Enterprise IT Architecture:
Key to Successful Application of Modeling and Simulation Based Systems Engineering on any Program

DEFENCE AND SPACE

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05 October 2017
Enterprise IT Architecture | General strategy

Enterprise IT Architecture | Application layer (Modelling and simulation Based Systems Engineering focus)

Enterprise IT Architecture | As an enabler for model-based strategies
The general strategy we followed is a classical decomposition of an enterprise IT architecture:

- **The business layer** reflect
  - our **company business processes** as well as
  - the Advanced Product Quality Planning framework.

- **The data layer** ensures a continuous data flow
  - to drive a risk-informed satisficed design decision-making,
  - to monitor and control variation during production, and
  - to enable condition based maintenance

- **The application layer** (enabling methods) enables our brilliant engineers
  - to execute the Design for Six Sigma / Robust Design strategy combining
    - **Modelling and simulation Based Systems Engineering (MBSE)** and
    - **Process Integration and Design Optimization (PIDO)** Satisficing
  - to implement a rigorous **reliability and safety engineering** management

- **The technology layer** ensure
  - Digital product and process data continuity using **state-of-the-art software** and
  - **Industrial Internet of Things** technology
Use of **System Engineering Process at each system decomposition level**

- Requirement Analysis
- Functional Analysis
- Physical Solution
- Tradeoffs
- Documentation

Enterprise IT Architecture | Application layer (MBSE focus) (1/6)
Use of System Engineering Process at each system decomposition level

- **Requirement Analysis**
  - Requirements may be *classified into* …

  - and _analyzed by applying ontologies_ in the (model-based) requirements engineering process.
Use of System Engineering Process at each system decomposition level
• Requirement Analysis
• Functional Analysis
  – using the Function Analysis System Technique (FAST)
    – To provide directed thrust
      – To condition hardware
      – To start operation
      – To generate thrust
      – To direct thrust
      – To stop operation
Use of System Engineering Process at each system decomposition level

- Requirement Analysis
- Functional Analysis
- Physical Solution
Use of System Engineering Process at each system decomposition level
• Requirement Analysis
• Functional Analysis
• Physical Solution
• Tradeoffs (Normative-target based)
  – Performance
  – Reliability-as-an-independent-variable
  – Cost-as-an-independent-variable
Use of System Engineering Process at each system decomposition level

- Requirement Analysis
- Functional Analysis
- Physical Solution
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Direct transfer of parameter values into requirement text
MBSE connects with Domain Engineering in the model-based requirement engineering or design verification process.
Enterprise IT Architecture | As an enabler for model-based strategies

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Thank you