



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

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Software Development Solutions

IBM Software

Innovate2012

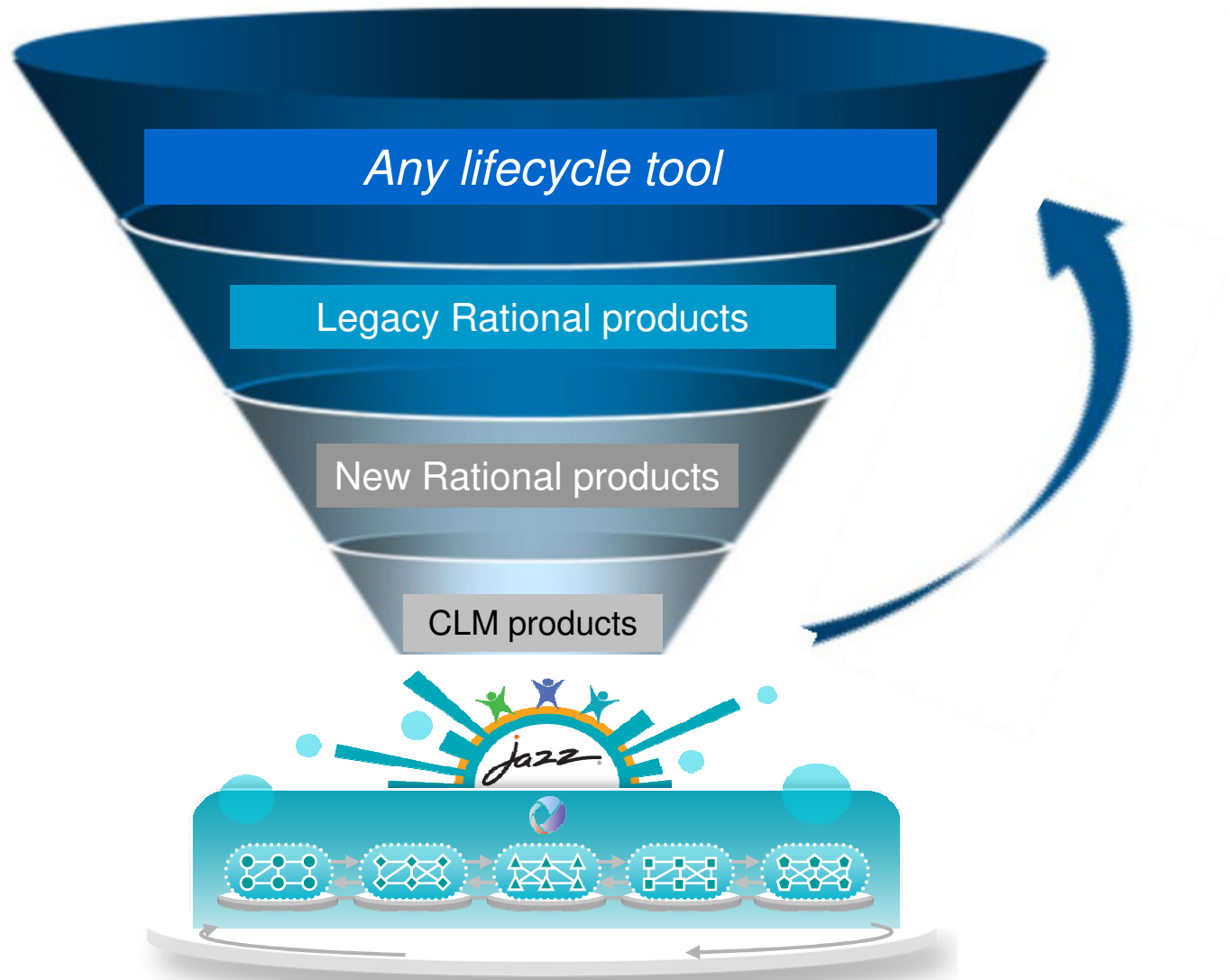
The Premier Event for Software and Systems Innovation



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

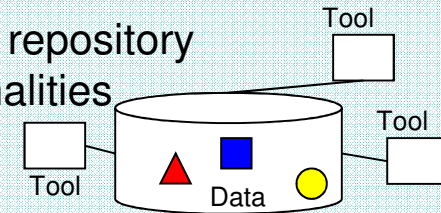
Rational Integration Strategy



Approaches for Tool Integration

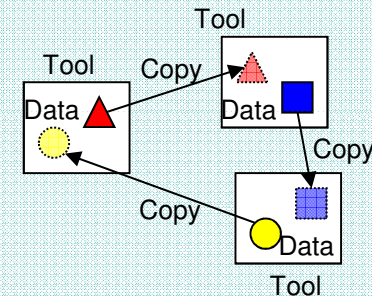
1. Common repository for all engineering data

- 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



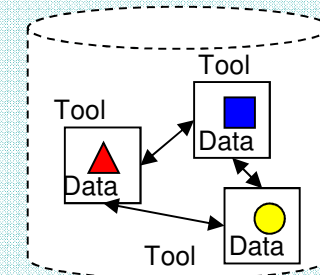
2. Point-to-Point Tool Integration

- 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)

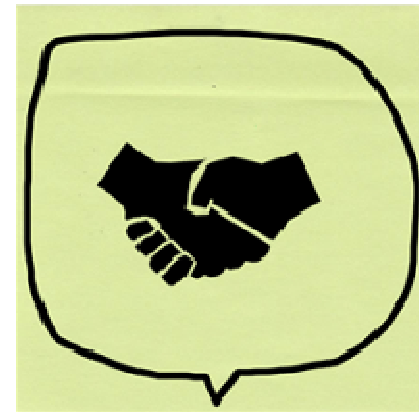
Working to standardize the way software lifecycle tools share data

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



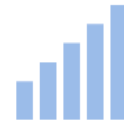
How does it work?



Inspired by the web



Free to use and share

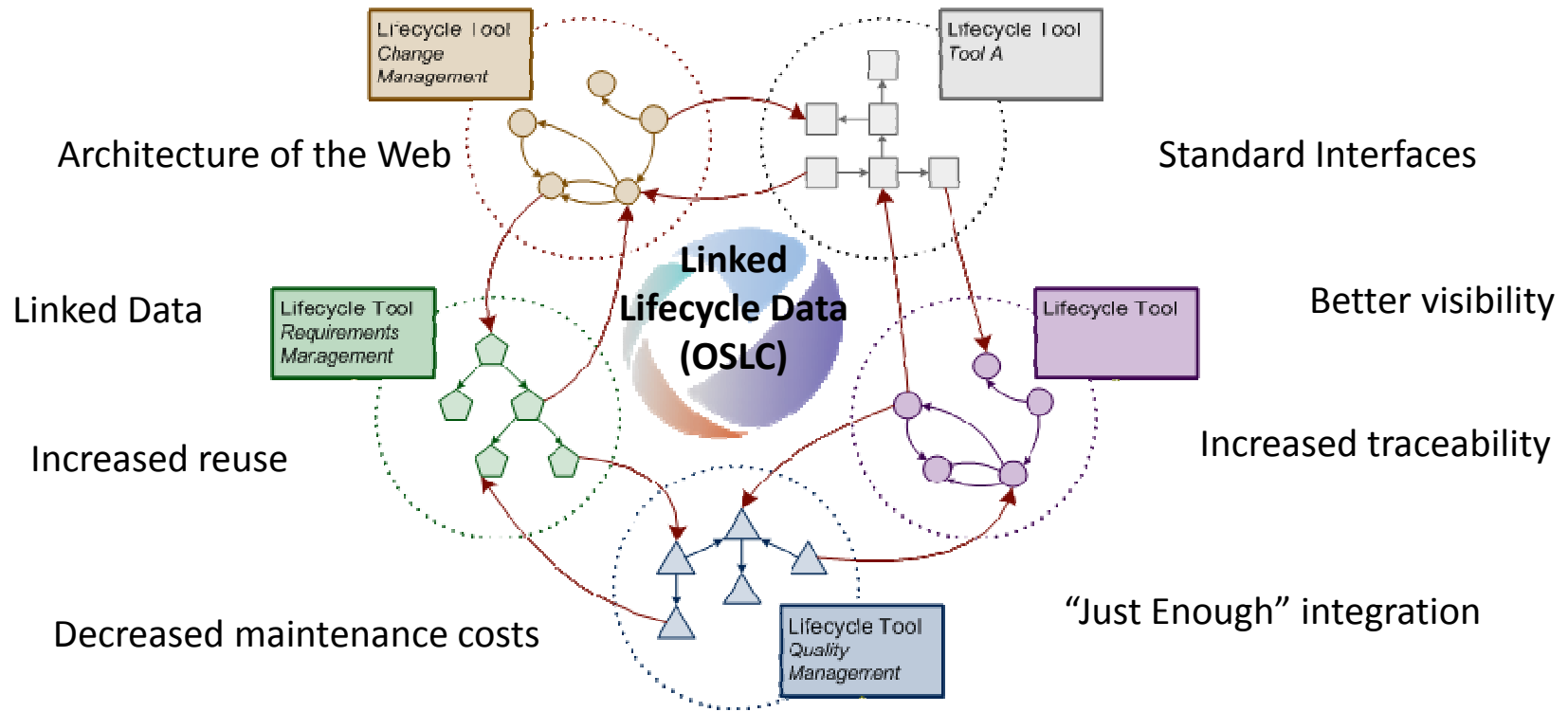


Changing the industry

GET INVOLVED AND CONTRIBUTE!

OSLC's Innovative Solution

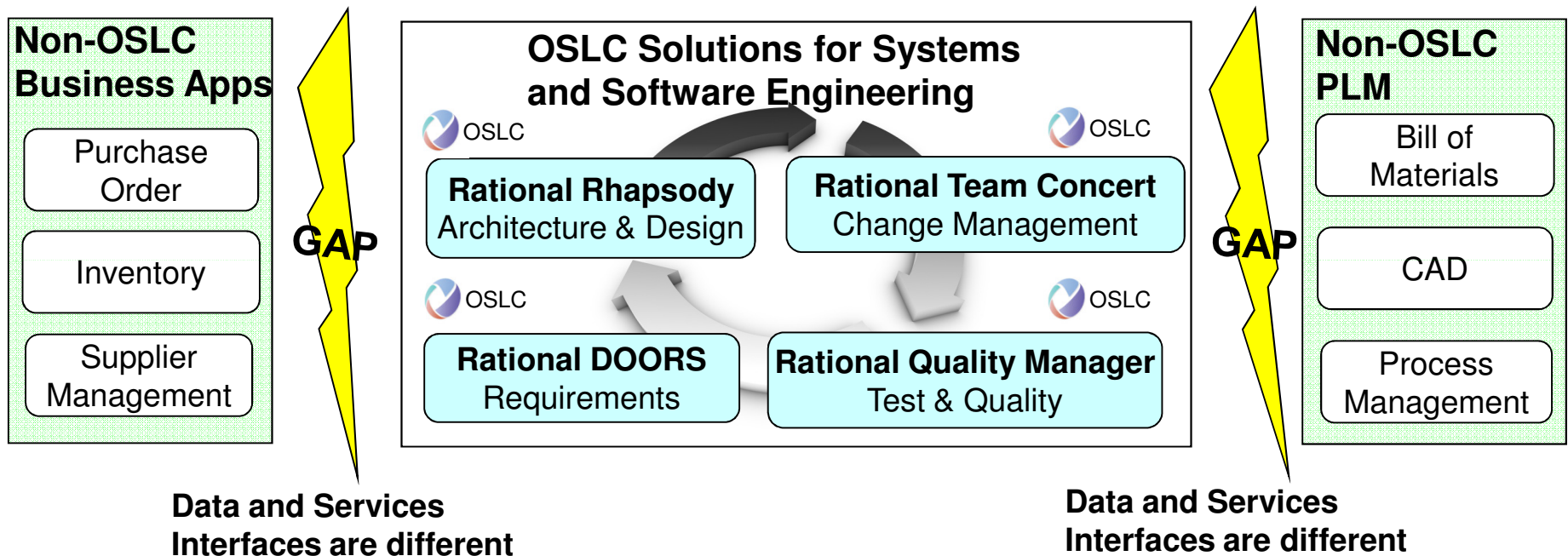
Users can work across the integration without leaving their favorite tool



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

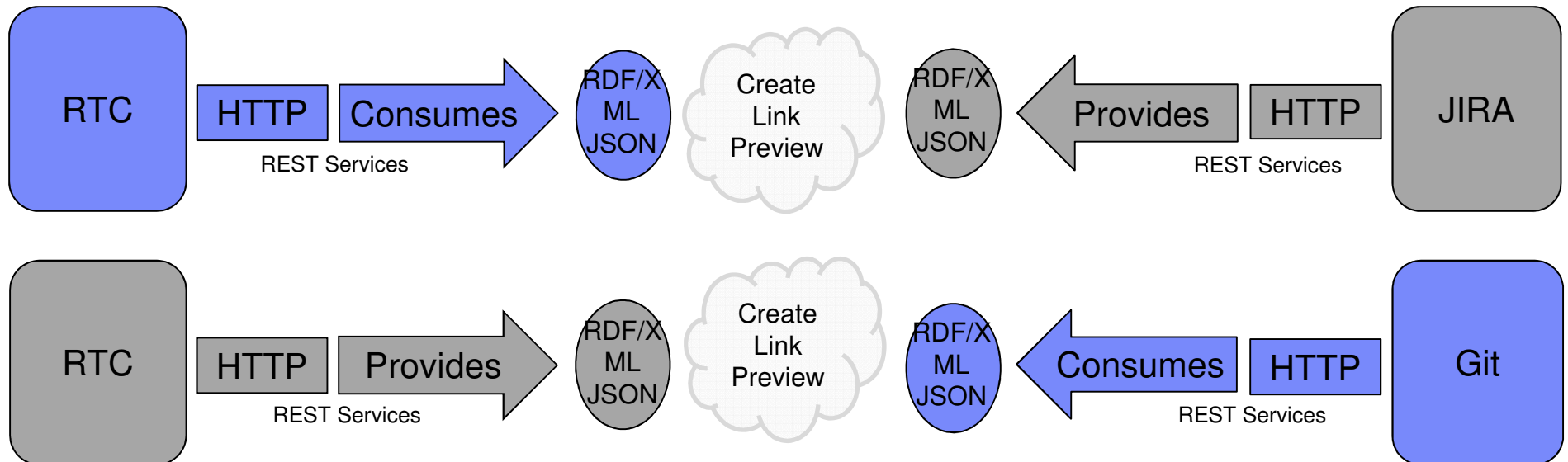


The gaps prevent us from answering questions such as:

- 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

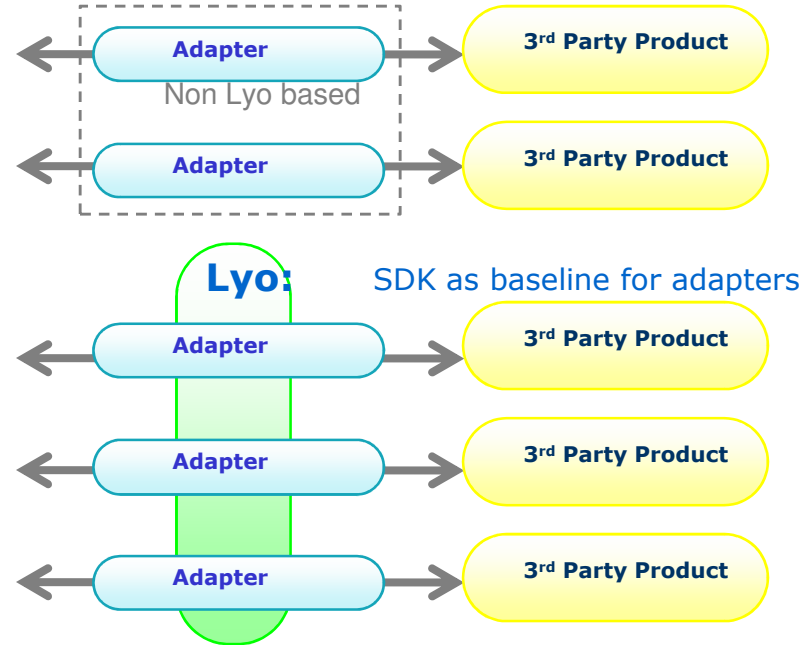
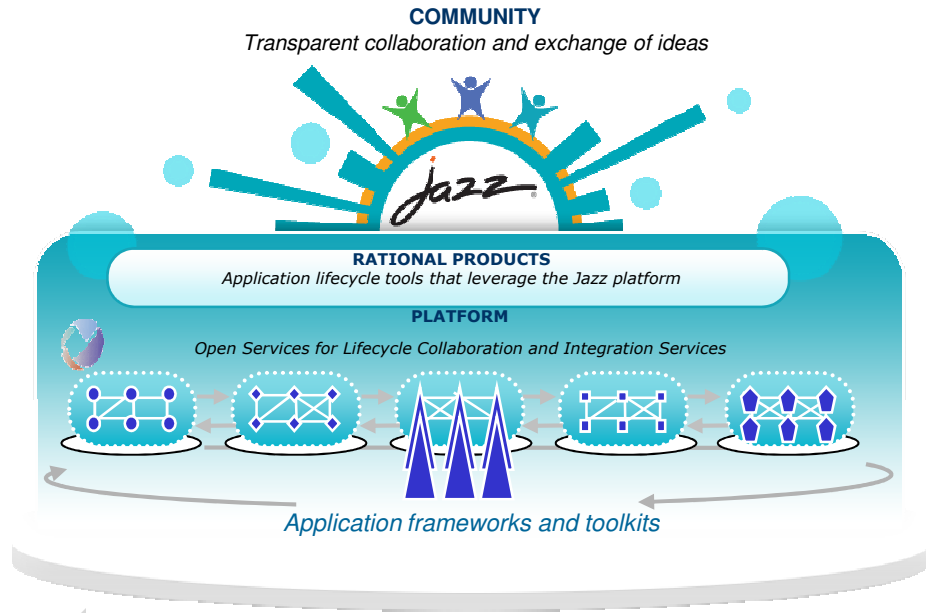
- An OSLC provider is responsible for exposing domain data in accordance with the OSLC specification to allow for creating, updating and querying linked data
- An OSLC consumer is responsible for consuming the OSLC provider services so that it can in turn, create, update, and query data via the delegated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

Build Hudson_Build_Definition Test2 [15]

✓ Completed
Duration: 24 seconds
Start Time: October 21, 2011 2:51:23 PM
Completed: October 21, 2011 2:51:48 PM

Contribution Summary
External Links: [1 link](#)
Logs: [1 log](#)

Associated Release
Released builds are available as choices in the work item "Found In" field.
[Create a release to associate with this build](#)

Reported Work Items
Work items reported against this build to help stabilize it.
[None reported against this build](#)
[Create a new work item](#)
[Associate an existing work item](#)

General Information
Requested by: ADMIN
Build Definition: [Hudson_Build_Definition](#)
Build Engine: [Hudson_Engine](#)
Tags:
 Deletion allowed

Submit builds to Hudson directly from RTC using its extensible Build Engine support

View Hudson Build Result to assess the builds success or failure

Hudson console job output linked to the build result as a log file

Overview | External Links | Logs

2 IBM Corporation

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)	<ul style="list-style-type: none"> • Tracks change set (link) -> • Associate change request (create/link) 	Git web
RTC Change request (any type)	<ul style="list-style-type: none"> • Tracks change set (link) -> • <- Associate change request (link) 	Git command line (push)

RTC & GIT command line

Associate 'defect' to a git comit at push time

```
JKEBankingRepo.git -- bash -- 93x28
dhcp-9-27-43-223:JKEBankingRepo.git jcleong$ git add .
dhcp-9-27-43-223:JKEBankingRepo.git jcleong$ git commit -m "Bug (138) - Email attachment fix"
[master 84fcc83] Bug (138) - Email attachment fix
 1 files changed, 1 insertions(+), 1 deletions(-)
dhcp-9-27-43-223:JKEBankingRepo.git jcleong$ git push origin master
root@gearbox.ic.ibm.com's password:
Counting objects: 5, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 317 bytes, done.
Total 3 (delta 0), reused 0 (delta 0)
To ssh://root@gearbox.ic.ibm.com/var/www/git/JKEBankingRepo.git/
 a6241a0..84fcc83 master -> master
dhcp-9-27-43-223:JKEBankingRepo.git jcleong$
```

Link to the Git commit in the defect itself

The screenshot shows the IBM Change and Configuration Management (CCM) interface for 'JKE Banking (Change Management)'. The main focus is on 'Defect 138' with the summary 'Email doesn't accept attachment'. The 'Links' tab is active, showing a link to the Git commit: 'Bug (138) - Email attachment fix master (84fcc831e318ed8e97680f87daeb8d082ece61d0)'. Other sections include 'Attachments', 'Subscribers' (listing Tanuj), and 'Change Sets (Remote)'.

RTC & GIT Web

Invoke the provider selection dialog from the Commit

Work Items
[Show Change Requests](#) | [Link Change Requests](#)

git://gearbox.ic.ibm.com / JKEBankingRepo.git / commit +++ git

[summary](#) | [shortlog](#) | [log](#) | [commit](#) | [commitdiff](#) | [tree](#)
 (parent: [a6241a0](#)) | [patch](#)

commit search: re

Bug (138) - Email attachment fix .master

```

author   Joseph Leong <jcleong@us.ibm.com>
         Fri, 18 May 2012 14:13:34 +0000 (10:13 -0400)
committer Joseph Leong <jcleong@us.ibm.com>
         Fri, 18 May 2012 14:13:34 +0000 (10:13 -0400)
commit   84fcc831e318ed8e97680f87daeb8d082ece61d0
tree     7d0ce0dd6aedd7a2637da7a02936c4ed8d907ac tree | snapshot
parent   a6241a049680c6254bc1d3aab499ca92241edeba commit | diff
  
```

Bug (138) - Email att

[DryRun.txt](#) [diff](#) | [blob](#) | [his](#)

[Production Source Code](#)

git://gearbox.ic.ibm.com / JKEBankingRepo.git / commi

[summary](#) | [shortlog](#) | [log](#) | [commit](#) | [co](#)
 (parent: [a6241a0](#)) | [patch](#)

Bug (138) - Email attachment fix .m

```

author   Joseph Leong <jcleo
         Fri, 18 May 2012 14
committer Joseph Leong <jcleo
         Fri, 18 May 2012 14
commit   84fcc831e318ed8e976
tree     7d0ce0dd6aedd7a263
parent   a6241a049680c6254bc
  
```

Bug (138) - Email attachment f

[DryRun.txt](#) [diff](#) | [blob](#) | [history](#)

[Production Source Code](#)

Create New Link to Existing

Type:

Summary: *

Filed Against: *

Severity:

Found In:

Owned By:

Priority:

Planned For:

Description:

https://clm.ic.ibm.com:9443/ccm/gitAdapter-adapted-project/0/JKEBankingRepo.git/c...

https://clm.ic.ibm.com:9443/ccm/gitAdapter-adapted-project/0/JKEBankingRepo.git/createLink?...

[Git Integration Dev](#)

[Innovate Conference App Ext \(CM\)](#)

[Innovate Water \(CM\)](#)

[JKE Banking \(Change Management\)](#)

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

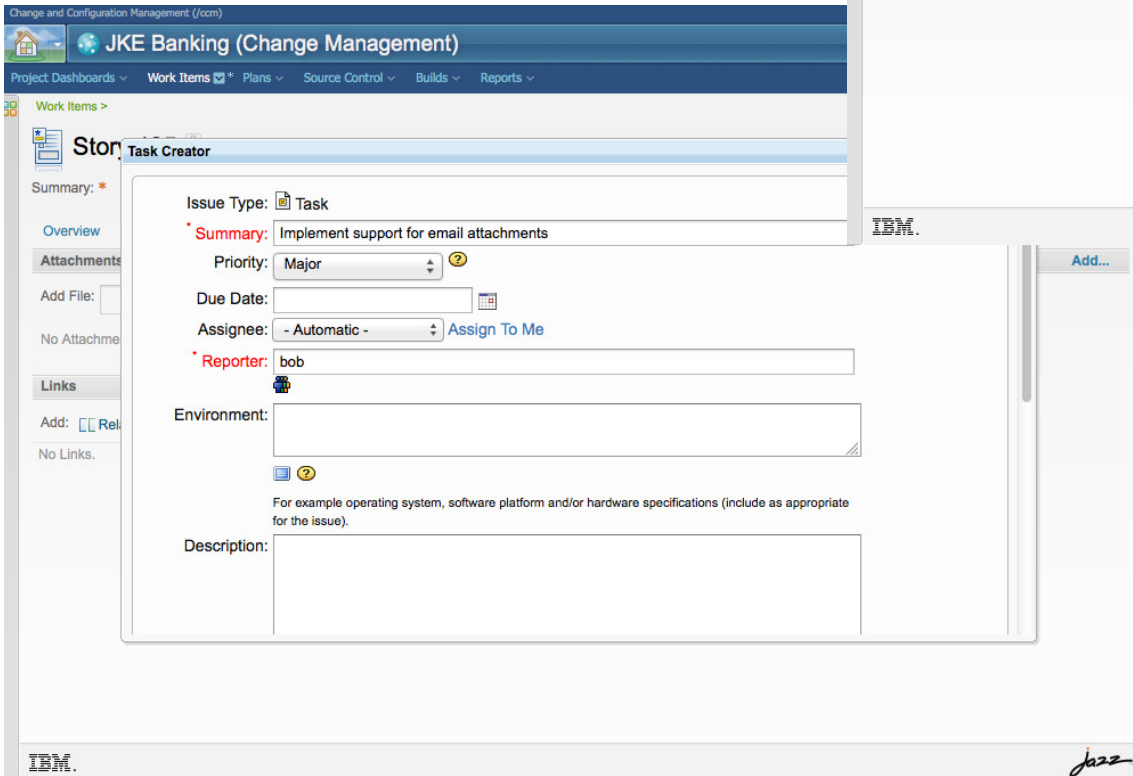
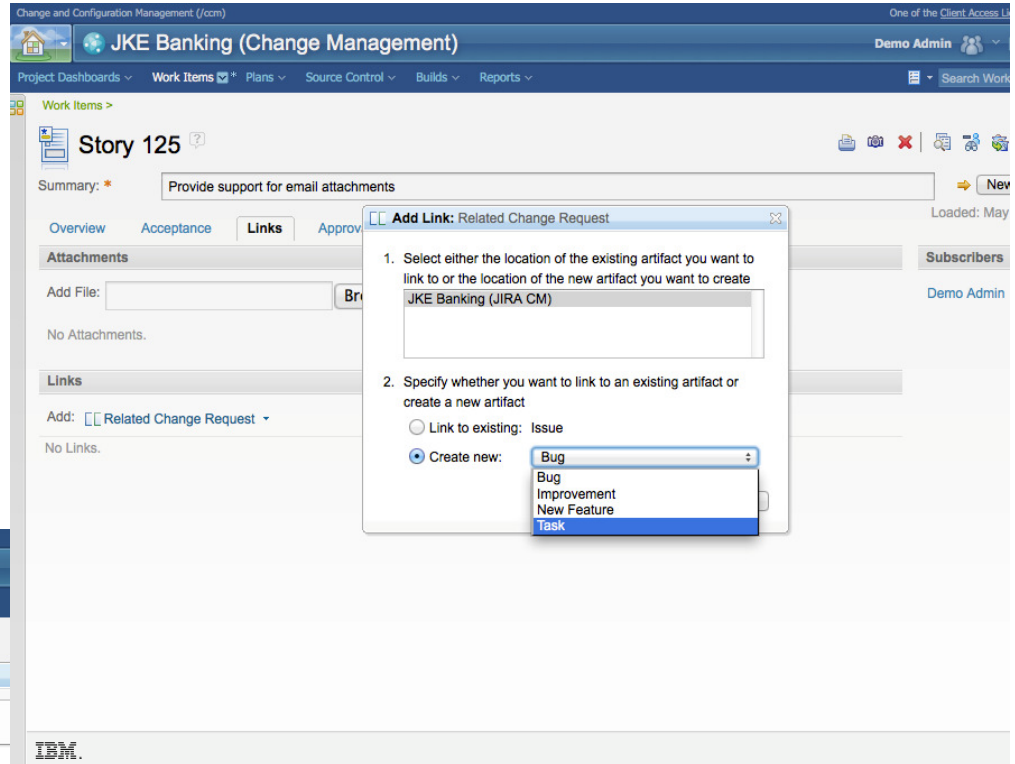
- Available now as an open beta from jazz.net: <https://jazz.net/library/article/766>
- GA intended for release in 2012

Rational OSLC adapter for JIRA use cases

Rational Product	Association	Atlassian Jira
RTC Change request (any type)	<ul style="list-style-type: none"> • Related change request (create/link) -> • <- Related change request (link) 	Issue (any type)
RTC Change request (any type)	<ul style="list-style-type: none"> • Affected by defect (create/link) -> • <- Affects (link) 	Issue (any type)
RTC Change request (any type)	<ul style="list-style-type: none"> • Affects a plan item (create/link) -> • <- Affects (link) 	Issue (any type)
RTC Change set	<ul style="list-style-type: none"> • Tracks change set (create/link) -> • <- Associated (link) 	Issue (any type)
RQM Test case	<ul style="list-style-type: none"> • Tests (create/link) -> • <- Tested by (link) • Affected by (create/link) -> • <- Affects test (link) 	Issue (any type)
RQM Test plans Test cases Test scripts Test execution records Test suites	<ul style="list-style-type: none"> • Related tasks (create/link) -> • <- related 	Issue (any type)
RRC requirement	<ul style="list-style-type: none"> • Tracked by (create/link) -> • <- Tracks (link) 	Issue (any type)
RRC requirement	<ul style="list-style-type: none"> • Implemented by (create/link) -> • <- Implements (link) 	Issue (any type)

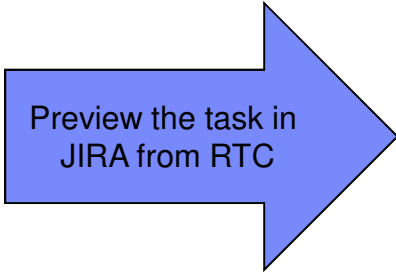
RTC & JIRA

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



Fill in the record details
in the delegated UI

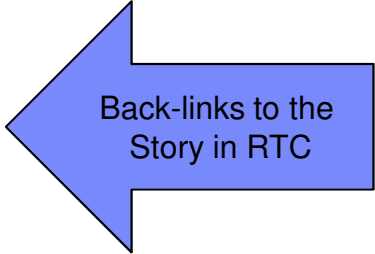
RTC & JIRA



The screenshot shows the JIRA web interface. The main view displays a task titled 'JKE-7: Implement support for email attachments' with a status of 'Open' and priority of 'Major'. A modal window is open, showing detailed information for this task, including its project, type, priority, and dates. The modal also shows a 'Show More' link at the bottom.

This screenshot shows the 'Details' section of the JIRA task. It includes the following information:

- Type:** Task
- Priority:** Major
- Status:** Open (View Workflow)
- Resolution:** Unresolved
- Affects Version/s:** None
- Fix Version/s:** None
- Component/s:** None
- Labels:** None
- OSLC Links:** Related Change Request
 - 125: Provide support for email attachments
- People:** Assignee: admin, Reporter: admin, Vote (0), Watch (0)
- Dates:** Created: Today 4:28 PM, Updated: Today 4:28 PM



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

The screenshot shows the 'Jazz COMMUNITY SITE' with a search bar. The main heading is 'Integrations. What works with what?'. Below this, it states: 'Our products work with a wide variety of 3rd party tools and are a part of a diverse ecosystem of integrated Rational solutions. To get the most out of your tools, find out what works with what.' There is a dropdown menu for 'Choose a tool:' currently set to 'Rational Team Concert'. A list of 'All tools' is provided, including Atlassian JIRA, BMC Remedy, Bugzilla, HP Quality Center, HP Service Manager, IntelliJ IDEA, Microsoft MSP, Rational Application Developer, Rational Asset Manager, Rational Build Forge, Rational Change, Rational ClearCase, Rational ClearQuest, Rational DOORS, Rational Developer for System z, Rational Method Composer, Rational Quality Manager, Rational Requirements Composer, Rational RequisitePro, Rational Rhapsody, Rational Software Analyzer, Rational Software Architect, Rational Software Modeler, and Rational Synergy. The main content area displays 'Integrations with Rational Team Concert' with a search bar and a 'Show Details' checkbox. Three integration entries are shown: 'BMC Remedy to RTC' (provided by Rational Services, GA), 'BSDGroup HPQC RTC Bridge' (provided by Business partner, GA), and 'CM Logic JazzConnect JIRA Integration with RTC and RQM' (provided by Business partner, GA). A fourth entry, 'HPSM Integration Framework with RTC', is partially visible at the bottom.

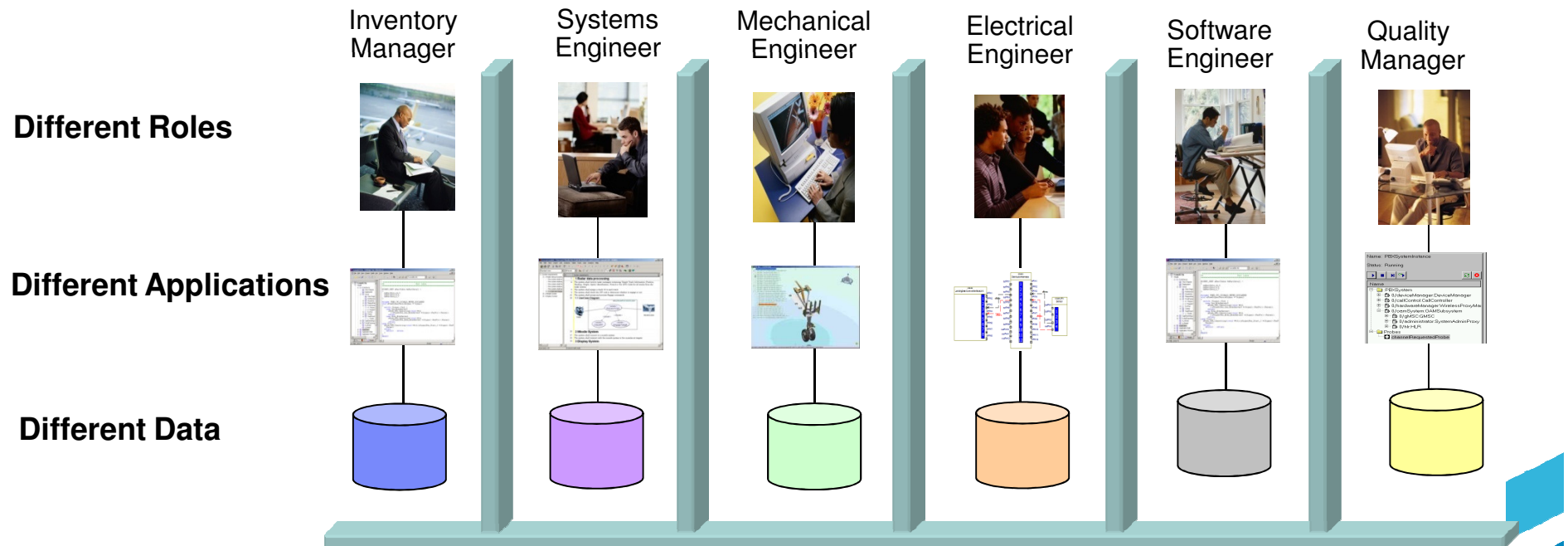
Challenges in Complex Product Development

Collaboration between domains is ad hoc and manual

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

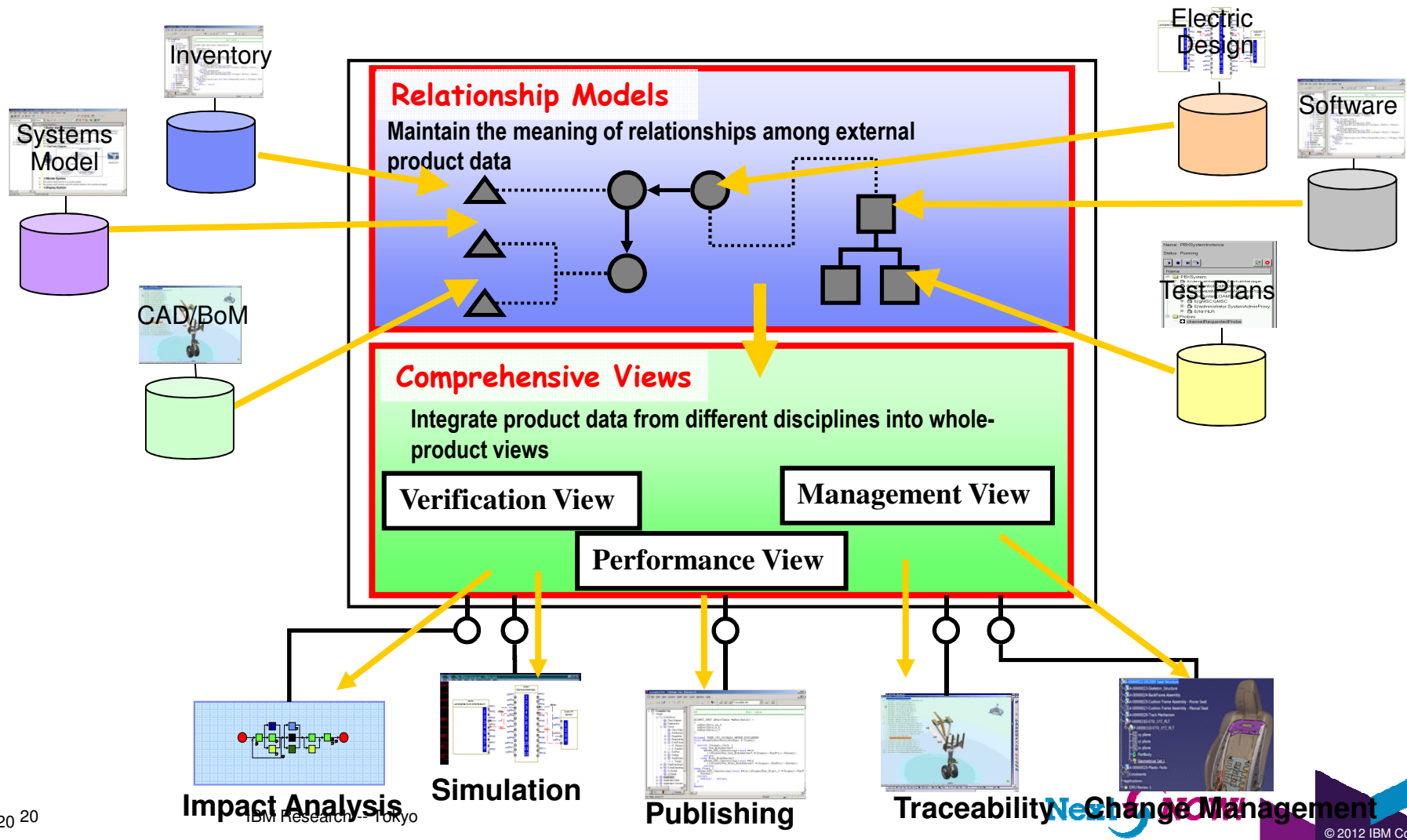
Lack of holistic view prevents us from:

- 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

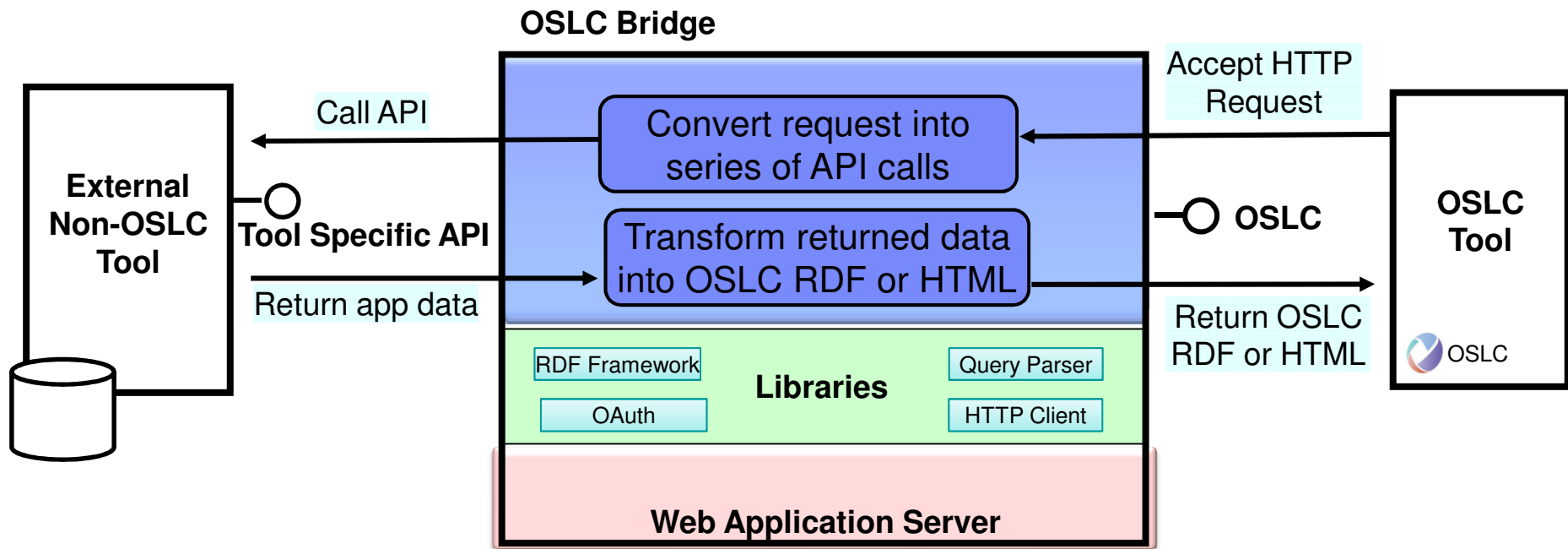
Establish the hub technology to manage the cross-domain knowledge and realize comprehensive views, where master data reside in domain applications



OSLC Bridge Architecture

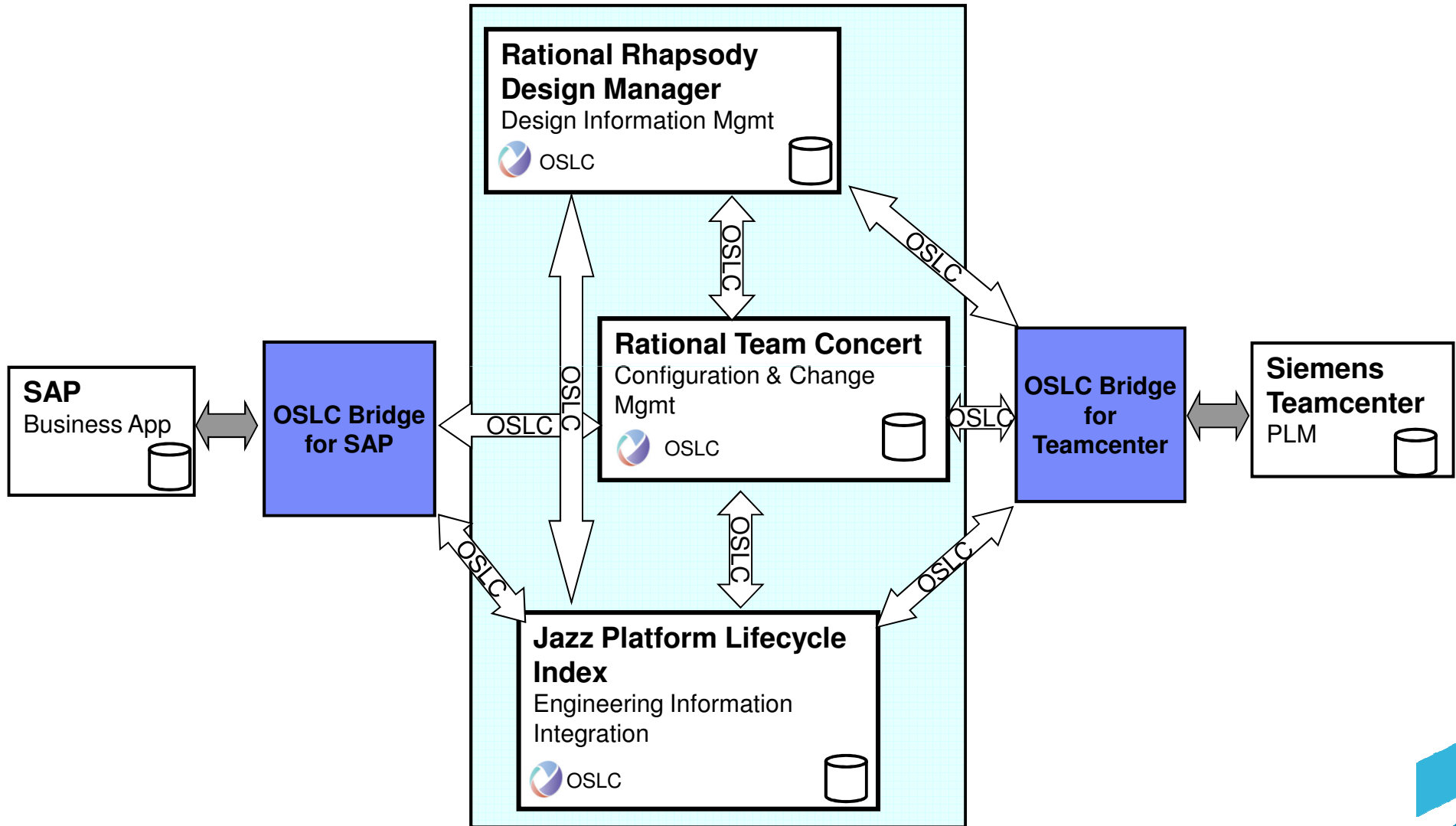
OSLC Bridge mediates OSLC services and external non-OSLC tool API by:

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

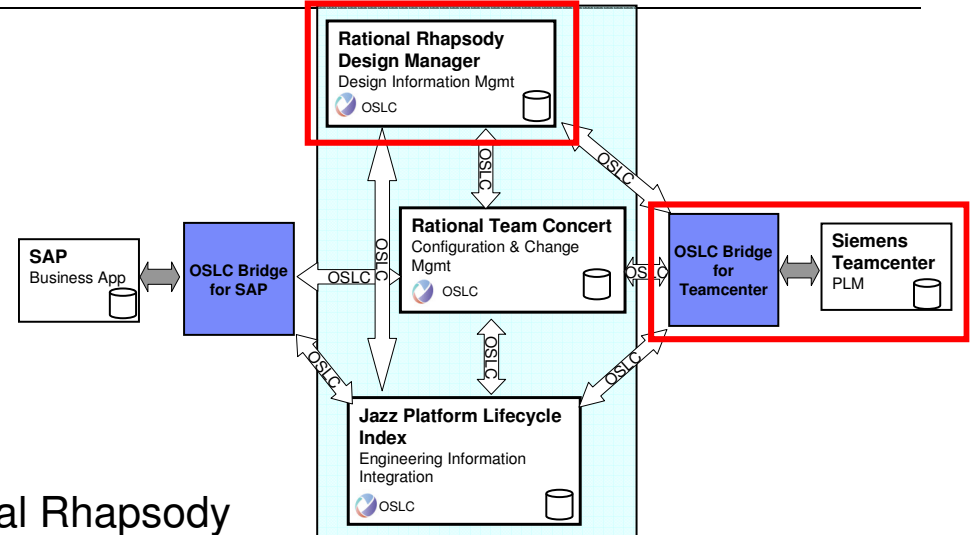


- Supports various types of business and PLM applications
- Uses IBM Research's technologies to
 - Map RESTful services requests and method invocations
 - Synchronize data between objects and RDF to preserve graph structures

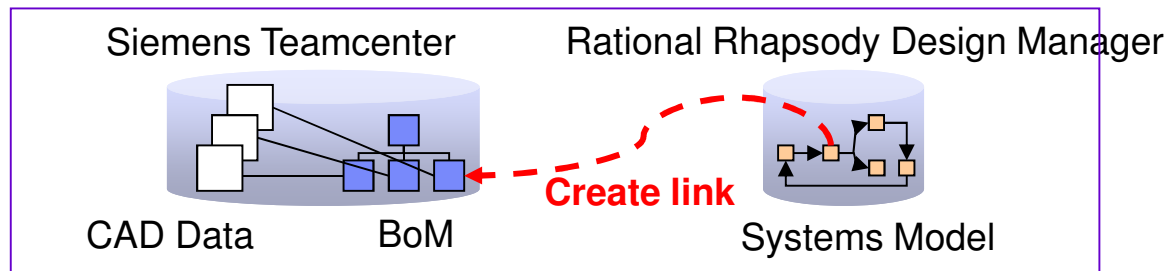
Example



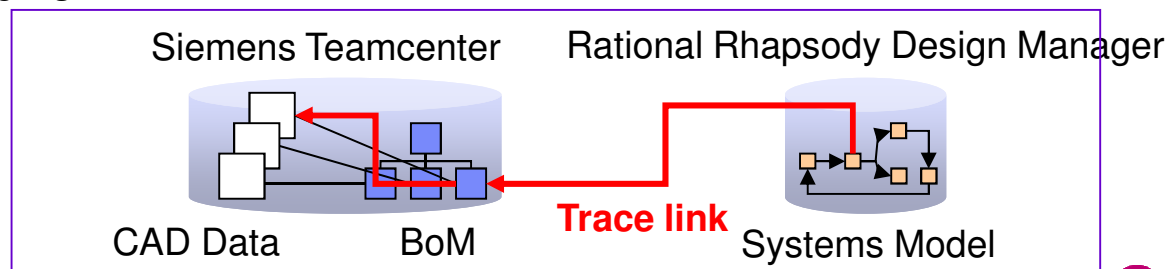
Example – Traceability of Artifacts



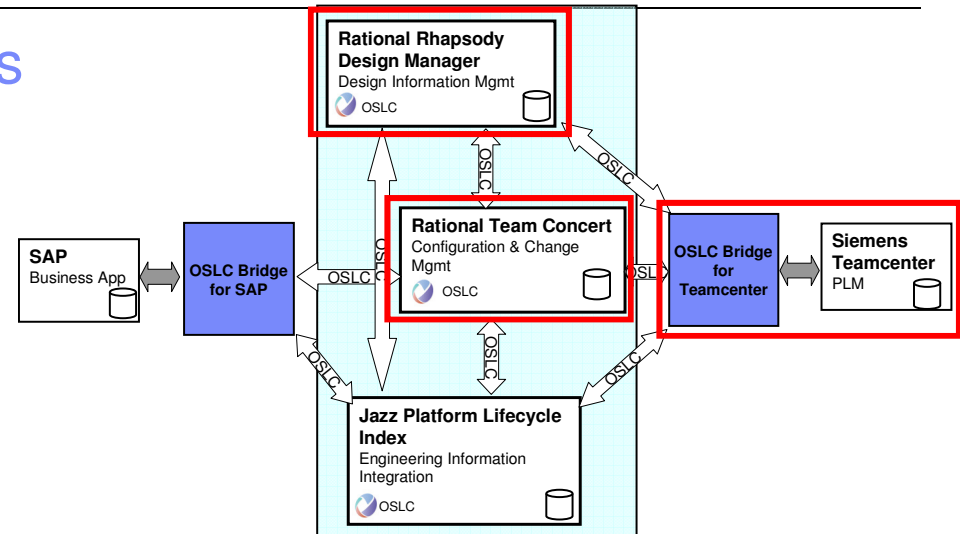
1. Create links from model elements in Rational Rhapsody Design Manager to BoM data items in Siemens Teamcenter



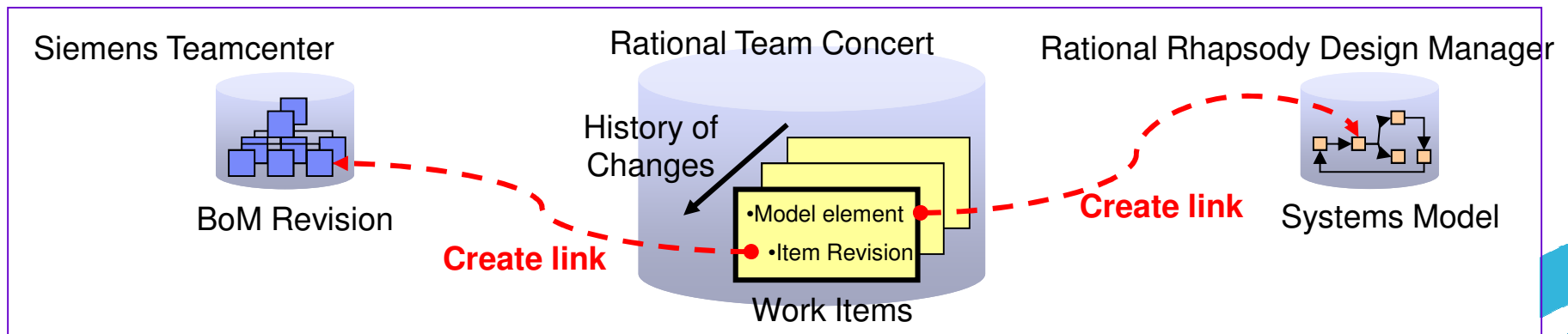
2. By clicking the created links, we can trace from model elements to BoM data items



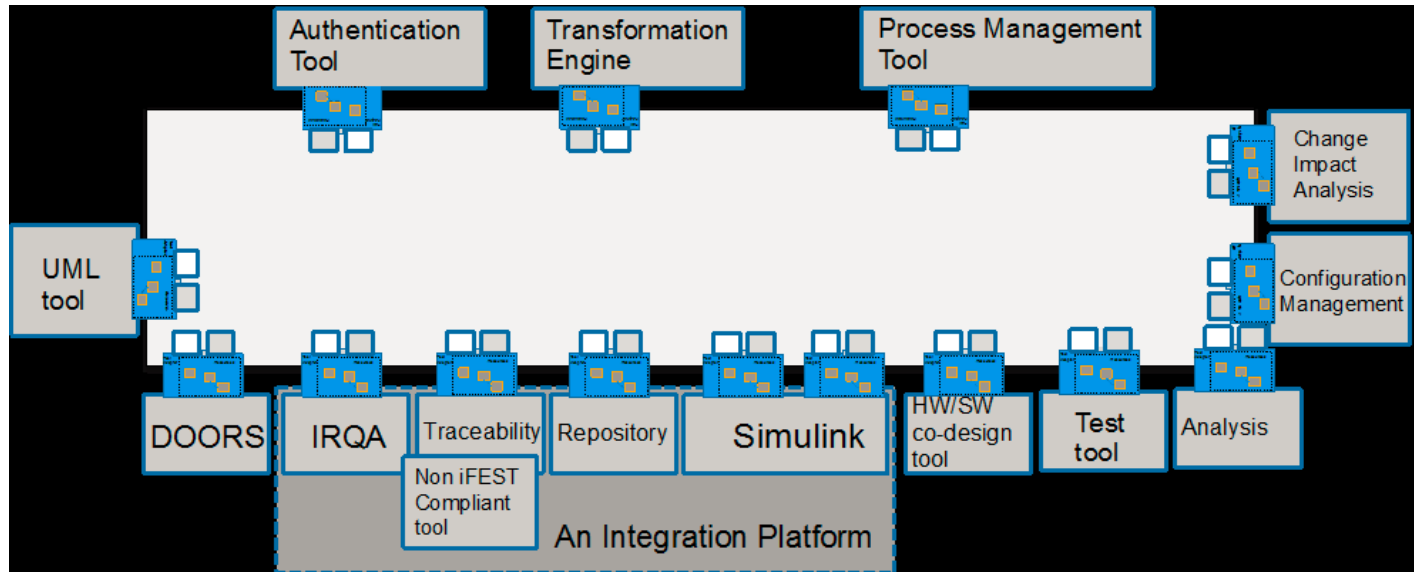
Example – Traceability of Changes



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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