

RELM – Rational Engineering Lifecycle Manager

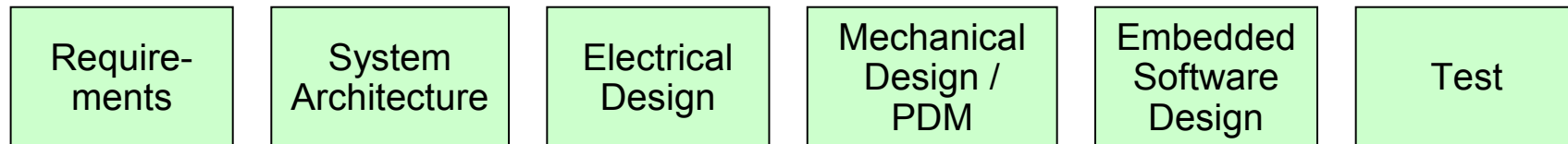
Visualize, Analyze, Organize the Linked Data

Charles-Henry JURD, Rational European Systems Tiger Team



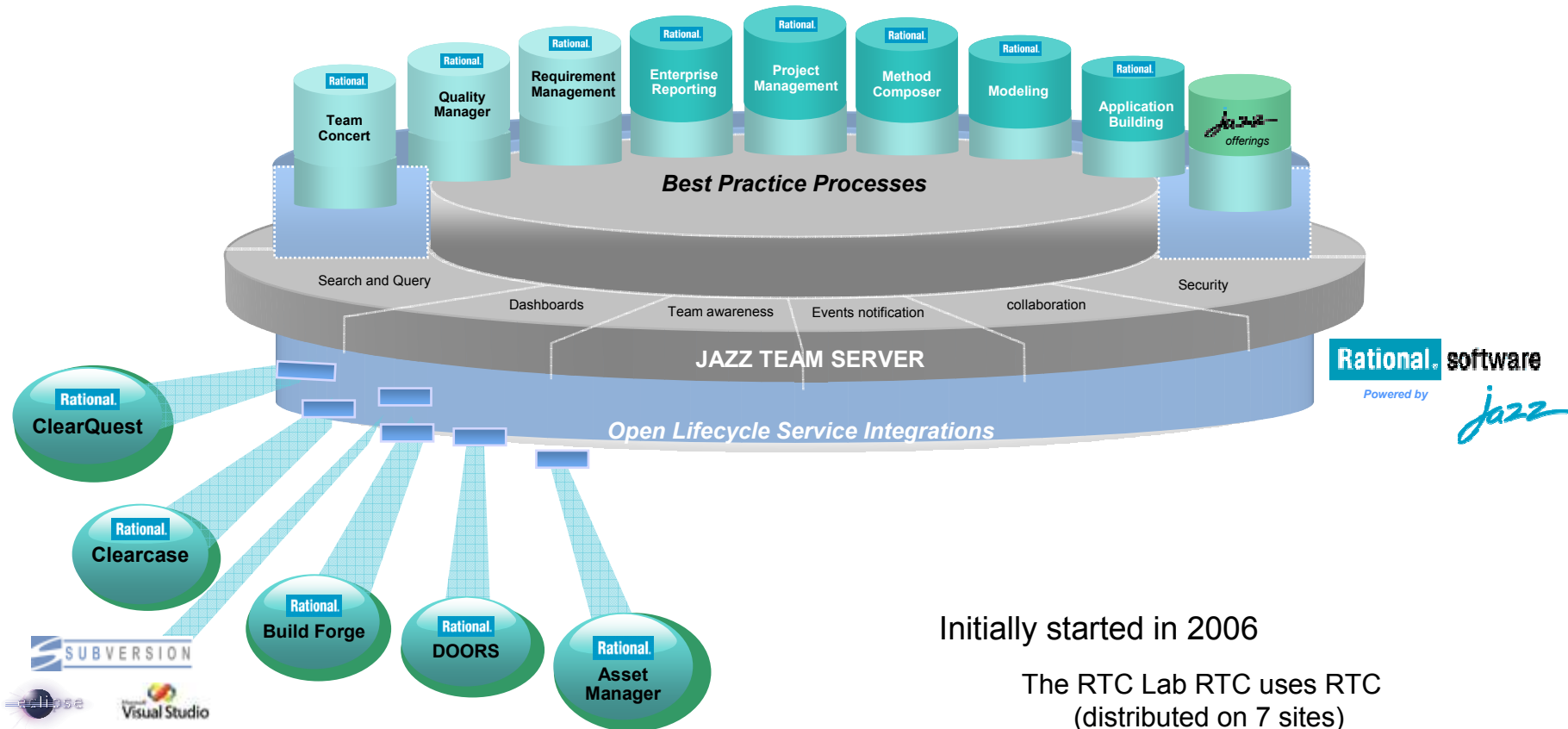
Common pains of today's complex systems engineering environments

- Ever increasing amounts of engineering data stored in geographically distributed silos
 - ▶ Difficult for engineers to find information quickly
 - Need to use multiple tools to find needed information
 - Easy to miss key information
 - Lots of surrounding 'irrelevant' information to work through
 - ▶ Lack of consistent structure and context to all the information
 - ▶ Difficult to understand relationships between the data
 - ▶ Increasing effort needed to manage overhead of increasing complexity
- Need a way to **Organize**, **Visualize**, and **Analyze** engineering lifecycle data regardless of where that data is stored and managed



Jazz - The IBM Rational Collaborative platform

The technical Jazz foundations



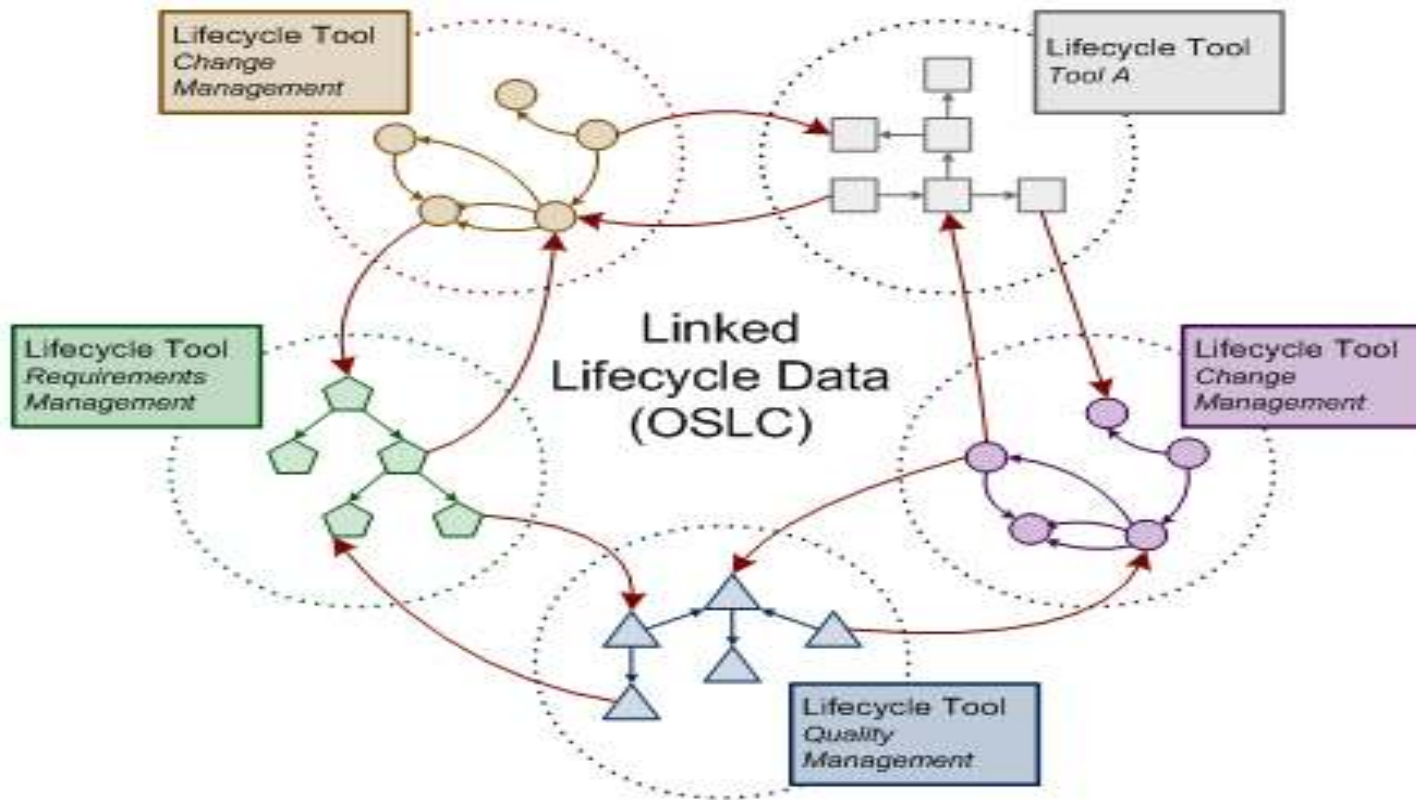
Initially started in 2006

The RTC Lab RTC uses RTC
(distributed on 7 sites)

Additional Dynamic Integrations based on Jazz 'Open Services for ALM'

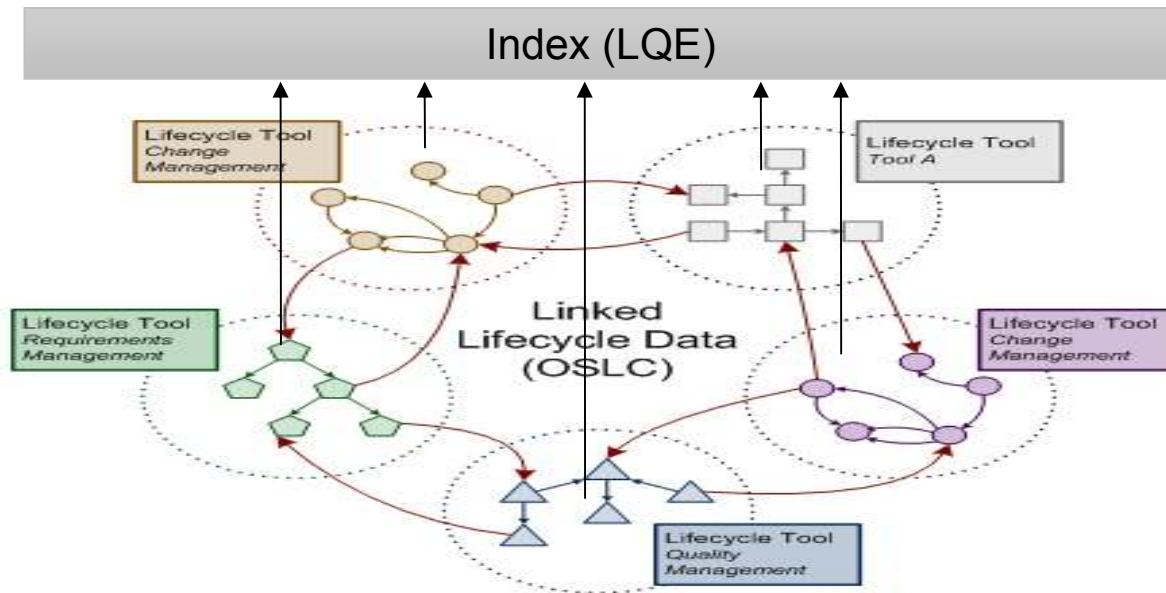
Linking Lifecycle Data via OSLC

- Resources from different domain tools are linked together using OSLC



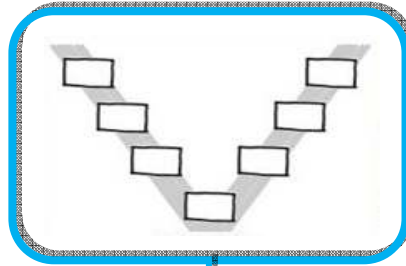
Index of Linked Lifecycle Data

- Index of Linked Data created using OSLC to fetch data from domain tools
 - OSLC Tracked Resource Set specification



Engineering Lifecycle Management

VISUALIZE Navigator / Explorer

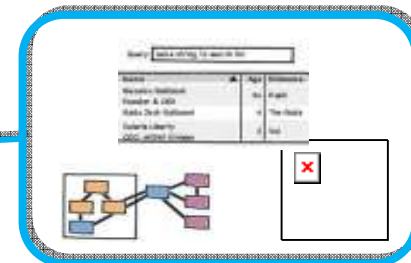


ORGANIZE

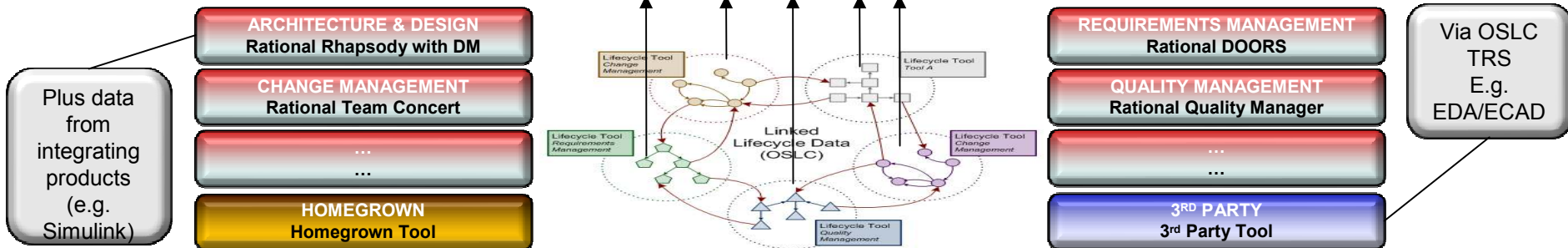
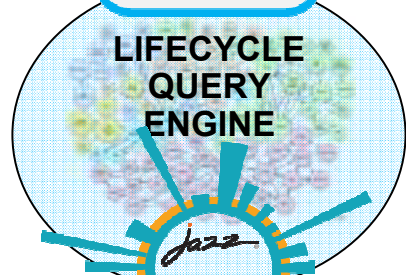


Product & System Definition

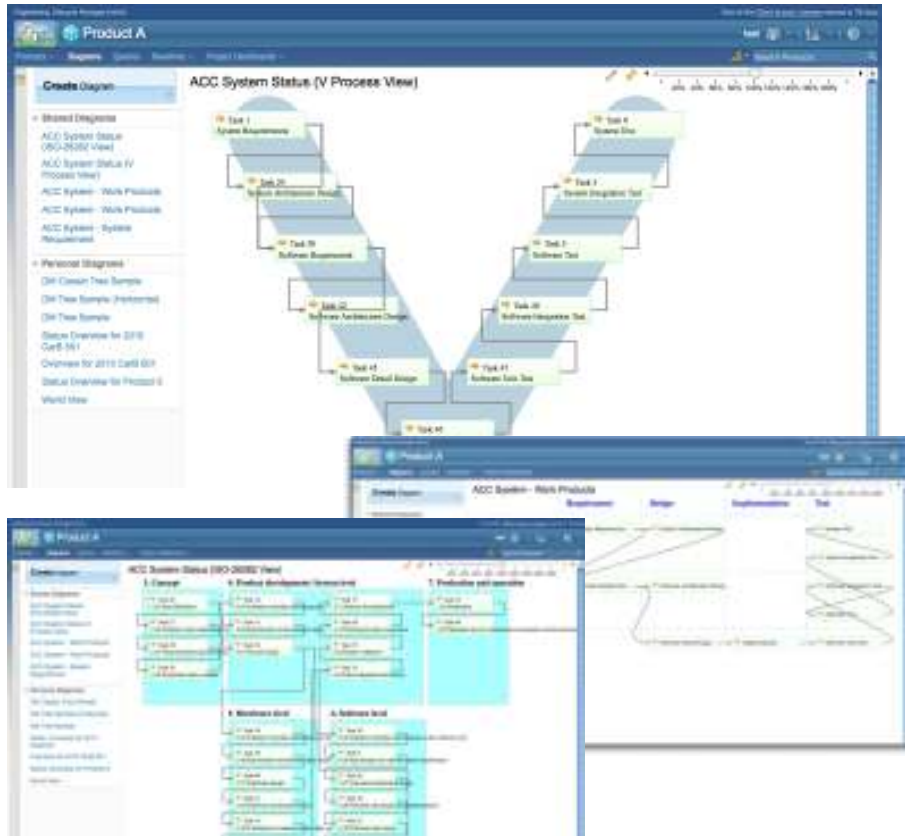
ANALYZE



Query, Reporting & Impact Analysis



Visualize: Navigator / Explorer

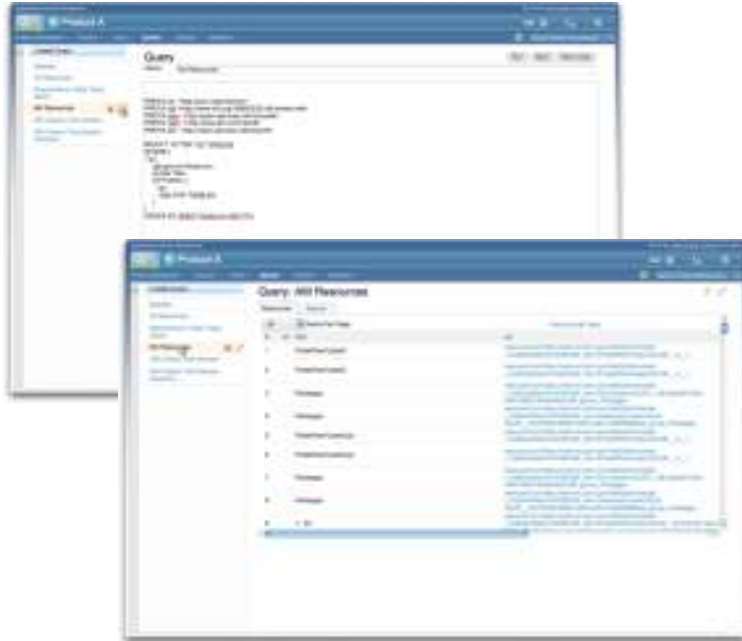


- **Structured and traceable views of engineering data across the development lifecycle**
 - Role and task relevant views
 - Product, system, sub-system, capability and component centric views
 - Process, standards and framework centric views with access to supporting guidance
- **Views are 'live' and dynamic**
- **Interactively explore and interrogate development lifecycle data and relationships**
- **Predefined views to support specific industries (e.g. ISO 26262)**
- **Ability to create new views or customize predefined views**
 - Table / Grid, Tree, Freeform
- **Save and share views**

Example User Story

“So that I can more easily achieve, maintain and monitor compliance to ISO26262, as a Safety Manager I need a view that shows me the different process tasks, their status and related tasks, and allows me to drill down to analyze linked lifecycle resources”

Analyze: Search / Query



- Perform plaintext searches across development lifecycle data
- Construct powerful queries to answer specific questions about development
- Save, share and re-use searches and queries

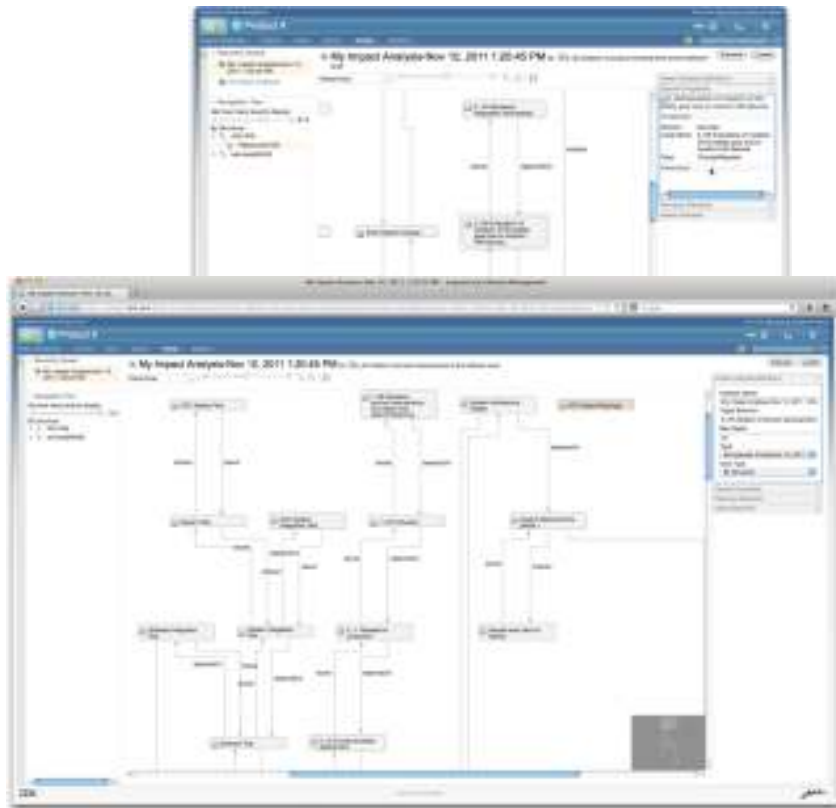
Example User Story

Example User Story

“So that I can understand overall implementation status for a specific product variant for a new market, as a Product Manager I need to be able to construct a query that shows me which requirements are associated with tests that failed on their last execution run within the context of my specific product variant.”

“So that I can perform ‘Where Used’ analysis, as a Systems Engineer I need to be able to construct a query that shows me which products, systems, subsystems, capabilities, components and their versions and variants are associated with a given requirement, logical design element, or E/E artefact.”

Analyze: Impact and Coverage Analysis Tool

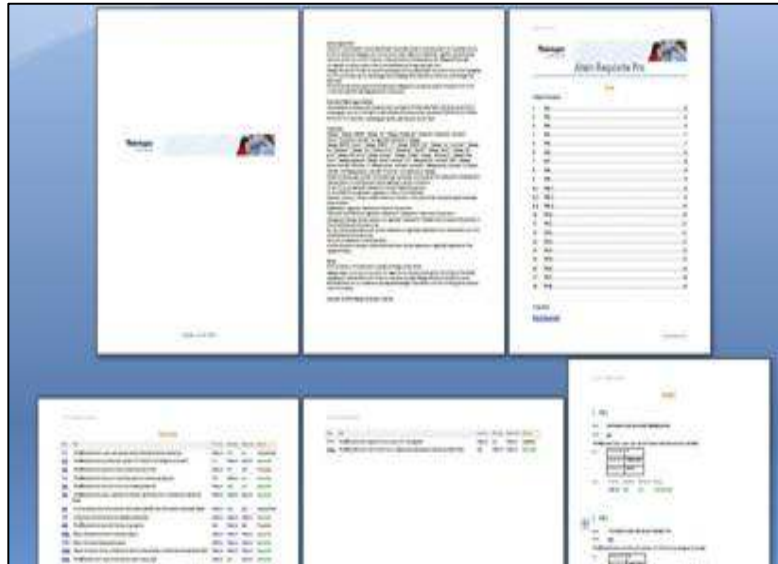


Example User Story

“So that we can understand the impact of a change to a safety requirement on product variants for different markets, as a small cross-functional team, we need to be able to visualize any development lifecycle resources related to that requirement”

- Create analysis definitions to:
 - Understand the impact of change to development lifecycle resources
 - Validate coverage of design, test and implementation
 - Prevent gold-plating
 - Demonstrate compliance to requirements or standards
 - Discover which products, systems, sub-systems, capabilities, components and their versions and variants use given development lifecycle resources
- Perform analysis in the context of products, systems, sub-systems, capabilities and components and their versions and variants
- Save, re-use and share analysis queries

Analyze: Document Generation



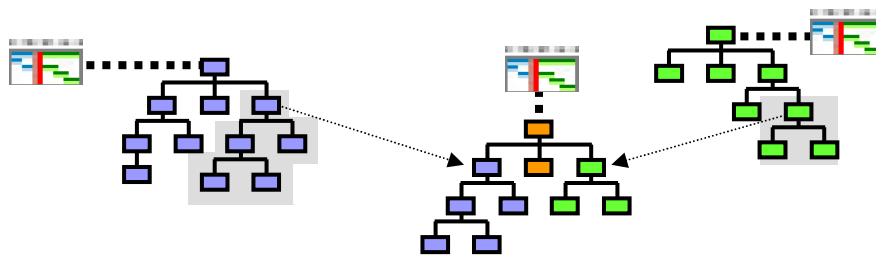
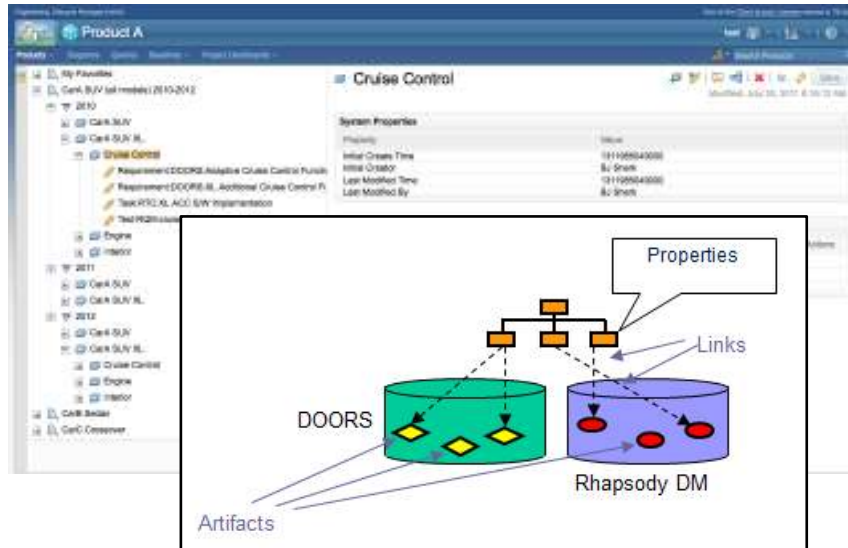
- Ability to efficiently create important documents including data from across the entire development lifecycle
- Predefined documents supporting specific industries / frameworks
- Enables documenting proof of compliance (to requirements, to standards etc.)
- Enables creation of mandatory deliverables

Example User Story

Uses RRDG/RPE technology to consume data from LQE via a SPARQL gateway application

"So that I can document compliance to ISO 26262, as a Safety Manager, I need to be able to create a document that demonstrates required traceability across development lifecycle resources including coverage of safety requirements"

Organize: Product Definition Tool



Example User Story

“So that I can define product variants for specific markets, as a Product Manager, I need to be able to create a structure for my product and sets of re-usable capabilities, and allocate lifecycle development resources to that product structure”

- *Central facility to define hierarchies of products, systems, sub-systems, capabilities and components*
- *Ability to allocate development lifecycle resources to definitions of products, systems, sub-systems, capabilities and components*
- *Ability to define and compare versions and variants of products, systems, sub-systems, capabilities and components*
- *Ability to specify re-use of development lifecycle resources across products, systems, sub-systems, capabilities and components*
- *Provides a context for visualization and analysis (e.g. queries, reports, impact and coverage analysis)*



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