# PLM Approaches to Reduce Cost and Cycle Time

Dr. Bipin Chadha
Coensys, Inc.
www.coensys.com

bchadha@coensys.com
(856) 552-0409

# Key Issues

- Products are becoming more complex
- Increasing competitive and cost pressures
- Product Life-Cycles are getting shorter
- Time to Market is a key metric for achieving market share and profitability
- Design Teams are distributed across disciplines, companies, and countries
- Design Phase impacts over 70% of the total cost of ownership

**PLM is key to addressing these issues**

# Approaches to Cost and Cycle Time Reduction

- **Systematic Tradeoff Analysis Early in Design**
  - Resolution of System Integration Issues in design (vs. later phases)
- **Reduce the need for design changes during the product lifecycle (defects)**
  - Resolution of Retooling issues in design phase
  - Decreased cost of doing QA via accounting for QA processes in design
- **Enhanced Communication Between Design Disciplines and Other Teams**
  - Reduced cost for information search
- **Enhanced Communication Between Supply Chain Members**
  - Avoidance of supplier latency problems via accounting for effects in design phase



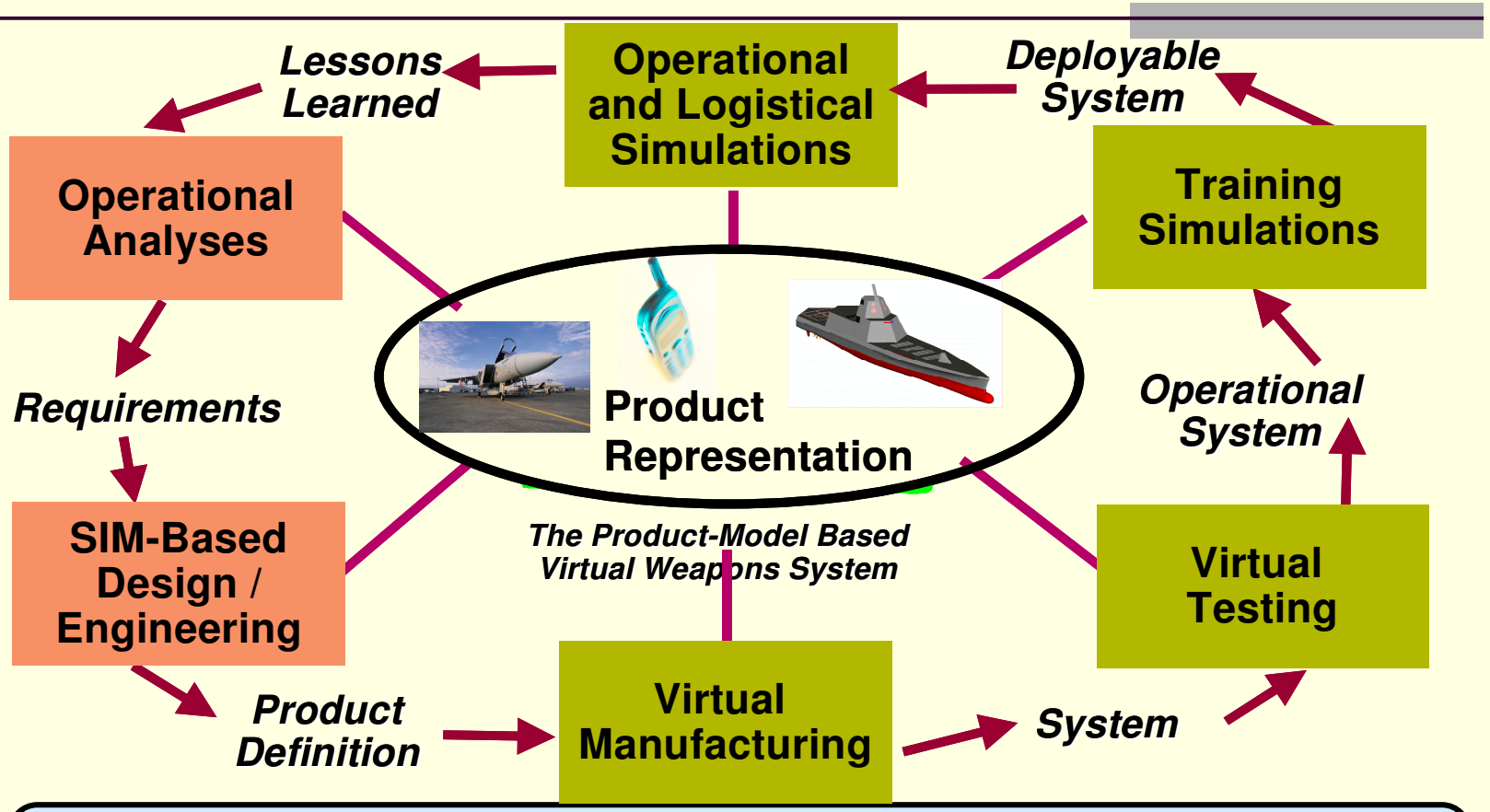
Source: MIT Lean Mfg Study

# Approaches to Address the Issues

| ISSUE | APPROACH |
|---|---|
| Product Complexity | Configuration controlled Product Data, Modular Design, Multi-Domain Product Representation |
| Cost Competitiveness | Collaborative Design, Global Design Optimization, Modular Design, End-to-End Traceability |
| Short Product Life Spans | Change Management, Modular Design, Build to Order, Process Management and Agents |
| Reduced Time to Market | Tradeoff Analysis, Concurrent Engineering, Configuration Management, Design of Experiments |
| Distributed Development | Federated Systems, Interoperability Standards, Distributed Configuration Control, Workflows |
| Design Phase Impact | Virtual Prototyping, Simulation Based Acquisition (SBA), Model Driven Design/Architecture |

**PLM is the Synthesis of these Approaches**

# Virtual Prototyping/ SBA

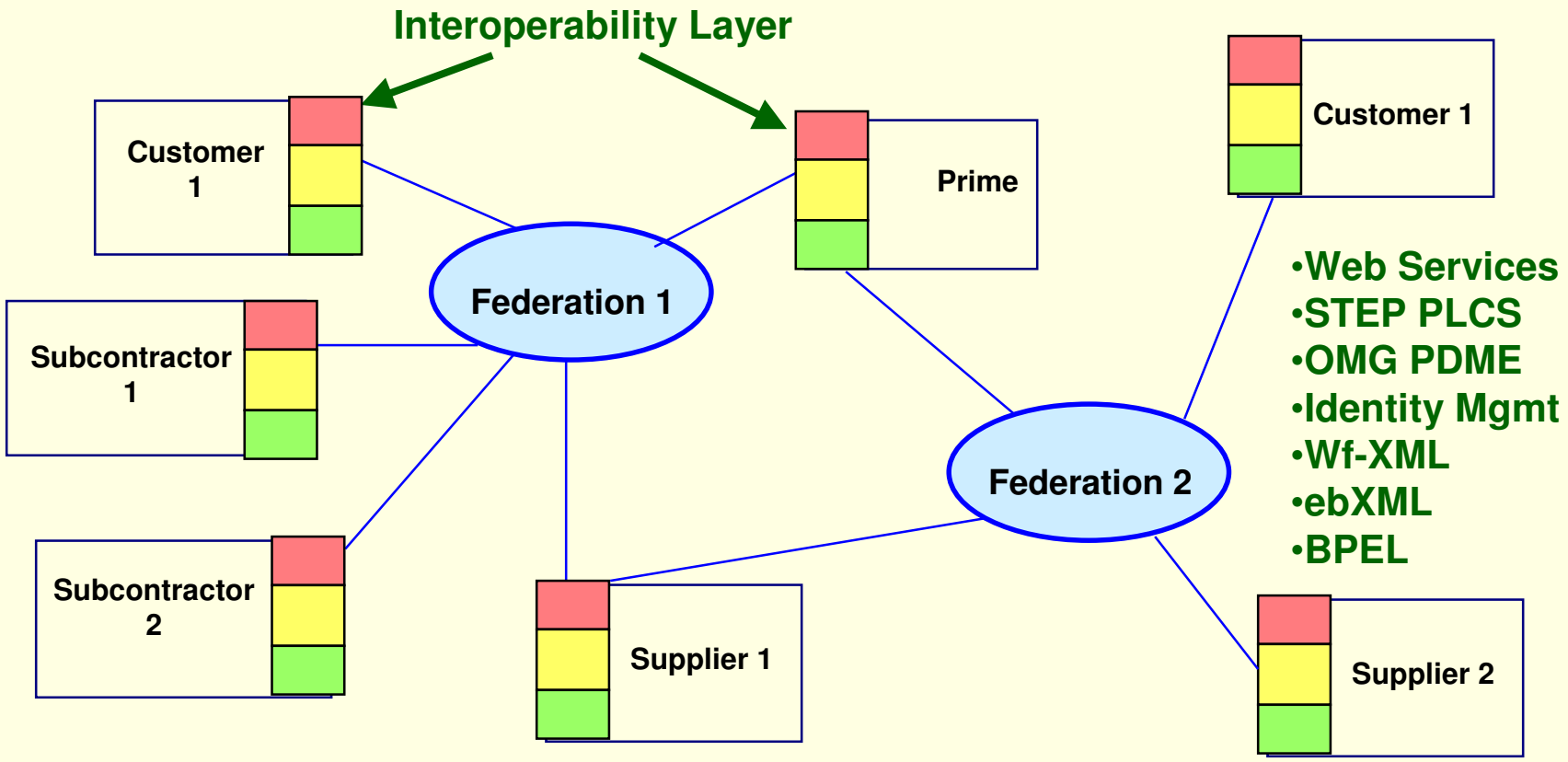



**PLM is Needed to Manage Data Over the Entire Product Life-cycle**



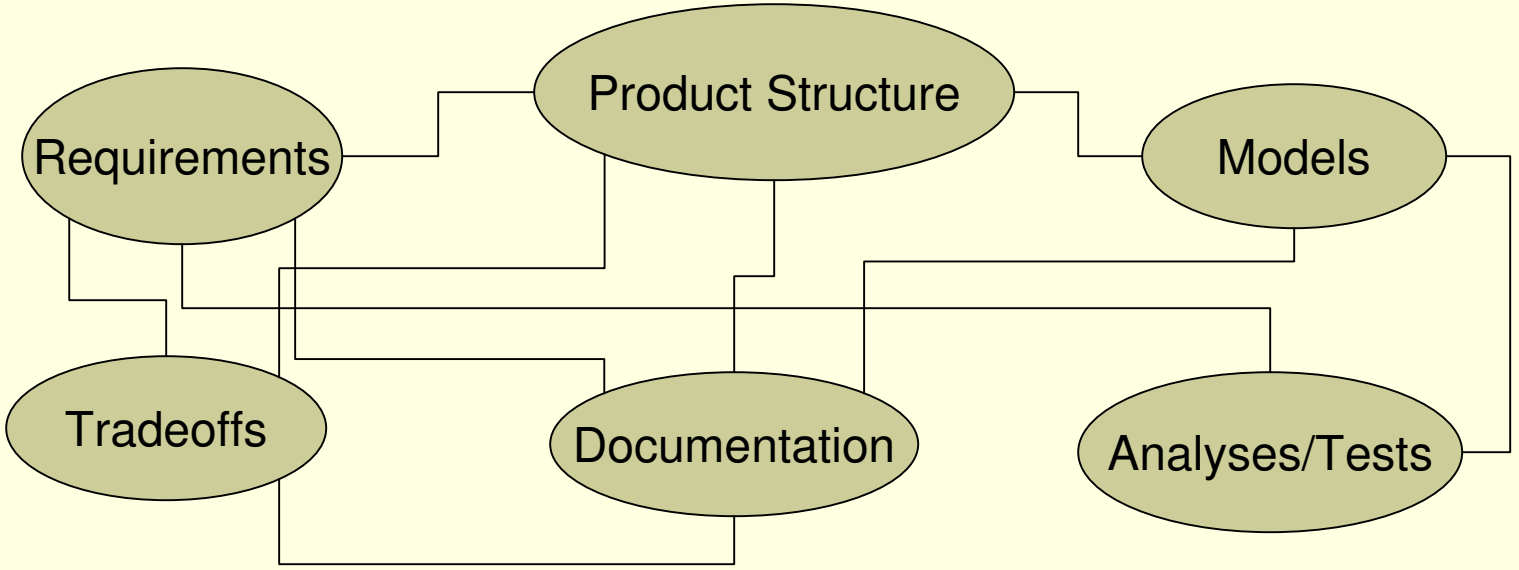
SOURCE: Navy SBA Vision Document

# Federated Architectures




**Federation of PLM Systems to Support the Collaborative Design Chain**

# End-to-End Traceability




**PLM is Needed to Manage End-to-End Traceability and Change Management**

# Examples of PLM Projects

- Navy DD-21
- Army FCS
- AF JSF
- GM Virtual Vehicle
- Chrysler Crossfire
- Boeing 777
- Volvo Engines
- SAAB Bofors Dynamics
- Nokia Communicator
- And Many More…

**PLM is Being Successfully Applied in a Variety of Industries**