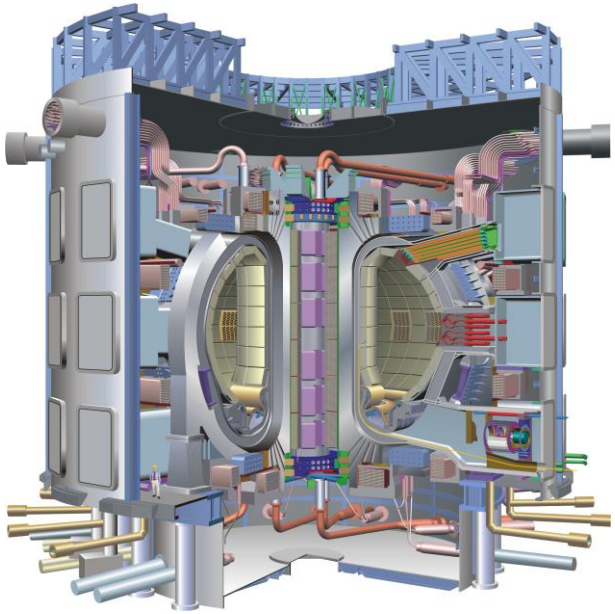


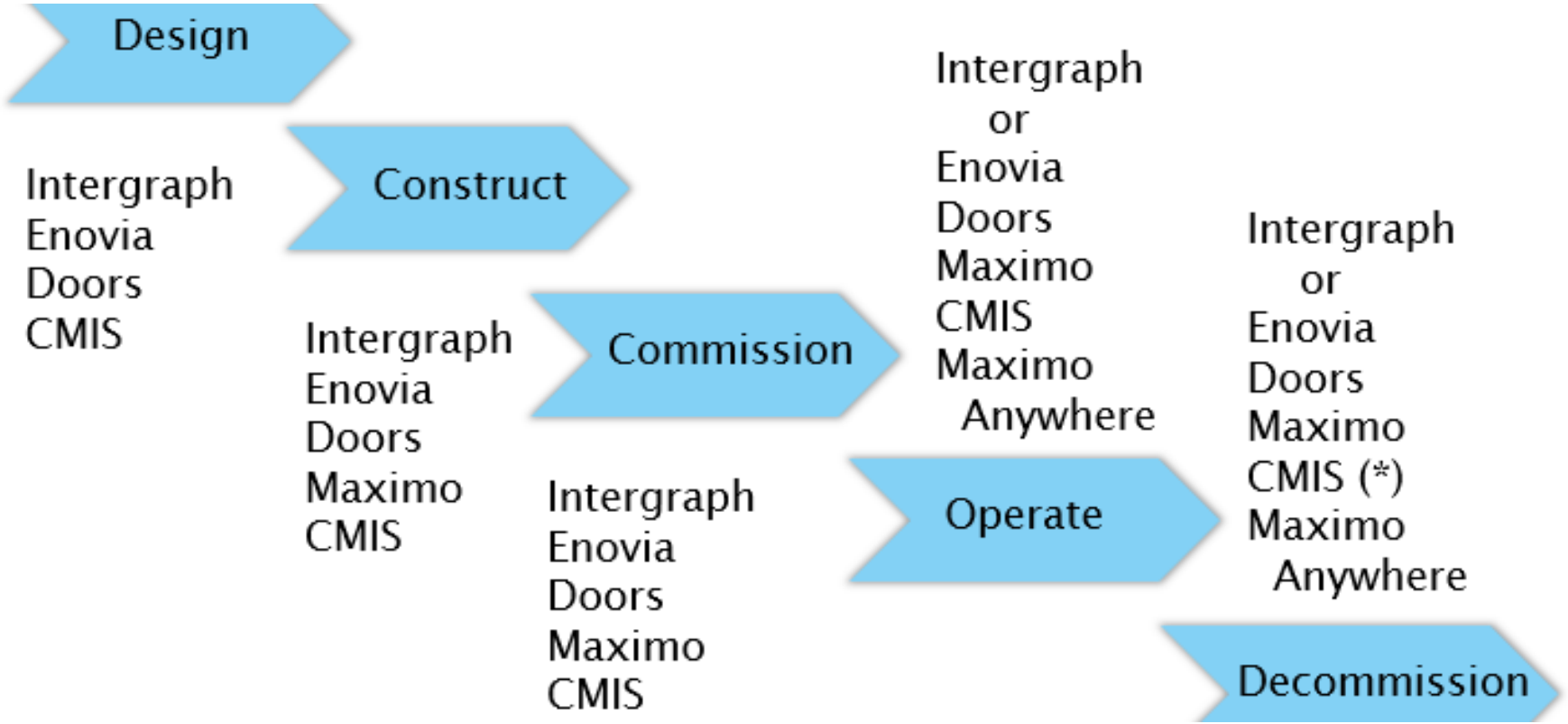
ATOMEXPO 2016
Round Table ASE May 30th

IBM Watson Internet of Things
Digital Transformation and Innovation

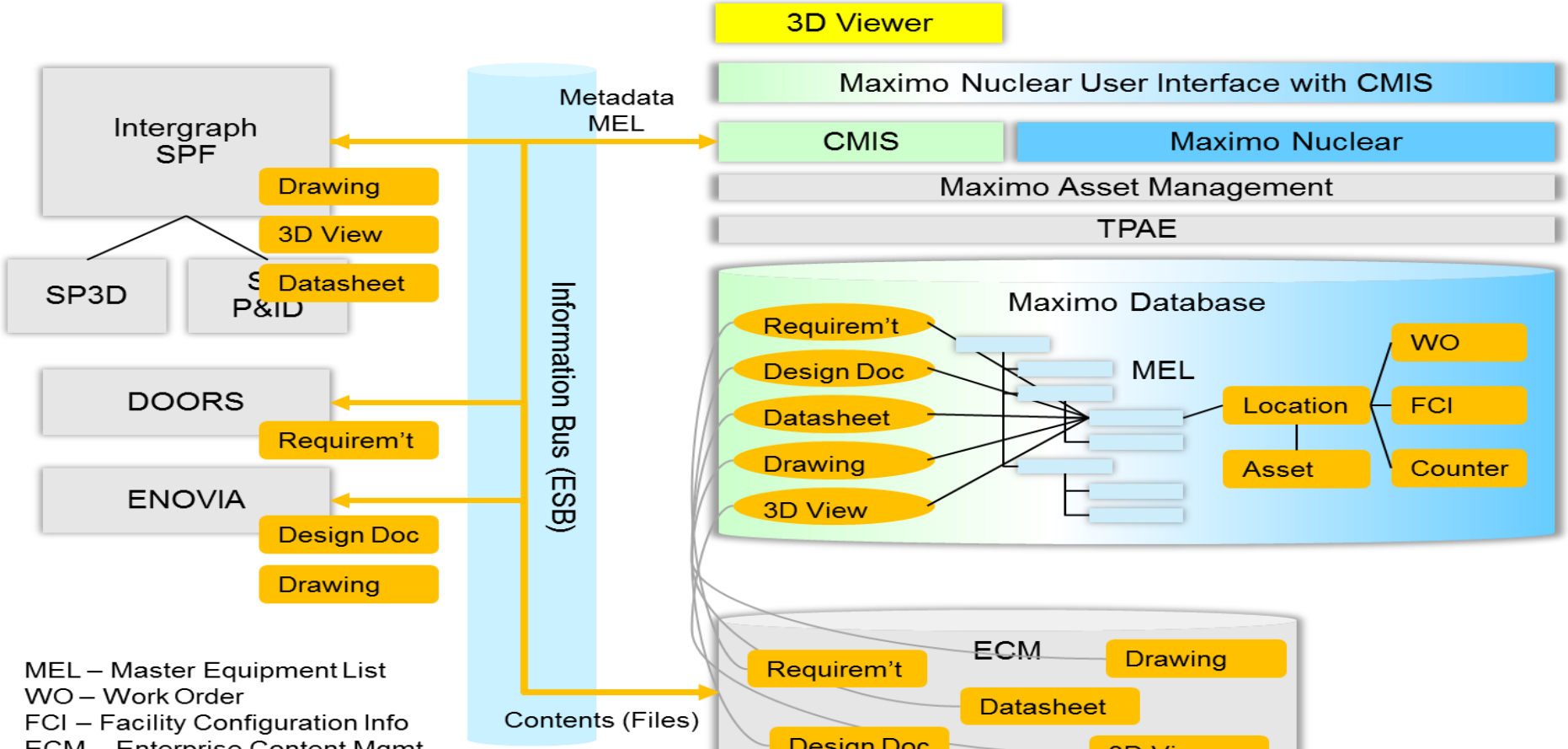
Richard Crisp

richard.crisp1@uk.ibm.com

ASE for Nuclear Power Lifecycle Management

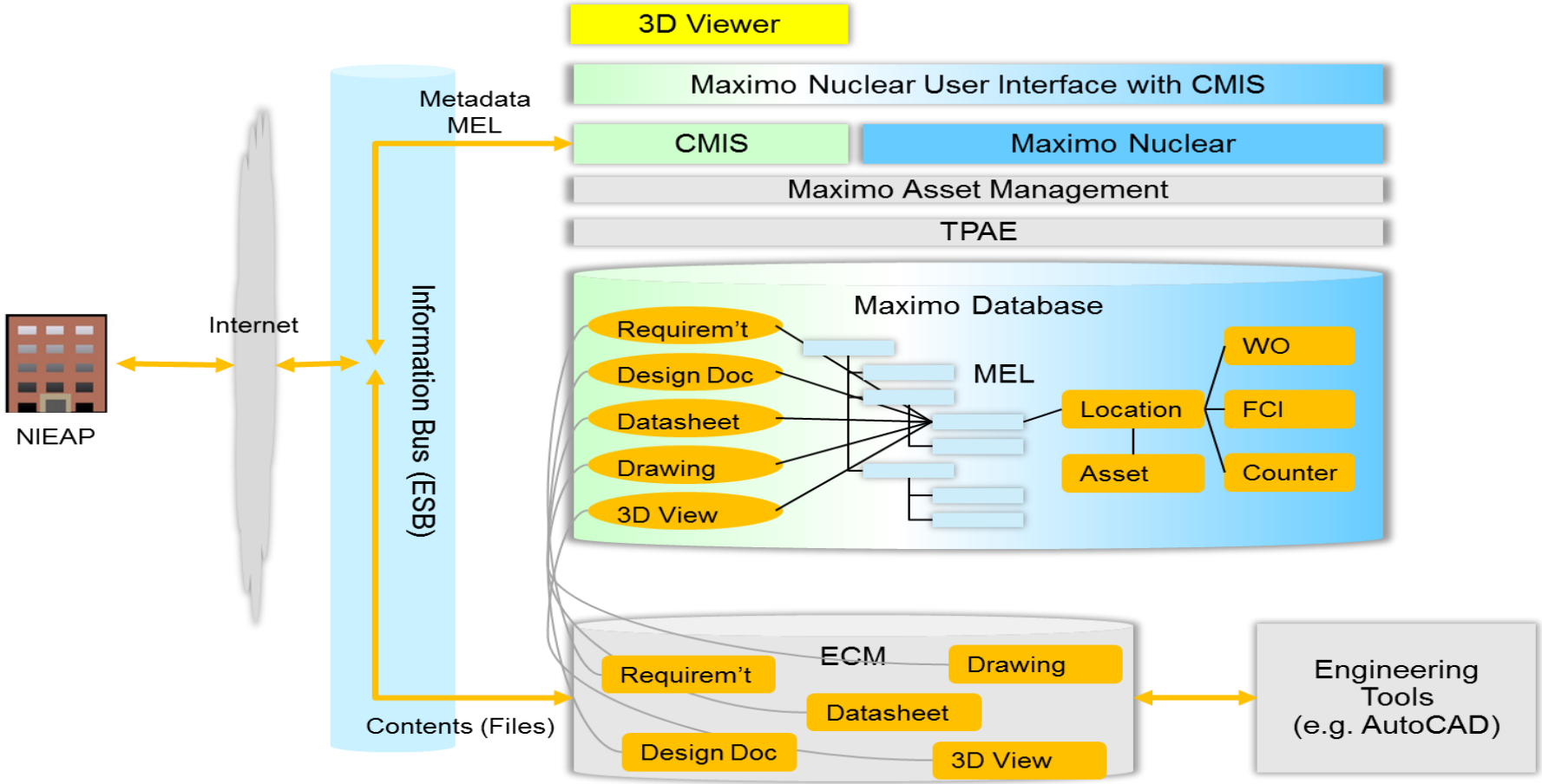


Maximo and PLM Integration Architecture – EPC Phase



MEL – Master Equipment List
WO – Work Order
FCI – Facility Configuration Info
ECM – Enterprise Content Mgmt

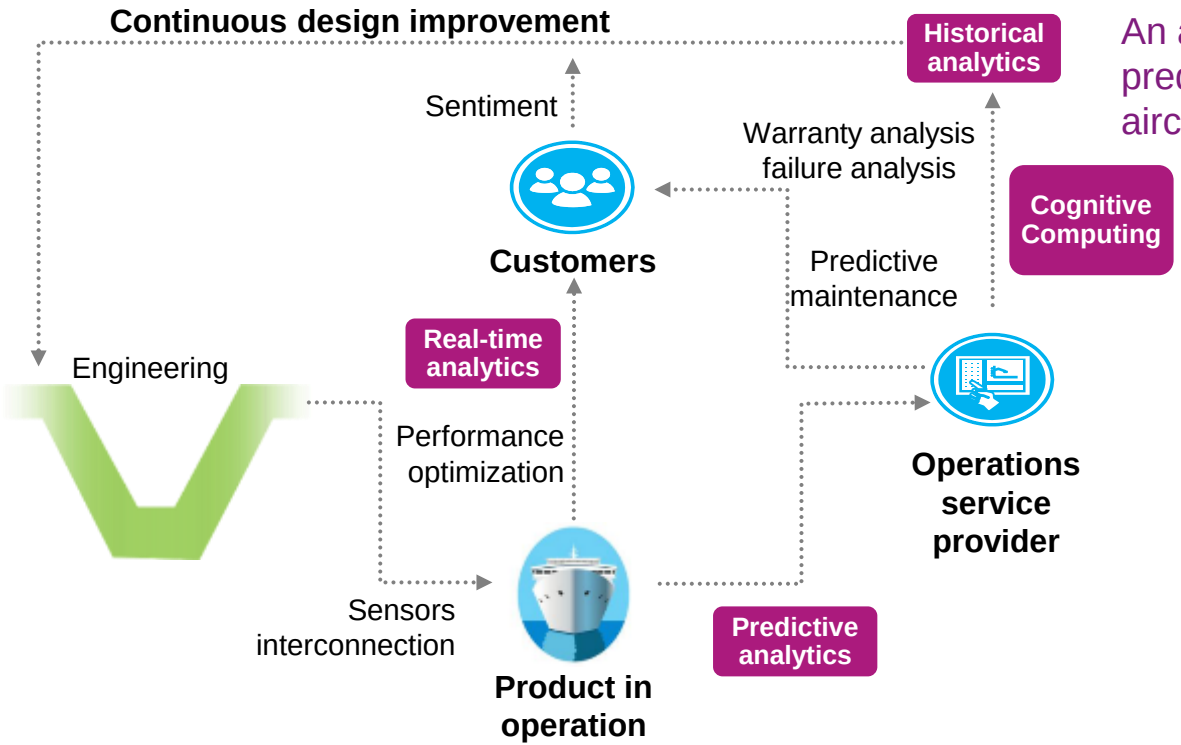
Maximo and PLM Integration Architecture – O&M Phase



Digital Transformation and Innovation

Watson IoT Continuous Engineering

Not only providing world class capabilities to improve engineering
but changing the way engineering is done !



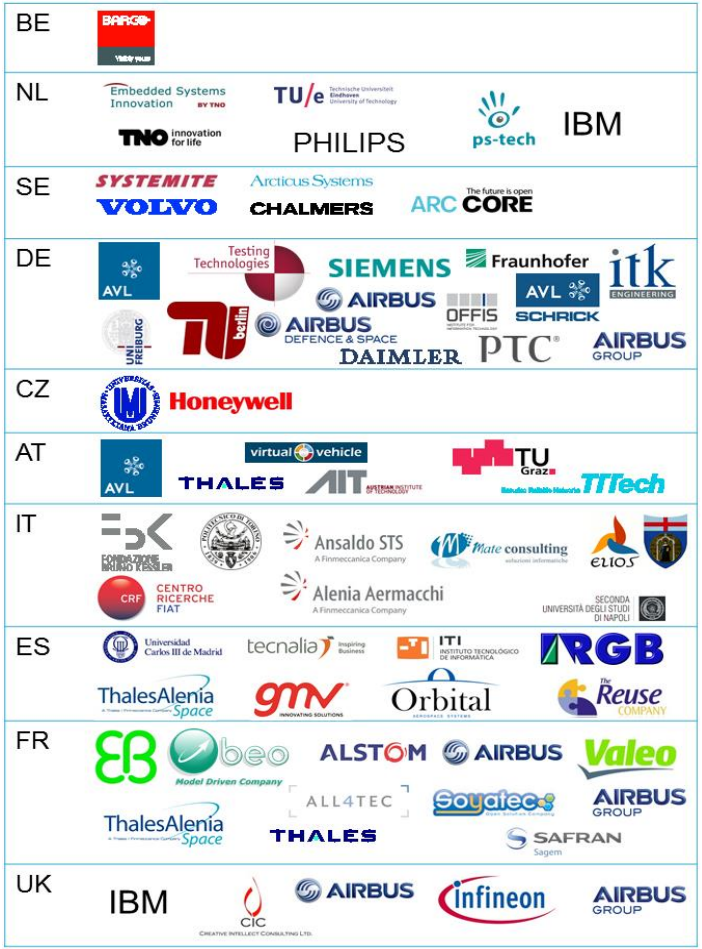
An aircraft engine manufacturer uses predictive analytics to prevent costly aircraft-on-ground engine events

100% prediction
of aircraft-on-the-ground events for high-risk engines

97% accuracy
in predicting engine events that lead to airline disruption

USD63 million
in extrapolated cost savings to airlines if prediction had been available in the previous year

The European Union CRYSTAL Project



- **70 partners** from **10 countries**
- **€82M** budget
- **European key players** from different industrial domains
- Large companies developing embedded systems act as **technology users** and case providers
- Large tool providers, SMEs and researchers as **technology providers**

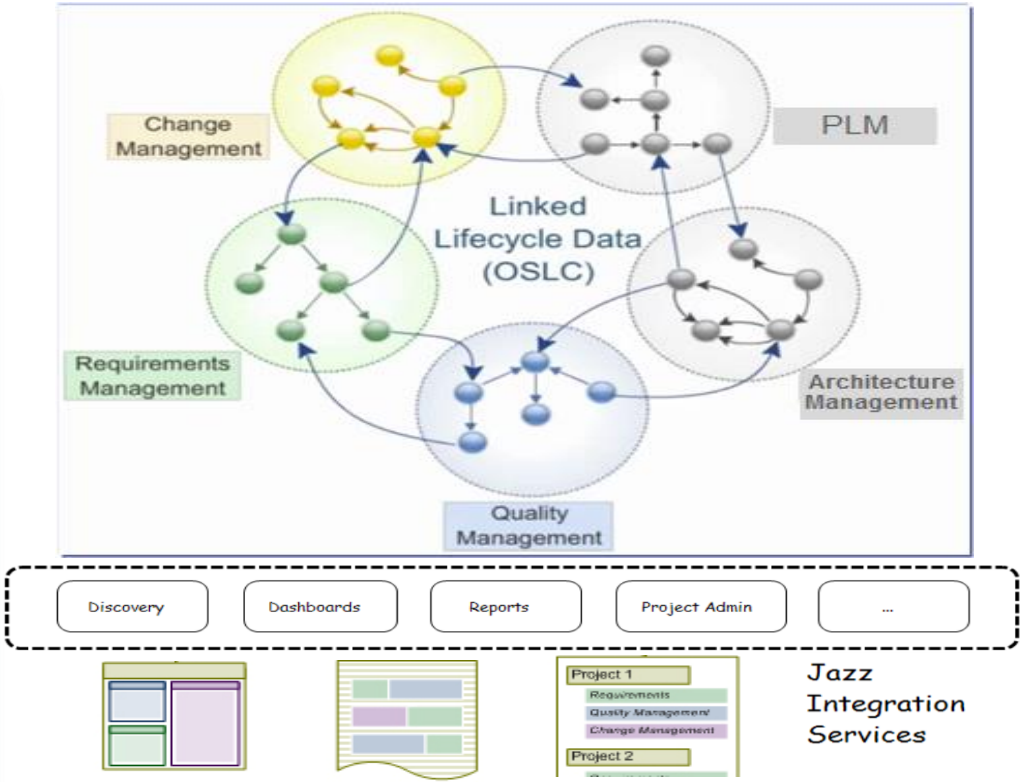
- *Interoperability and traceability across the lifecycle are critical to show success*
- *Reference Technology Platform*

OSLC and Jazz

An open architecture for lifecycle tool integration

Open Services for Lifecycle Collaboration
Lifecycle integration inspired by the web

- Open community – @ open-services.net
- Driven by OASIS open-standards consortium
- Open specifications for numerous disciplines
  - Including ALM, PLM, and DevOps
- Defined by scenarios
  - Solution oriented
- Inspired by the web
- Open world assumption – vs. rigid APIs approach
  - Web W3C Linked-Data approach
  - Internet architecture
  - HTTP based RESTful protocols
- Decouple data from container
  - Unlock data from silo tools
- "Just enough" integration
  - Consume/Provide the necessary services
- IBM and major A&D companies are part of the 22 founding members



Manage the Engineering Complexity of Systems of Systems

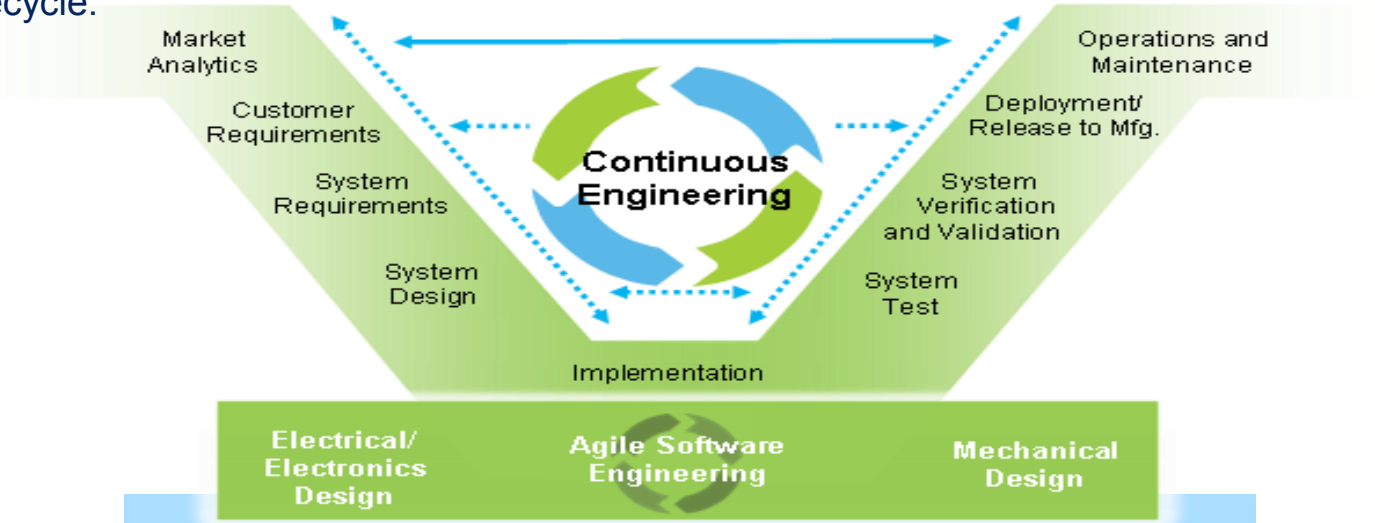
A structured and auditable approach to identifying requirements, managing interfaces and controlling risks throughout the project lifecycle."

Solution:

Systems Engineering

IoT Challenge:

I'm combining new complex technologies with cloud infrastructure in ways never seen in my industry. How can you help me reduce my technical risk and still ensure I deliver a great customer experience?

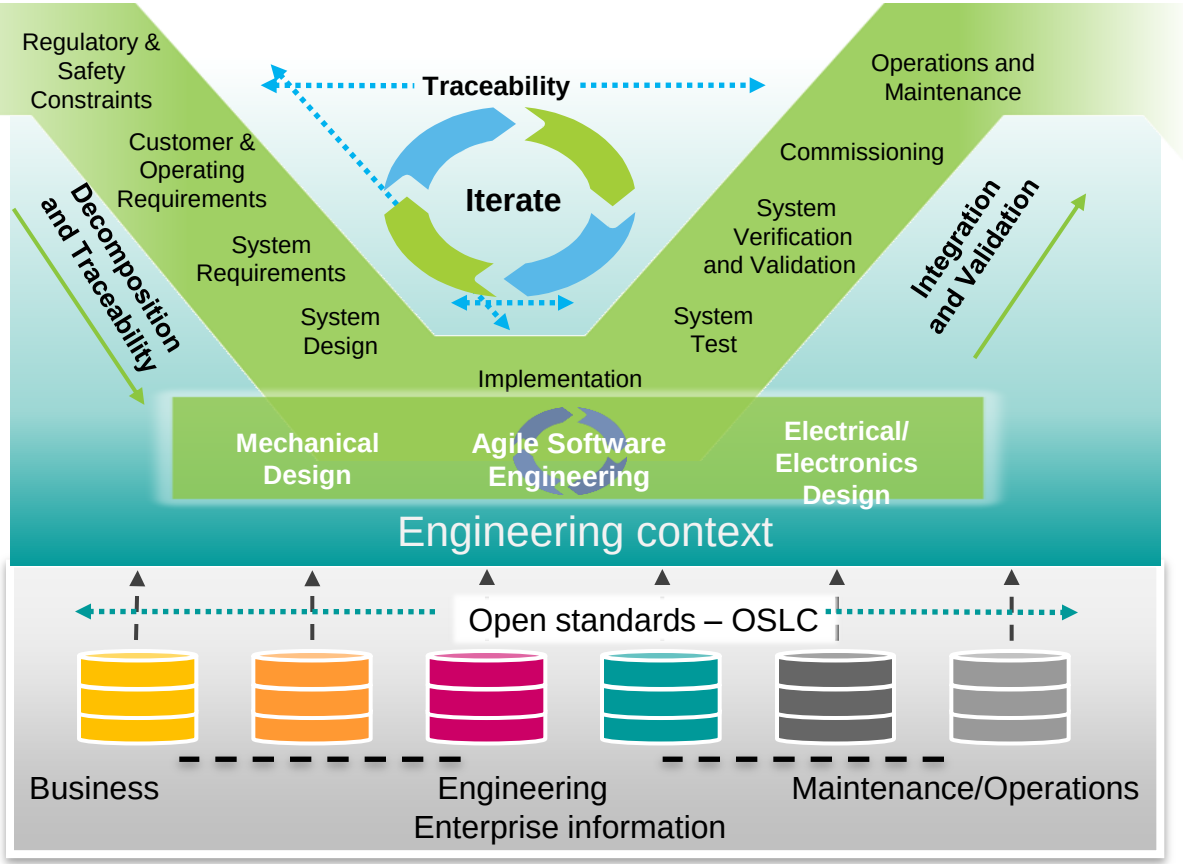


- Engineer for continuous reuse in complex product lines or exploit simpler reuse patterns in line with your economic fundamentals
- Access, unlock and understand all engineering information no matter where it resides
- Verify throughout the IoT design lifecycle to reduce rework and achieve faster time to quality
- Rigourous design justification and traceability

"Big Picture thinking, and the application of Common Sense to projects." INCOSE

IBM's Systems Engineering Solution

- Improve **systems engineering** to **tackle growing product complexity**
- Improve **systems development** to **deliver innovation faster across all engineering disciplines**
- Improve **collaboration** with supply chain to **manage requirements and track changes**
- With an **open, integrated systems** approach that **enables access to all engineering and related information**



Continuous engineering is about game-changing capabilities

Continuous engineering is an enterprise capability that helps to ***speed*** delivery of increasingly complex and ***connected products*** by helping engineers ***accelerate learning*** throughout the lifecycle, while managing ***cost***, ***quality*** and ***risk***.

- **Unlocking Engineering Knowledge**
  "Turn Insight into Outcomes"
  Access, unlock and understand all engineering information, regardless of source – to enable the right decisions at the right times

- **Continuous Verification**
  "Measure twice, cut once"
  Verify requirements and design at all stages of the product lifecycle – to prevent rework and achieve faster time to quality

- **Strategic Reuse**
  "Don't reinvent the wheel"
  Strategic reuse across the engineering lifecycle – to increase design efficiencies, engineer product lines, and tame complexity