Rational Systems and Software Engineering **Symposium**

IBM

Introduction to Rational Engineering Lifecycle Manager

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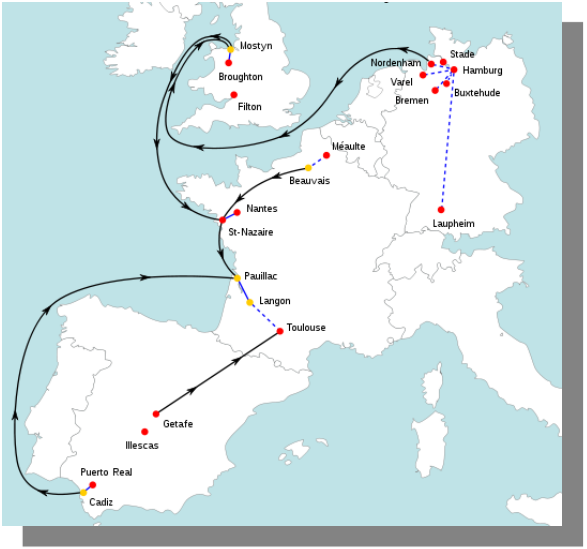
Airbus Group at a Glance

Airbus | Airbus Defence and Space | Airbus Helicopters

Airbus Key Challenges for Engineering Lifecycle Management – A380 Example

- Complex Products
- Safety-critical Systems (Certification)



- Geographically distributed engineering teams
- Complex IT infrastructure
- Extended Enterprise

The vision, challenges and how to reach the goals

- **The Vision (one of many…)**
  - Improve collaborative aspects within the life cycle
  - Increase productivity of work and quality of products by reducing costs in terms of time during the engineering and management of products
- **Challenges to reach our goal:**
  - Traceability, Visibility, Control in the product engineering lifecycle

- **How to:**

- Integration of Software and Systems Engineering with Product Lifecycle Management tools
- Integration of process and change management into the systems engineering lifecycle

Smarter products → rising complexity


Project Plans


Requirements


Documents


Electrical & Electronic


Parts


Tests

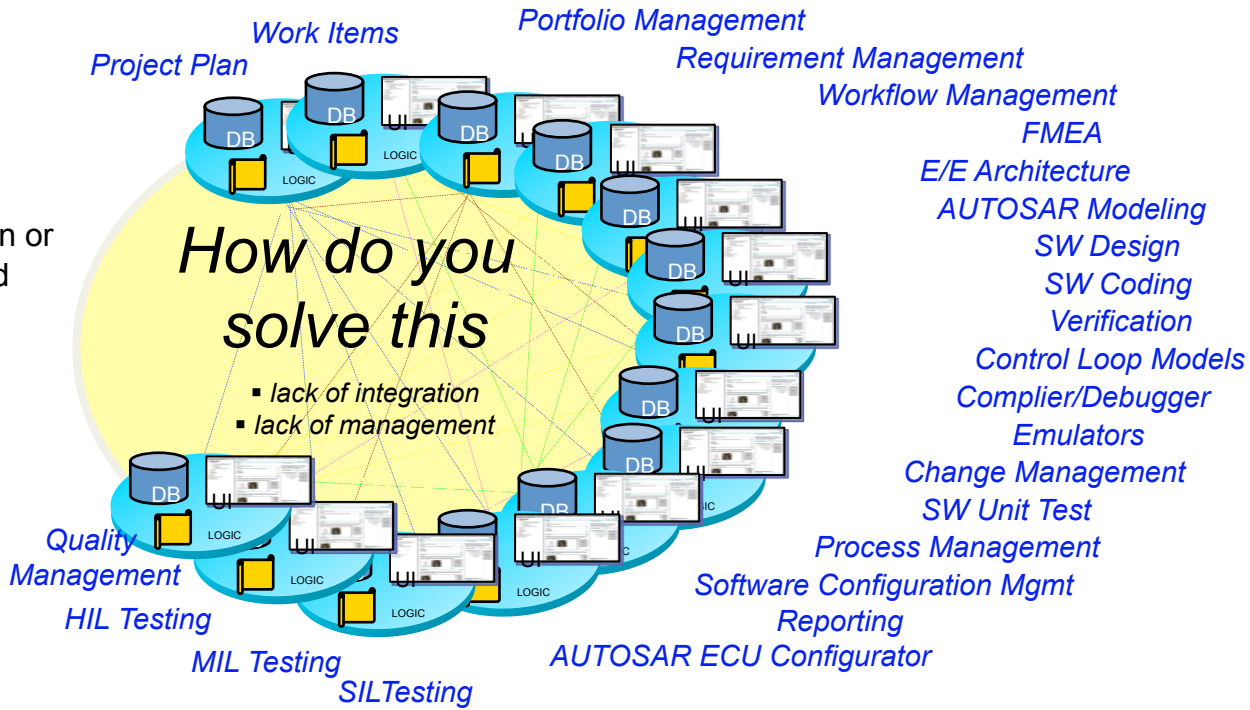

Models


Source Code

Eng. Environments are highly fragmented

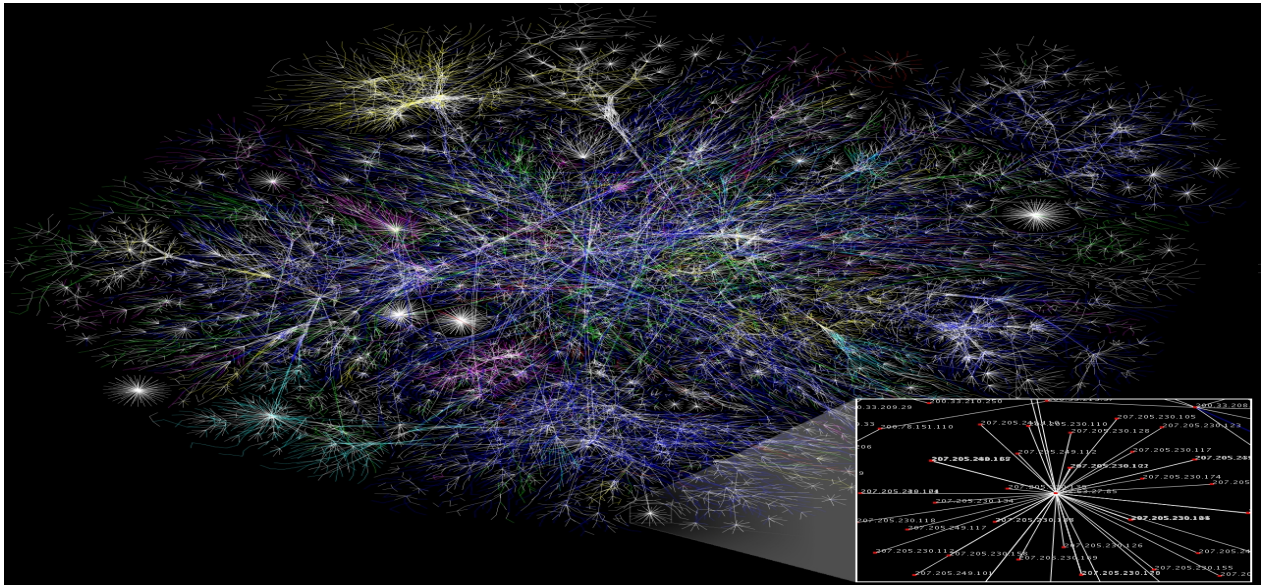
The challenge to connect them is increasing exponentially

- **Traditionally, each tool came with its own**
  - **UI** - Web and desktop presentations of views and tasks
  - **Logic –** Workflow, process, search, query, scale, security and collaboration
  - **Storage** – individual files on workstation or servers: how to ensure availability and traceability?
- **Resulting in...**
  - Brittle/poor integrations
  - Silos everywhere
  - High cost to maintain and administer
  - Low re-use



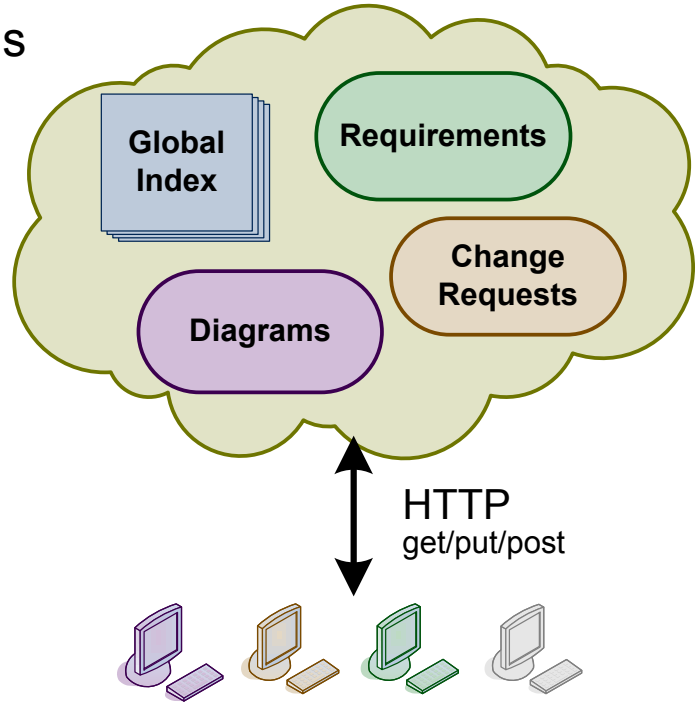
The Internet

- A model for a
  ‘’*huge source of data with navigable links*’ ….already exists



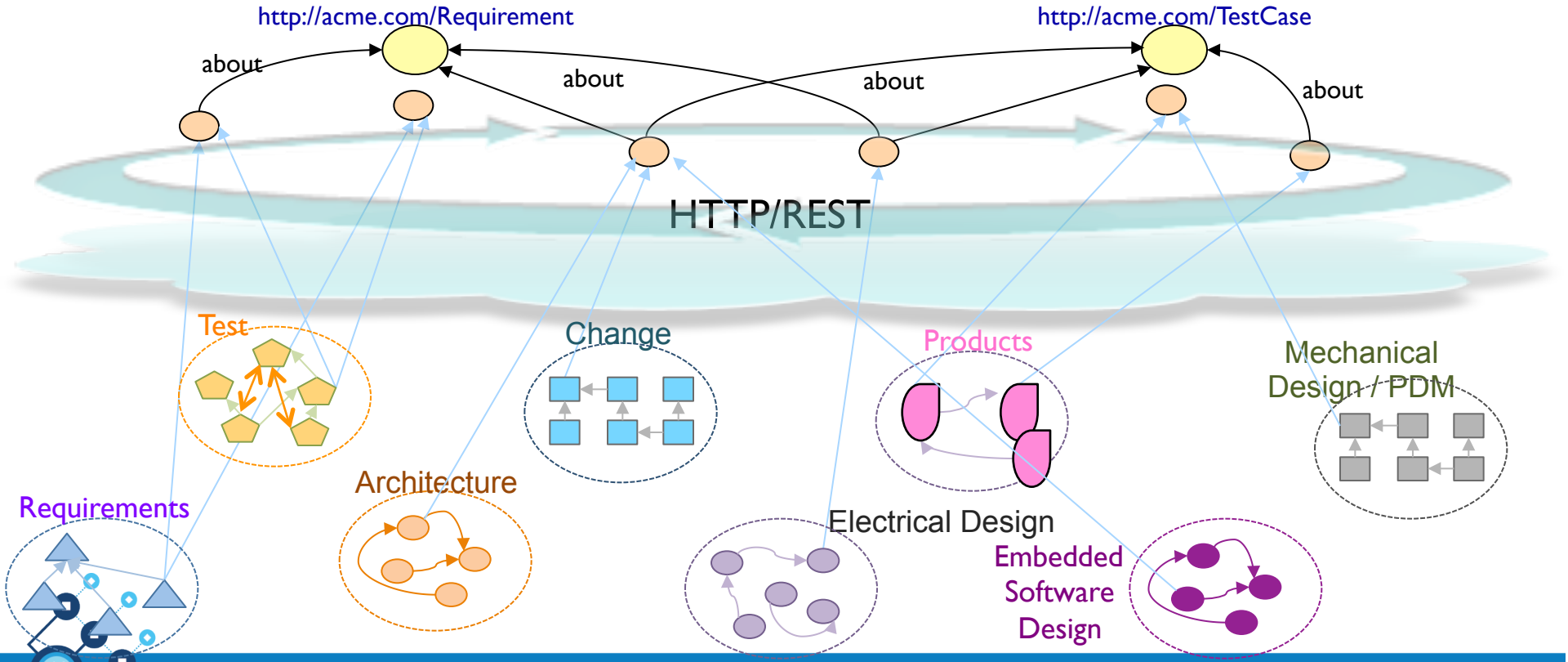
What does Internet inspiration mean?

- Data specified independently of tools
- All data are resources with URLs
- Multiple tools access data
- References are embedded URLs
- Resources have representations
- Unprecedented extensibility



Leveraging the Linked Data concepts of Web Technology…

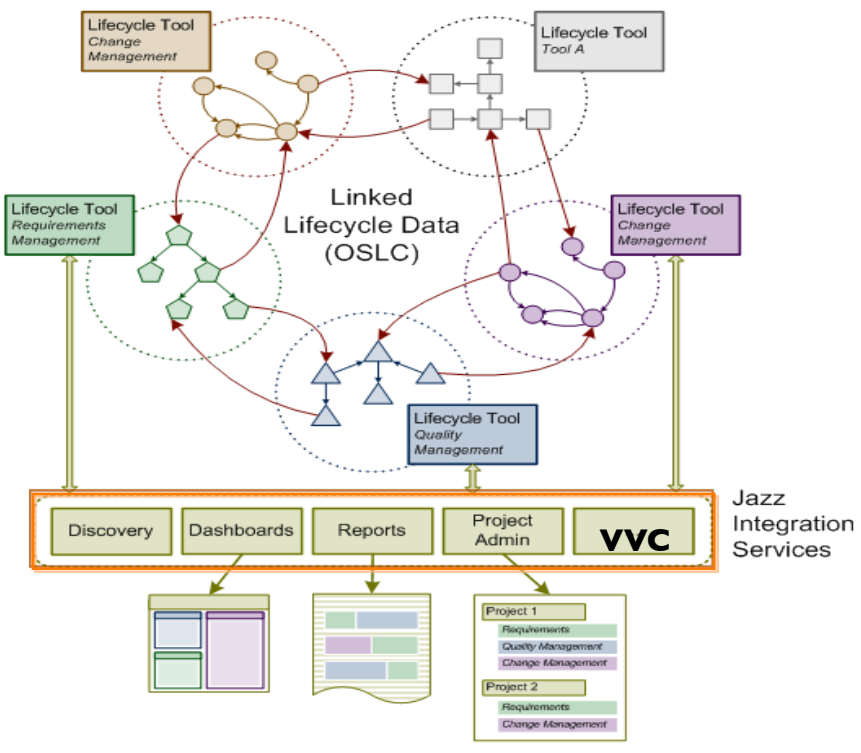
The Web has proven to be the most **scalable**, **open**, and **flexible** integration technology



The Foundation: Linked Lifecycle Data and OSLC

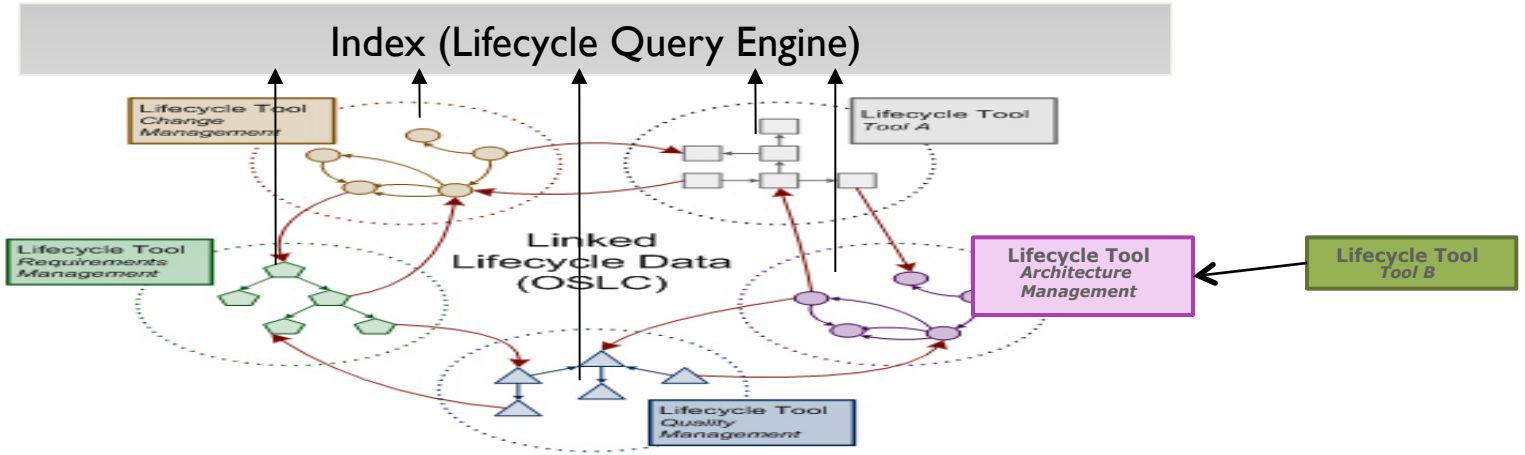
OSLC =
Open **S**ervices for
Lifecycle **C**ollaboration

- **Linked Lifecycle Data (OSLC)**
  - Supporting a range of integration patterns
  - Sharing lifecycle resources
- **Jazz Integration Services & Protocols (Jazz Platform)**
  - Defining services for common capabilities like administration, reporting, dashboards, etc.



Effective Lifecycle Analysis: Lifecycle Query Engine

An index of Linked Data is created from domain tools that allows for cross-domain ***Lifecycle Queries and Analysis***



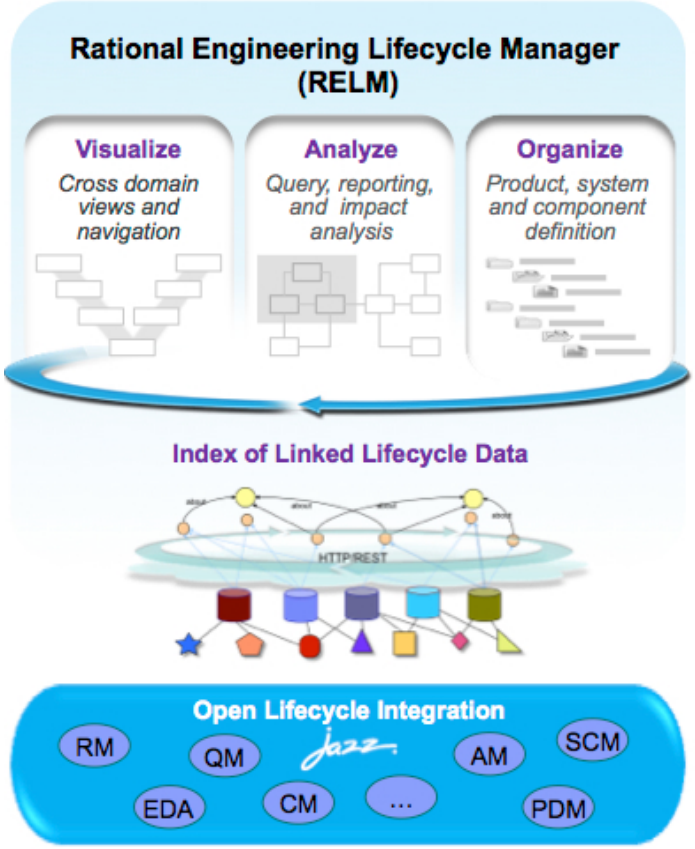
Introducing Rational Engineering Lifecycle Manager

Uses a Linked Data approach that enables a single source of truth with a federated architecture to provide

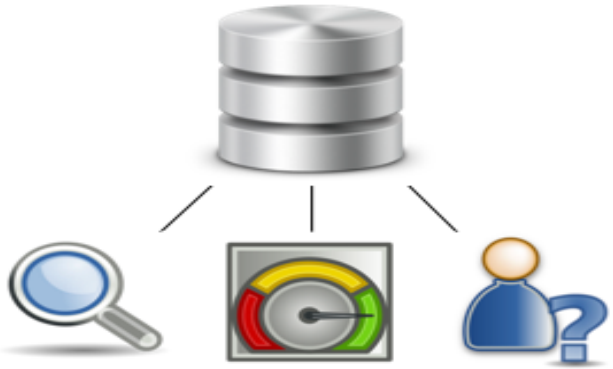
- ***Visibility*** – across many sources of data
- **Analysis** - answer questions using that contextualized information
- ***Organization*** – information in context

Allows stakeholders to:

- manage growing complexity
- derive knowledge from the available data
- make timely and correct engineering and business decisions

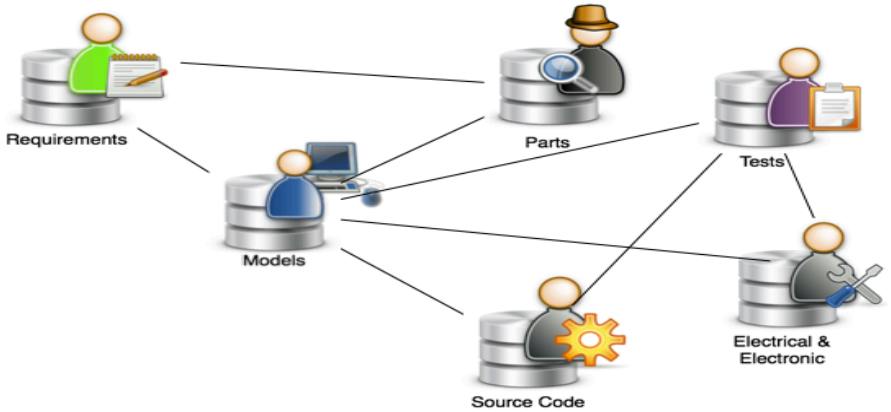


Rational Engineering Lifecycle Manager (RELM)



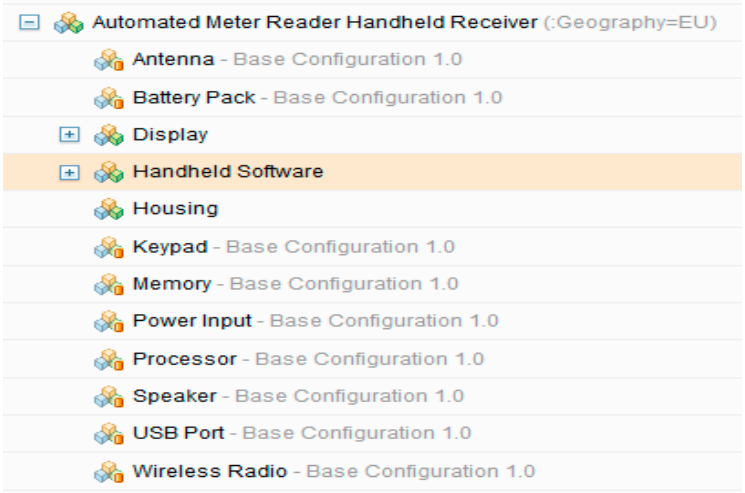
Visualization: Searching, Querying and Visualizing

Rational Engineering Lifecycle Manager (RELM)



Analysis: Managing Impact of Change

Rational Engineering Lifecycle Manager (RELM)

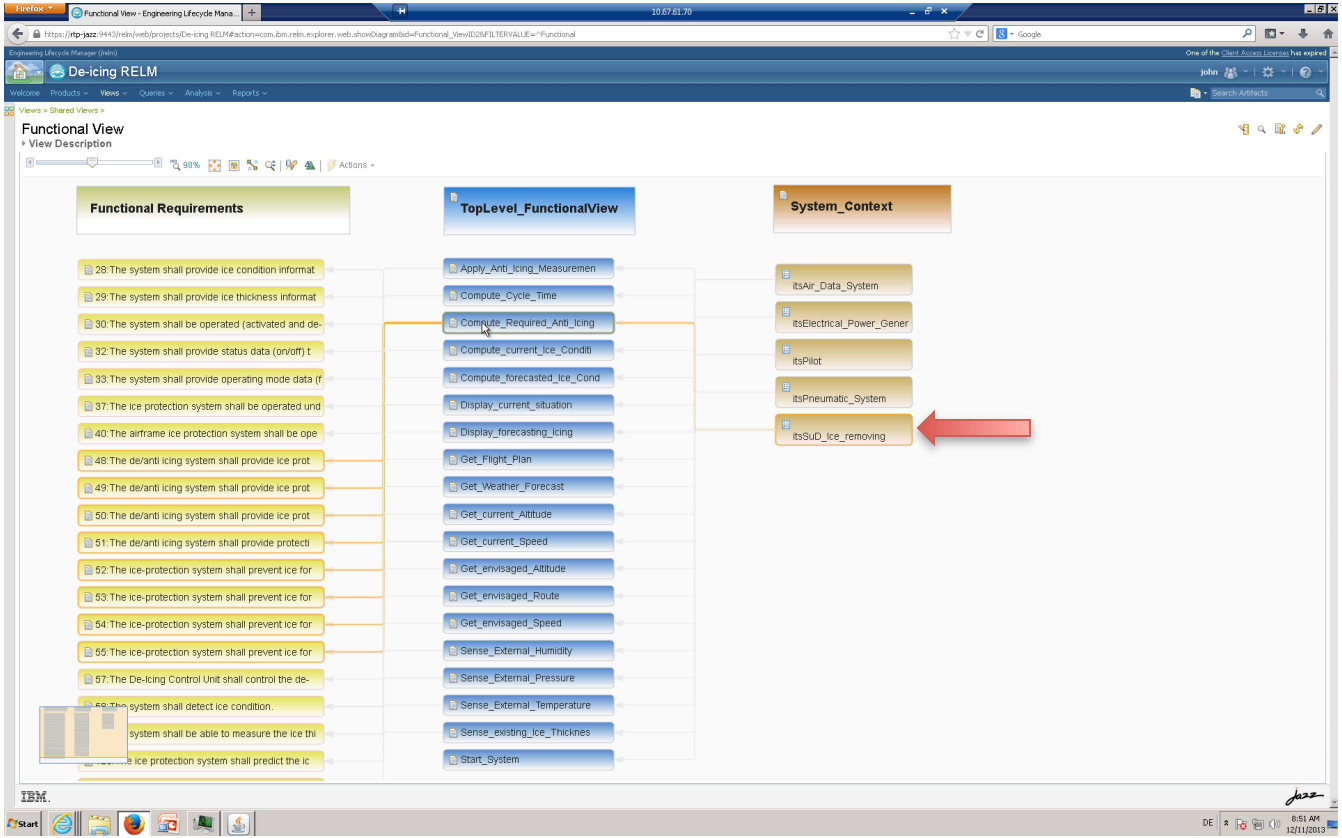


Organizing Data: Products, Systems, Sub-systems, Capabilities, Components etc

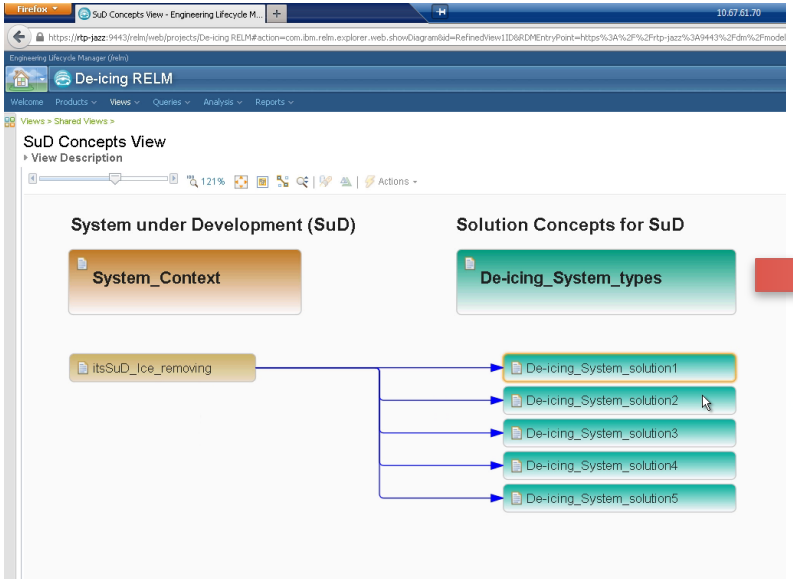
Demonstration

Airbus RELM Dashboard Prototype: Functional View

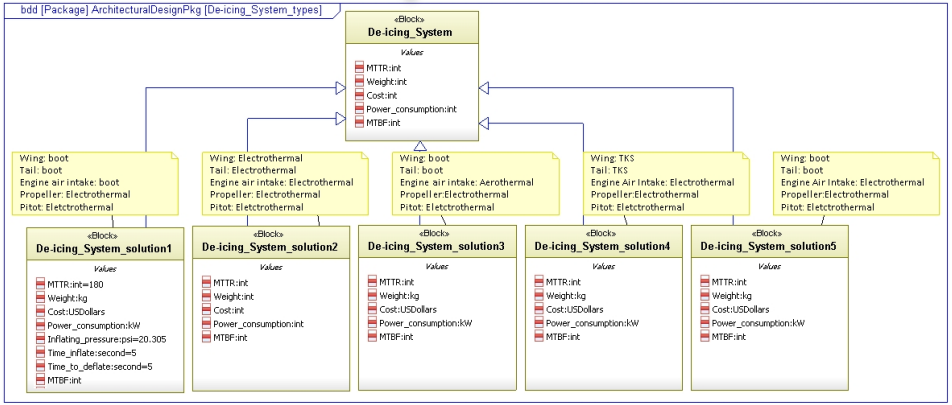
A prototype of a RELM dashboard has been created to visualize various information of an aircraft component in context to other available and related engineering information.



Airbus RELM Interoperability: IBM Tools and Data Integration

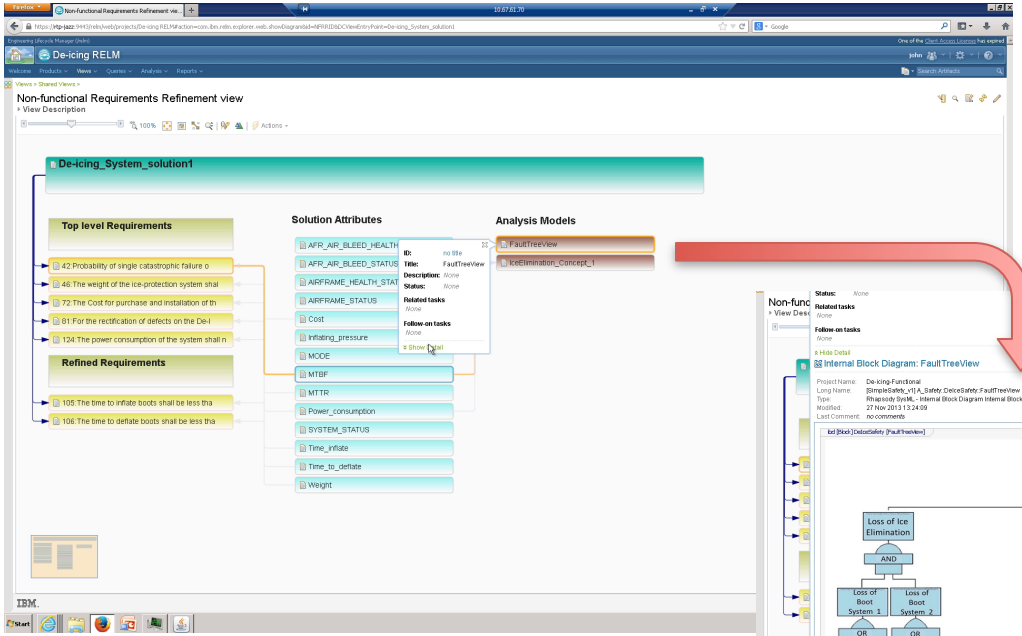


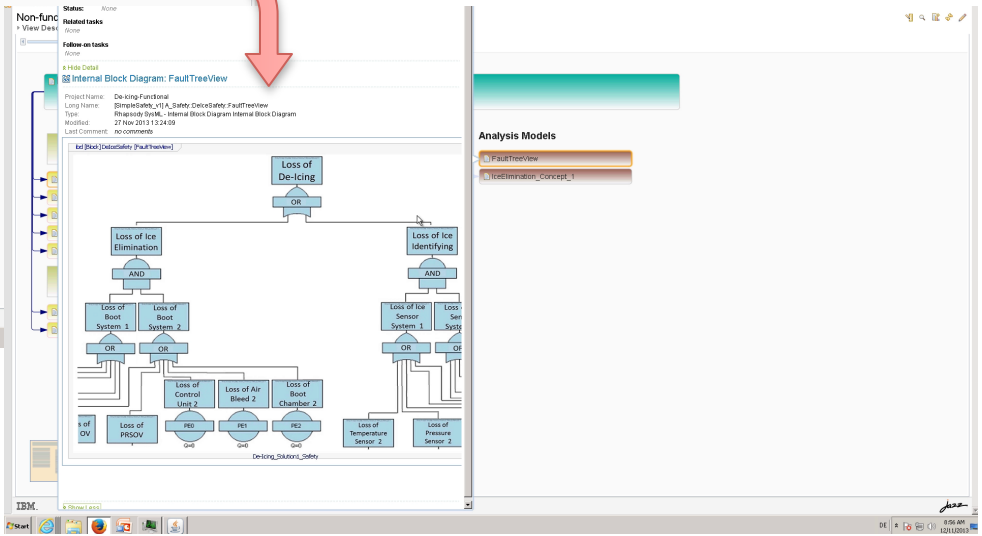
Information Integration:
Model coming from Rhapsody Design Manager using OSLC



Source of different Solutions:
The different solutions can be developed and evaluated in various other tools – depending on the type (e.g. Electric, Hydraulic, Mechanical,…)

Airbus RELM Interoperability: 3rd Party Tools and Data Integration





3rd Party Integration:
For example real-time information about safety analysis

Thank You.