

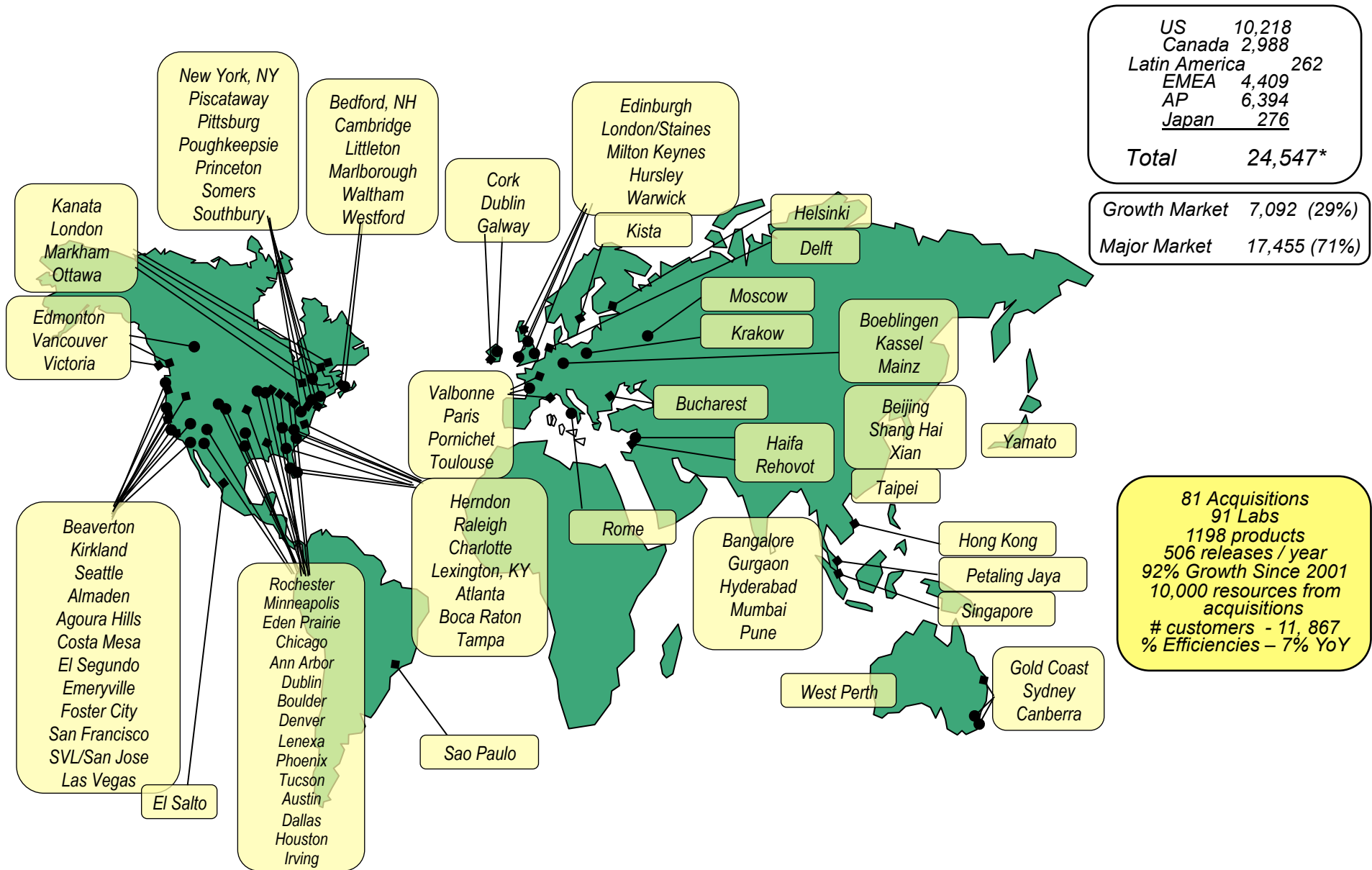
Connecting the dots

Development Lifecycle integration with open standards

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Example: IBM Software Group – Agile Transformation at Large



IBM Rational – Improvements in Software product delivery

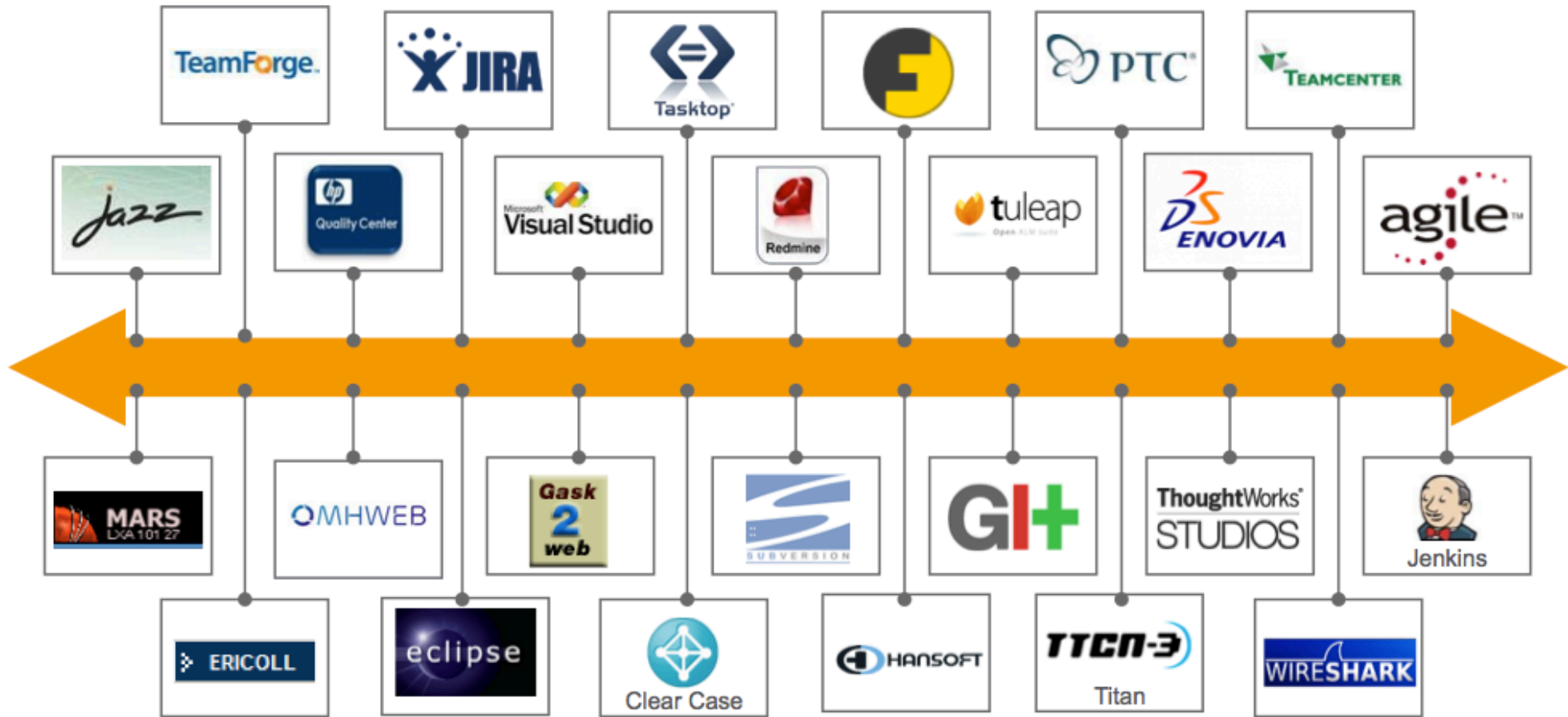
Metric	Goal	2006 Measurement	2011 Measurement
Maintenance / Innovation	50/50	42% / 58%	31% / 69%
Customer Touches / Product	100	~10	~ 400
Customer Calls	-5% YoY	~ 135,000	~86,000 (-14% since 2010)
Customer Defect Arrivals	-15% YoY	~ 6,900	~2200
On Time Delivery	65%	47%	94%
Defect Backlog	3 Months	9+ Months	3 months
Enhancements Triaged	85%	3%	100%
Enhancements into Release	15%	1%	21%
Customer Sat Index	88%	83%	88%
Beta Defects Fixed Before GA	50%	3%	85%
Cost of Poor Quality		~ \$10,000,000	~ \$5,600,000 (-13% since 2010)

Lifecycle Measurements	2008	2010	2012 – 2013	Total Improvement
Project Initiation	30 days	10 days	2 days	28 days
Groomed Backlog	90 days	45 days	On-going	89 days
Overall TTD	120 days	55 days	3 days	117 days
Iteration Length	6 weeks	4 weeks	4 weeks	2 weeks
Number of Iterations	6	8	3	N / A
Composite Build Time	36 hours	12 hours	8 hours	400 %
BVT Availability	N / A	18 hours	< 1hour	17 hours
Iteration Test Time	5 days	2 days	4 hours	4 days
Total Deployment Time	2 days	8 hours	2 hours	2 days
Overall TTP	9 days	3 days	15 hours	8 days
Time Between Releases	12 Months	12 Months	3 Months	9 Months

<https://jazz.net/blog/index.php/2013/07/27/improving-throughput-in-the-deployment-pipeline/>

However ...

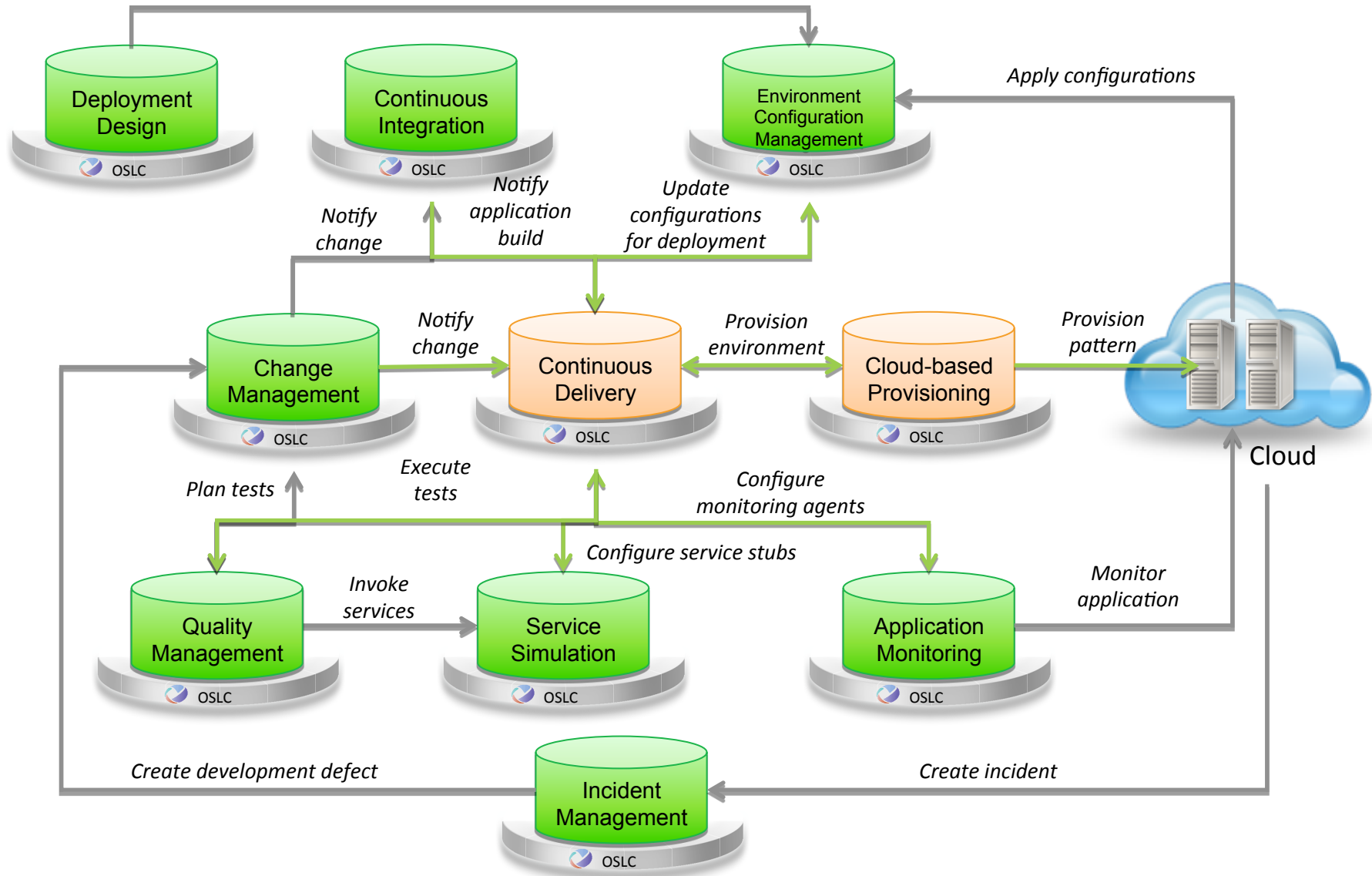
Example: Lifecycle Tools @ Ericsson



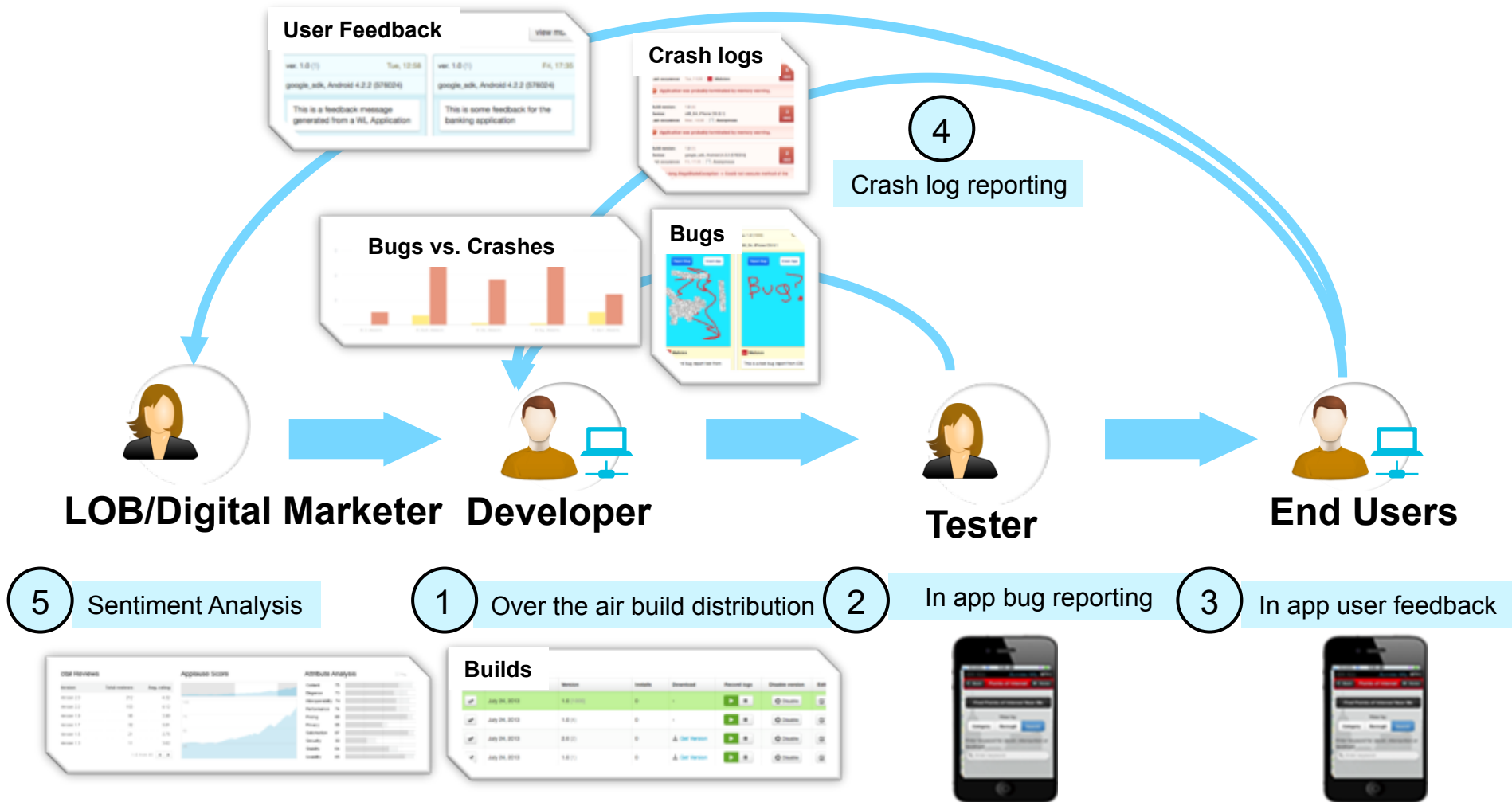
<http://open-services.net/resources/presentations/should-i-link-or-should-i-sync/>

Example: On Premise Delivery

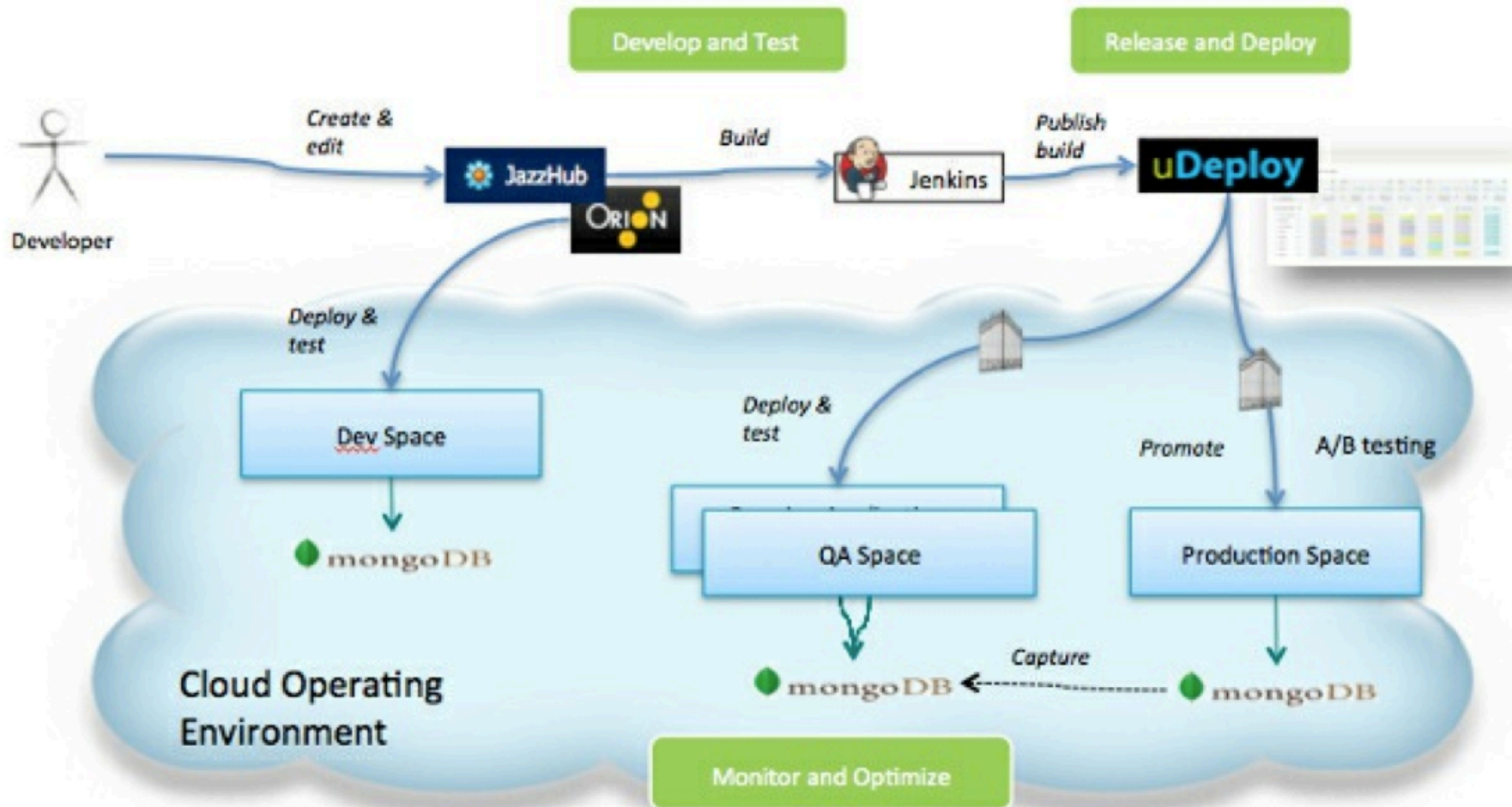
Generate automation



Example: Mobile Quality Assessment



Example: IBM DevOps Services PaaS Delivery on Bluemix

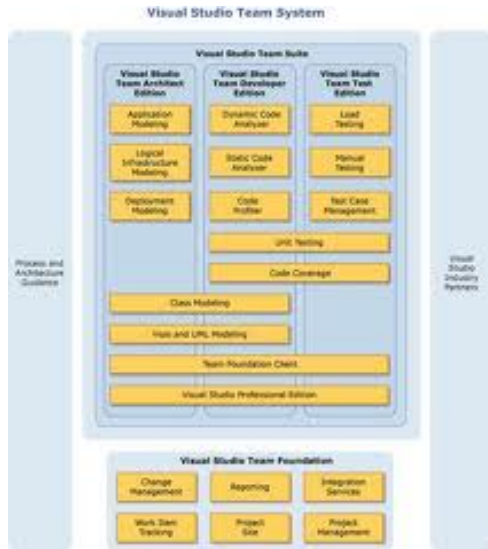


Software Delivery and DevOps

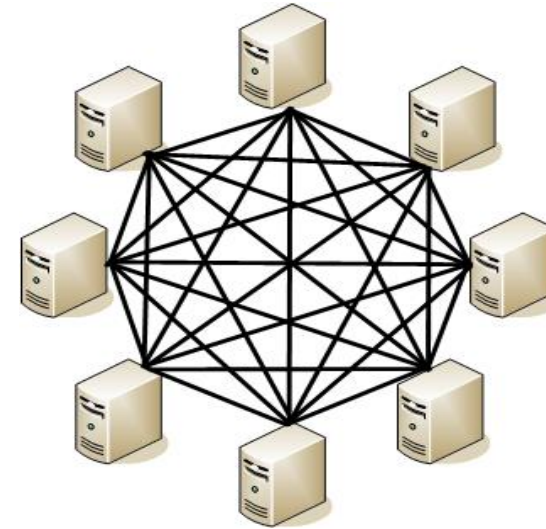
Involves different disciplines,
roles and tasks

across heterogeneous
tools and repositories

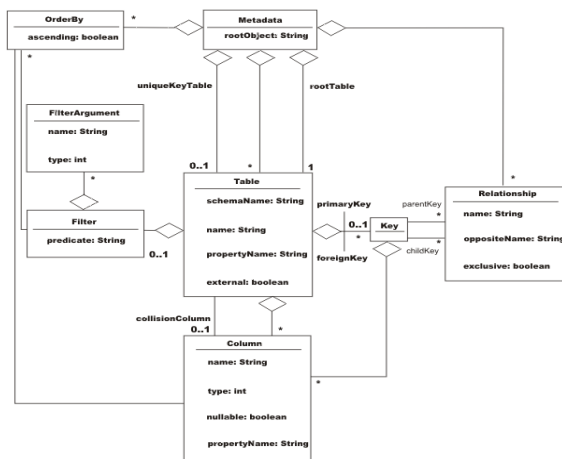
Some Tool Integration Approaches



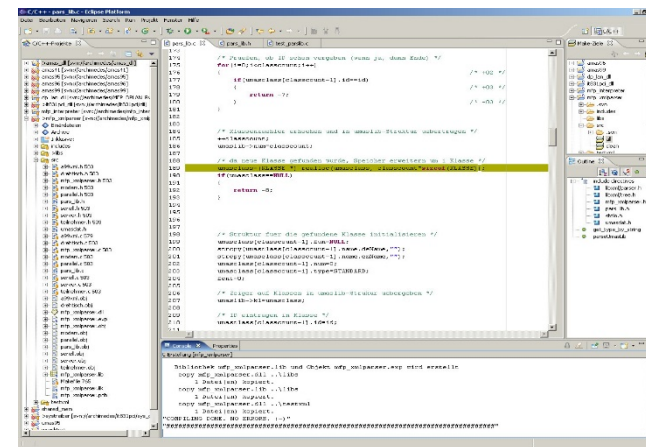
Single Repository



Point-to-Point



Universal Metadata



Common Platform



Open Services for Lifecycle Collaboration (OSLC)

Access all lifecycle data without moving it out of the repositories it was created in



<http://oasis-open.org/>

GET MORE DETAILS @ <http://open-services.net>


Domain Workgroups

Automation

Automation 2.0  Final

Change and Configuration Management TC @oasis

Configuration Management 1.0  Scope

Change Management 3.0  Draft

Change Management

Change Management 2.0  Final

Estimation and Measurement inactive

Estimation and Measurement 2.0  Converge

Performance Monitoring

Performance Monitoring 2.0  Final

Quality Management

Quality Management 2.0  Final

Reconciliation

Reconciliation 2.0  Final

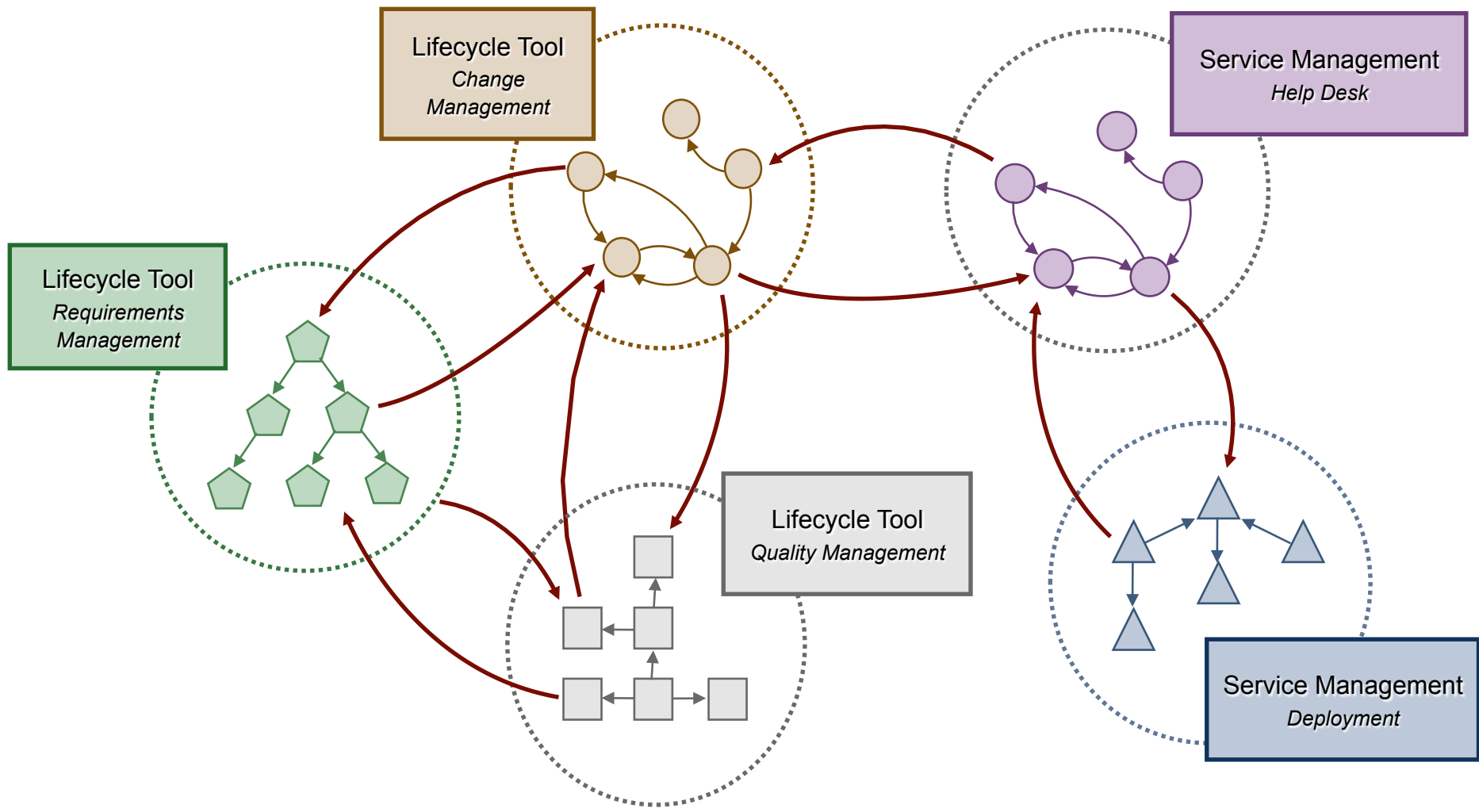
The data is the thing

Resources and relationships

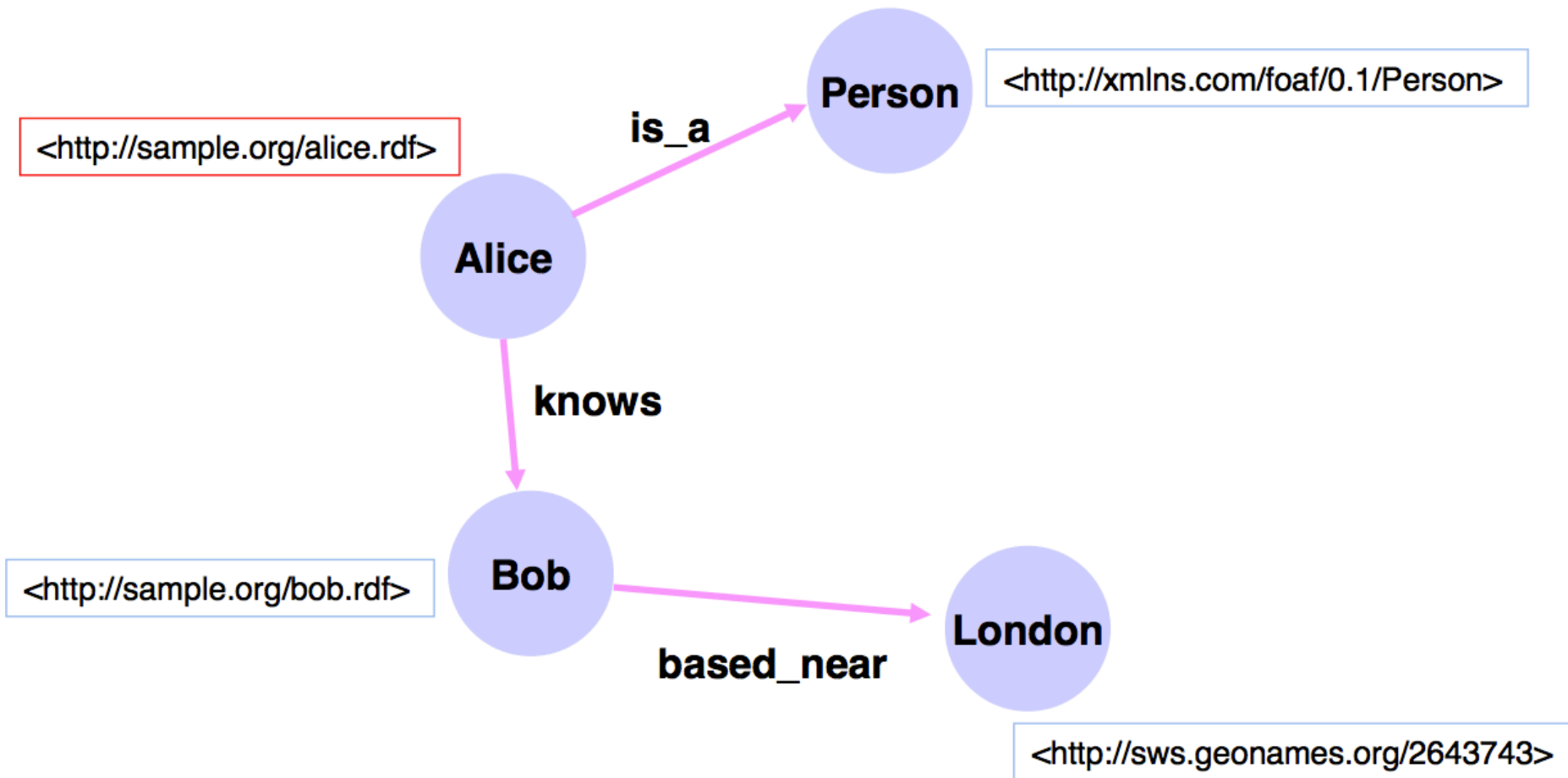
Tools operate on the data

Tools execute the process

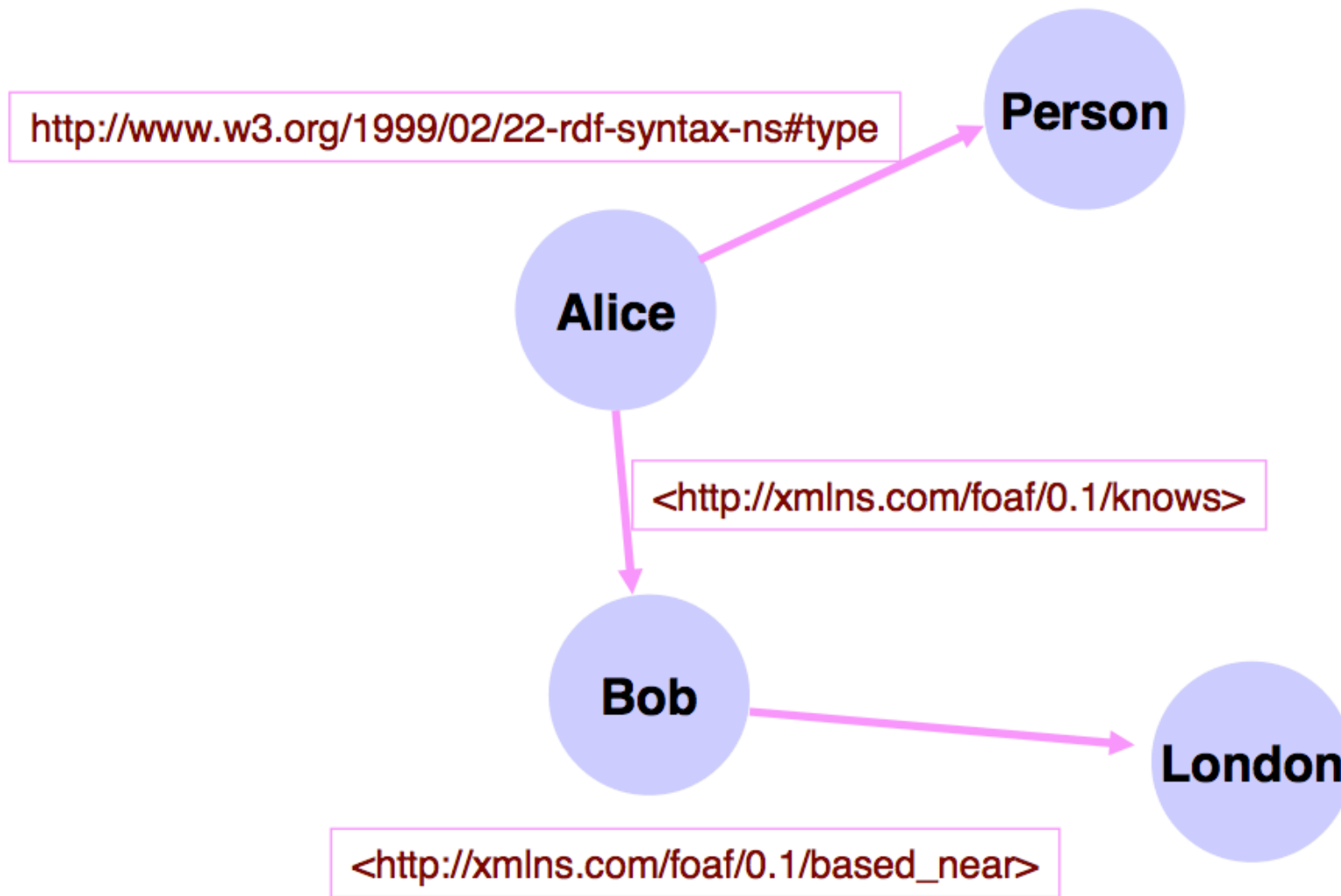
Tools expose their data in a common way
(REST)



Linking Data – „Things“



Linking Data – „Relationships“



RDF - Resource Description Format

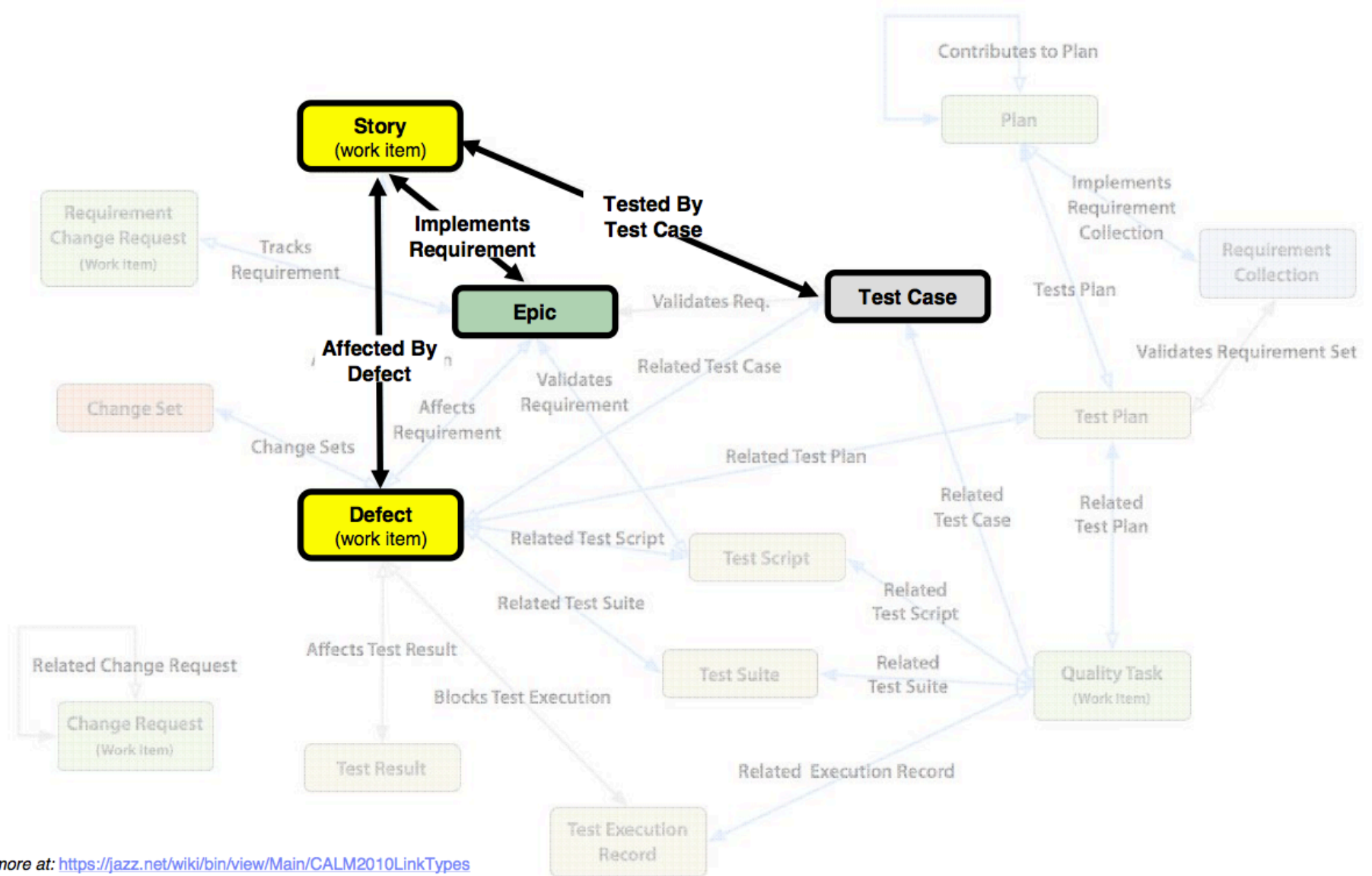
```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <foaf:Person rdf:about="http://sample.org/alice.rdf">
    <foaf:name>Alice</foaf:name>
    <foaf:knows rdf:resource="http://sample.org/bob.rdf"/>
  </foaf:Person>
</rdf:RDF>
```

SPARQL – Protocol and Query Language

```
PREFIX foaf:<http://xmlns.com/foaf/0.1/>
SELECT {
    ?email, ?name }
WHERE {
    <http://sample.org/alice.rdf> foaf:knows ?person .
    ?person foaf:name ?name .
    ?person foaf:mbox ?email
}
```

*Names and email of all people
that Alice knows*

Example: Implementation of Cross-Discipline Traceability



Learn more at: <https://jazz.net/wiki/bin/view/Main/CALM2010LinkTypes>

BRM Sprint 2 (1.0) Plan

Auto-Save Save

26 items: 23 open, 3 closed | Ends in: 3 days

Plan Details

Edit

Planned Items

Links Snapshots Dashboard Notes

View As: Traceability (17 items filtered)

Add Work Item

Actions	Summary	Owned By	Implements Requirement	Tested By Test Case	Affected by
	Requests sent in form of email	Unassigned	Requests sent in form of email	--	--
	Frequency of dividend transfer	Unassigned	--	Verify dividend transfer frequency	--
	Organization must provide justification for why funds are neec	Marco	Organization must provide justification for why funds are ne	Organization must provide justificatio	--
	Organizations can Apply	Marco	Organizations can apply	Organizations can Apply	--
	Organization must identify how much money is desired	Marco	Organization must identify how much money is desired	Organization must identify how much	Links (2,
	Donor Dividend Allocation Criteria	Deb	Donor Dividend Allocation Criteria	Donor dividend allocation conforms t	--
	Organizations may apply with an initial request	Bob	Organizations may apply with an initial request	Organizations may apply with an initi	--
	JKE Charity Coordinator will respond to request in the websit	Marco	JKE Charity Coordinator will respond to request in the web	JKE Charity Coordinator responds to	425: Rur
	Customers can Nominate an Organization	Marco	Customers can nominate an organization for the program	Customers can Nominate an Organiz	--

Change Management Artifacts

Requirements Management Artifacts

Quality Management Artifacts

Task 76

Summary: * Make UI for selecting multiple organizations more accessible

Overview Links Approvals History

Details

Type: Task

Filed Against: JKEWeb UI

Project Area: JKE Banking (Change Management)

Team Area: JKE Banking (Change Management)

Creation Date: Mar 27, 2012 5:39 AM

Created By: cadmin

Tags:

Owned By: Unassigned

Priority: Medium

Planned For: Release 1.0

Estimate: Correction:

Time Remaining:

Due Date:


```

- <rdf:RDF>
- <rdf:Description rdf:about="https://clm.jkebanking.net:9443/ccm/resource/itemName/com.ibm.team.workitem.WorkItem/76">
  <rtc_cm:timeSheet rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/workitems/_B2s-dHfPEeGEIq-p6JEY6g/rtc_cm:timeSheet"/>
  <rtc_cm:filedAgainst rdf:resource="https://clm.jkebanking.net:9443/ccm/resource/itemOid/com.ibm.team.workitem.Category/_U67v0r90EeCeP-ZM3UH5Dw"/>
  <oslc_cm:fixed>false</oslc_cm:fixed>
  <dcterms:modified>2012-03-27T05:40:36.083Z</dcterms:modified>
  <oslc_cm:approved>false</oslc_cm:approved>
  <rtc_cm:state rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/workflows/_DzGsIr90EeCeP-ZM3UH5Dw/states/com.ibm.team.workitem.taskWorkflow/1"/>
  <oslc:shortTitle rdf:parseType="Literal">Task 76</oslc:shortTitle>
  <rtc_cm:modifiedBy rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/users/_pw0re79yEeCS04DjoJC6UA"/>
- <dcterms:title rdf:parseType="Literal">
  Make UI for selecting multiple organizations more accessible
</dcterms:title>
<oslc:serviceProvider rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/contexts/_DzGsIr90EeCeP-ZM3UH5Dw/workitems/services"/>
<rtc_ext:contextId>_DzGsIr90EeCeP-ZM3UH5Dw</rtc_ext:contextId>
<dcterms:subject/>
<dcterms:description rdf:parseType="Literal"/>
<oslc:discussion rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/workitems/_B2s-dHfPEeGEIq-p6JEY6g/rtc_cm:comments"/>
<dcterms:creator rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/users/_pw0re79yEeCS04DjoJC6UA"/>
<rtc_cm:repository rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/repository"/>
<oslc_cm:severity rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/enumerations/_DzGsIr90EeCeP-ZM3UH5Dw/severity/severity.literal.13"/>
<dcterms:identifier>76</dcterms:identifier>
<oslc_cm:closed>false</oslc_cm:closed>
<oslc_cm:priority rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/enumerations/_DzGsIr90EeCeP-ZM3UH5Dw/priority/priority.literal.107"/>
<rtc_ext:archived>false</rtc_ext:archived>
<oslc_cm:verified>false</oslc_cm:verified>
<dcterms:created>2012-03-27T05:39:54.265Z</dcterms:created>
<dcterms:type>Task</dcterms:type>
<rtc_cm:progressTracking rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/workitems/_B2s-dHfPEeGEIq-p6JEY6g/progressTracking"/>
<rtc_cm:timeSpent/>
<oslc_cm:inprogress>false</oslc_cm:inprogress>
<rdf:type rdf:resource="http://open-services.net/ns/cm#ChangeRequest"/>
<rtc_cm:resolvedBy rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/users/_YNh4MOIsEdq4xpiOKg5hvA"/>
<rtc_cm:plannedFor rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/iterations/_D4KyUb90EeCeP-ZM3UH5Dw"/>

```

Work Items >

Task 76

Summary: *

Overview Links Approvals History

Attachments

Add File:

No Attachments.

Links

Add: ▾

Tracks Requirement

[44. Donor Chooses Multiple Organizations](#)

44: Donor Chooses Multiple Organizations

Card: Donor may identify one or more organizations.
The Donor(s) identifies one or more organizations to donate Dividend funds.
Conversation:
Registered User accesses account information via JKE.com (...)

Location

JKE Banking (Requirements) Elaborated Stories
Extended Functionality, Release 1

Attributes

Type:	User Story Elaboration	Format:	Text
Description:		Origin:	Customer
Priority:	High	Product Owner:	Bob
Status:	Approved		

Links

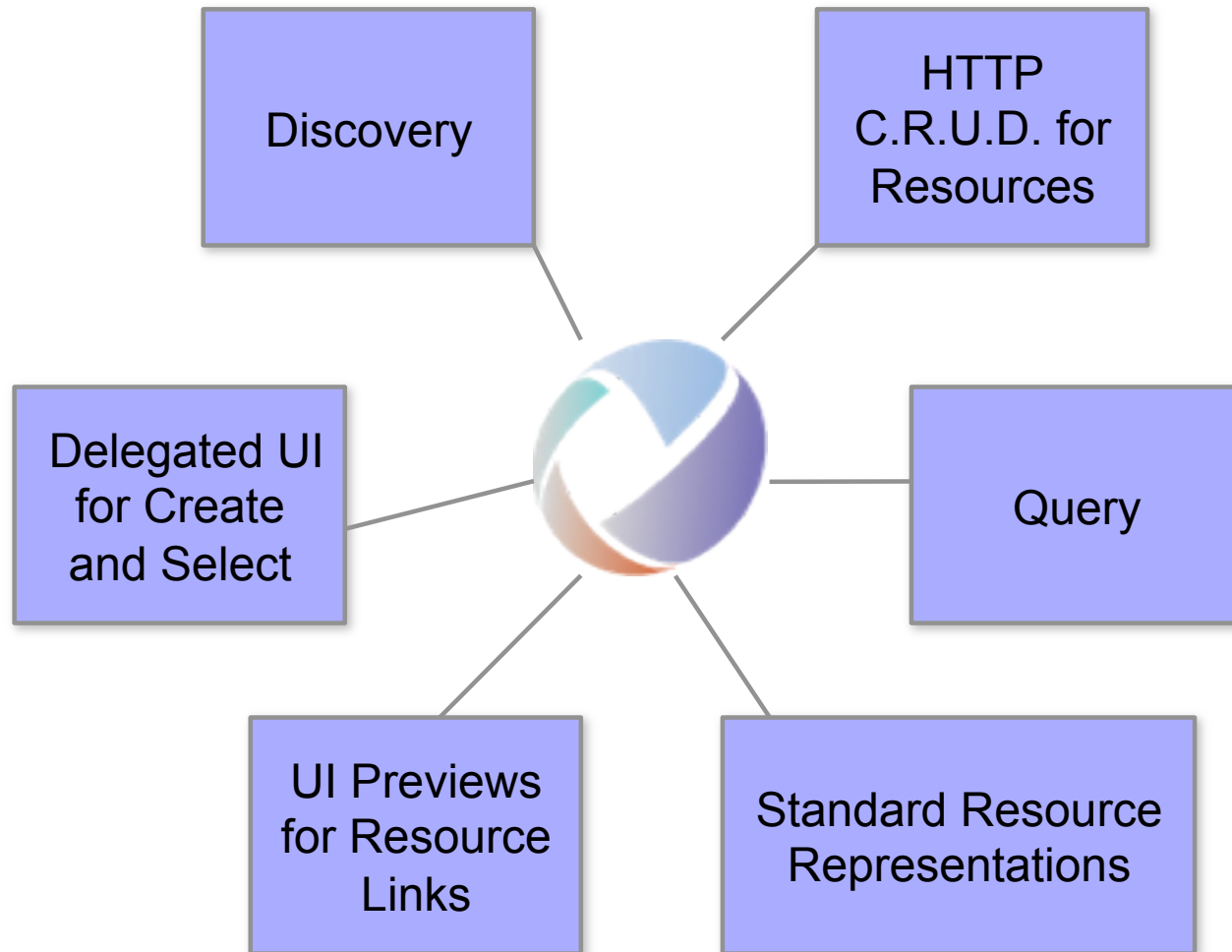
Constrained by (2): 92, 93	References Term (1): 79
Embeds (1): 41	Tracked By (1): ...
Illustrated By (7): 19, 21, 35, 35, 39, 41, 48	Satisfies (2): 67, 121
Implemented By (1): ...	

```

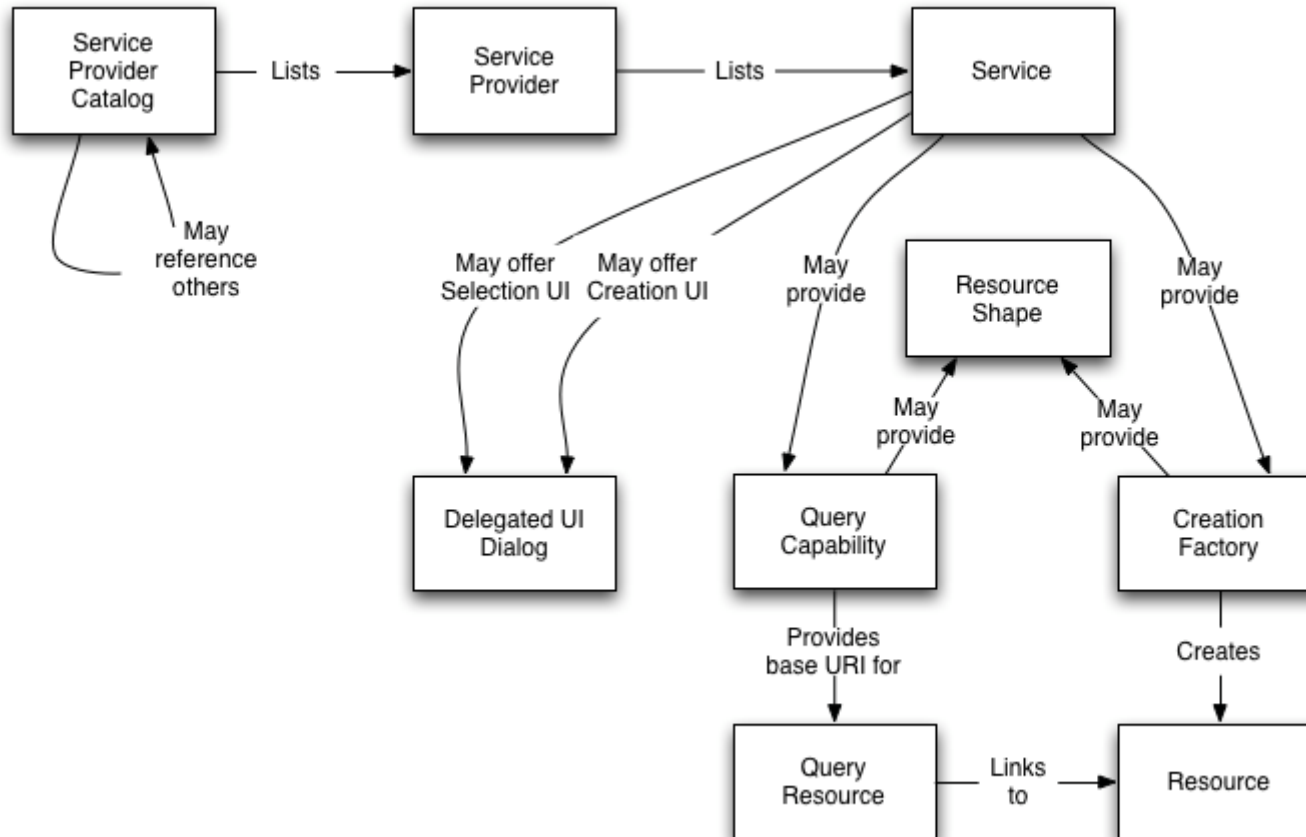
<oslc_cm:project rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/projectareas/_DzGsIr90EeCeP-ZM3UH5Dw"/>
<rtc_cm:estimate/>
<oslc_cm:tracksRequirement rdf:resource="https://clm.jkebanking.net:9443/rm/resources/_N18DC790EeCS04DjoJC6UA"/>
<rtc_cm:type rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/types/_DzGsIr90EeCeP-ZM3UH5Dw/task"/>
<oslc_cm:reviewed>>false</oslc_cm:reviewed>
<dcterms:contributor rdf:resource="https://clm.jkebanking.net:9443/ccm/oslc/users/_YNh4MOlsEdq4xpiOKg5hvA"/>
</rdf:Description>
- <rdf:Description rdf:nodeID="A0">
  <rdf:subject rdf:resource="https://clm.jkebanking.net:9443/ccm/resource/itemName/com.ibm.team.workitem.WorkItem/76"/>
  <rdf:predicate rdf:resource="http://open-services.net/ns/cm#tracksRequirement"/>
  <rdf:object rdf:resource="https://clm.jkebanking.net:9443/rm/resources/_N18DC790EeCS04DjoJC6UA"/>
  <rdf:type rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
  <dcterms:title>44: Donor Chooses Multiple Organizations</dcterms:title>
</rdf:Description>
</rdf:RDF>

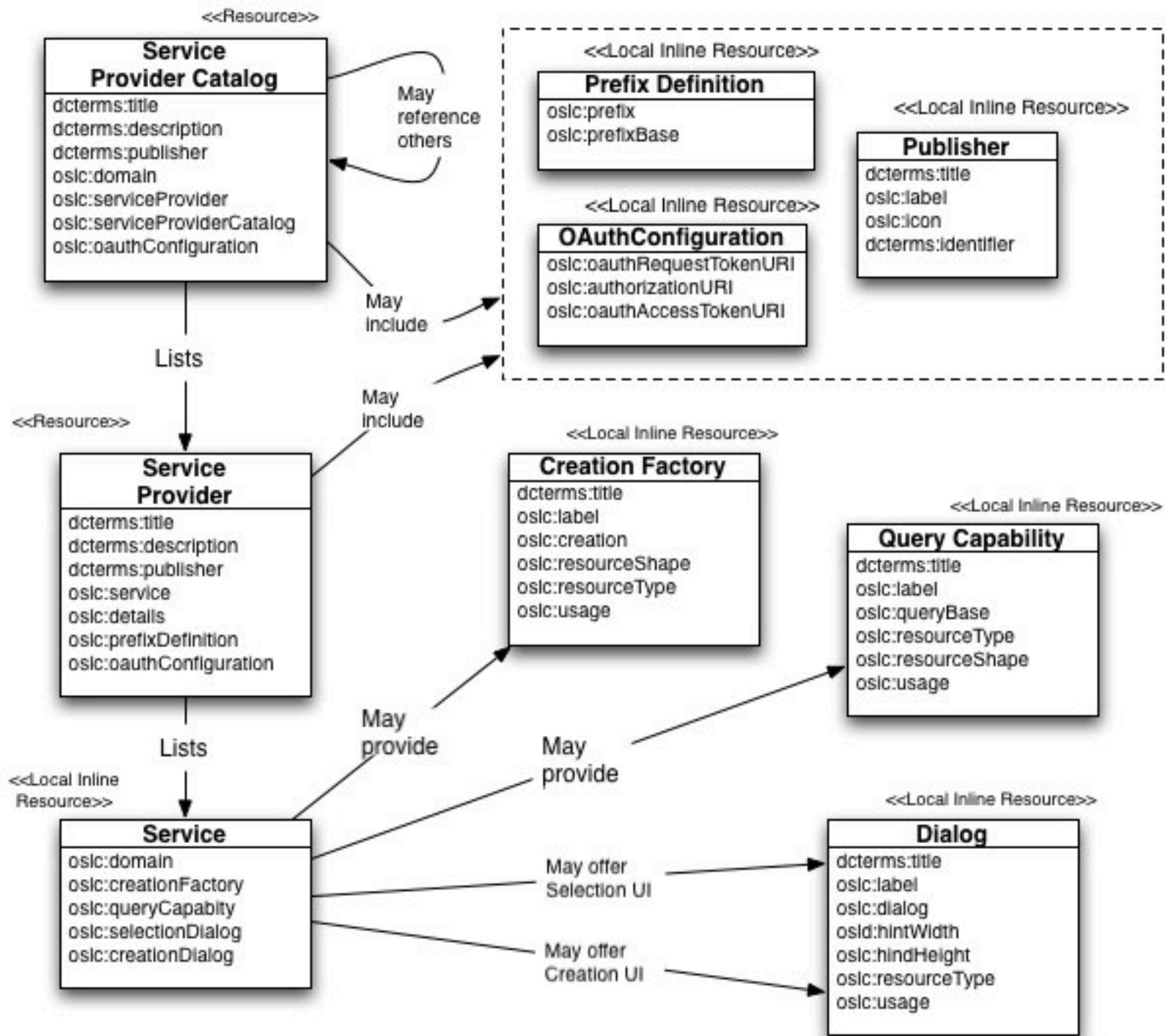
```

OSLC Specification Components



OSLC Service Providers (core spec)





Rootservices document

[...]

```
<!-- Change Management service catalog -->
<oslc_cm:cmServiceProviders
  xmlns:oslc_cm="http://open-services.net/xmlns/cm/1.0/"
  rdf:resource="https://jazz.net/sandbox01-ccm/oslc/workitems/catalog" />

<oslc_config:cmServiceProviders
  xmlns:oslc_config="http://open-services.net/ns/config#"
  rdf:resource="https://jazz.net/sandbox01-ccm/rtcslc/catalog" />

<oslc_scm:scmServiceProviders
  xmlns:oslc_scm="http://open-services.net/xmlns/scm/1.0/"
  rdf:resource="https://jazz.net/sandbox01-ccm/oslc-scm/catalog" />
```

[...]

Spec versioning through HTTP-Headers

```
curl --header "OSLC-Core-Version: 2.0" https://jazz.net/sandbox01-ccm/rootservices
```

ServiceProviderCatalog

```
<?xml version="1.0" encoding="UTF-8" ?>
<oslc_disc:ServiceProviderCatalog xmlns:oslc_disc="http://open-services.net/xmlns/discovery/1.0/" rdf:about="https://jazz.net/sandbox01-
xmlns:jfs_proc="http://jazz.net/xmlns/prod/jazz/process/1.0/">
  <dc:title>Project Areas</dc:title>
  <oslc_disc:entry>
    <oslc_disc:ServiceProvider>
      <dc:title>My Project (Change and Configuration Management)</dc:title>
      <oslc_disc:details rdf:resource="https://jazz.net/sandbox01-ccm/process/project-areas/_YkY34mDfEeSfwac2Vc1tig" />
      <oslc_disc:services rdf:resource="https://jazz.net/sandbox01-ccm/oslc/contexts/_YkY34mDfEeSfwac2Vc1tig/workitems/services.xml" />
      <jfs_proc:consumerRegistry rdf:resource="https://jazz.net/sandbox01-ccm/process/project-areas/_YkY34mDfEeSfwac2Vc1tig/links" />
    </oslc_disc:ServiceProvider>
  </oslc_disc:entry>
</oslc_disc:ServiceProviderCatalog>
```

[...]

- Service Provider <-> “Container” (e.g. one project)
- Catalog lists all available Providers for this application

Services – Creation Factories

```
<oslc:service>
  <oslc:Service>
    <oslc:domain rdf:resource="http://open-services.net/ns/cm#" />
    <calm:home>=
    <oslc:creationFactory>
      <oslc:CreationFactory>
        <dcterms:title rdf:parseType="Literal">Location for creation of Defect change requests </dcterms:title>
        <oslc:usage rdf:resource="http://open-services.net/ns/core#default" />
        <oslc:usage rdf:resource="http://open-services.net/ns/cm#defect" />
        <oslc:resourceType rdf:resource="http://open-services.net/ns/cm#ChangeRequest" />
        <oslc:resourceType rdf:resource="https://jazz.net/sandbox01-ccm/oslc/types/_YkY34mDfEeSfwac2Vc1tig/defect" />
        <oslc:resourceShape rdf:resource="https://jazz.net/sandbox01-ccm/oslc/context/_YkY34mDfEeSfwac2Vc1tig/shapes/workitems/defect" />
        <oslc:creation rdf:resource="https://jazz.net/sandbox01-ccm/oslc/context/_YkY34mDfEeSfwac2Vc1tig/workitems/defect" />
      </oslc:CreationFactory>
    </oslc:creationFactory>
  </oslc:Service>
</oslc:service>
```

- ResourceType may be OSLC “core”, or “tool specific”
- Resource Shapes define “understood” properties

Services – Query Capability

```
<oslc:queryCapability>
  <oslc:QueryCapability>
    <dcterms:title rdf:parseType="Literal">Change request queries</dcterms:title>
    <oslc:usage rdf:resource="http://open-services.net/ns/core#default" />
    <oslc:resourceType rdf:resource="http://open-services.net/ns/cm#ChangeRequest" />
    <oslc:resourceShape rdf:resource="https://jazz.net/sandbox01-cm/oslc/context/_YkY34mDfEeSfwac2Vc1tig/shapes/workitems" />
    <oslc:queryBase rdf:resource="https://jazz.net/sandbox01-cm/oslc/context/_YkY34mDfEeSfwac2Vc1tig/workitems" />
  </oslc:QueryCapability>
</oslc:queryCapability>
```

OSLC core query spec: <http://open-services.net/bin/view/Main/OSLCCoreSpecQuery>

Services – Creation / Selection Dialogs

```
<oslc:creationDialog>
  <oslc:Dialog>
    <dcterms:title rdf:parseType="Literal">New Defect</dcterms:title>
    <oslc:label>Defect</oslc:label>
    <oslc:usage rdf:resource="http://open-services.net/ns/core#default" />
    <oslc:usage rdf:resource="http://open-services.net/ns/cm#defect" />
    <oslc:resourceType rdf:resource="http://open-services.net/ns/cm#ChangeRequest" />
    <oslc:dialog rdf:resource="https://jazz.net/sandbox01-ccm/oslc/contexts/_YkY34mDfEeSfwa" />
    <oslc:hintWidth>680px</oslc:hintWidth>
    <oslc:hintHeight>505px</oslc:hintHeight>
  </oslc:Dialog>
</oslc:creationDialog>
<oslc:creationDialog>=
<oslc:creationDialog>=
<oslc:creationDialog>=
<oslc:creationDialog>=
<oslc:selectionDialog>=
<oslc:selectionDialog>=
<oslc:selectionDialog>=
  <oslc:Dialog>
    <dcterms:title rdf:parseType="Literal">Select Plan Item</dcterms:title>
    <oslc:label>Plan Item</oslc:label>
    <oslc:usage rdf:resource="http://open-services.net/ns/cm#planItem" />
    <oslc:resourceType rdf:resource="http://open-services.net/ns/cm#ChangeRequest" />
    <oslc:dialog rdf:resource="https://jazz.net/sandbox01-ccm/_ajax-modules/com.ibm.team.work" />
    <oslc:hintWidth>550px</oslc:hintWidth>
    <oslc:hintHeight>460px</oslc:hintHeight>
  </oslc:Dialog>
```

OSLC Sample Integration - Mozilla Firefox

Delegated UI Explained

File Edit View History Bookmarks Tools Help

https://localhost:9443/jazz/_rcm-test/sample.html

OSLC Sample Integration

Configuration

OSLC Base URI: Configuration complete?

RTC Change Management Service Provider Catalog: B2B Service

Contributor Information: Name IBM Rational Team Concert Wor...

Test 5574: Bad password

Test Case Steps Links

View New Add

Resource Picker

Use Work Item ID or Words from the Summary 1 result(s)

Matching Work Items:

- 9: Server startup errors

OK Cancel

Project Area: B2B Service

#1 Click to launch delegated UI

#2 iframe's src set to delegated UI's URL

#3 Selection made

#4 OK pressed – sends message (link+label) to parent window

Eclipse Lyo



Eclipse Lyo

Enabling tool integration with OSLC

Eclipse Lyo is an SDK to help the Eclipse community adopt [OSLC](#) (Open Services for Lifecycle Collaboration) specifications and build OSLC-compliant tools.

Download

Source

Docs

Lyo Features

SDK

We'll provide the pieces to get your client or server up and running with OSLC. We're focusing on Java initially; however, JavaScript and other languages will soon follow.

[Learn more](#)

Test suite

Utilize a test suite to help build interoperable OSLC tools.

[Learn more](#)

Reference implementations

See how OSLC works directly with working samples and with a simple server to test against.

[Learn more](#)

<http://eclipse.org/lyo/>

OSLC4J – JAX-RS based providers

```
@OslcCreationFactory
(
    title = "Change Request Creation Factory",
    label = "Change Request Creation",
    resourceShapes = {OslcConstants.PATH_RESOURCE_SHAPES + "/" + Constants.PATH_CHANGE_REQUEST},
    resourceTypes = {Constants.TYPE_CHANGE_REQUEST},
    usages = {OslcConstants.OSLC_USAGE_DEFAULT}
)
@POST
@Consumes({OslcMediaType.APPLICATION_RDF_XML, OslcMediaType.APPLICATION_XML, OslcMediaType.APPLICATION_JSON})
@Produces({OslcMediaType.APPLICATION_RDF_XML, OslcMediaType.APPLICATION_XML, OslcMediaType.APPLICATION_JSON})
public Response addChangeRequest(@Context final HttpServletRequest httpServletRequest,
                                @Context final HttpServletResponse httpServletResponse,
                                final ChangeRequest changeRequest)
    throws URISyntaxException
{
    //Business logic for creating a new change request goes here

    return Response.created(about).entity(changeRequest).build();
}
```

REST Client

```
protected void testRetrieve(final String mediaType)
    throws URISyntaxException
{
    assertNotNull(CREATED_CHANGE_REQUEST_URI);

    final OslcRestClient oslcRestClient = new OslcRestClient(PROVIDERS,
                                                            CREATED_CHANGE_REQUEST_URI,
                                                            mediaType);

    final ChangeRequest changeRequest = oslcRestClient.getOslcResource(ChangeRequest.class);

    verifyChangeRequest(mediaType,
                       changeRequest,
                       true);
}
```

Case Study: SPRINT

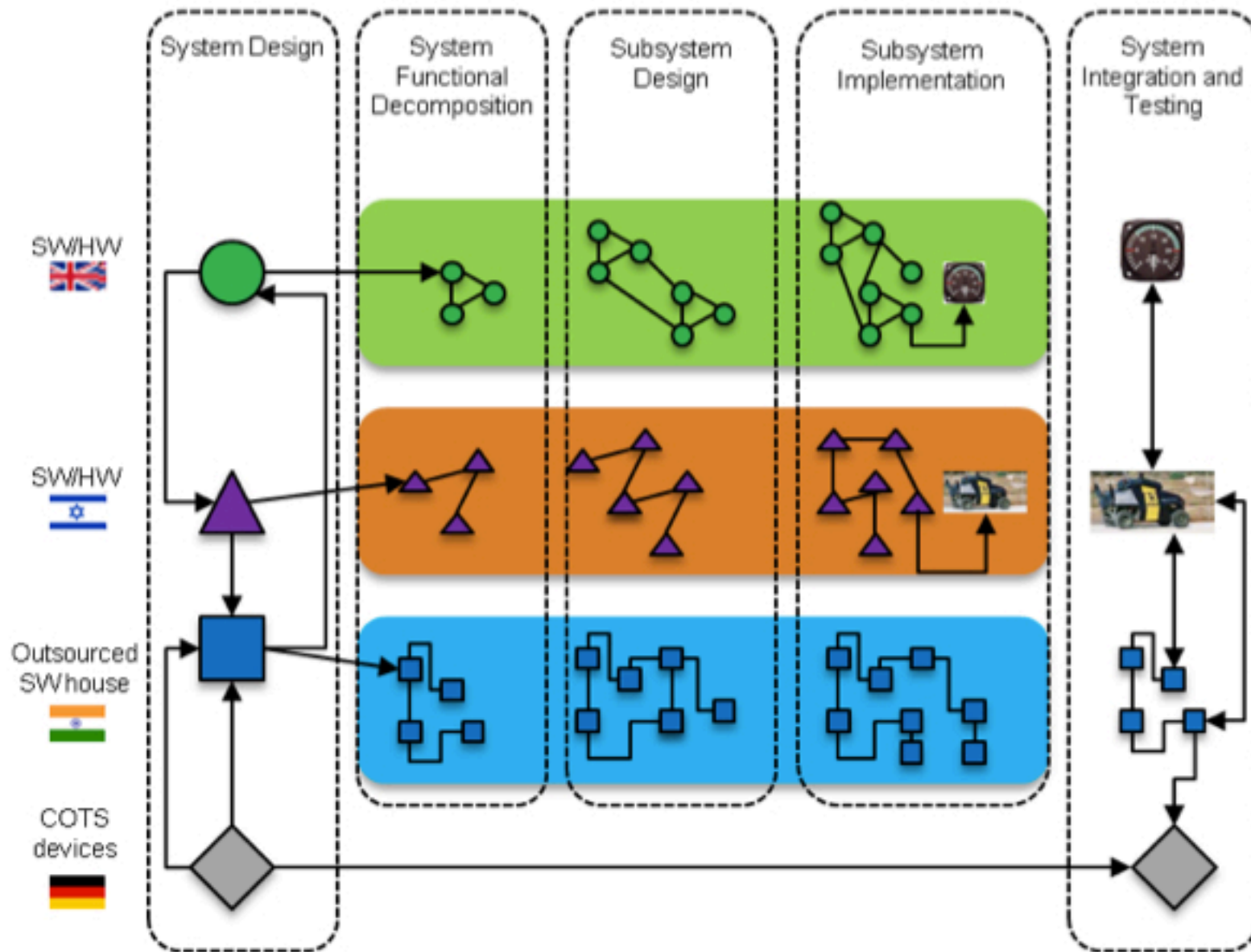
SPRINT – Software Platform for Integration of Engineering and Things

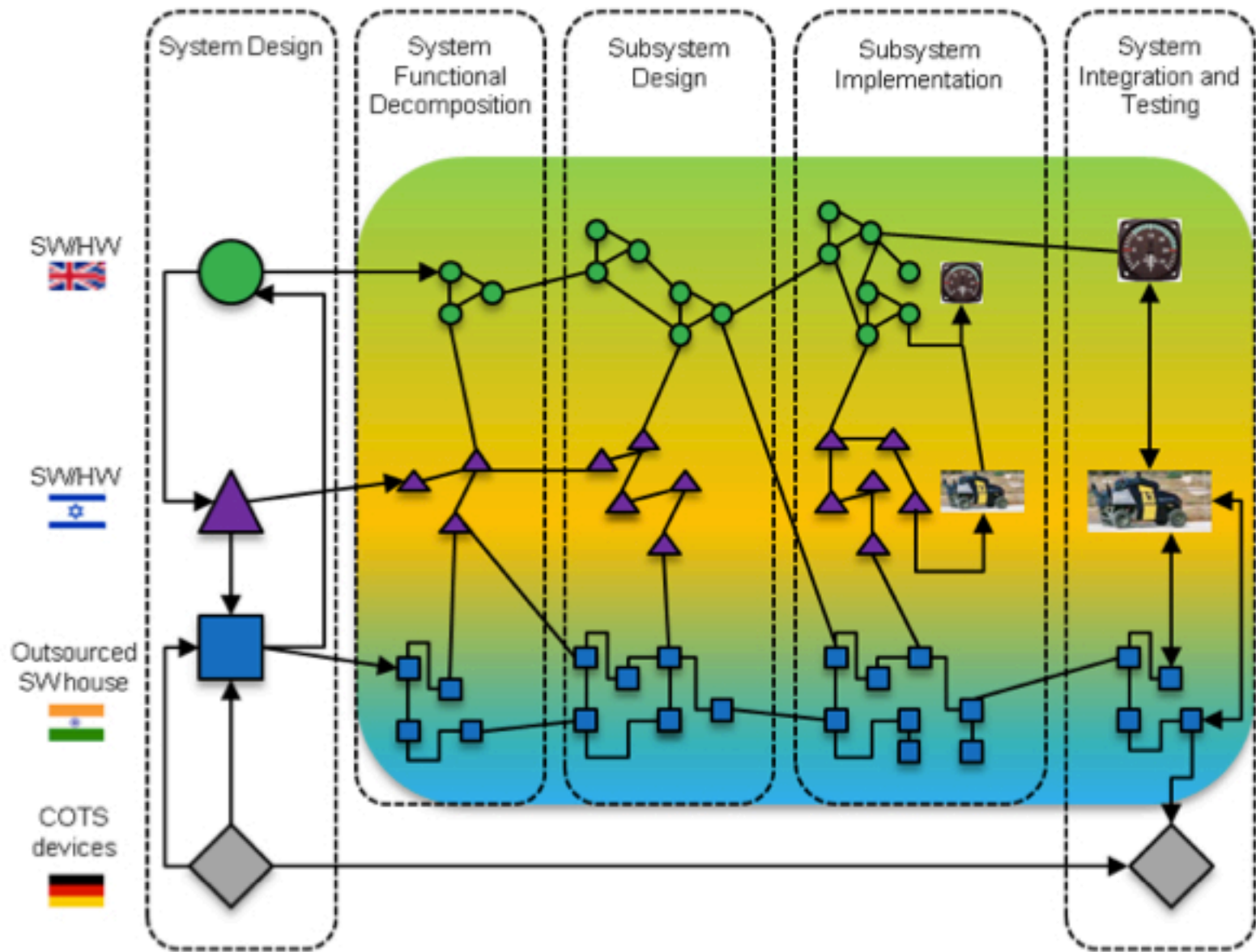
- FP7 Project (ICT-2009.1.3: Internet of Things and Enterprise environments)
- Project Website: www.sprint-iot.eu
- Launched October 2010
- Duration 36 months
- Budget: 3.46 Mio EUR

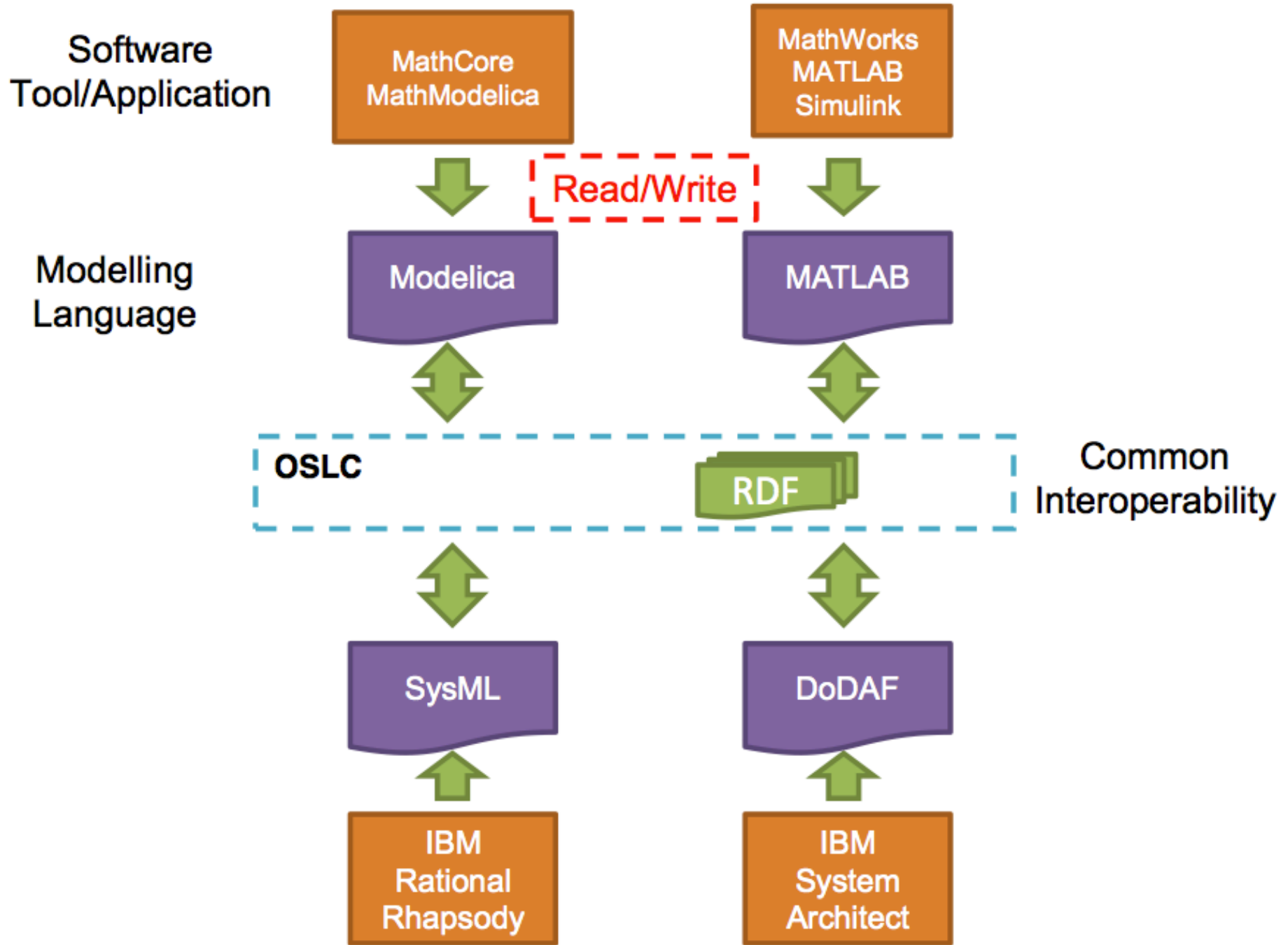
Our Roles:

- Andreas Keis: Project Coordinator
- Parham Vasaiely: Project Manager
- Uri Shani: Technical Manager

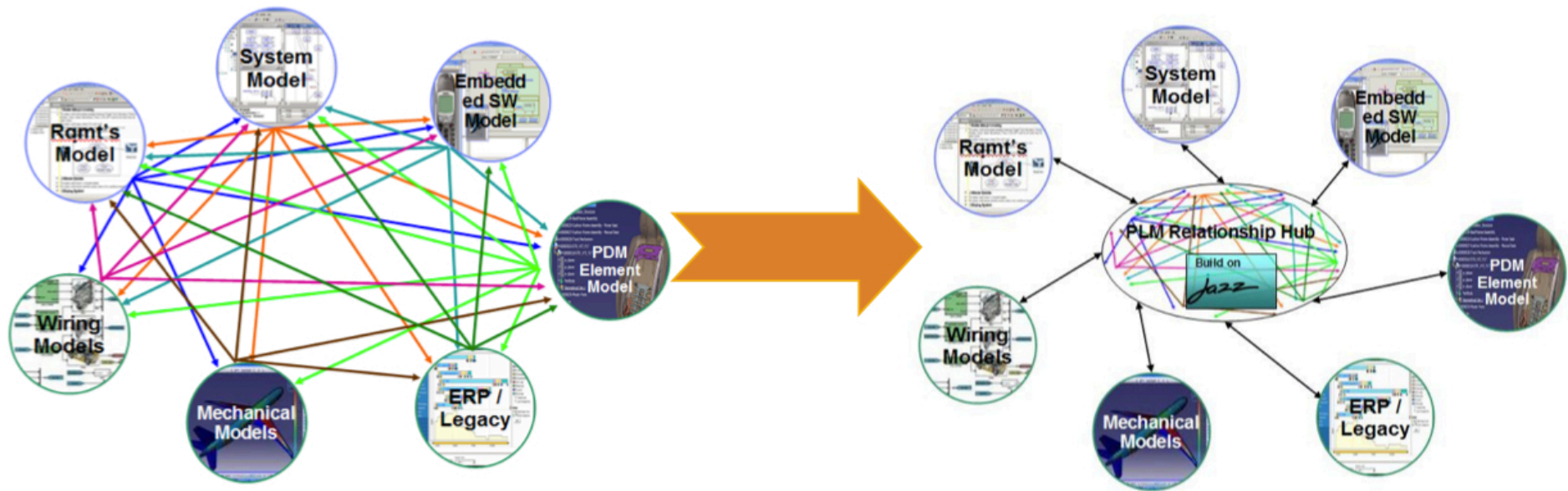
Partner	Country
EADS UK (Coordinator)	United Kingdom
Israel Aerospace Industries	Israel
IBM Haifa Research	Israel
FRAUNHOFER FOKUS	Germany
Mathcore	Sweden
ALES	Italy
Elvior	Estonia



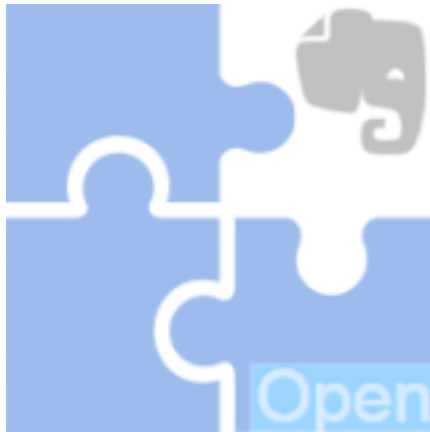




P2P towards "Hub"



Prototype: EverOpen



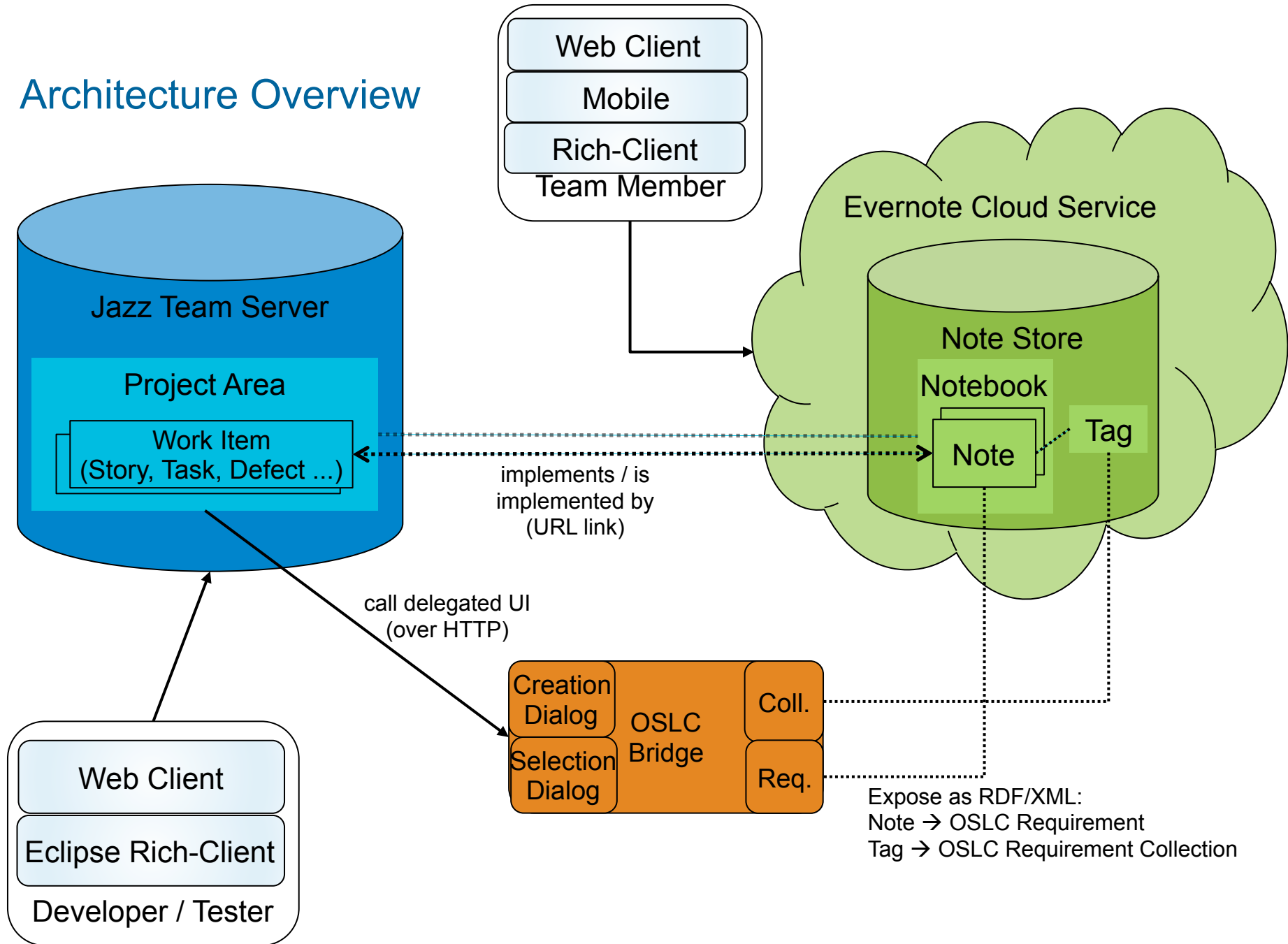
<https://hub.jazz.net/project/florian.georg.ch.ibm.com/EverOpen2/overview>



<http://bluemix.net>

Not using Eclipse Lyo

Architecture Overview



EVERNOTE Notebook: Evernote2Oslc X Search + New Note

Evernote2Oslc


Create a whiteboard photo and attach it to a requirement

Create User Story using Evernote
3/21/13 As a Team Member I want to Create a new User Story using the different Evernote clients Acceptance: Open Evernote client (Web, Android, iOS) Select Project Notebook Create new Note and

Create a whiteboard photo and attach it to a r
3/21/13 As a team member I want to take a picture of a whiteboard sketch, attach it to a note, so that this information is available for the team to link work

As a team member I want to take a picture of a whiteboard sketch, attach it to a note, so that this information is available for the team to link work items to.

Acceptance:



EVERNOTE Filter...

Note de-selected: Create User Story using Evernote

OK 1 Note selected Cancel

Preview	Title	Tags
	Create User Story using Evernote	high ux story Sprint R1 S1
	Create a whiteboard photo and attach it to a requirement	medium story Sprint R1 S1

Change and Configuration Management (/ccm) One of the Client Access Licenses expires in 3 days

JKE Banking (Change Management) clmadmin

Project Dashboards Work Items Plans Source Control Builds Reports Search Work Items

Work Items > Story 91

Summary: * Create a whiteboard photo and attach it to a requirement New

Loaded: Jun 12, 2013 8:12 PM

Overview Acceptance Links Approvals History

Details

Type: Story

Filed Against: JKE/Java UI

Business Value: \$\$\$

Risk: Medium

Story Points: 8 pts

Progress: 0/8pts Estimated: 100%

Project Area: JKE Banking (Change Management)

Team Area: JKE Banking (Change Management)

Creation Date: Jun 12, 2013 8:12 PM

Created By: clmadmin

Quick Information

Subscribers (1): c

Related Artifacts (1): 1

Related Artifacts (1)
Evernote: Create a whiteboard photo and attach it to a requirement

Resources

- <http://open-services.net/>
- <http://www.oasis-oslc.org/>
- <http://wiki.eclipse.org/Lyo>