



APACHE SLING & FRIENDS TECH MEETUP  
BERLIN, 23-25 SEPTEMBER 2013

# Argeo Platform

## Integrating OSGi, Spring, Eclipse and JCR

# Argeo GmbH, Berlin

- Tailor-made enterprise systems since 2007, mostly for the finance industry
- Over time a generic basis has emerged
- Main packaged product based on the framework is **Argeo SLC**
- Coordinator/host of the “Enterprise Linux GIS” effort at the OSGeo foundation

# Argeo Platform - Principles

- Consistent set of OSGi bundles (**Argeo Distribution**)
- Integrate the various security models and provide utilities (**Argeo Commons**)
- Prototyping is fast, while preparing evolution towards a complex application
- Linux and Java can fit well

Not THE framework, to cover all needs

# Argeo – Core Technologies

- Modularity and provisioning: **OSGi**
- Assembly and configuration: **Spring**
- User interface: **Eclipse**
  - RCP (desktop)
  - RAP (web)
- Data layer: **JCR / Jackrabbit**

# Argeo 1 vs. Argeo 2

- **Argeo 1 (stable)**
  - stable and backward compatible since 2009 (so, getting slowly outdated)
  - open source since the beginning but no effort was made to build a community around it
  - OSGi: Equinox only, v3.6
  - Spring v2.5
  - Eclipse v3.6 / RAP 1.3
  - Jackrabbit v2.2

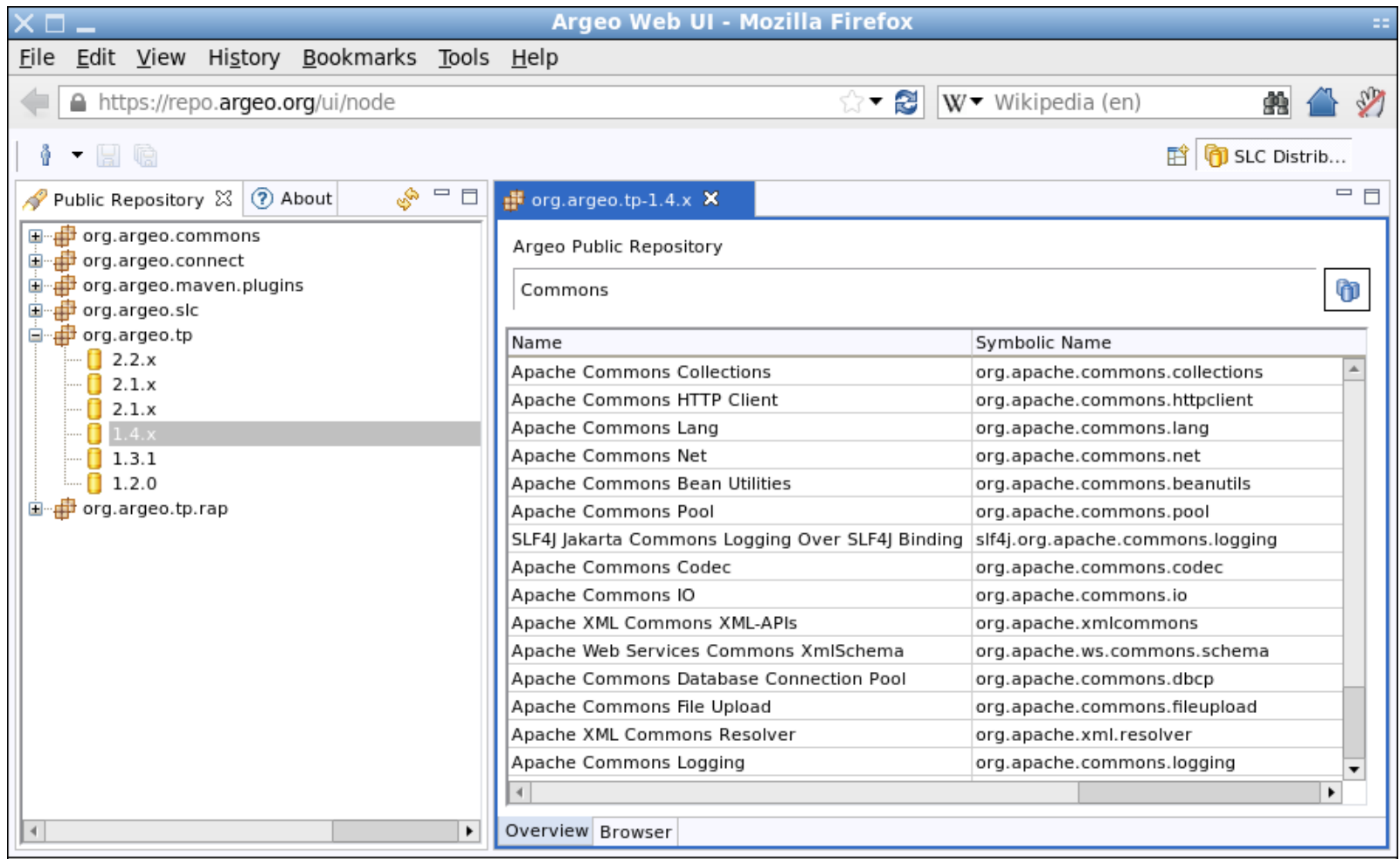
# Argeo 1 vs. Argeo 2

- **Argeo 2 (under development)**
  - to be released early 2014
  - upgraded third parties
  - reusability by others (docs, SDK, community)
  - OSGi: support for Felix in addition to Equinox v3.9
  - Spring v3.2
  - Eclipse v4.3 / RAP 2.1
  - Jackrabbit v2.6

# OSGi / Argeo Distribution

- 250+ open source modules, fully resolved in OSGi, available in maven-compatible repositories
- **[Argeo 2]** The factory used to maintain the distribution is easily forkable in order for others to create spins. Combined with **SLC Repo** it allows for a kind of 'git' for provisioning

# OSGi / Argeo Distribution



Argeo Web UI - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://repo.argeo.org/ui/node

Public Repository About

- org.argeo.commons
- org.argeo.connect
- org.argeo.maven.plugins
- org.argeo.slc
- org.argeo.tp
  - 2.2.x
  - 2.1.x
  - 2.1.x
  - 1.4.x
  - 1.3.1
  - 1.2.0
- org.argeo.tp.rap

Argeo Public Repository

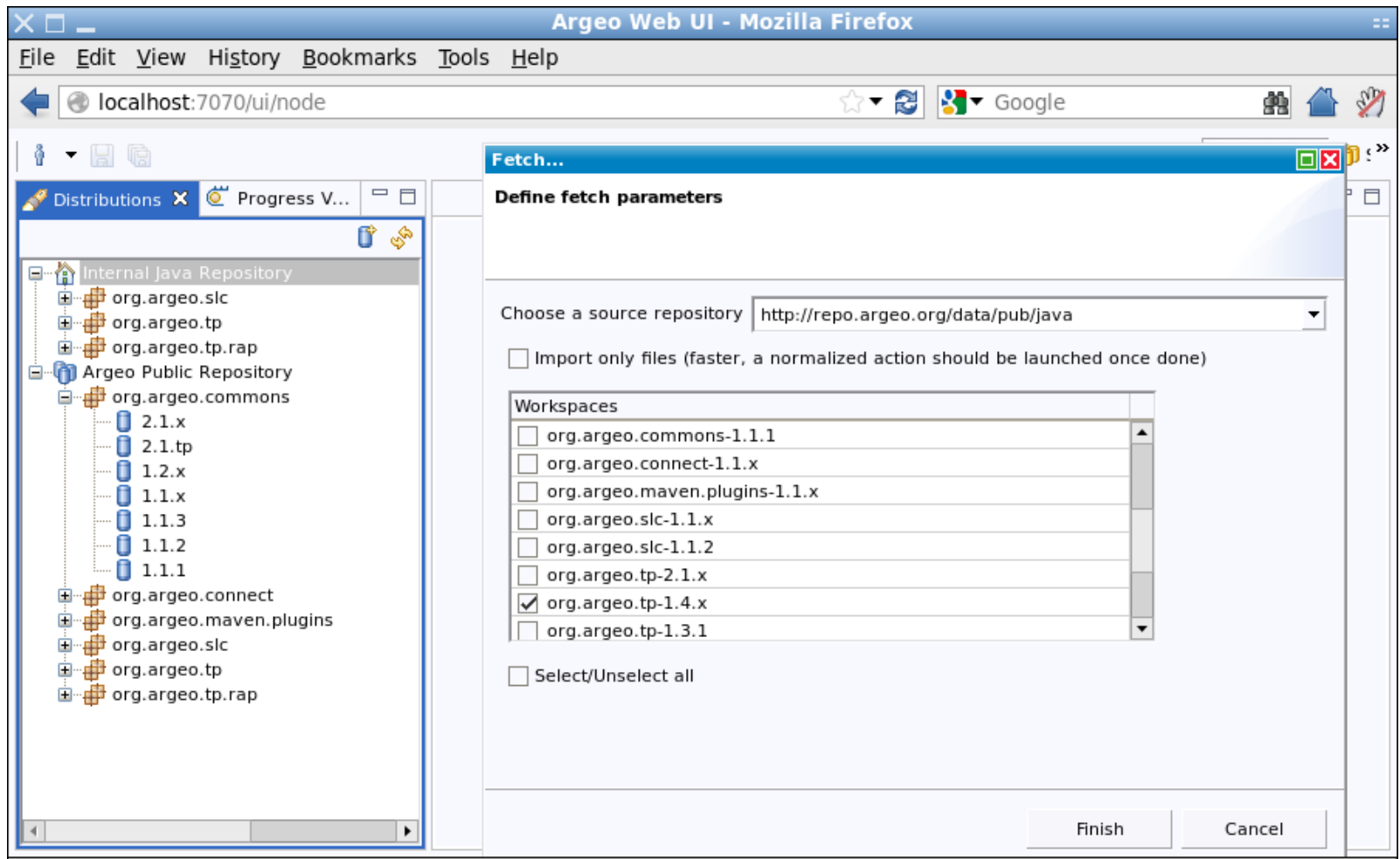
Commons

Name	Symbolic Name
Apache Commons Collections	org.apache.commons.collections
Apache Commons HTTP Client	org.apache.commons.httpclient
Apache Commons Lang	org.apache.commons.lang
Apache Commons Net	org.apache.commons.net
Apache Commons Bean Utilities	org.apache.commons.beanutils
Apache Commons Pool	org.apache.commons.pool
SLF4J Jakarta Commons Logging Over SLF4J Binding	slf4j.org.apache.commons.logging
Apache Commons Codec	org.apache.commons.codec
Apache Commons IO	org.apache.commons.io
Apache XML Commons XML-APIs	org.apache.xmlcommons
Apache Web Services Commons XmlSchema	org.apache.ws.commons.schema
Apache Commons Database Connection Pool	org.apache.commons.dbcp
Apache Commons File Upload	org.apache.commons.fileupload
Apache XML Commons Resolver	org.apache.xml.resolver
Apache Commons Logging	org.apache.commons.logging

Overview Browser



# OSGi / Argeo Distribution



# Spring

- Spring-friendly containers for Tomcat, Jackrabbit, Apache Directory Server (LDAP), etc.
- Spring massively used and pushed to the limits in Argeo SLC
- **[Argeo 2]** Upgrade to Gemini Blueprint from Spring OSGi, expression language, REST support

# Spring

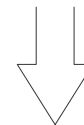
```
<!-- Templates -->
<bean id="template.jcrRepository" abstract="true"
      class="org.argeo.jackrabbit.JackrabbitContainer" init-method="init"
      destroy-method="destroy">
  <property name="variables" value="osgibundle:/repo.properties" />
  <property name="cndFiles">
    <list>
      <value>/org/argeo/jcr/argeo.cnd</value>
      <value>/org/argeo/slc/jcr/slc.cnd</value>
      <value>/org/argeo/slc/repo/repo.cnd</value>
    </list>
  </property>
  <property name="bundleContext" ref="bundleContext" />
  <property name="forceCndImport" value="${slc.repo.jcr.forceCndImport}" />
</bean>
```

```
<!-- JCR repositories -->
<bean id="javaRepository" parent="template.jcrRepository">
  <property name="homeDirectory" value="${slc.repo.jcr.reposBase}/java" />
  <property name="configuration" value="${slc.repo.jcr.configuration.java}" />
</bean>
<bean id="distRepository" parent="template.jcrRepository">
  <property name="homeDirectory" value="${slc.repo.jcr.reposBase}/dist" />
  <property name="configuration" value="${slc.repo.jcr.configuration.dist}" />
</bean>
```

```
<!-- SERVICES -->
<service ref="javaRepository" interface="javax.jcr.Repository">
  <service-properties>
    <beans:entry key="argeo.jcr.repository.alias" value="java" />
  </service-properties>
</service>
<service ref="distRepository" interface="javax.jcr.Repository">
  <service-properties>
    <beans:entry key="argeo.jcr.repository.alias" value="dist" />
  </service-properties>
</service>
```



OSGi Services



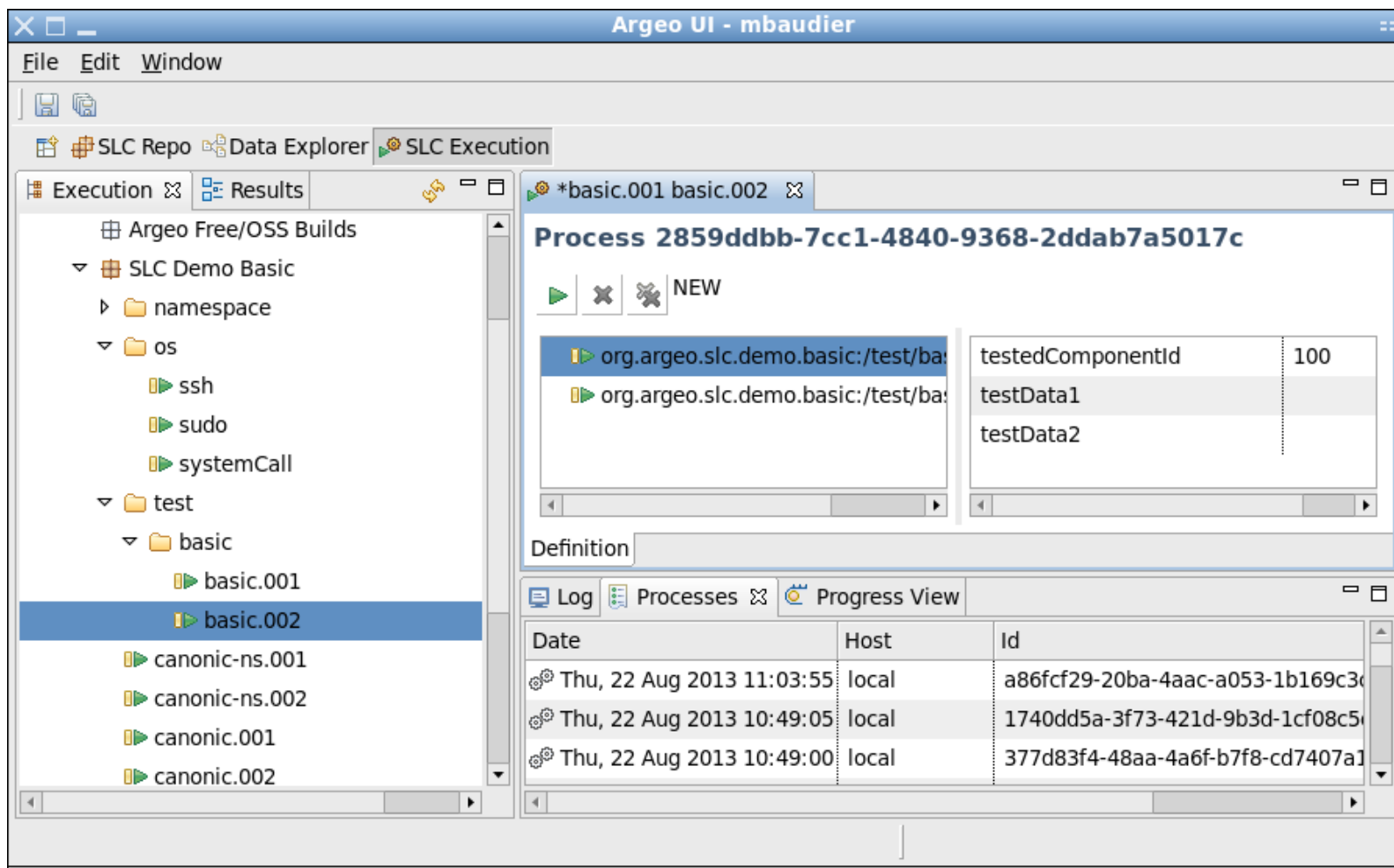
```
<!-- REFERENCES -->
<reference id="javaRepository" interface="javax.jcr.Repository"
  filter="(argeo.jcr.repository.alias=java)" />
<reference id="distRepository" interface="javax.jcr.Repository"
  filter="(argeo.jcr.repository.alias=dist)" />

<!-- Example of injection into a POJO bean -->
<bean id="osgiFactory" class="org.argeo.slc.repo.osgi.OsgiFactoryImpl"
  init-method="init" destroy-method="destroy">
  <property name="workspace" value="org.argeo.tp-2.1.x" />
  <property name="nodeIndexers">
    <list>
      <bean class="org.argeo.slc.repo.ArtifactIndexer" />
      <bean class="org.argeo.slc.repo.JarFileIndexer" />
    </list>
  </property>
  <property name="javaRepository" ref="javaRepository" />
  <property name="distRepository" ref="distRepository" />
</bean>
```

# Eclipse

- Integration with Spring: views and editors are defined as Spring beans so that OSGi services can be easily injected
- Single sourcing and JCR utilities
- **[Argeo 2]** Leverage RAP 2.x improvements to have more flexible design and templating and go beyond the workbench paradigm

# Eclipse – Desktop



The screenshot displays the Argeo UI - mbaudier application. The interface is divided into several sections:

- Top Bar:** Contains the title "Argeo UI - mbaudier" and standard window controls.
- Menu Bar:** Includes "File", "Edit", and "Window".
- Toolbars:** Includes icons for "SLC Repo", "Data Explorer", and "SLC Execution".
- Left Panel (Execution Results):**
  - Tree structure:
    - Argeo Free/OSS Builds
      - SLC Demo Basic
        - namespace
          - os
            - ssh
            - sudo
            - systemCall
          - test
            - basic
              - basic.001
              - basic.002** (selected)
              - canonic-ns.001
              - canonic-ns.002
              - canonic.001
              - canonic.002

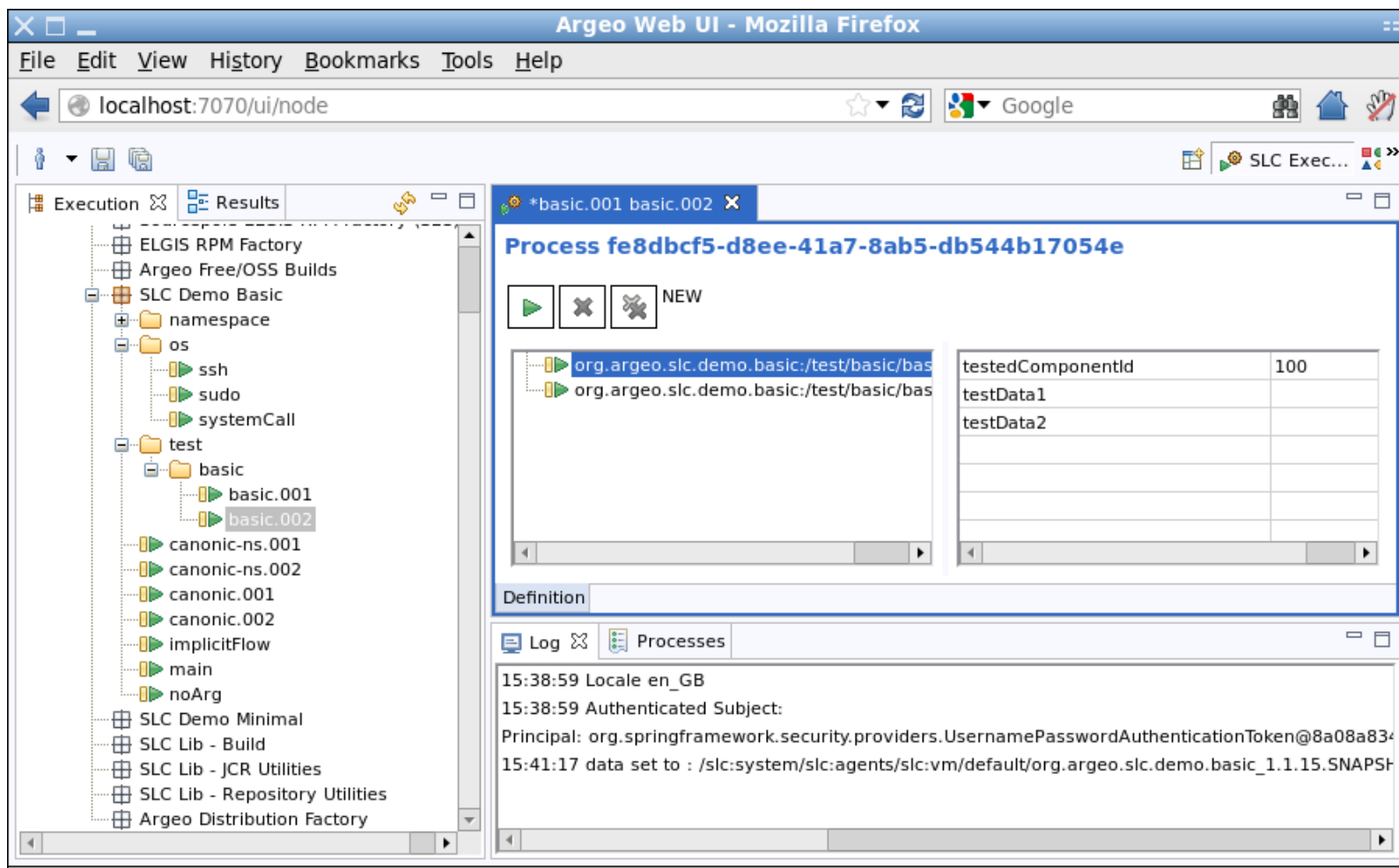
- Central Panel:**
- Tab: `*basic.001 basic.002`
- Section: **Process 2859ddbb-7cc1-4840-9368-2ddab7a5017c**
- Buttons: Run, Stop, Kill, NEW
- Code Snippets:
 

```
org.argeo.slc.demo.basic:/test/ba
org.argeo.slc.demo.basic:/test/ba
```
- Table:
 

Property	Value
testedComponentId	100
testData1	
testData2	
- Bottom Panel:**
- Tab: **Log**
- Table:
 

Date	Host	Id
Thu, 22 Aug 2013 11:03:55	local	a86fcf29-20ba-4aac-a053-1b169c3c
Thu, 22 Aug 2013 10:49:05	local	1740dd5a-3f73-421d-9b3d-1cf08c5
Thu, 22 Aug 2013 10:49:00	local	377d83f4-48aa-4a6f-b7f8-cd7407a1

# Eclipse – Web



Argeo Web UI - Mozilla Firefox

File Edit View History Bookmarks Tools Help

localhost:7070/ui/node

Google

SLC Exec...

Execution Results

ELGIS RPM Factory

Argeo Free/OSS Builds

SLC Demo Basic

namespace

os

ssh

sudo

systemCall

test

basic

basic.001

basic.002

canonic-ns.001

canonic-ns.002

canonic.001

canonic.002

implicitFlow

main

noArg

SLC Demo Minimal

SLC Lib - Build

SLC Lib - JCR Utilities

SLC Lib - Repository Utilities

Argeo Distribution Factory

\*basic.001 basic.002

Process fe8dbcf5-d8ee-41a7-8ab5-db544b17054e

NEW

org.argeo.slc.demo.basic:/test/basic/bas

org.argeo.slc.demo.basic:/test/basic/bas

testedComponentId	100
testData1	
testData2	

Definition

Log Processes

15:38:59 Locale en\_GB

15:38:59 Authenticated Subject:

Principal: org.springframework.security.providers.UsernamePasswordAuthenticationToken@8a08a834

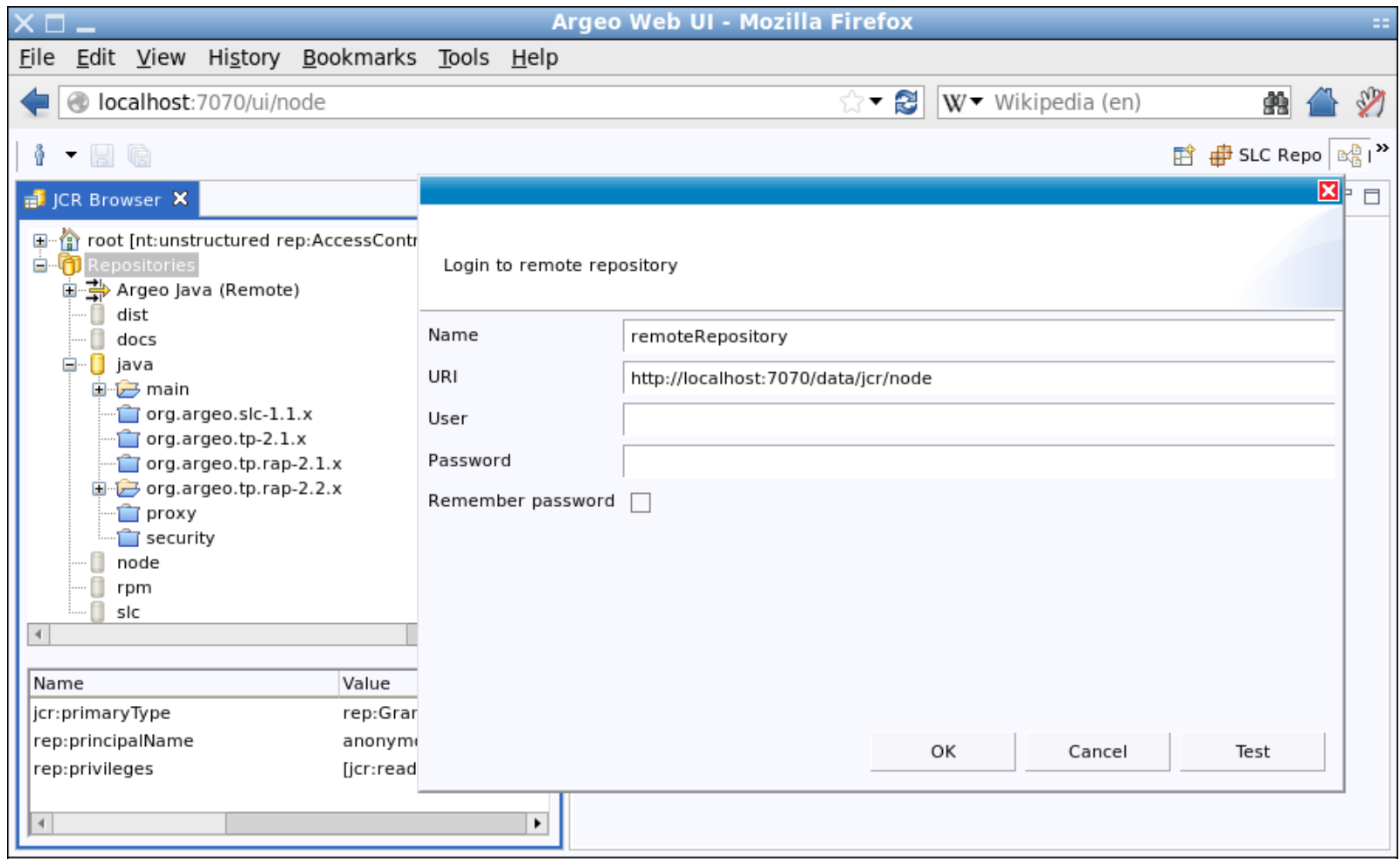
15:41:17 data set to : /slc:system/slc:agents/slc:vm/default/org.argeo.slc.demo.basic\_1.1.15.SNAPSHOT

# JCR - Multiple Repositories

- Multiple Jackrabbit repositories in one runtime referenced as OSGi services. Always a 'node' repository available
- All repositories exposed via remoting / webdav thanks to a Spring MVC layer integrating the Jackrabbit servlets
- **[Argeo 2]** Modeshape support. Generalized usage of remoting thanks to improvements in Jackrabbit.



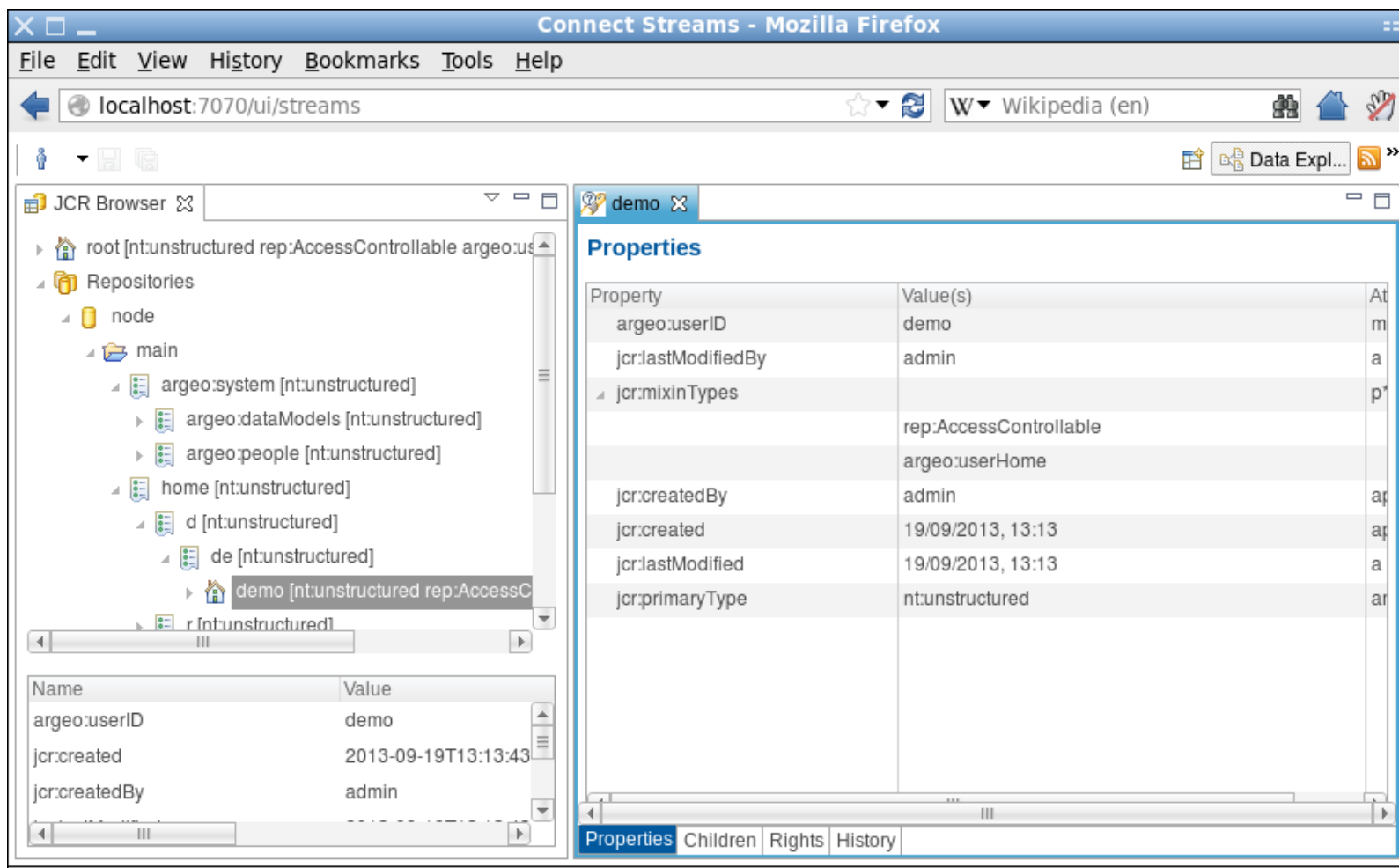
# JCR - Multiple Repositories



# JCR – Data Explorer

- Browse the multiple repositories in a runtime, or remote repositories
- Very useful for debugging and during development
- **[Argeo 2]** Finer management of security and versioning. Management of Jackrabbit specific features

# JCR - Data Explorer



The screenshot shows a Mozilla Firefox browser window titled "Connect Streams - Mozilla Firefox" with the address bar at "localhost:7070/ui/streams". The JCR Browser panel on the left displays a tree structure of repositories. The "demo" repository is selected, and its properties are shown in the "Properties" panel on the right.

**JCR Browser Tree Structure:**

- root [nt:unstructured rep:AccessControllable argeo:us]
  - Repositories
    - node
      - main
        - argeo:system [nt:unstructured]
          - argeo:dataModels [nt:unstructured]
          - argeo:people [nt:unstructured]
        - home [nt:unstructured]
          - d [nt:unstructured]
            - de [nt:unstructured]
              - demo [nt:unstructured rep:AccessC]

**Properties Panel:**

Property	Value(s)	At
argeo:userID	demo	m
jcr:lastModifiedBy	admin	a
jcr:mixinTypes	rep:AccessControllable	p
jcr:createdBy	admin	ap
jcr:created	19/09/2013, 13:13	ap
jcr:lastModified	19/09/2013, 13:13	a
jcr:primaryType	nt:unstructured	ar

The bottom of the Properties panel shows tabs for "Properties", "Children", "Rights", and "History".

# Security Integration 1/2

- Security integrated between JAAS, Eclipse and Jackrabbit with Spring Security as pivot
- A given thread has consistent username and authorities through all layers
- Init/destroy methods of beans can be configured to have admin/system rights

# Security Integration 2/2

- Each user has a home JCR node in the 'node' repository (similar to a UNIX home directory) where modules can write
- Integrated with
  - LDAP for server applications
  - OS authentication for desktop
  - Remote Jackrabbit for thin clients

# Security Integration

Connect Streams - Mozilla Firefox

File Edit View History Bookmarks Tools Help

localhost:7070/ui/streams

Wikipedia (en)

Security

demo User

demo User

General

Displayed Name demo User

First name Demo

Last name User

Email demo@localhost

Description Demo user

Password

New password

Repeat password

Main Roles

User ID	Name	E-mail	Description
demo	demo User	demo@localhost	Demo user
root	demo User	root@localhost	Superuser

# Demo - SLC Runtime

- Based on Argeo 1, Desktop
- Execute processes defined as standard Java Runnable via Spring
- Used for builds, tests, configuration management, building RPMs, etc.
- Argeo Distribution factory based on it

# Demo – RSS Reader 'Streams'

- Based on Argeo 2, Web
- As Google Reader has been retired, we wanted to illustrate that free, distributed, innovative alternatives are possible
- Prototyped in 3 man-days
- Note improvements in styling and instant search with [\[Argeo 2\]](#)



# Questions / Contact



<http://www.argeo.org>

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