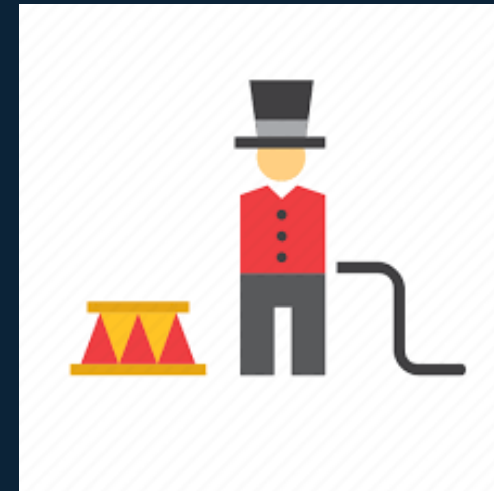


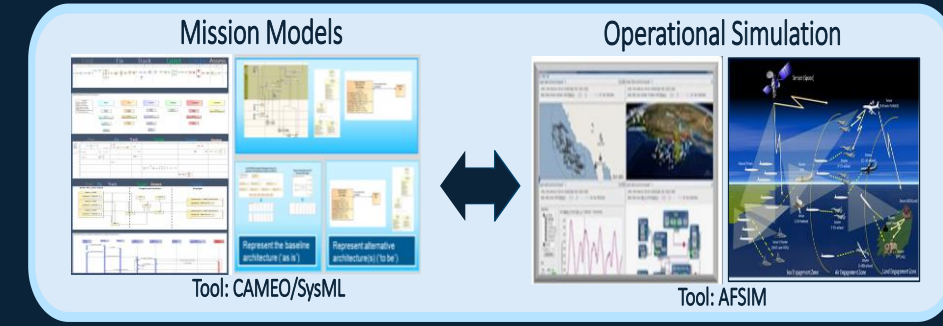
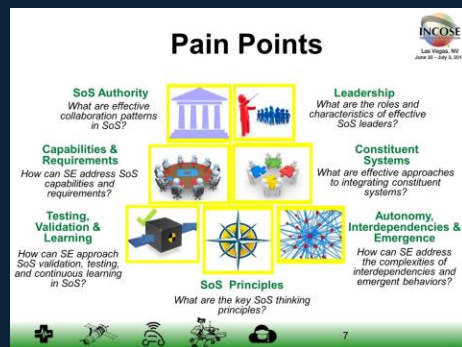
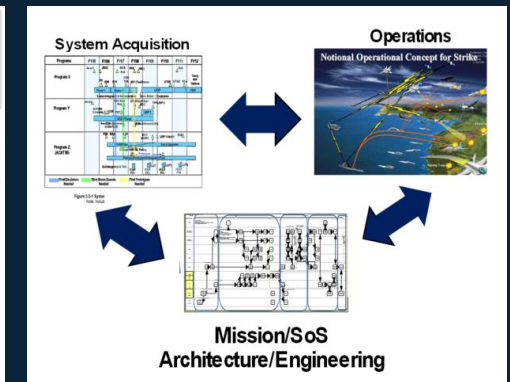
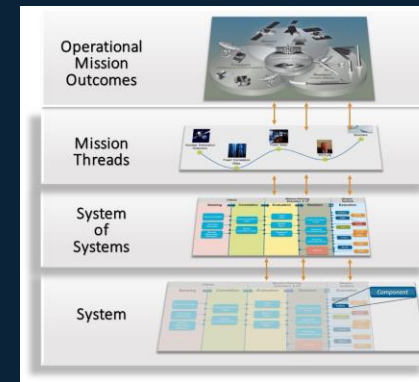
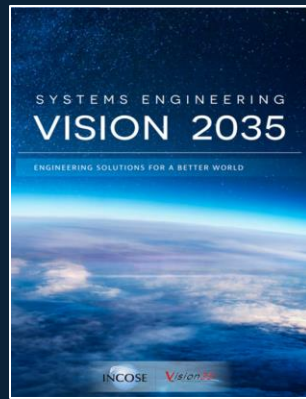
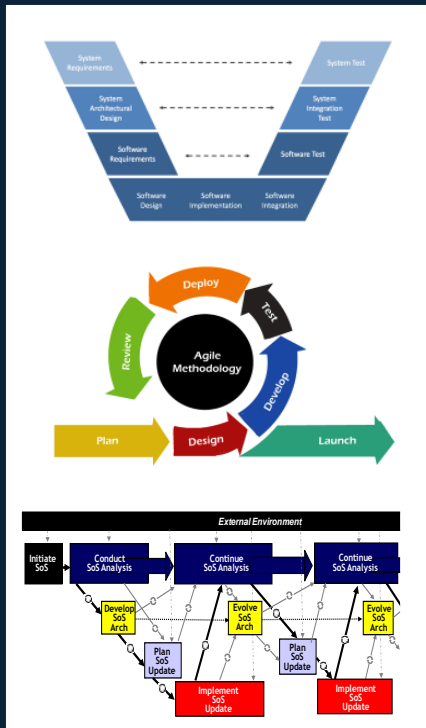
AI-Enabled Systems Engineering for Systems of Systems and Missions

Tools to Tame Complexity

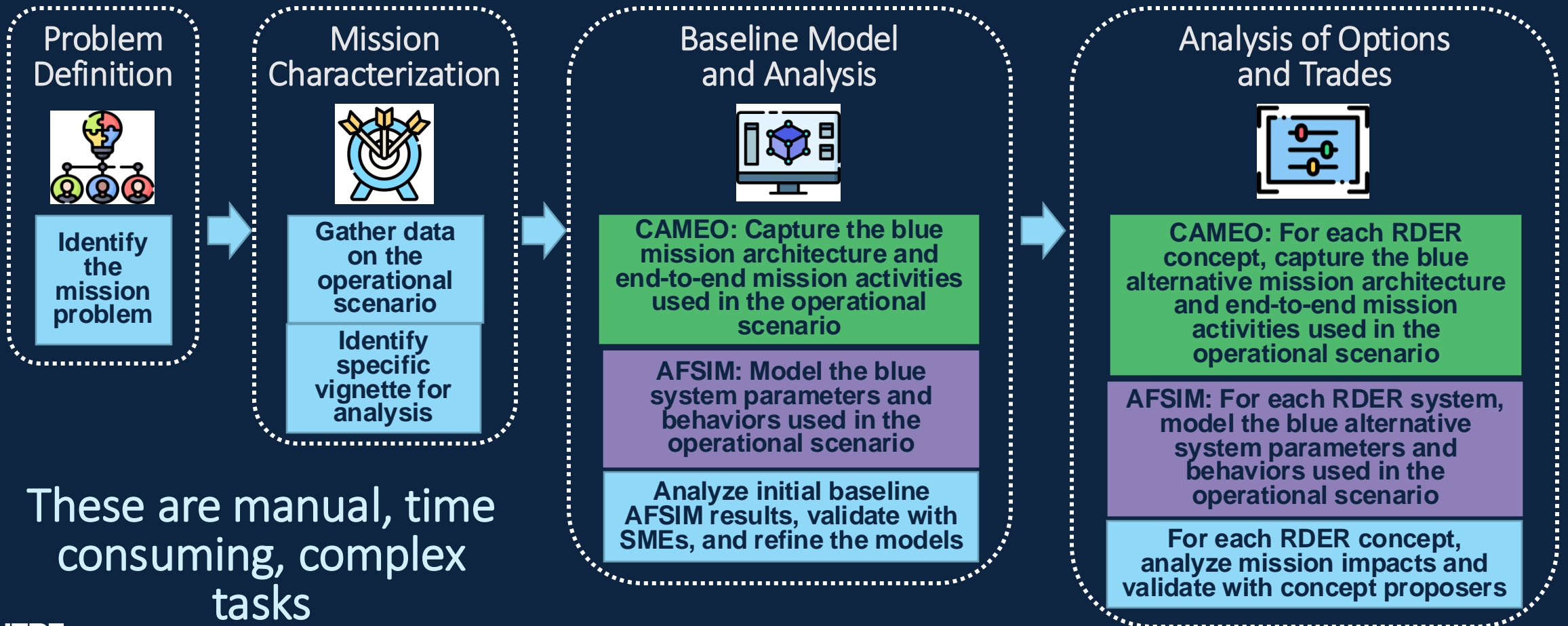
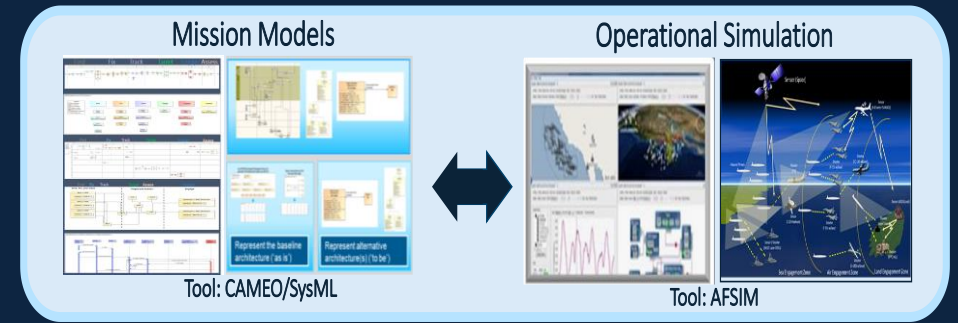
Judith Dahmann
MITRE Fellow



Directions in Systems, SoS and Mission Engineering



SoS/Mission Engineering Workflow



These are manual, time consuming, complex tasks

Timely and responsive application of systems of systems and mission engineering through advanced AI-enabled technologies

Knowledge Development and Synthesis

AI-based approaches can be applied to identify key source material and synthesize the critical information to facilitate rapid creating of the critical information needed to address the problem definition and mission characterization.

Data/Model Mining

AI-based approaches can be employed to identify, assess and adapt available models to create valid mission models and operational simulations to describe and analyze mission architectures and operational impacts. Data perfecting, data engineering and data quality can also be improved with various algorithms.

Model Creation

AI-based approaches can be applied to rapidly generate models from the synthesized information, providing a starting point for model development.

Visualization

AI-based approaches can support creation of user-oriented visualizations, drawing on mission architecture models and operational simulations, to visualize key scenarios and systems of system in ways that users can readily review and provide feedback to build validated trustworthy representations for mission engineering and analysis.

Model Analysis

AI-based approaches can enable not only more rapid analysis, but also provide new insights into the complex mission architecture and operational analyses, by, for example, identifying anomalies, critical point of failure, key factors driving outcomes of the mission.



