

# **The Purdue University Product Life Cycle Management Center of Excellence**

Co-Directors

Gary Bertoline (CGT & ITaP)

Christoph Hoffmann (CS)

John Sullivan (AAE)

# Background

Explore interdisciplinary opportunities in learning, engagement and discovery in partnership with our corporate sponsors

**1960s**

**1980s**

**2000s**

*Customer Pain Points*

- Design inefficiency
- Lack of design tools

- Limited engineering data management
- No product change management automation
- Lack of interoperability

- Limited connection of engineering to shareholder value
- An inability to collaborate real-time with suppliers
- Uncompetitive product development cycles

*Value Migration*

- Invent new functions to sell hardware

- Grow solution functionality
- Connect inside four walls
- Applications drive sales

- Connect the value chain
- Transform process to gain full value from technology

*PLM Solution Buyer*



*Buying Behavior*

Build Home Grown

Implement Value Packages

Integrate Value Chain

# Some Ingredients

- **Business Strategy and Value**
- **Engineering Advances**
- **Infrastructure and Enabling Technologies**
- **Training and Continuing Learning**

Proposal

Needs

Function

Needs

Design

Manufacture

Needs

Function

Deliver

Function

Design

Maintain

Sustain

Design

Manufacture

Infrastructure and Enabling Technologies

Needs

Function

Deliver

Maintain

Training and Continuing Learning

Manufacture

Maintain

Sustain

Deliver

Sustain

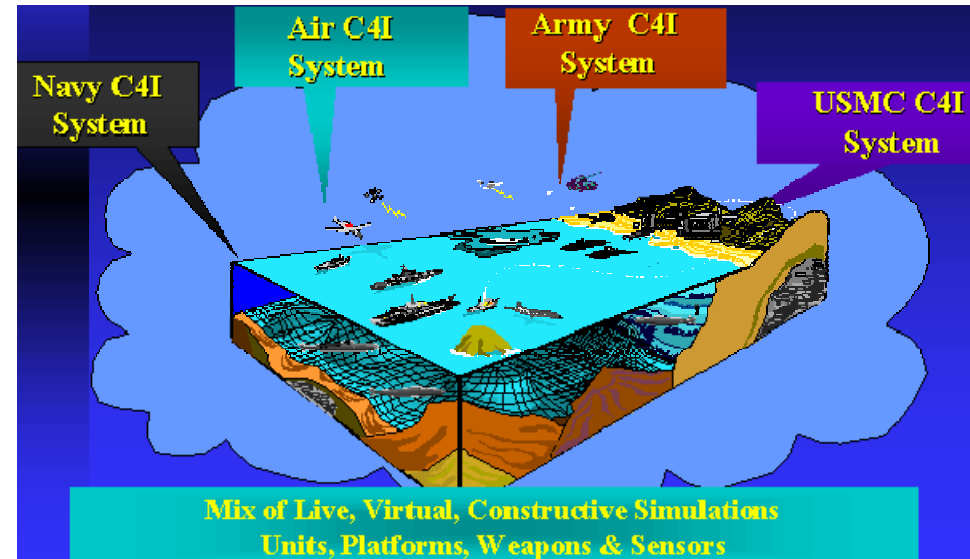
Maintain

Sustain

Disposal

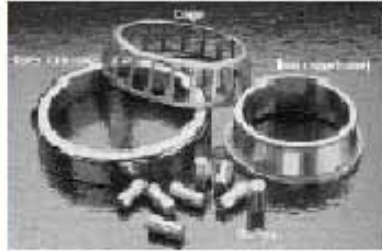
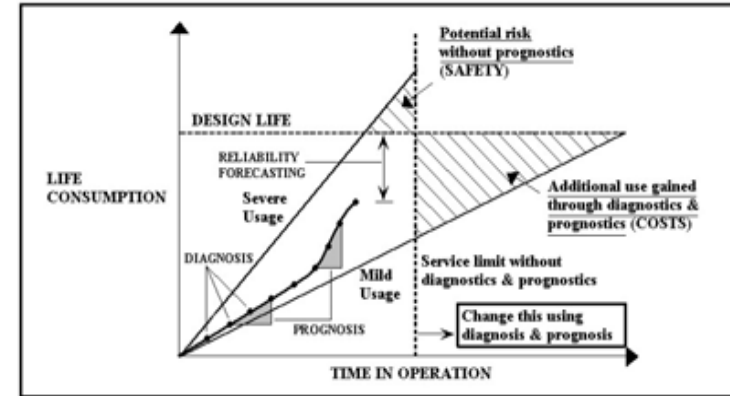
# Business Strategy and Value

- Virtual product innovation
  - SEAS simulation environment; Chaturvedi, Mehta (Kran)
  - Measured response
- Dynamic partnerships
  - Secure supply chain management; Schwarz (Kran), Clifton (CS)

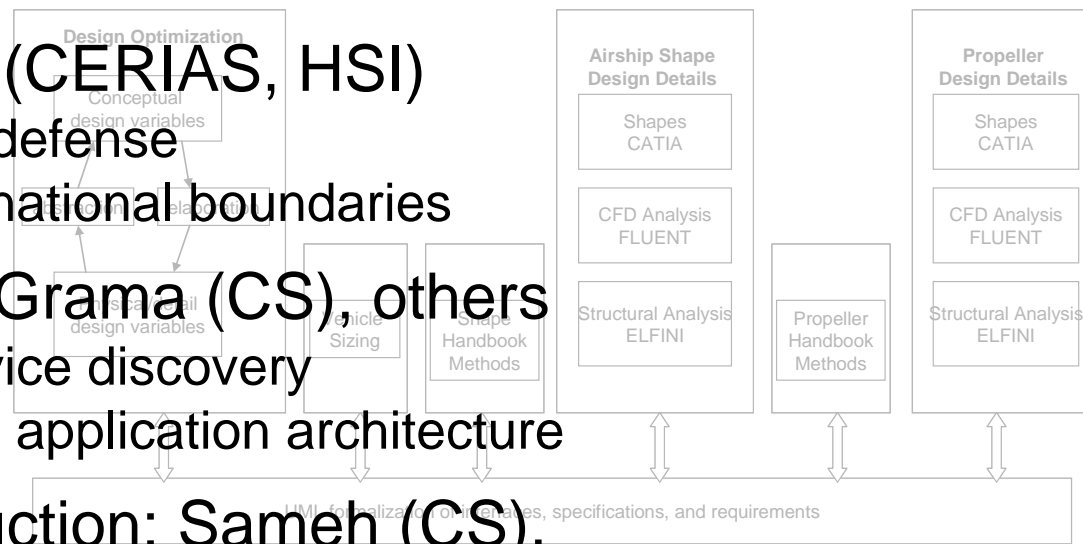


# Engineering Advances

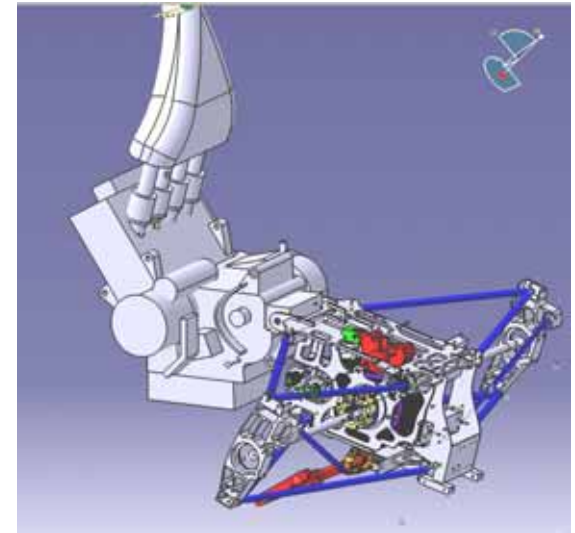
- Condition-based maintenance; Adams (ME), Rotea (AAE)
- Autonomic systems; Adams et al.
- Mass customization; Ramani (ME)
- Novel materials; King (MSE)



- Total cost of ownership
- Information assurance (CERIAS, HSI)
  - Intrusion detection and defense
  - Enterprise boundaries, national boundaries
- Grid computing; ITaP, Grama (CS), others
  - Wide-area storage, service discovery
  - Middleware, component application architecture
- Simulation, model reduction; Sameh (CS), Sozen (CE)
- Visualization; Popescu, Hoffmann (CS)



- Next generation
  - Integrated curriculum, Miller(MET)
  - Course ware, Tomovic (MET)
  - Case studies, summer internships
- This generation
  - Best practices workshops
  - Technology reviews
  - Continued learning



# Summary

- Ingredients for a comprehensive approach in place
- Purdue has a unique interdisciplinary commitment
- Partnership to make it happen

