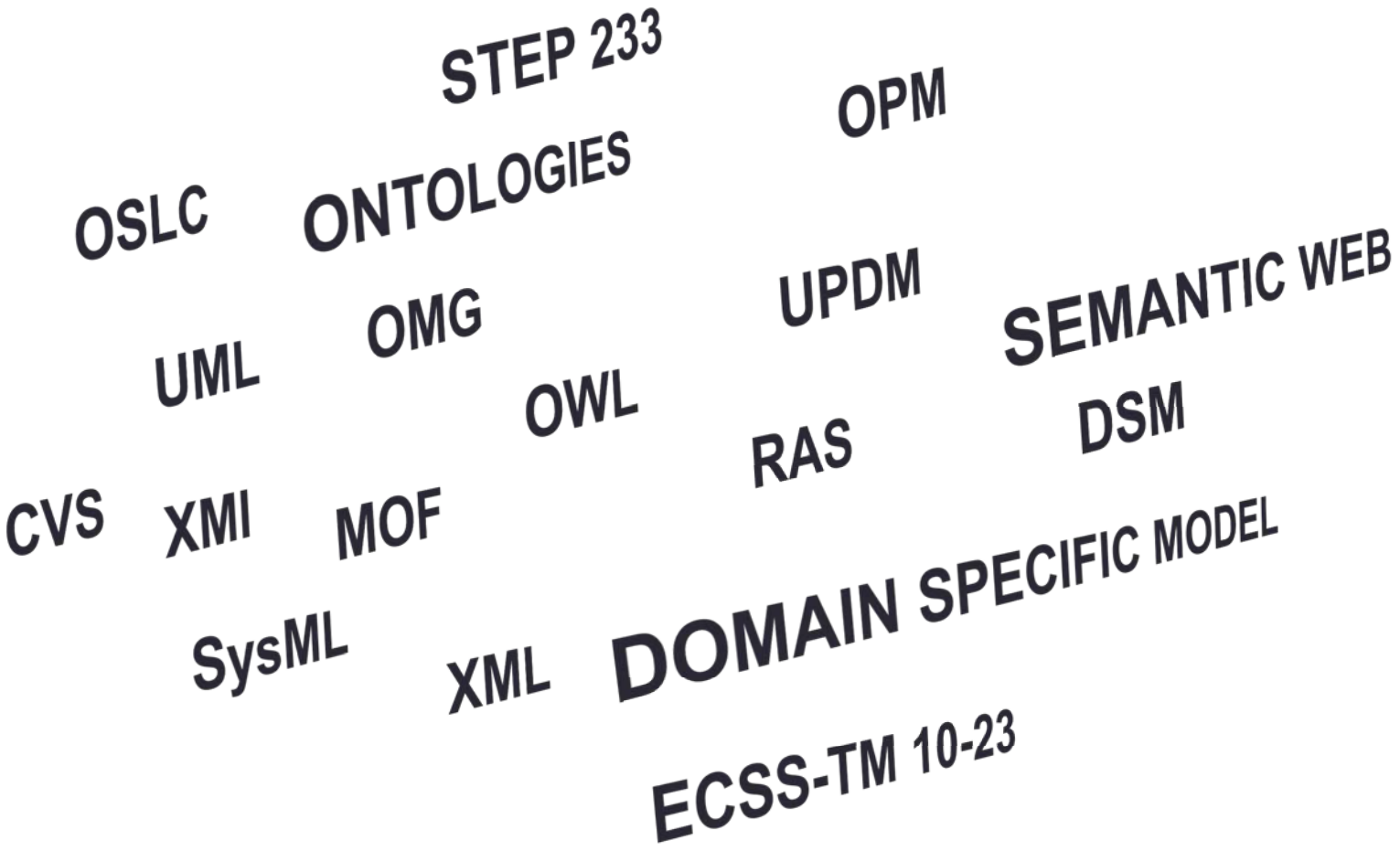


A system model is queryable interconnected set of model elements that represent key system aspects including:

- structure,
- behavior,
- requirements, and
- parametrics

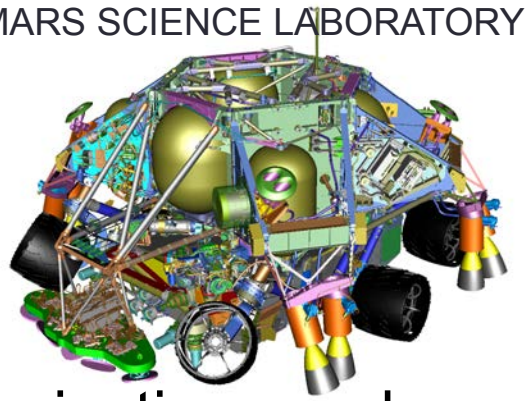
A system model represents logical relationships among requirements, design, analysis and verification elements

MBse is IT-Centric



But mbSE is Really about Better Systems Engineering

MARS SCIENCE LABORATORY



MBSE promises to enhance our ability to…

- Rapidly evaluate design options
- Significantly improve the quality of communications and understanding between systems and subsystem engineers
- Manage system complexity
- Maintain a technical baseline among distributed teams
- Do more engineering and much less paper management
- Perform early validation of system design and architectures
- Detect and correct defects earlier in the lifecycle

…So How Are We Doing?

Does the promise remain?

What are the challenges?

How are we addressing the challenges?

What value are we seeing from early adopters?

Today's MBSE Panel

Dr. Thierry Duhamel

Project Manager
Digital Engineering
Space Systems

Airbus Defense and Space

Dr. Ron Williamson

Senior Engineering Fellow

Integrated Defense Systems
Raytheon Company

Mr. Brian Cooke

Project Systems Engineer
Europa Clipper

NASA/JPL

Mr. Chris Schreiber

Systems Engineering Manager

Lockheed-Martin
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