



MAPPER

Model-based Adaptive Product and Process Engineering

Introducing the Product Perspective

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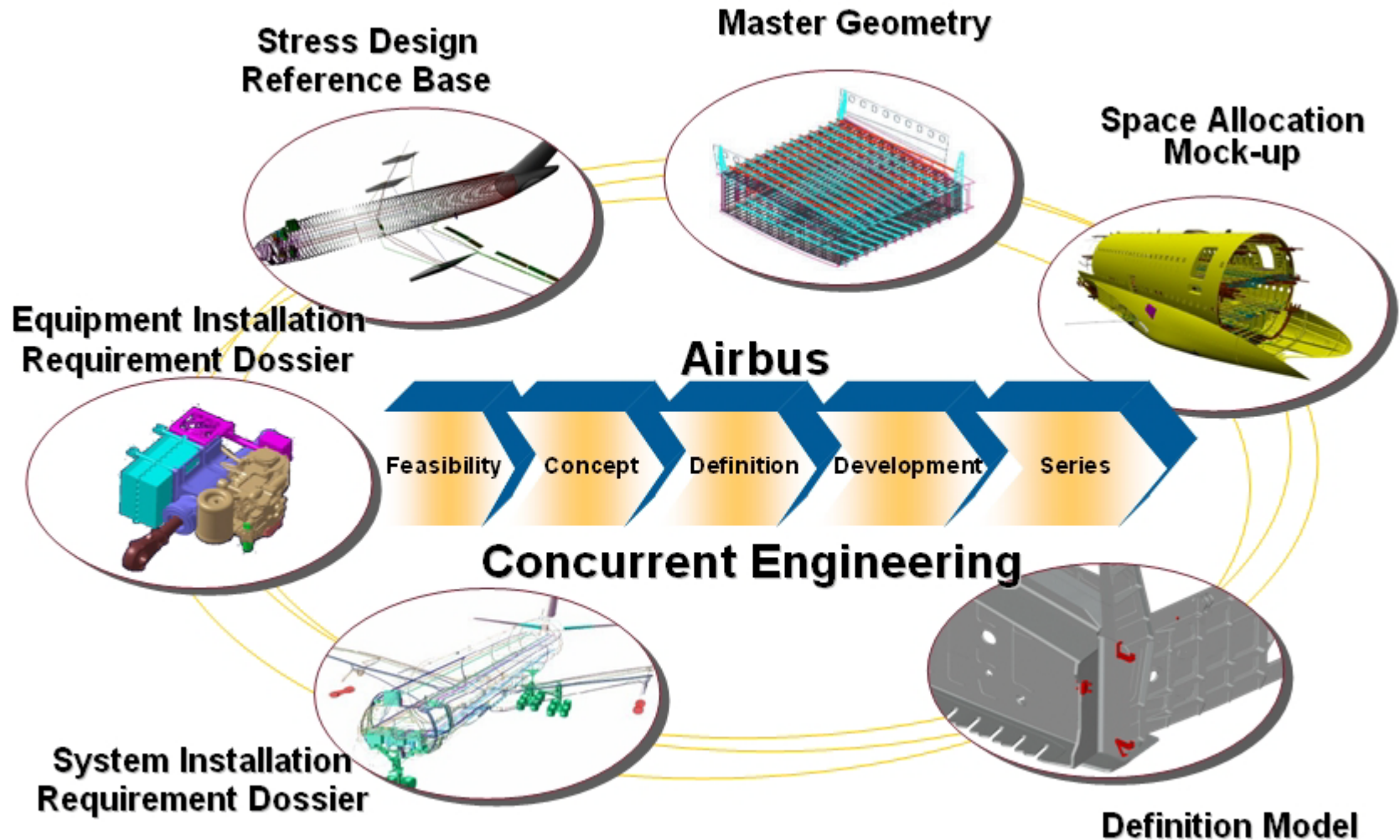
Overview

- Product information exchange and sharing
- Collaborative Product and Process Design (CPPD) overview
- Demonstrators
 - Configurable Product Components
 - Configurable Visual Workspaces
- Next steps
 - Overview of CPPD components
 - Brief development plan



Virtualization of the Product

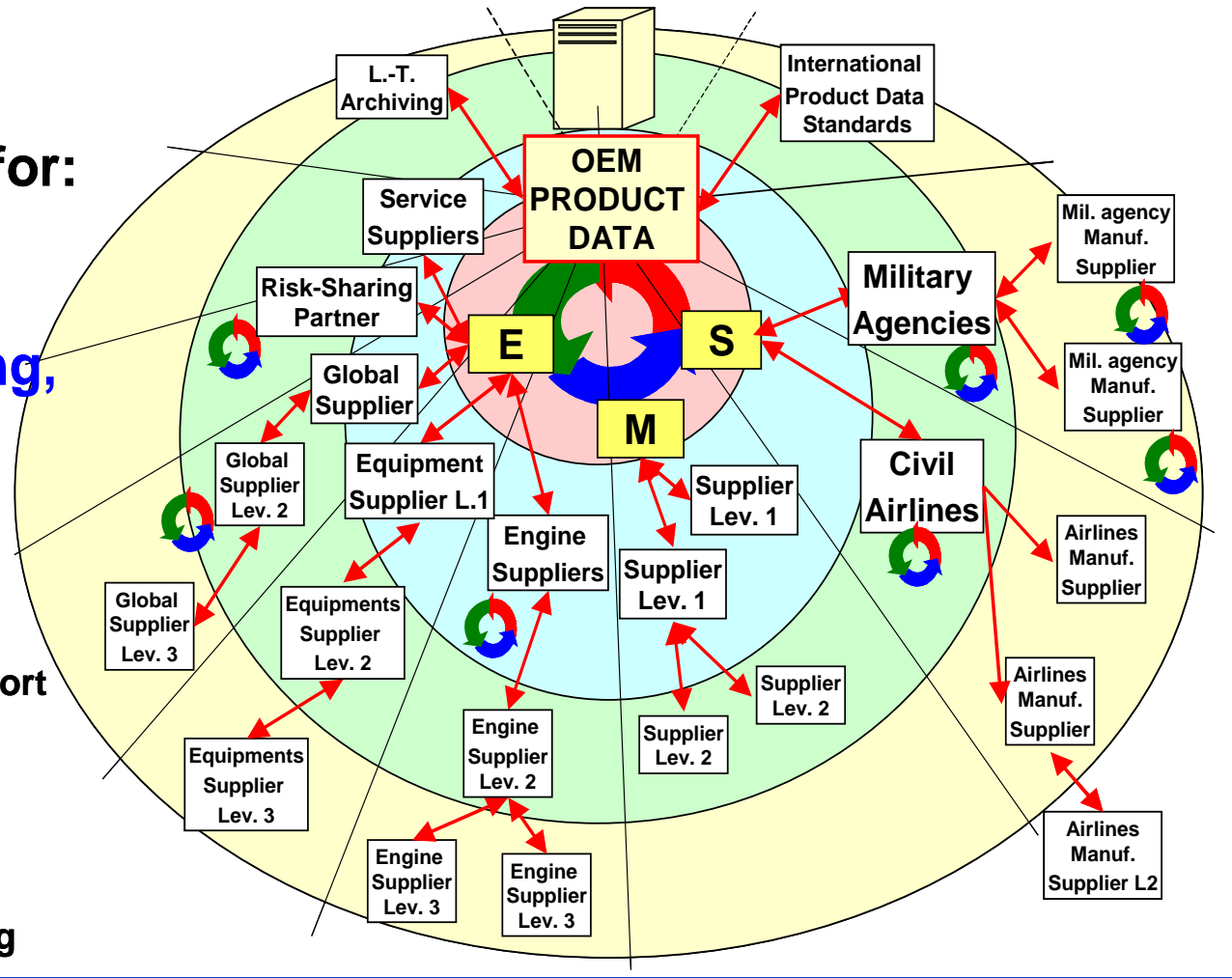
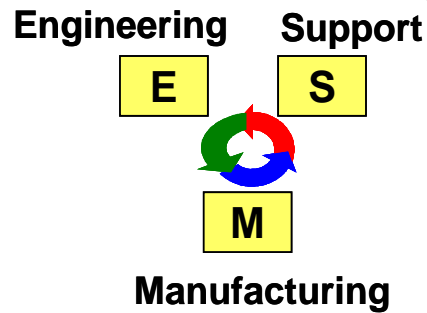
Concurrent Engineering using multidisciplinary 4D e-models (source: Airbus ACE)



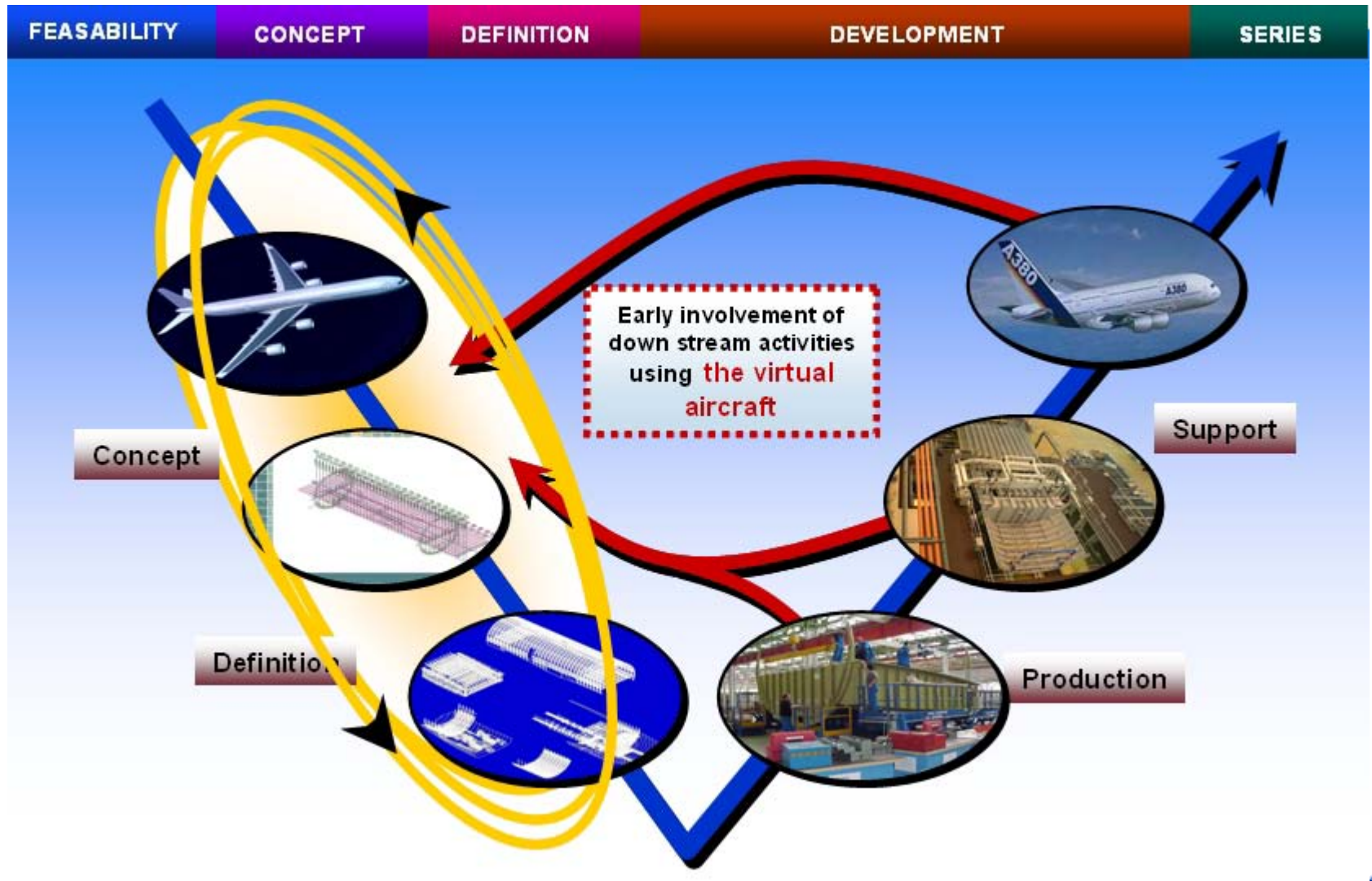
Virtualization of the enterprise - Networked organizations

Configured & Controlled Product Data for:

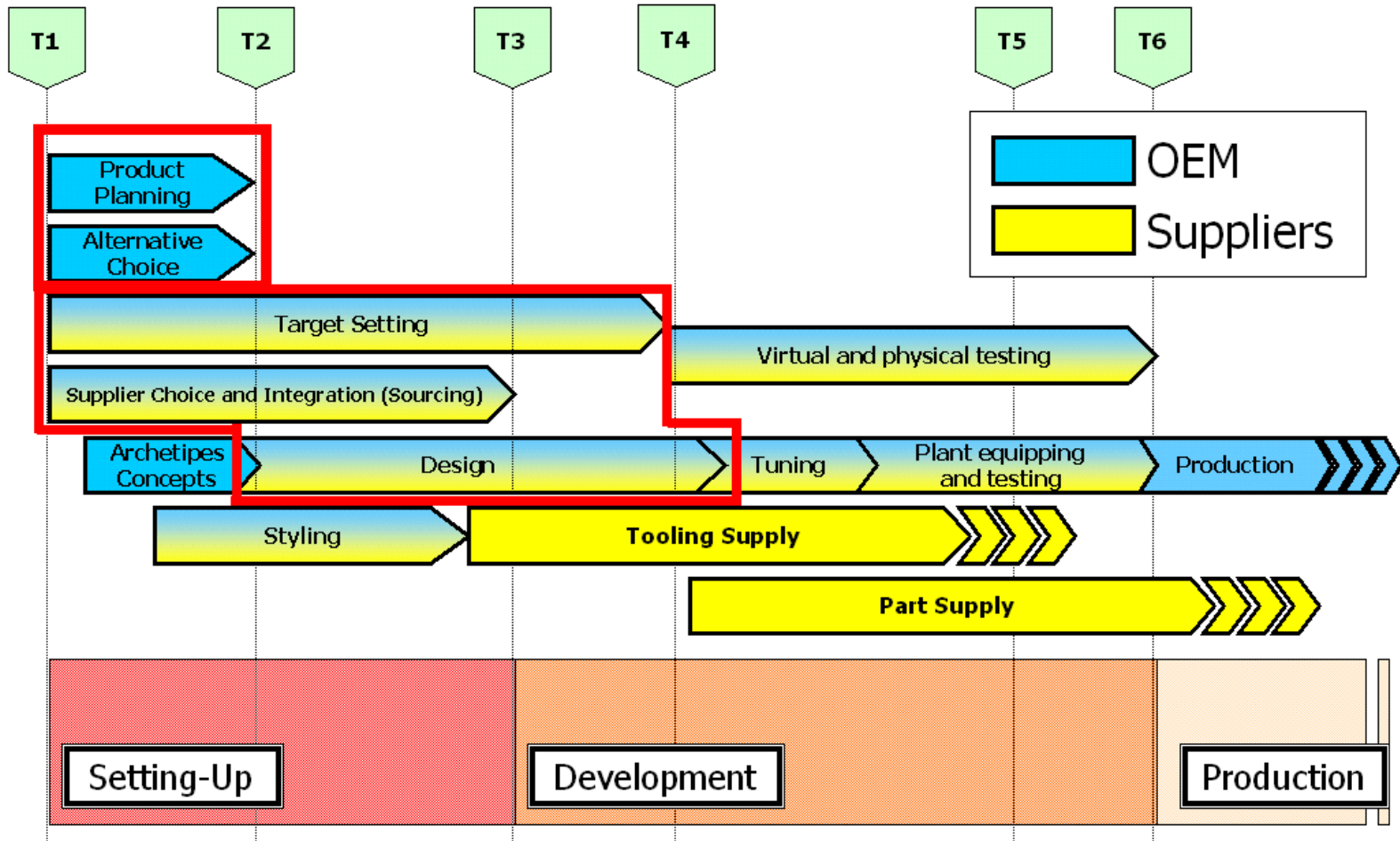
- Design,
- Simulation,
- Manufacturing,
- & Support



Virtual Aircraft for early involvement of downstream activities



CPD focus





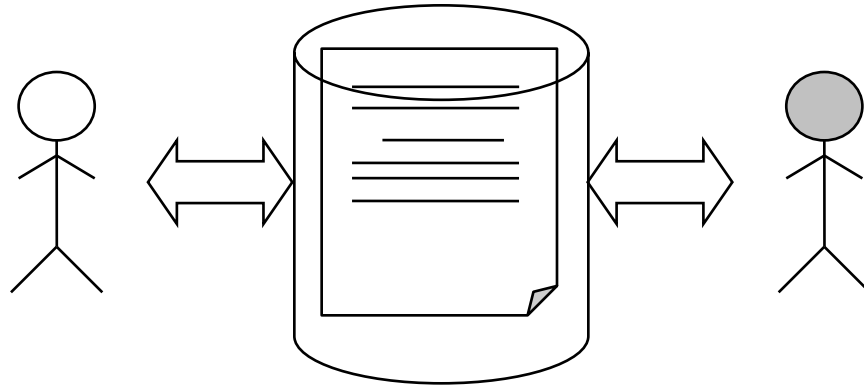
Profiles of Product Based Interoperability

- Document management
- Data mapping (EAI)
- Reference model (Semantic web)
- Shared information repository (PDM)
- Federated knowledge repository





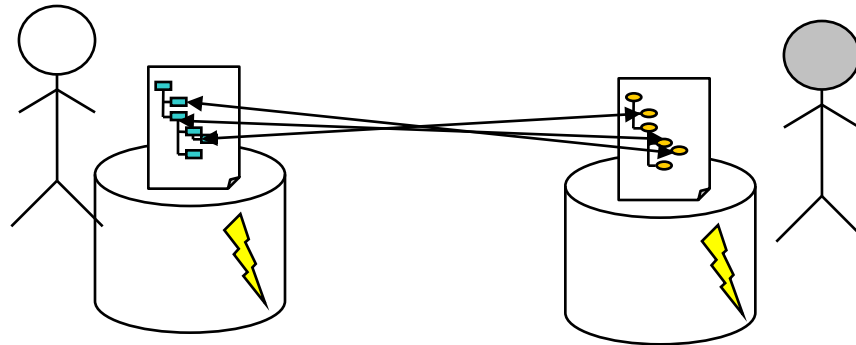
Product Document Management



- Manual data processing
- Email exchange or document management
- Documents include text, spreadsheets, engineering drawings etc.



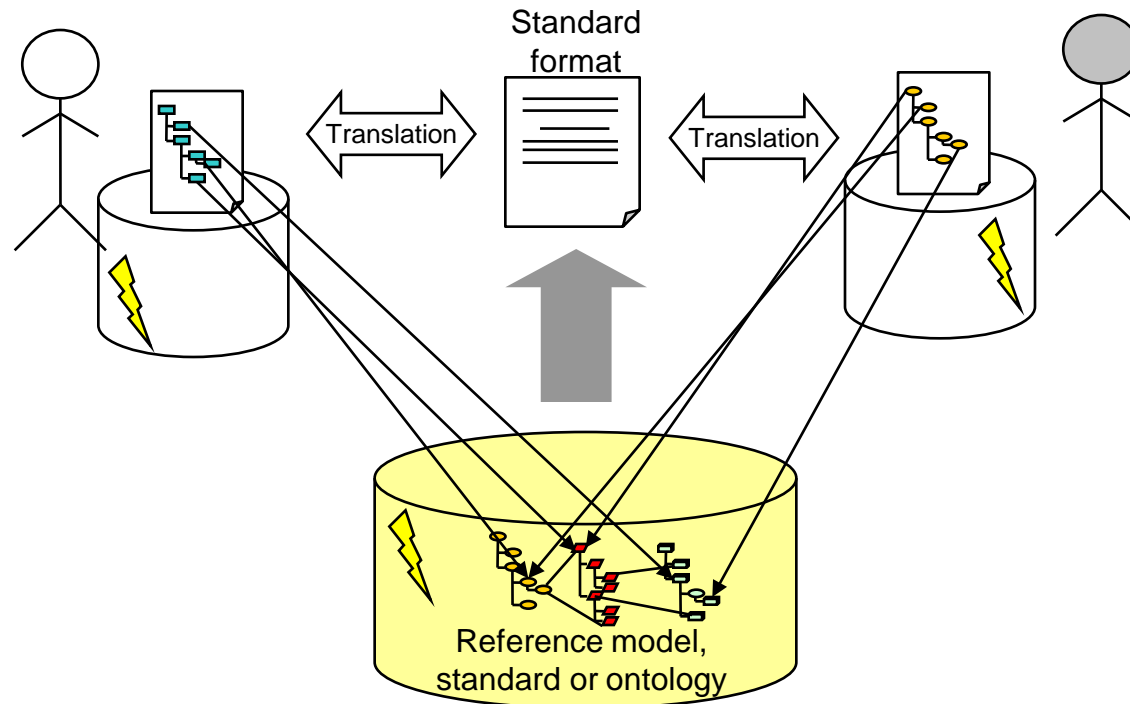
Product Data Mapping



- Local applications for automated data processing
- Data to data mapping, APIs and web services
- Enterprise Application Integration (EAI)

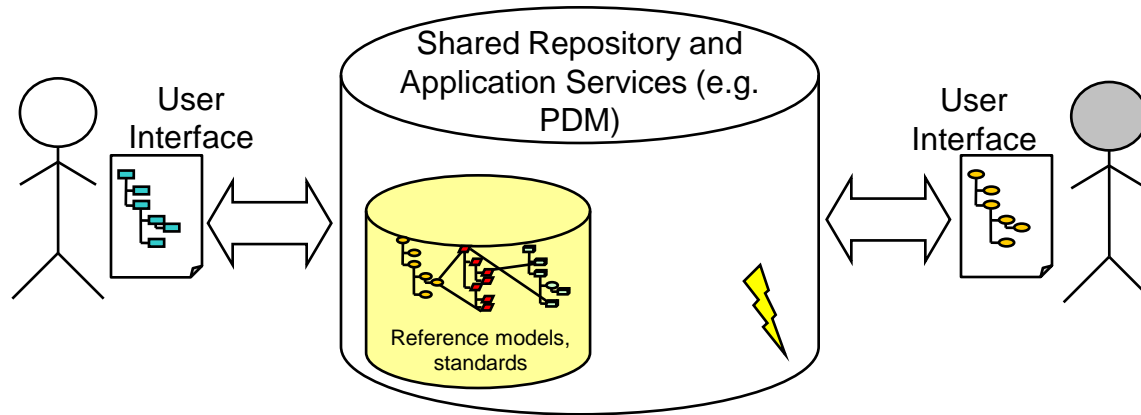


Semantic Web



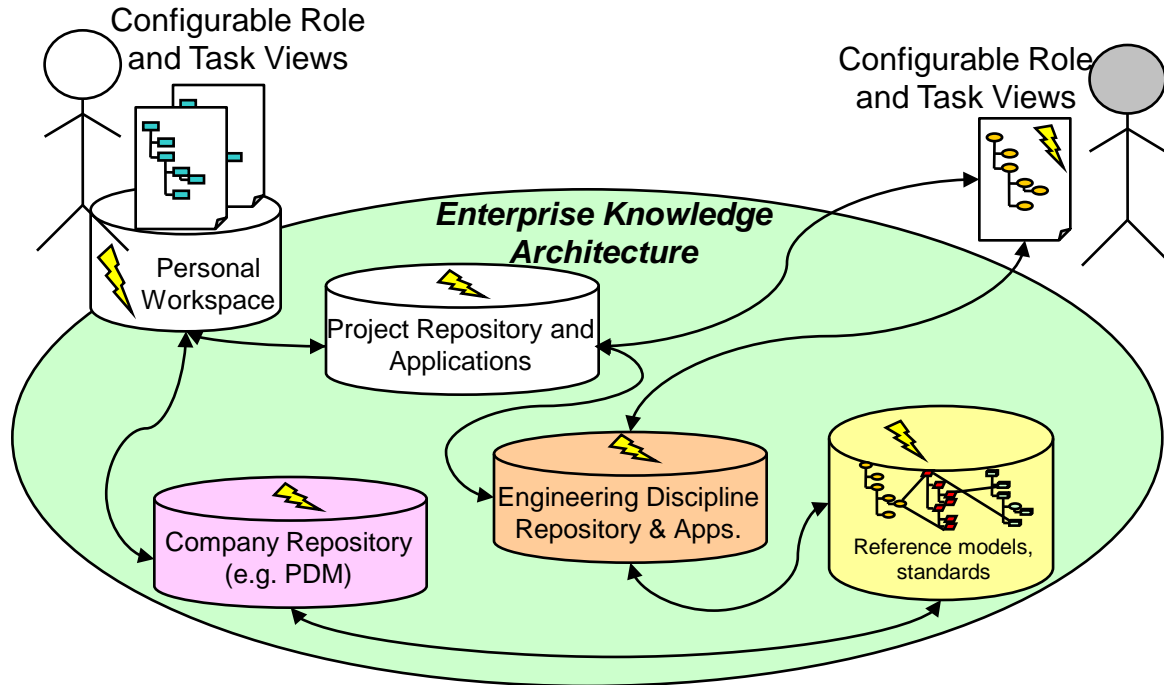
- Local applications
- Mapping through global taxonomy/thesaurus
- Ontologies
 - Formal global model opens up for automated reasoning and rule based reconciliation

Shared Information Repository



- Integrating database with instance data and reference models
- Single global model, global execution
- Product data management (PDM)

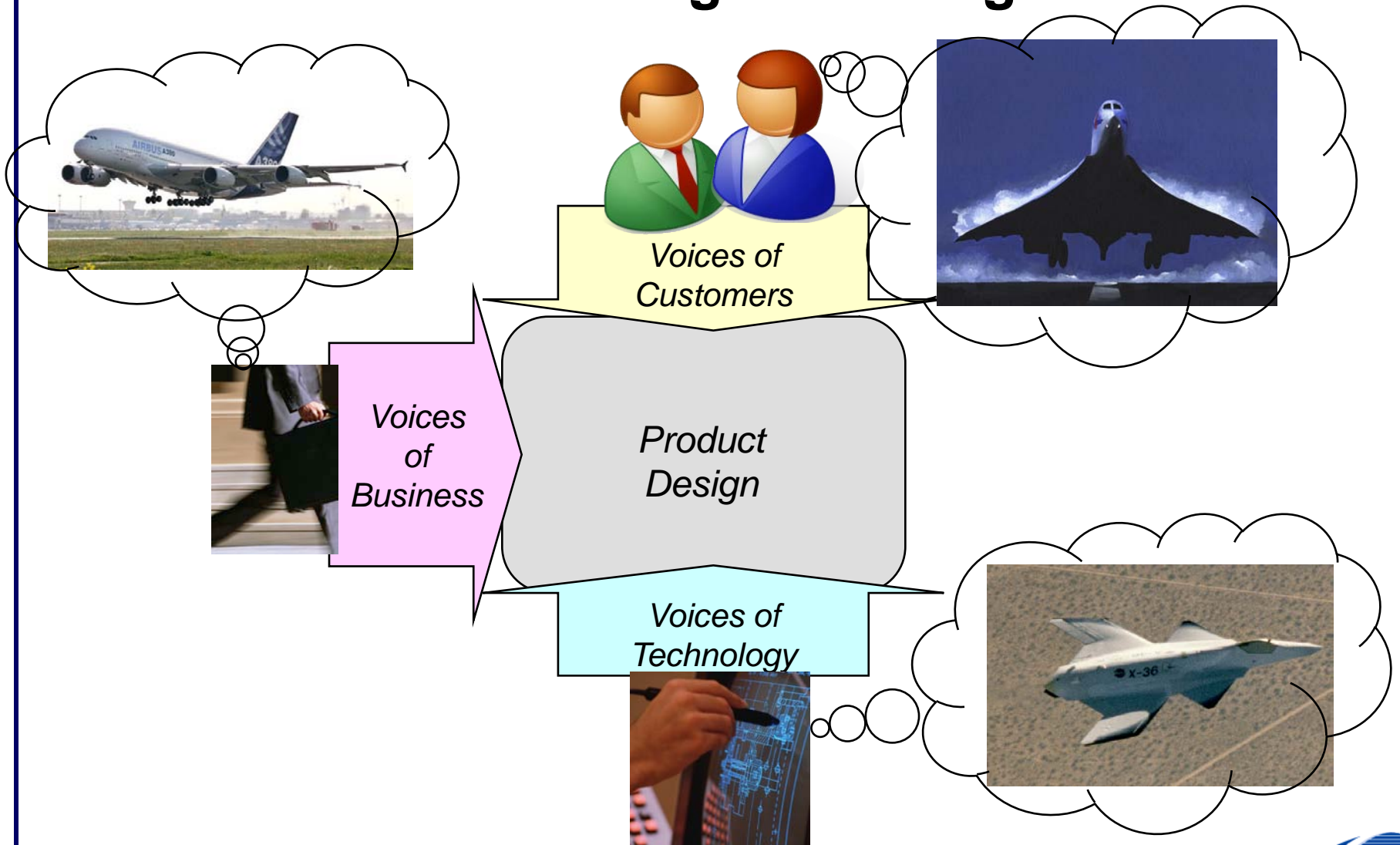
Federated Knowledge Repository



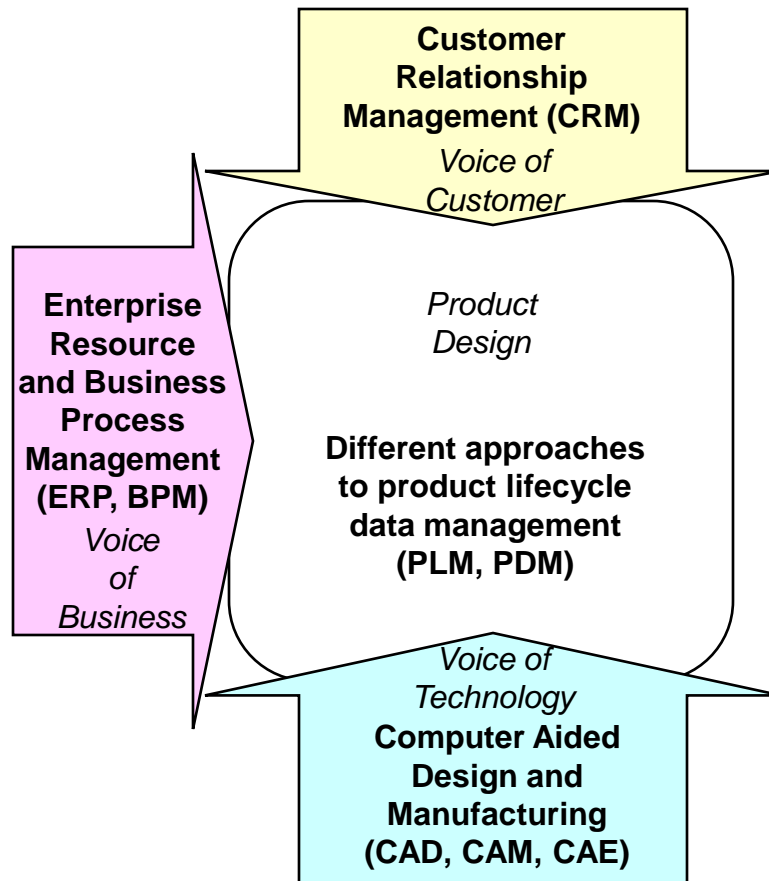
- Federated knowledge architecture with multiple local repositories
- Web of local views, local metamodels, local execution, local ownership
- Active knowledge models



Product Design Challenges

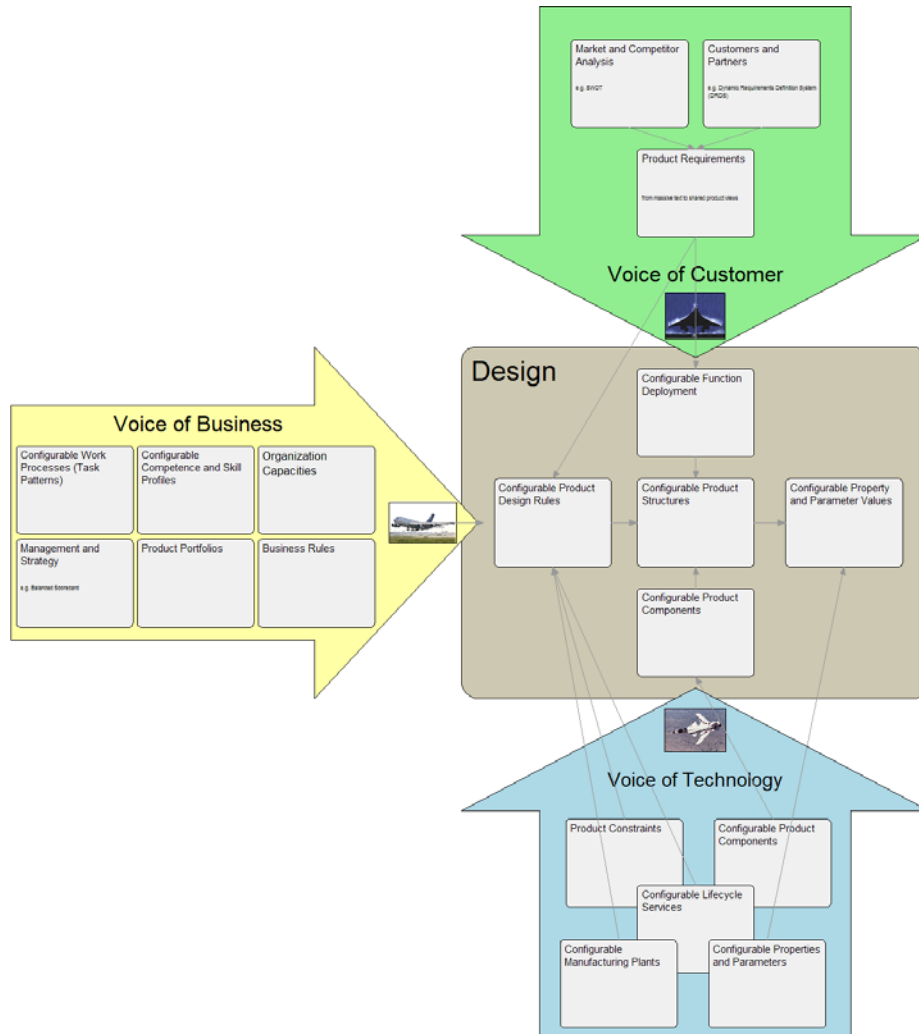


Product Design Support – State of the Art



- Single dominant perspective with insufficient interdisciplinary knowledge sharing
- Information exchange, not active knowledge support

CPPD Overview



[Model Demo]





CPPD Components

- **Configurable Product Structures**
 - √ Configurable Product Components
 - √ Configurable Function Deployment
 - √ Configurable Properties and Parameter sets
 - Configurable Design Languages
 - Configurable Idea Banks
- **Configurable Collaboration Spaces**
 - √ Configurable Work Processes
 - Configurable Skill Profiles
 - √ Configurable Web service Integration
 - √ Configurable Visual Workplaces
 - Configurable Web Workplaces





Status - Collaboration Space Portal

- Repository extended with EKA concepts
- Model-configured navigation menu
- Task execution
- Web service and portal content integration
- Problems
 - Useability
 - Performance
 - Access control
 - Missing functionality
 - Model-configured workplaces requires new portal technology





Status – Modeling Client

- Stable environment
 - Metamodels being developed
- Product modeling template
 - Configurable components and structures
 - Property modeling extensions
 - Multiple views (e.g. different hierarchies)
- Configurable visual workplaces
- Component configuration (rule execution)
- Missing
 - Repository integration

