# Integrating Rational's jazz solutions with multi-vendor and open source tools.

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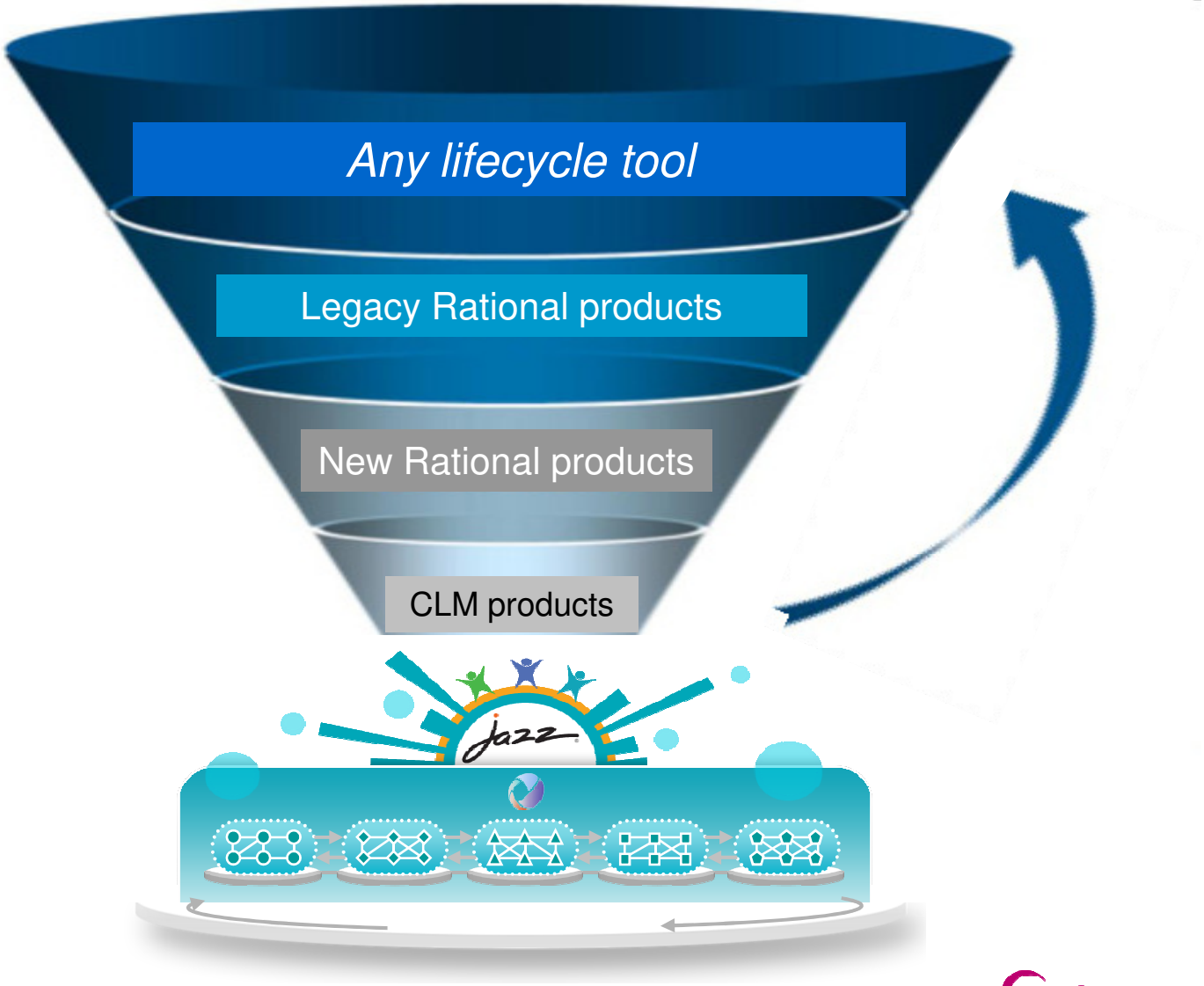
# Agenda

- Rational integration strategy.
- Overview of Open Services for Lifecycle Collaboration (OSLC)
- Gap between OSLC tools and non-OSLC tools
- Rational integrations with OSLC tools
- OSLC Bridge for Rational integration with non OSLC tools
- OSLC Ecosystem – What about Simulink for example?
- Summary

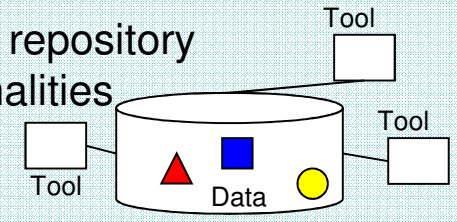
# Rational Integration Strategy



# Approaches for Tool Integration

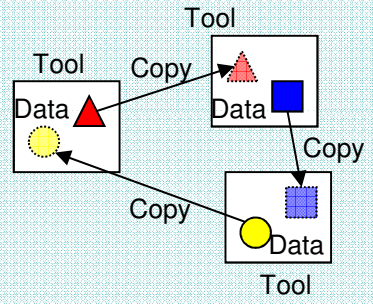
**1. Common repository for all engineering data**

- Aggregate all data in a single unified repository
- *Problem:* Not practical to move all applications to a common repository
- *Problem:* Common schema for all apps restricts tool functionalities




**2. Point-to-Point Tool Integration**

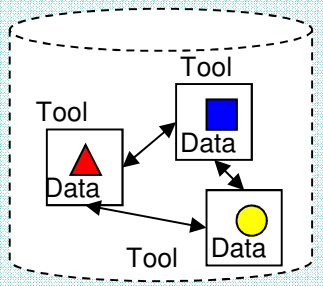
- Exchange tool data via APIs the tools support
- *Problem:* Does not allow cross-tool data search or analysis




**3. Virtual Repository with Data Relationships**

- Expose tool data through standardized interface
- Master data reside in domain applications
- Enable cross-tool traceability, query, and reporting

***OSLC (Open Services for Lifecycle Collaboration)***



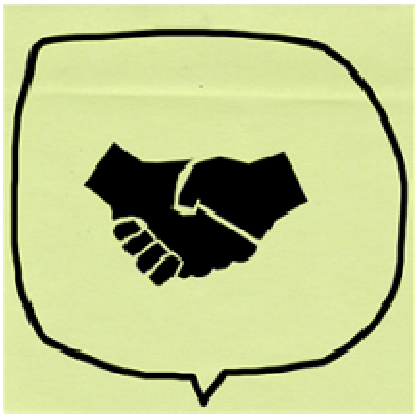
# Open Services for Lifecycle Collaboration (OSLC)

*Working to standardize the way software lifecycle tools share data*

## What is OSLC?

**Open Services for Lifecycle Collaboration**
Lifecycle integration inspired by the web

- Community Driven – @ **open-services.net**
  - Specifications for numerous disciplines
    - Such as, ALM, PLM and DevOps
    - Defined by scenarios – solution oriented
      - Inspired by Internet architecture
- A different approach to industry-wide proliferation



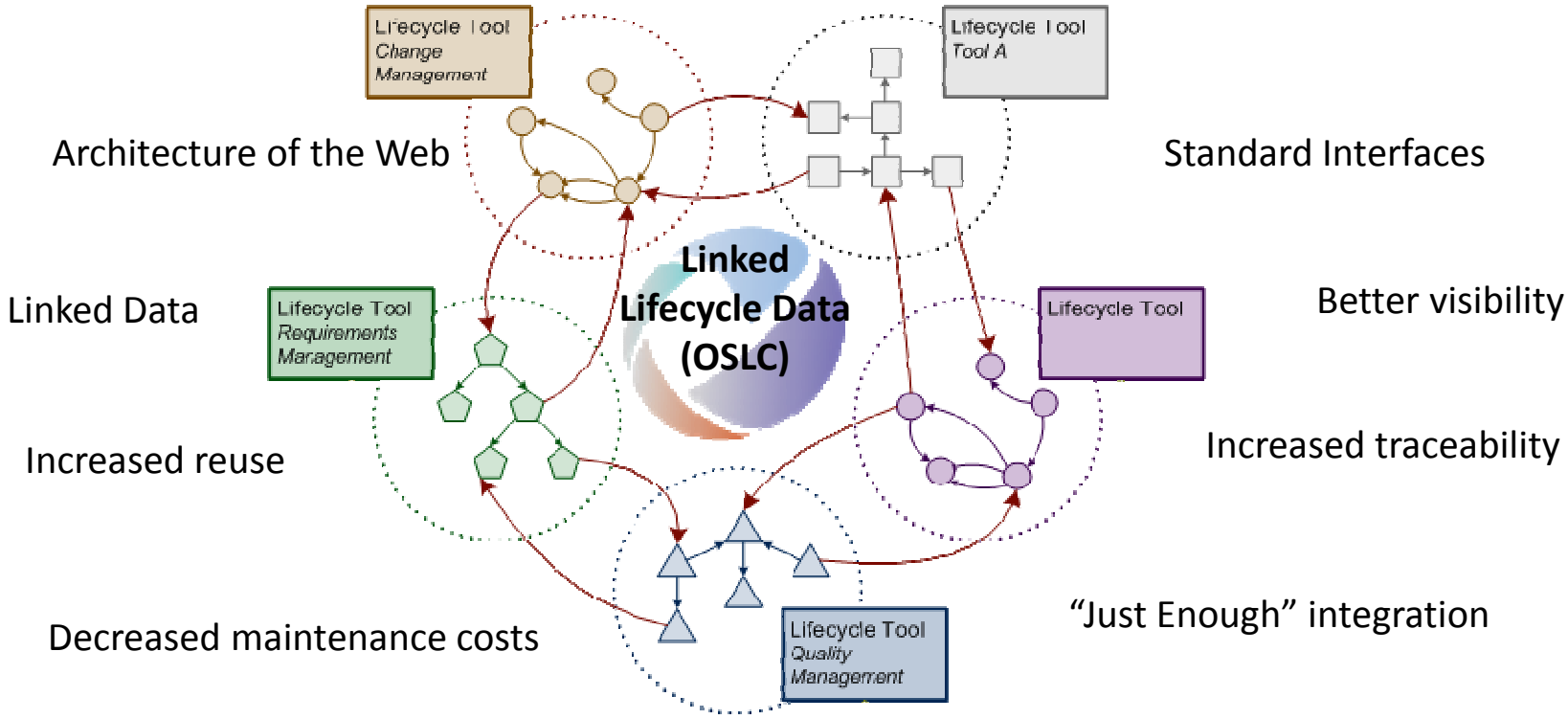
## How does it work?

**Inspired by the web** **Free to use and share** **Changing the industry**

## GET INVOLVED AND CONTRIBUTE!

# OSLC's Innovative Solution

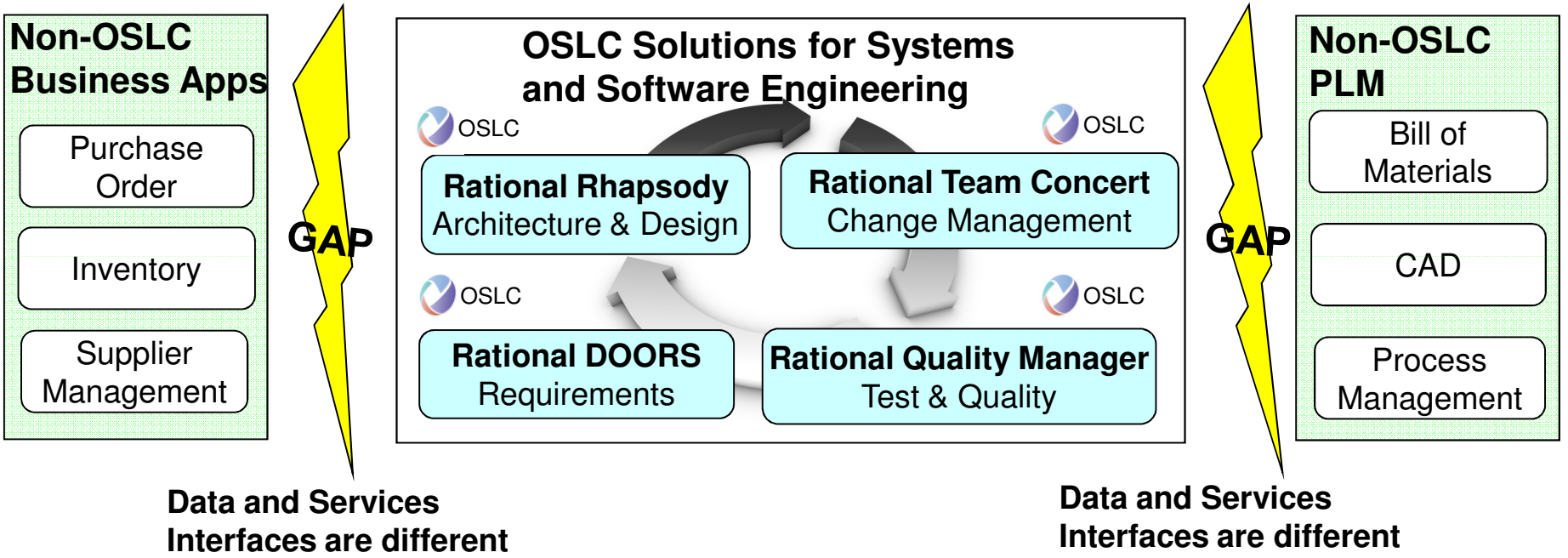
Users can work across the integration without leaving their favorite tool




***Links to where the data lives as opposed to copying and synchronizing***

# Gap between OSLC tools and non-OSLC tools

OSLC is advancing the integration of systems and software engineering solutions, but we also want to use non-OSLC tools for entire systems lifecycle management. As a result, holistic product traceability and analysis are still challenging

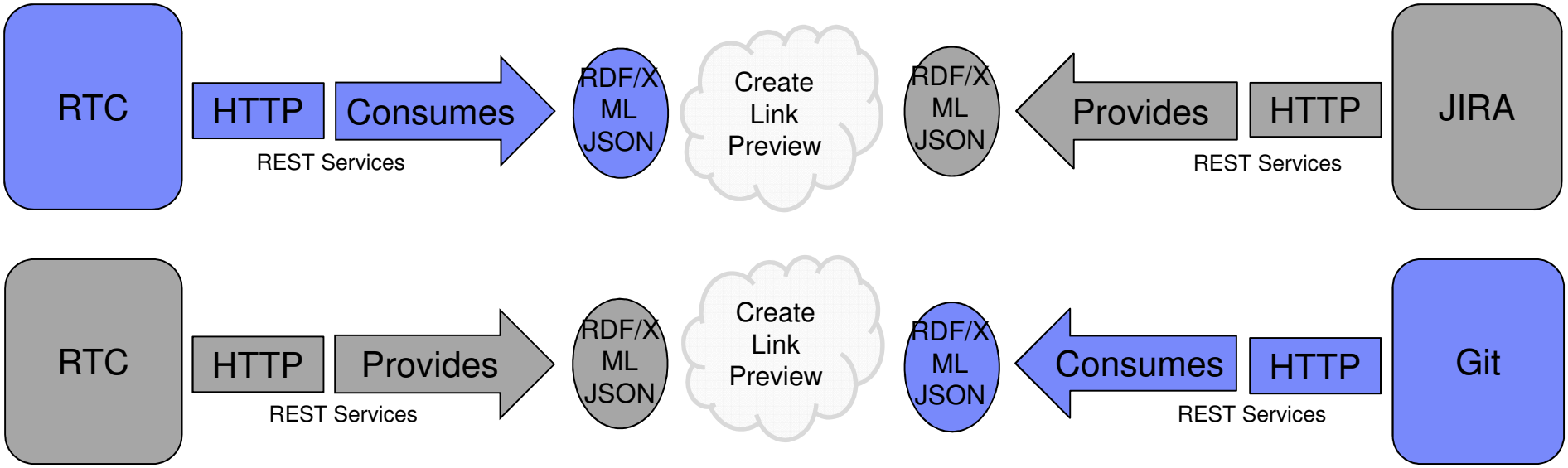



The gaps prevent us from answering questions such as:

- Which code parameters affect the gear ratio in a mechanical design?
- Do we have sufficient parts in inventory for a trial production run?

# OSLC Integrations are facilitated by Providers and Consumers

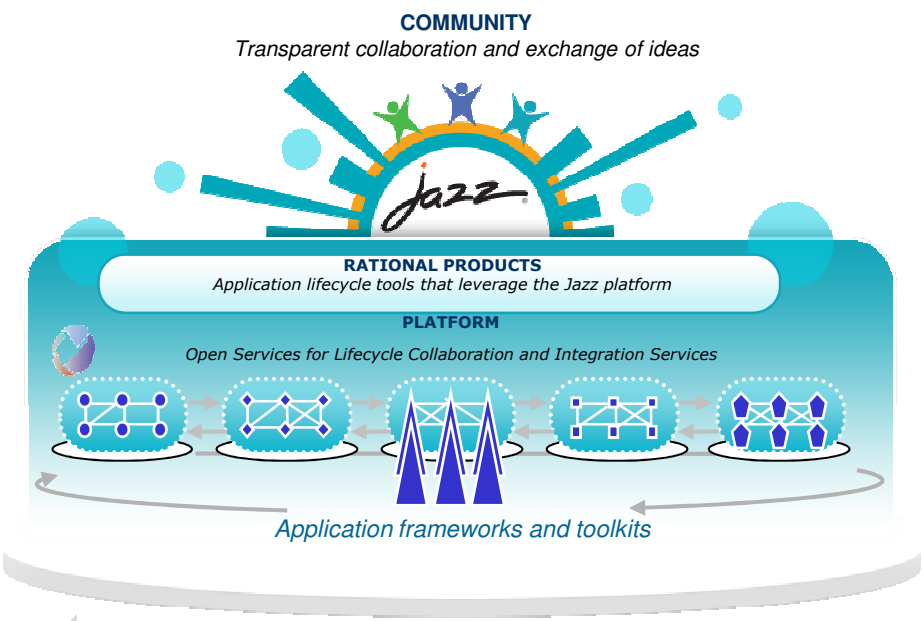
- An OSLC provider is responsible for exposing domain data in accordance with the OSLC specification to allow for creating, updating and querying linked data
- An OSLC consumer is responsible for consuming the OSLC provider services so that it can in turn, create, update, and query data via the delegated interfaces

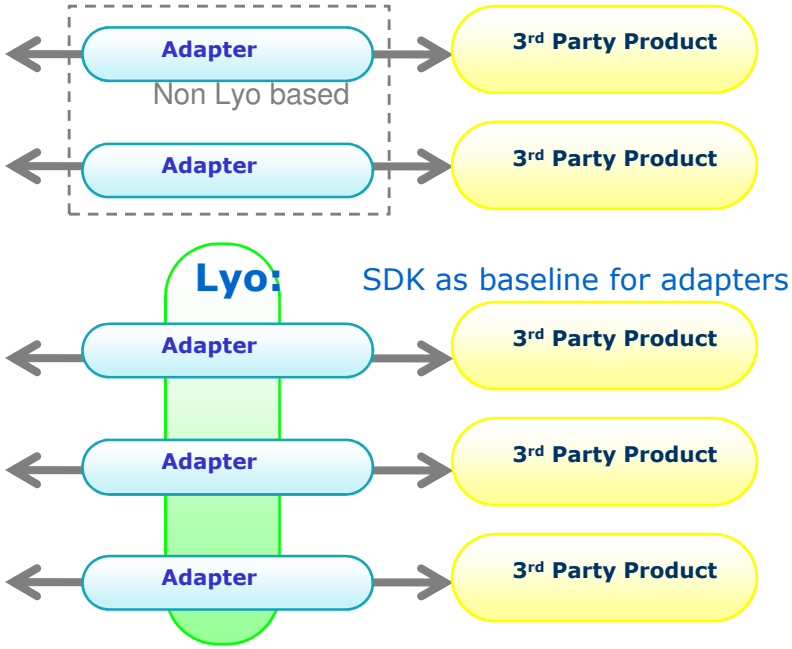



OSLC Services provide a uniform HTTP interface, OSLC URIs are stable and opaque and, in simple terms, OSLC works like the web.

http://open-services.net/bin/view/Main/OslcCoreSpecification#Design_considerations

# Rational Integrations and OSLC




OSLC as the standard that enables integrations within and beyond Jazz

- Value driven by diverse scenarios:

Jazz provides an integration platform

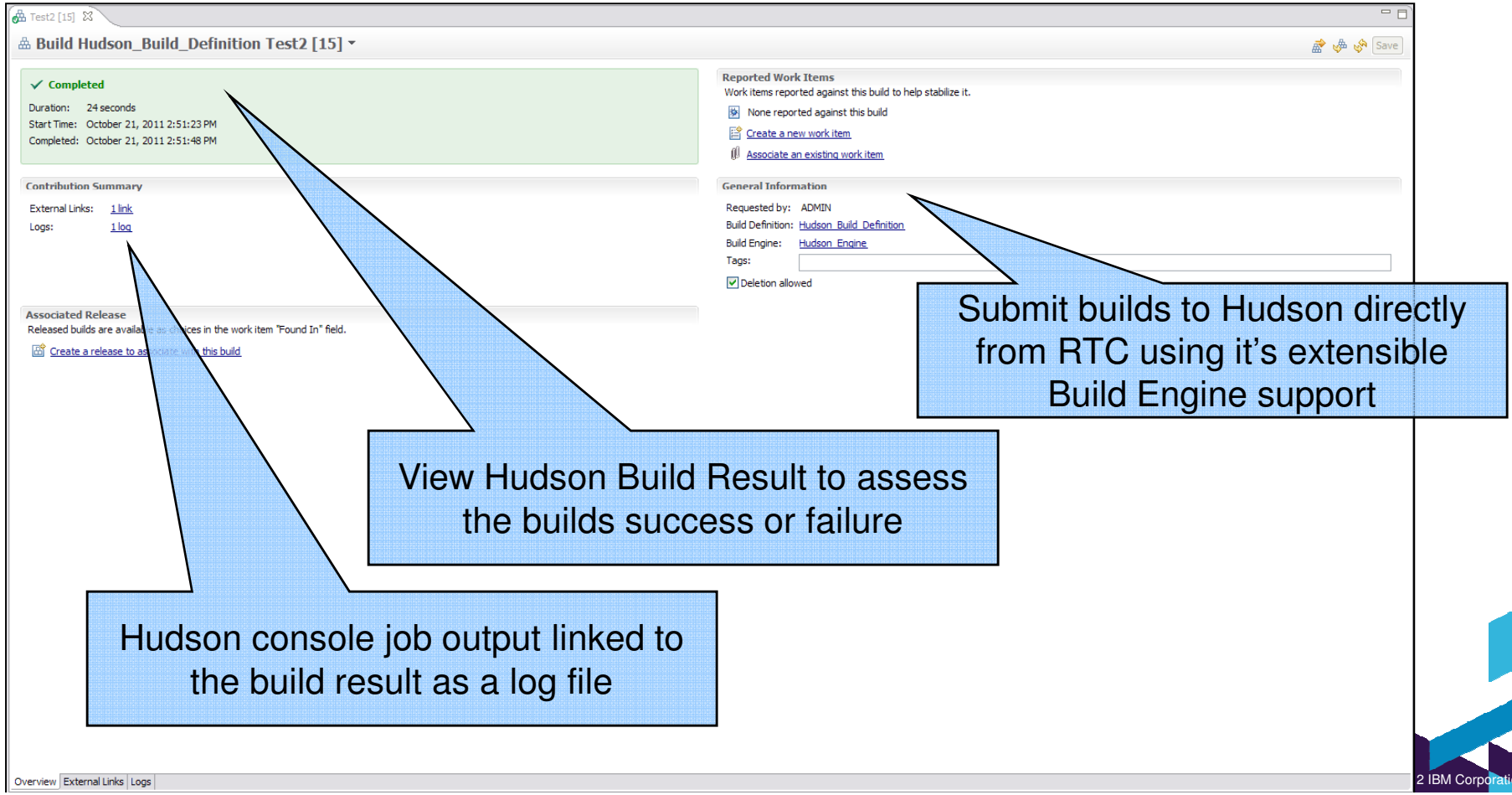
Eclipse Project Lyo provides an OSLC SDK

Adapters provide endpoints (in-house, partners, community, service assets)

# RTC v4.0 RC0 – Hudson/Jenkins Build Support out of the box

*"As a RTC build user, I want to easily manage builds in Hudson/Jenkins"*

- Directly submit builds through RTC to Hudson and view build health in RTC
- No need to log into Hudson to see the console job output



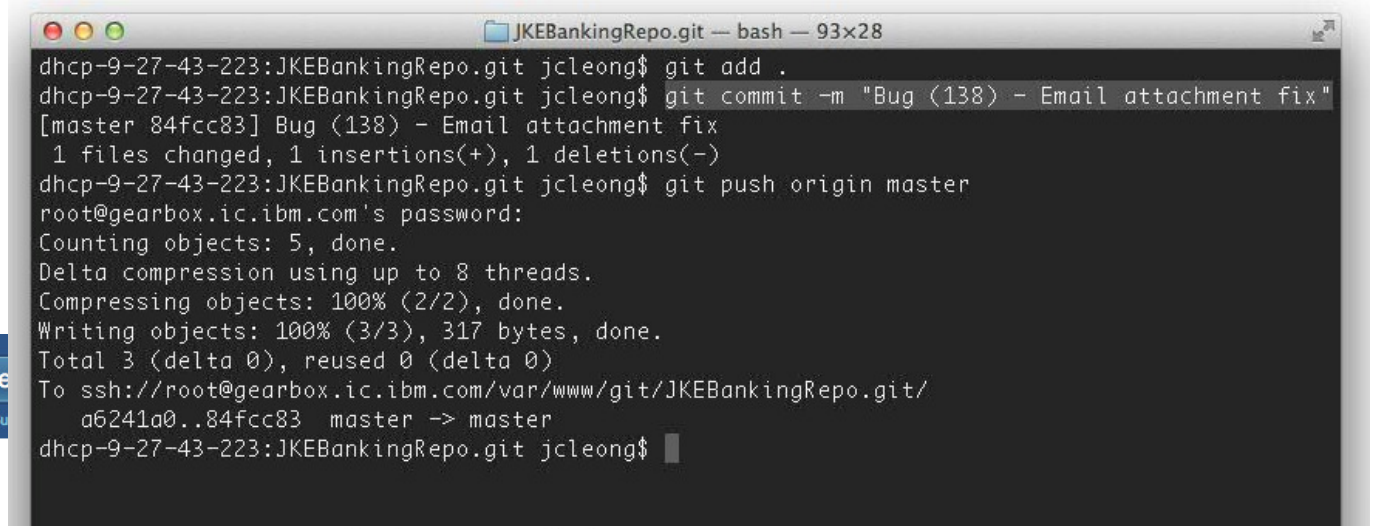
# Rational OSLC Adapter for Git

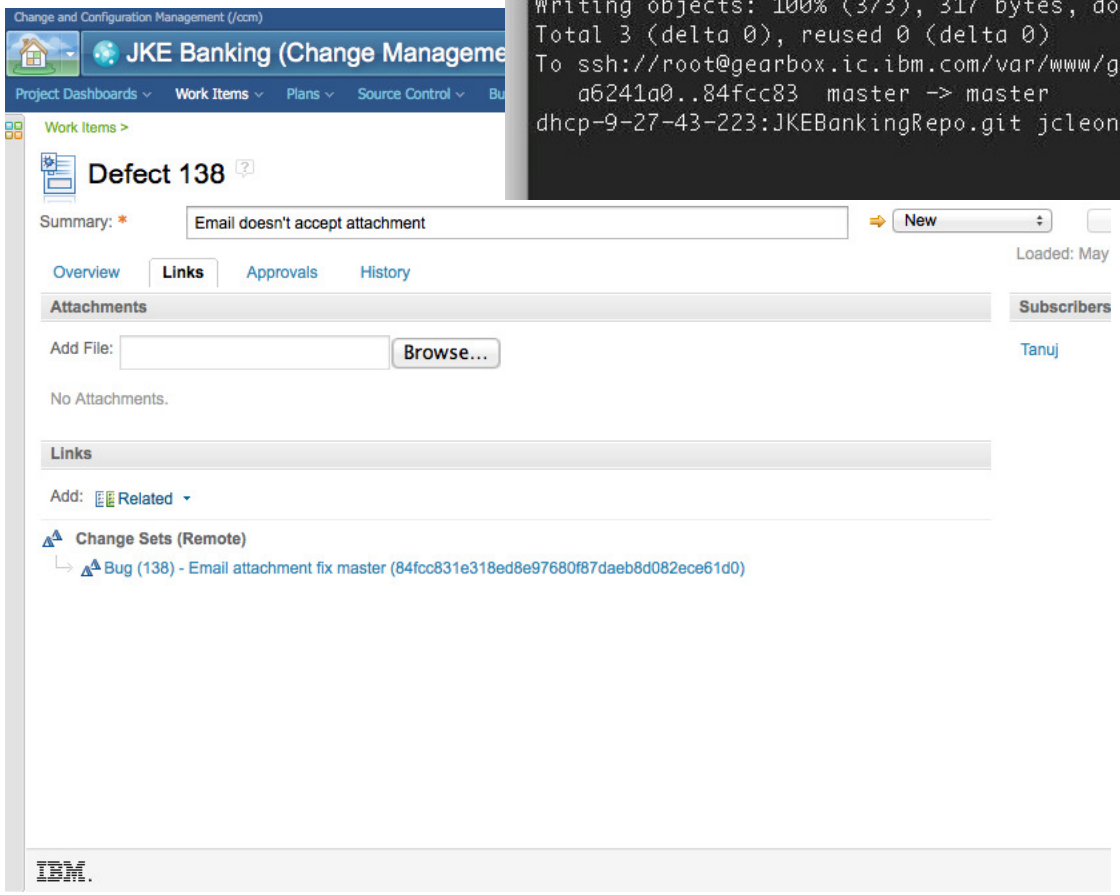
- Overview
  - When users of Git need to integrate their SCM artifacts with Rational Team Concert, the Rational OSLC adapter for Git provides traceability across the tools involved.
- Product support details
  - Rational solution for CLM 2012
  - Git

| Rational product | Association | Git |
|---|---|---|
| RTC Change request (any type) | • Tracks change set (link) -><br>• Associate change request (create/link) | Git web |
| RTC Change request (any type) | • Tracks change set (link) -><br>• <- Associate change request (link) | Git command line (push) |

# RTC & GIT command line

Associate 'defect' to a git comit at push time

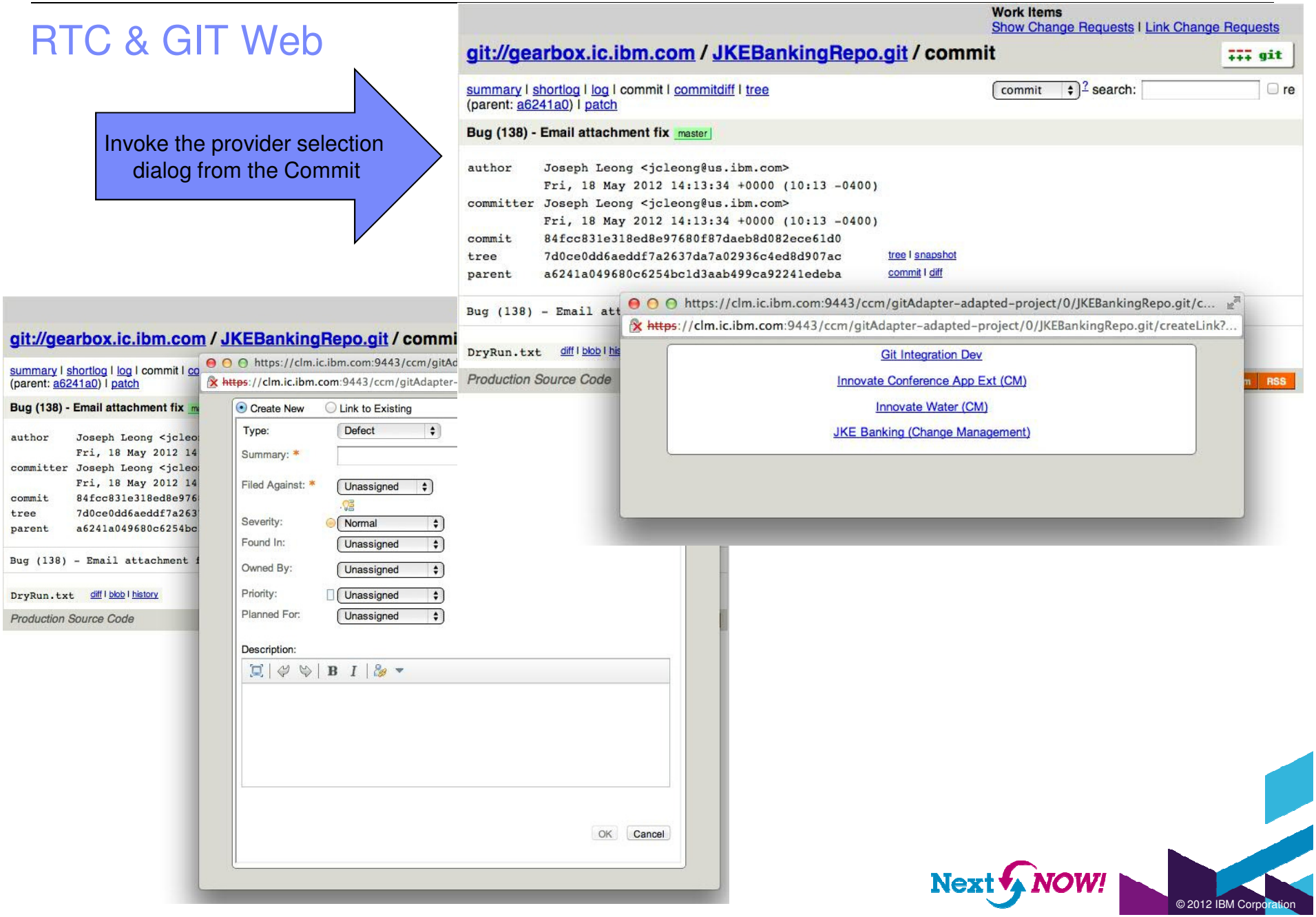



Link to the Git commit in the defect itself

# RTC & GIT Web

Invoke the provider selection dialog from the Commit



# Rational OSLC Adapter for JIRA

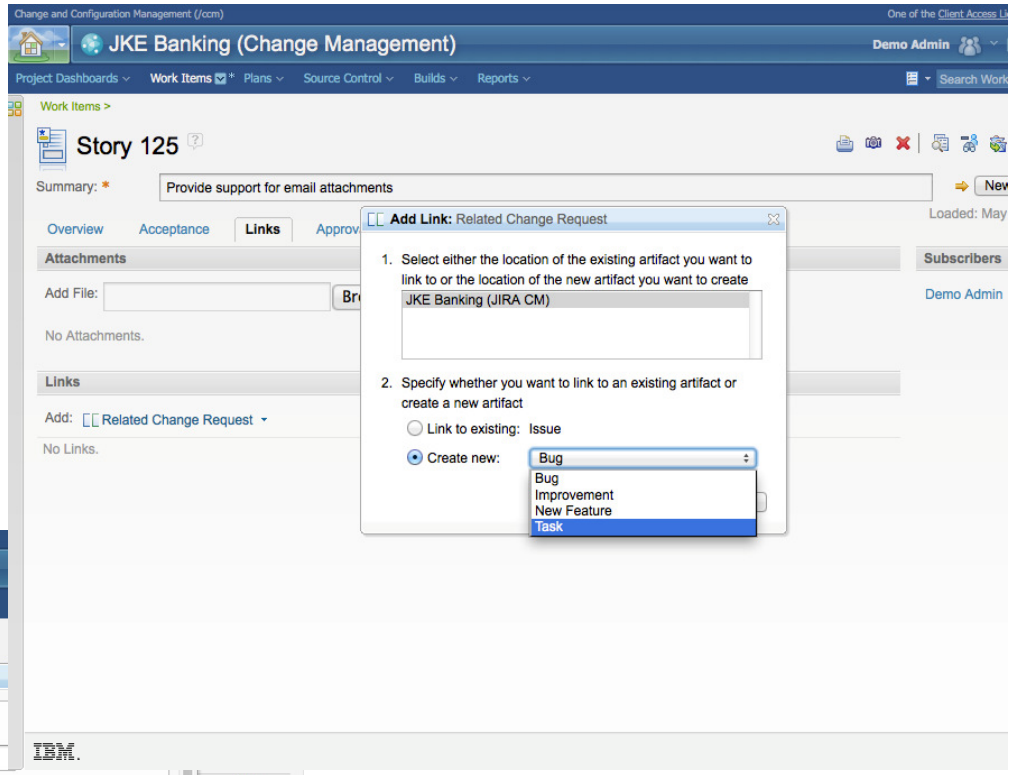
- Overview
  - When there are pockets of JIRA users that need to integrate their change management artifacts with other phases of the lifecycle, the Rational OSLC adapter for JIRA provides traceability across the Rational tools involved.
- Product support details
  - Rational solution for CLM 3.0.1.x – 2012
    - *Linking RTC change sets to JIRA issues is only supported in CLM 2012
  - JIRA 4.4.0.x
- Timeline
  - Available now as an open beta from jazz.net: https://jazz.net/library/article/766
  - GA intended for release in 2012

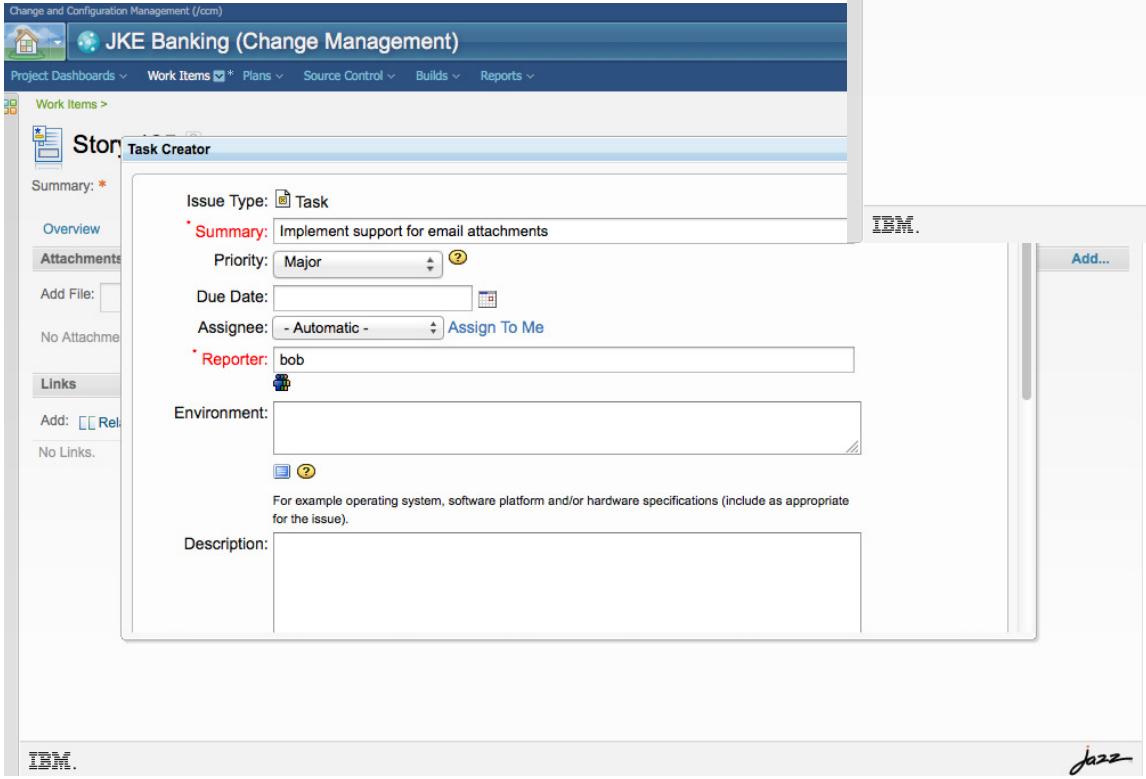
# Rational OSLC adapter for JIRA use cases

| Rational Product | Association | Atlassian Jira |
|---|---|---|
| RTC Change request (any type) | • Related change request (create/link) -><br>• <- Related change request (link) | Issue (any type) |
| RTC Change request (any type) | • Affected by defect (create/link) -><br>• <- Affects (link) | Issue (any type) |
| RTC Change request (any type) | • Affects a plan item (create/link) -><br>• <- Affects (link) | Issue (any type) |
| RTC Change set | • Tracks change set (create/link) -><br>• <- Associated (link) | Issue (any type) |
| RQM Test case | • Tests (create/link) -><br>• <- Tested by (link)<br>• Affected by (create/link) -><br>• <- Affects test (link) | Issue (any type) |
| RQM Test plans<br>Test cases<br>Test scripts<br>Test execution records<br>Test suites | • Related tasks (create/link) -><br>• <- related | Issue (any type) |
| RRC requirement | • Tracked by (create/link) -><br>• <- Tracks (link) | Issue (any type) |
| RRC requirement | • Implemented by (create/link) -><br>• <- Implements (link) | Issue (any type |

# RTC & JIRA

Select a link type, your CM provider, and record type

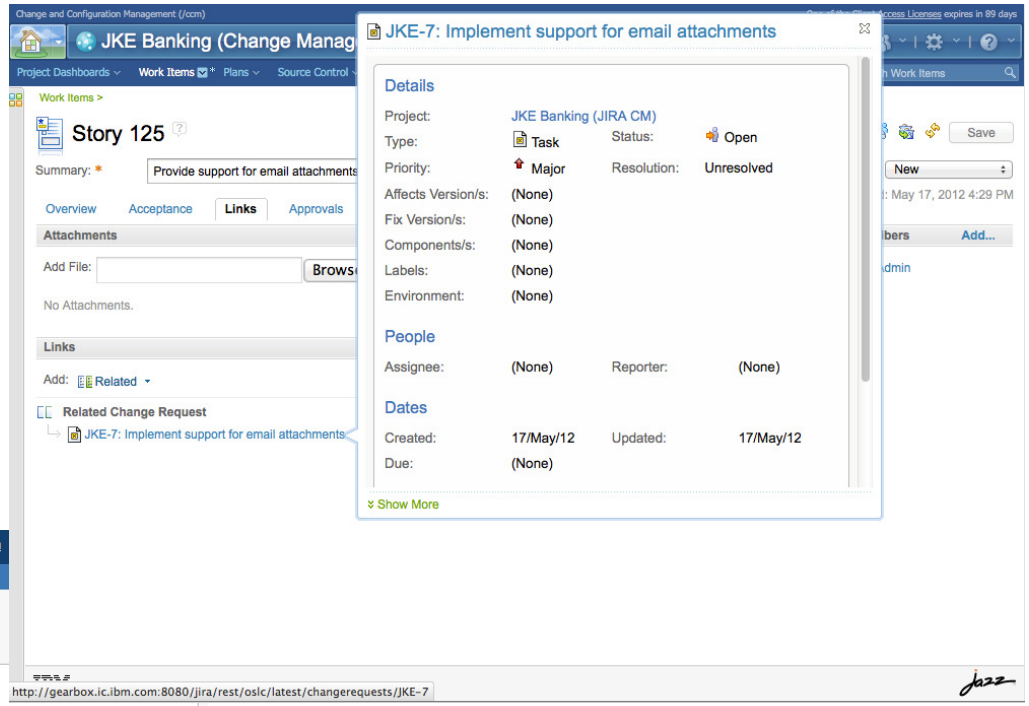


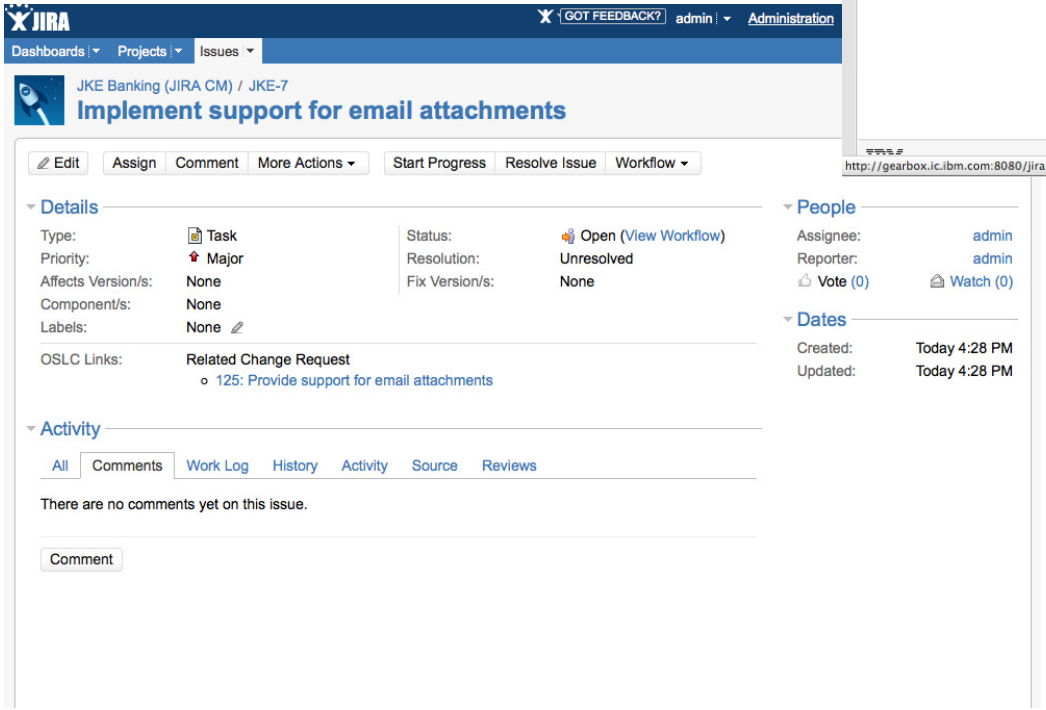




Fill in the record details in the delegated UI

# RTC & JIRA

Preview the task in JIRA from RTC



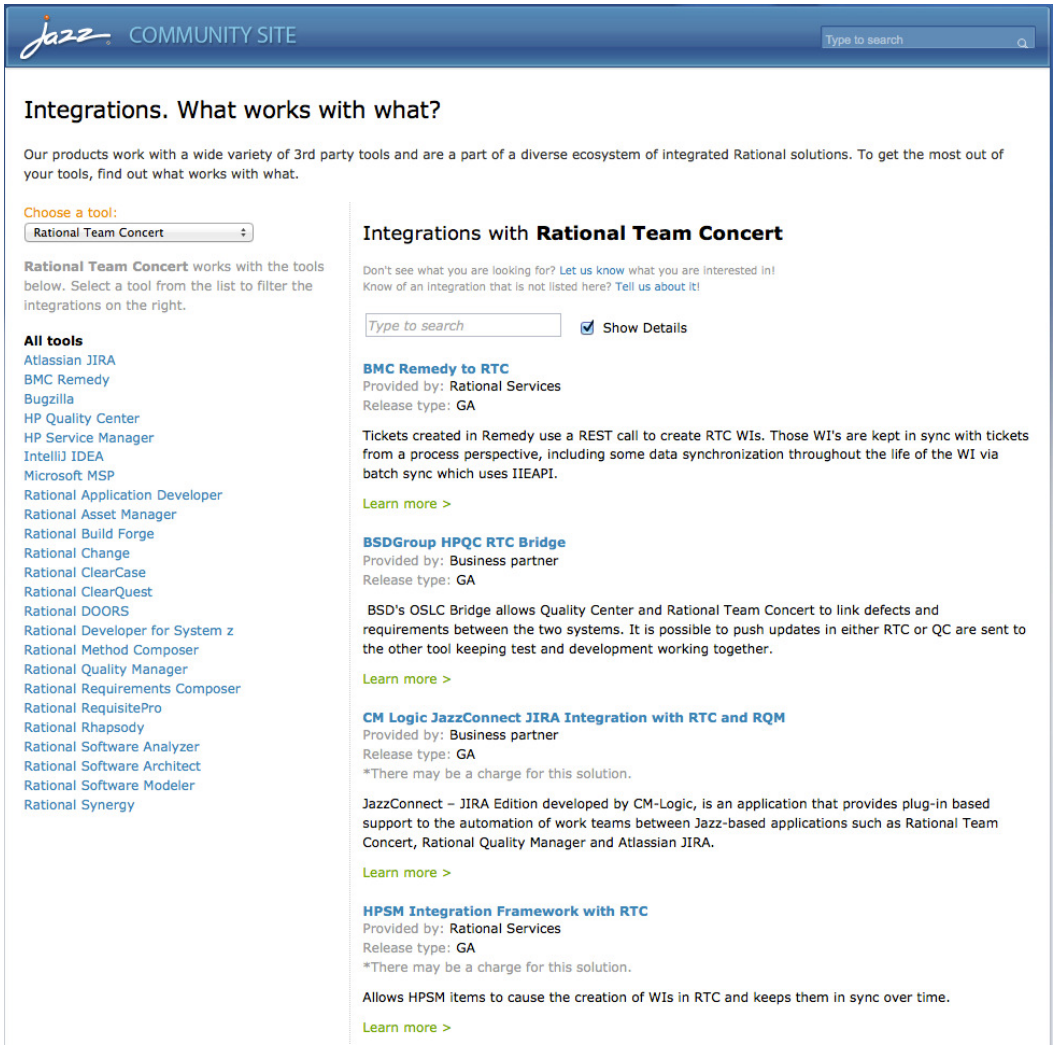




Back-links to the Story in RTC

# Learn about other Integrations; Jazz.net Integration Directory

**External Jazz.net Integration Directory**

- Information sourced from Integration Dashboard
- Ability to filter by any Rational or non-Rational tool, or narrow by a second tool
- Raise visibility of request for integrations not listed



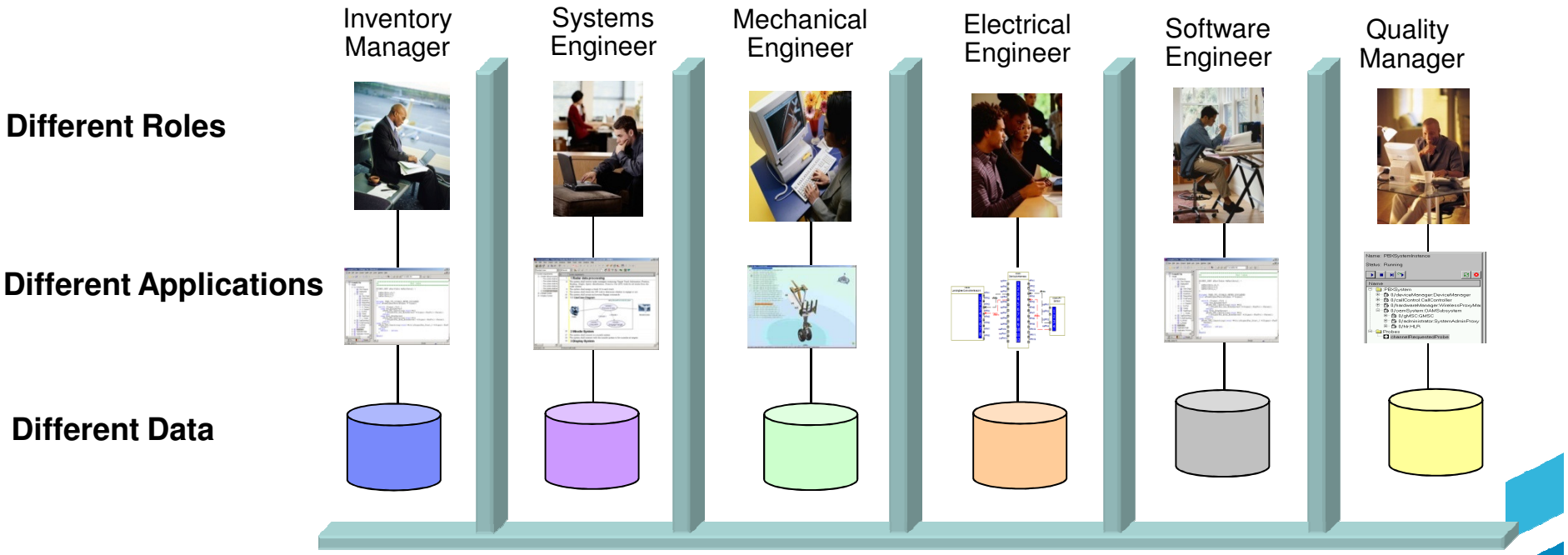
# Challenges in Complex Product Development

Collaboration between domains is ad hoc and manual

- Dependent data
- Shared plans and related tasks
- Changes in elements

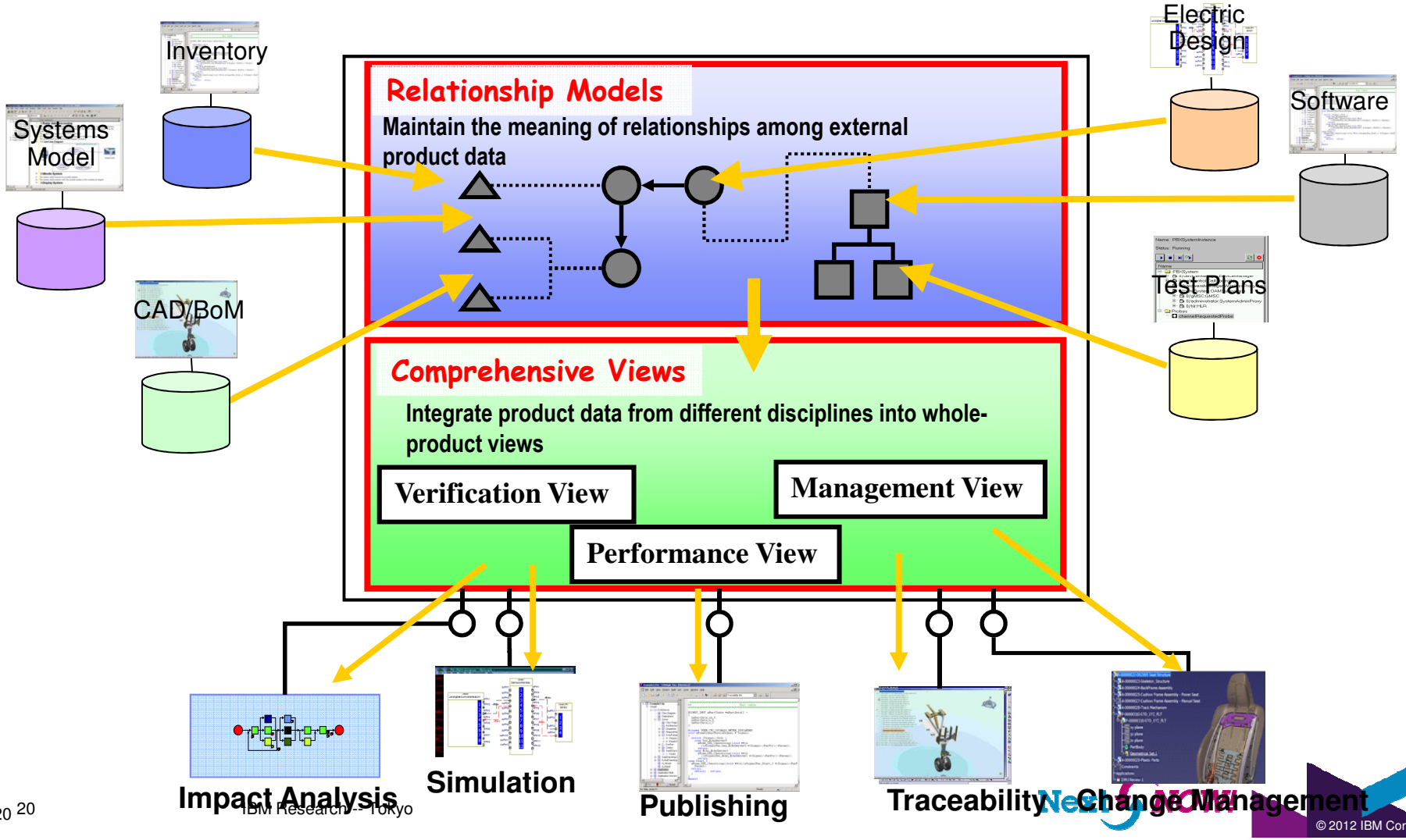
Lack of holistic view prevents us from:

- Understanding the complete system definition
- Identifying the elements affected by a change
- Finding master data after duplication



# Engineering Information Integration for Cross-Disciplinary Systems Lifecycle Management

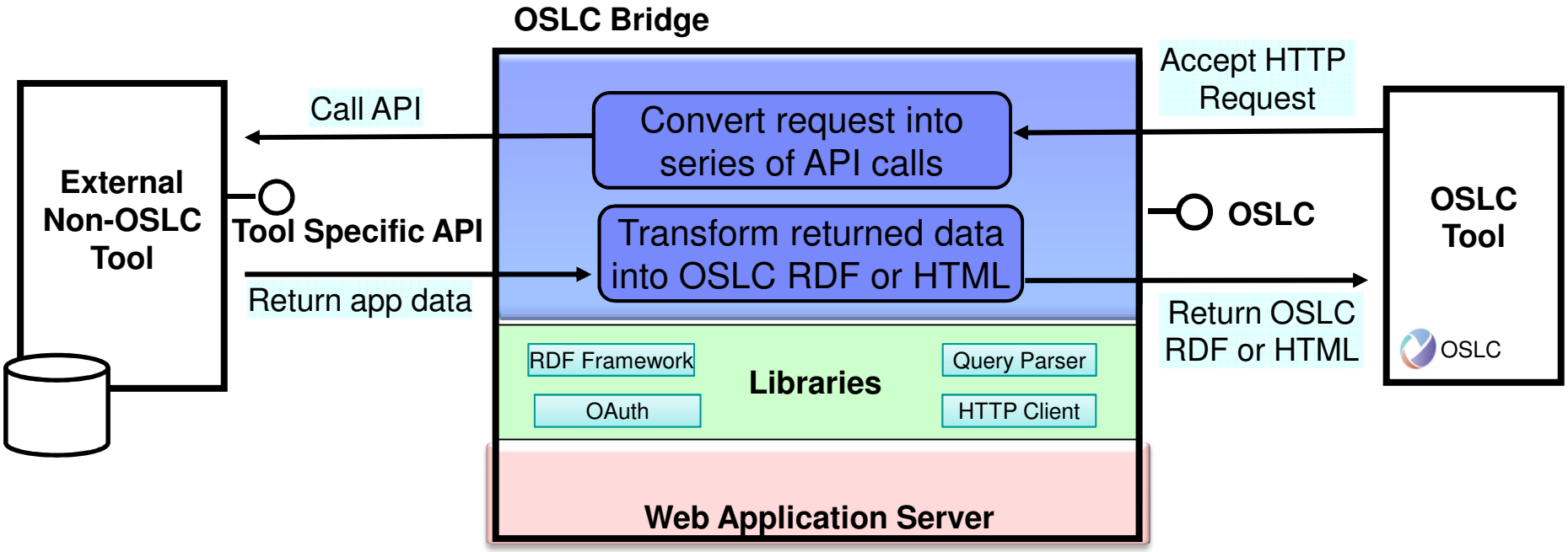
## Establish the hub technology to manage the cross-domain knowledge and realize comprehensive views, where master data reside in domain applications



# OSLC Bridge Architecture

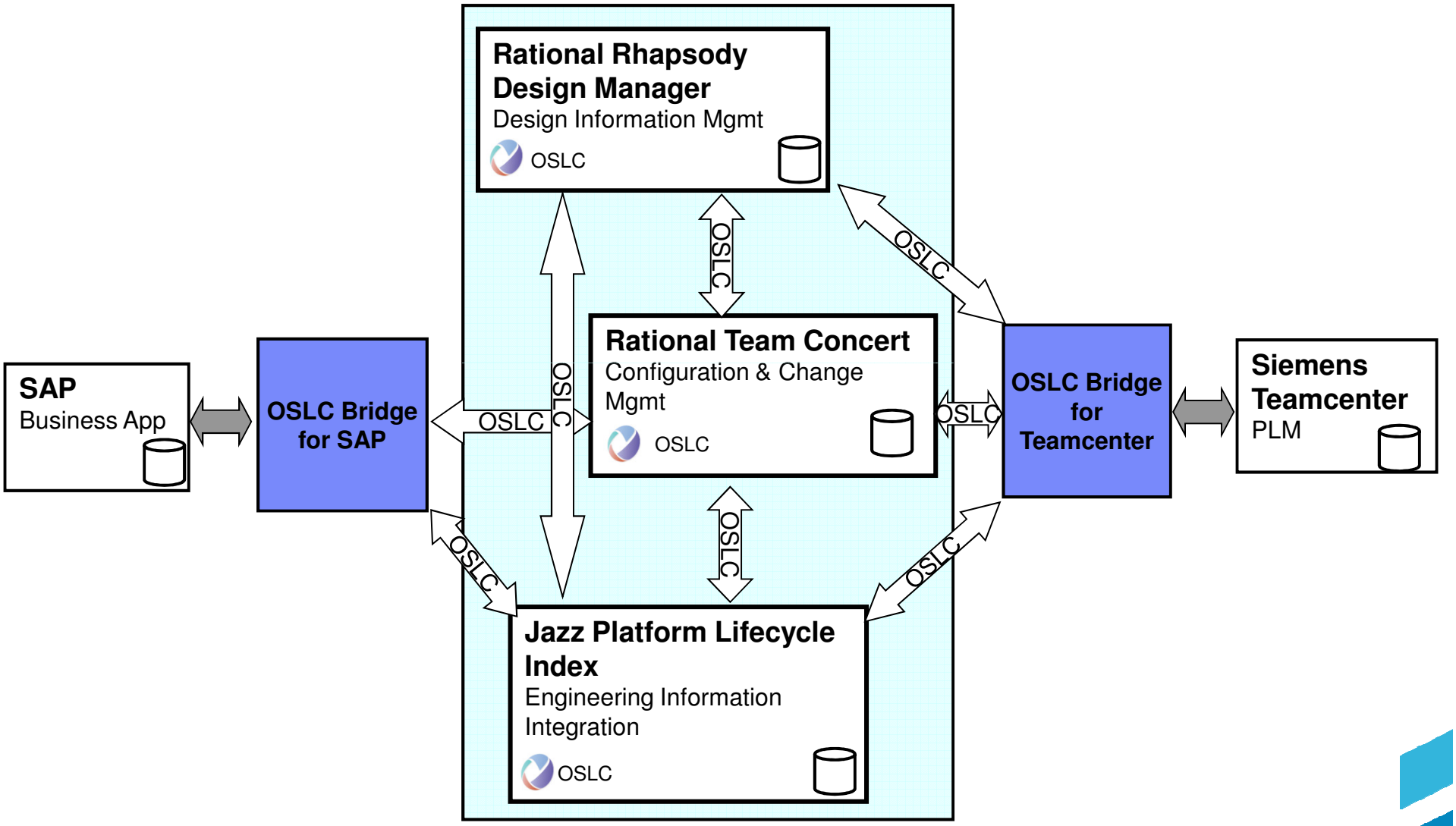
OSLC Bridge mediates OSLC services and external non-OSLC tool API by:

1. Generating a series of API calls to external tools
2. Converting the returned application data into OSLC RDF or HTML

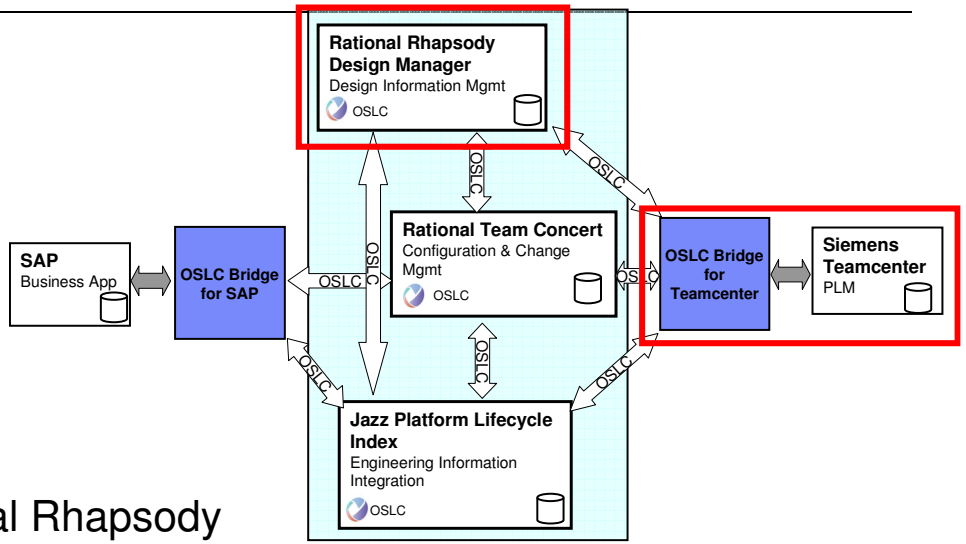



- Supports various types of business and PLM applications
- Uses IBM Research's technologies to
  - Map RESTful services requests and method invocations
  - Synchronize data between objects and RDF to preserve graph structures

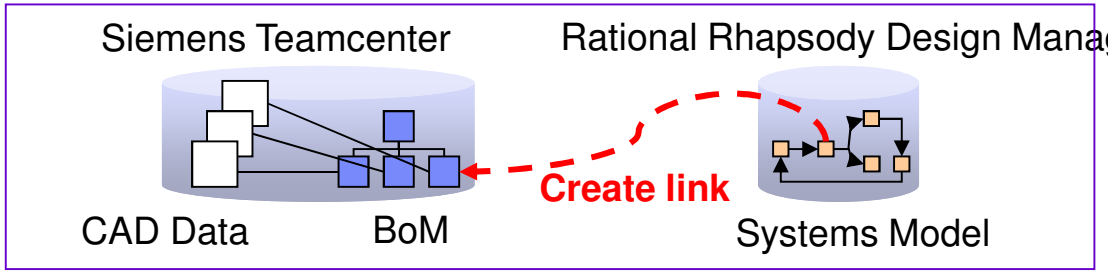
# Example



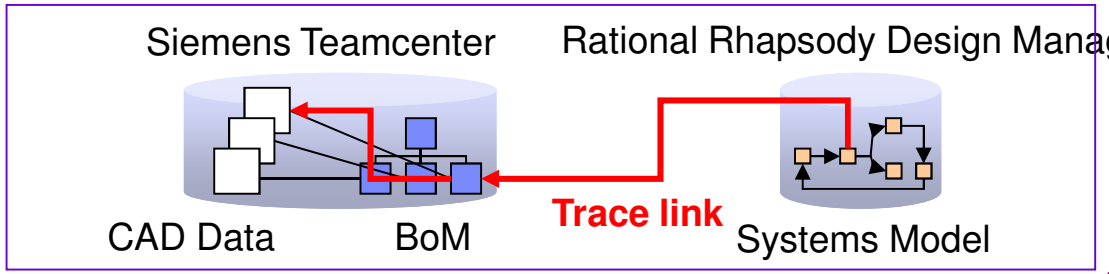
# Example – Traceability of Artifacts



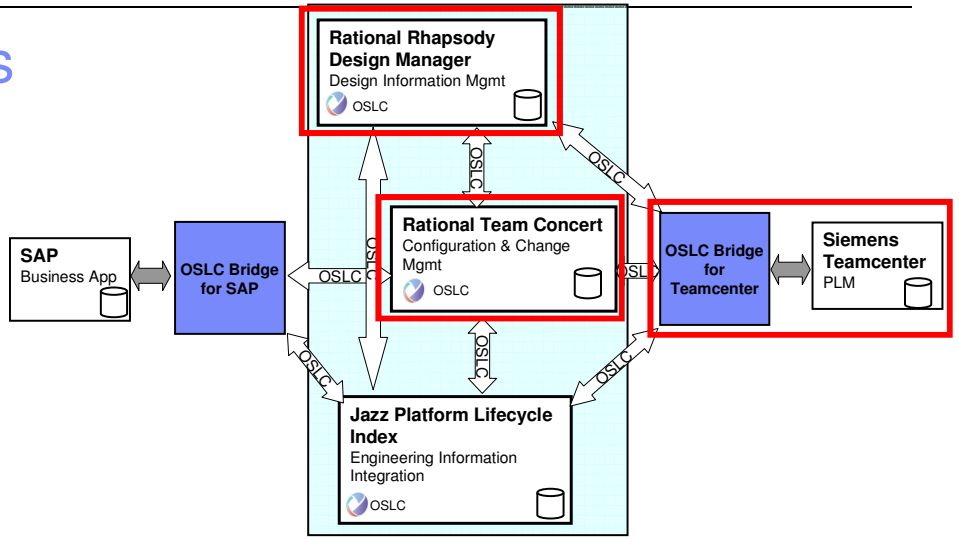

1. Create links from model elements in Rational Rhapsody Design Manager to BoM data items in Siemens Teamcenter



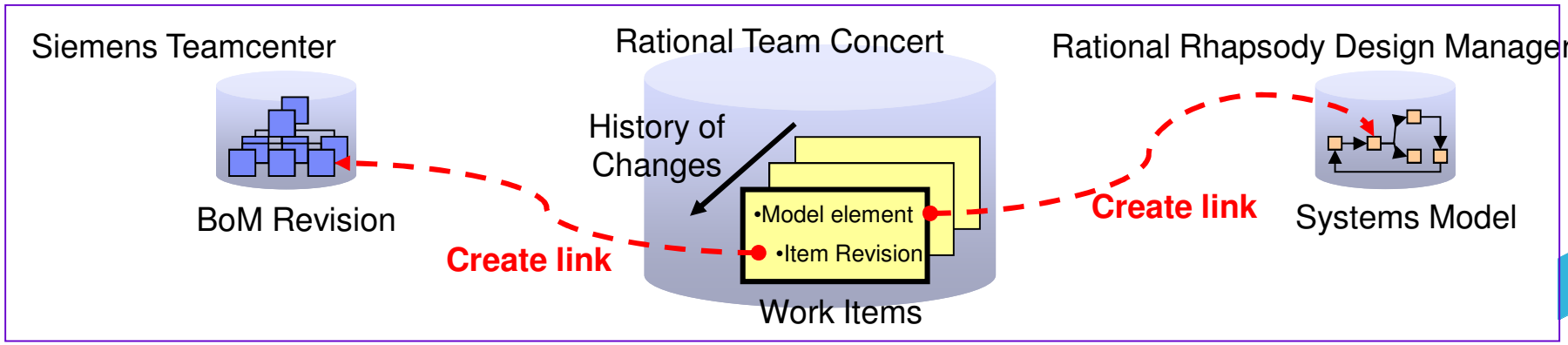

2. By clicking the created links, we can trace from model elements to BoM data items



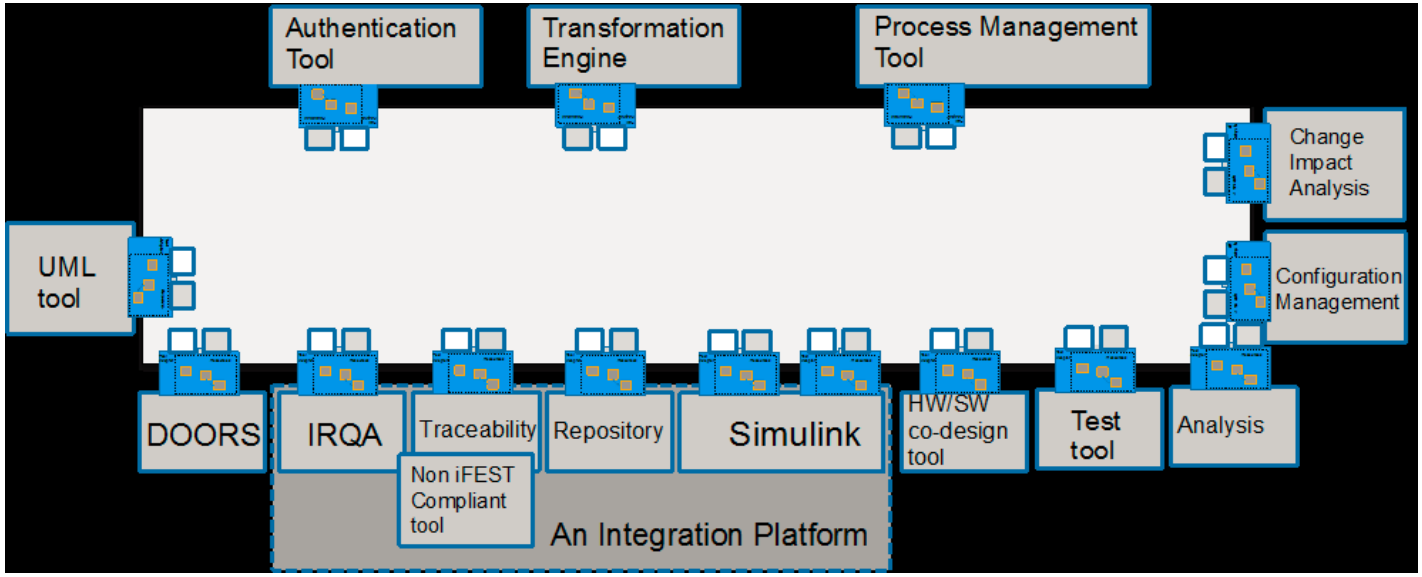
# Example – Traceability of Changes




1. Create links from work items in Rational Team Concert (1) to model elements in Design Manager, and (2) to item revisions in Siemens Teamcenter
2. The resulting work items record the associations between the artifacts that justify the change (Design Manager data), and the artifacts that will be affected by the change (Teamcenter data)



# OSLC ecosystem - Artemis, ifest - http://www.artemis-ifest.eu/




OSLC adopted as a main part of the iFEST IOS:

- SOA distributed over the Web, HTTP protocol, web technologies, URLs
- W3C Linked Data and RDF/XML as the main data exchange format
- Basic data models for lifecycle tools (e.g., requirements, change requests, reports, etc)

# Summary

- OSLC Bridge enables us to integrate systems engineering, software development, PLM, and business applications using OSLC for cross-disciplinary systems lifecycle management

- The solution does not require us to build a huge database that contains all data
  - Hold minimal data set for indexing
  - External data can be reached through OSLC links

- The solution enables holistic integration of engineering information, which is not possible by point-to-point tool connections

- The solution allows users to continue using existing development and IT tools. We only need to adapt them to an OSLC interface

# Where to get more information

- jazz.net Integration Directory: https://jazz.net/extend/integrations/#
- OSLC community: http://open-services.net
- Eclipse Lyo: http://eclipse.org/
- Rational 3rd Party Integrations DPP' : Email to ratldpp@us.ibm.com
- Ready for Rational (Business Partners):
  - Partners: http://www-304.ibm.com/isv/rational/readyfor.html
  - Customers: http://www.ibm.com/developerworks/rational/downloads/ready.html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