

Rapid JCR applications development with Apache Sling



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blog at <http://grep.codeconsult.ch>

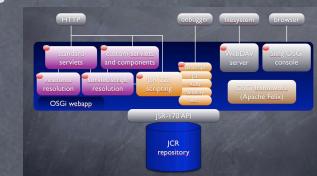
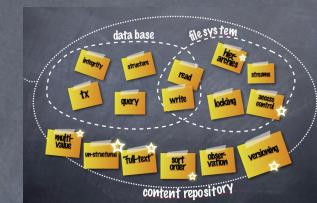
twitter: @bdelacretaz

Slides revision: 2009-03-20

Slides theme design: David Nuescheler

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is this slide
busy enough?



Sling microblog

Navigation Title of the current post

(Create new post) Title:
Hello my friends
Hello world post,
for you
And text here.
Me and you

Sling

ApacheCon Europe 2009

Slings ESP blog sample

Recent posts

Yes

Posted at 2009-03-17 16:45
my dear
See comments



Intro to JCR

JCR = Java Content Repository API

JSR-170 / JSR-283



Everything Is Content - and JCR manages it as trees of Nodes and Properties, using rich data types.

What's JCR?

JSR-170

**Content Repository for
JavaTM technology API**

**Spec-Lead:
Day Software**

**Status:
Final Release 17-jun-2005**



Expert Group:



MEDIASURFACE
Enterprise Content Management



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What's JCR?

JSR-170

JSR-283

**Content Repository for
JavaTM technology API v2.0**

**Spec-Lead:
Day Software**

**Status:
Public Review Closed sep-2007**



**Java
Community
Process**
b2b
community

Expert Group:



FILENET
software, inc.

Xythos
software, inc.

ORACLE

OPENTEXT
CORPORATION

nUXEO

IBM

bea™



redhat

INTERWOVEN

FIRST

SAP

eXo

atg■

> MEDIASURFACE
Enterprise Content Management

EMC documentum



GX



sas



Hummingbird®



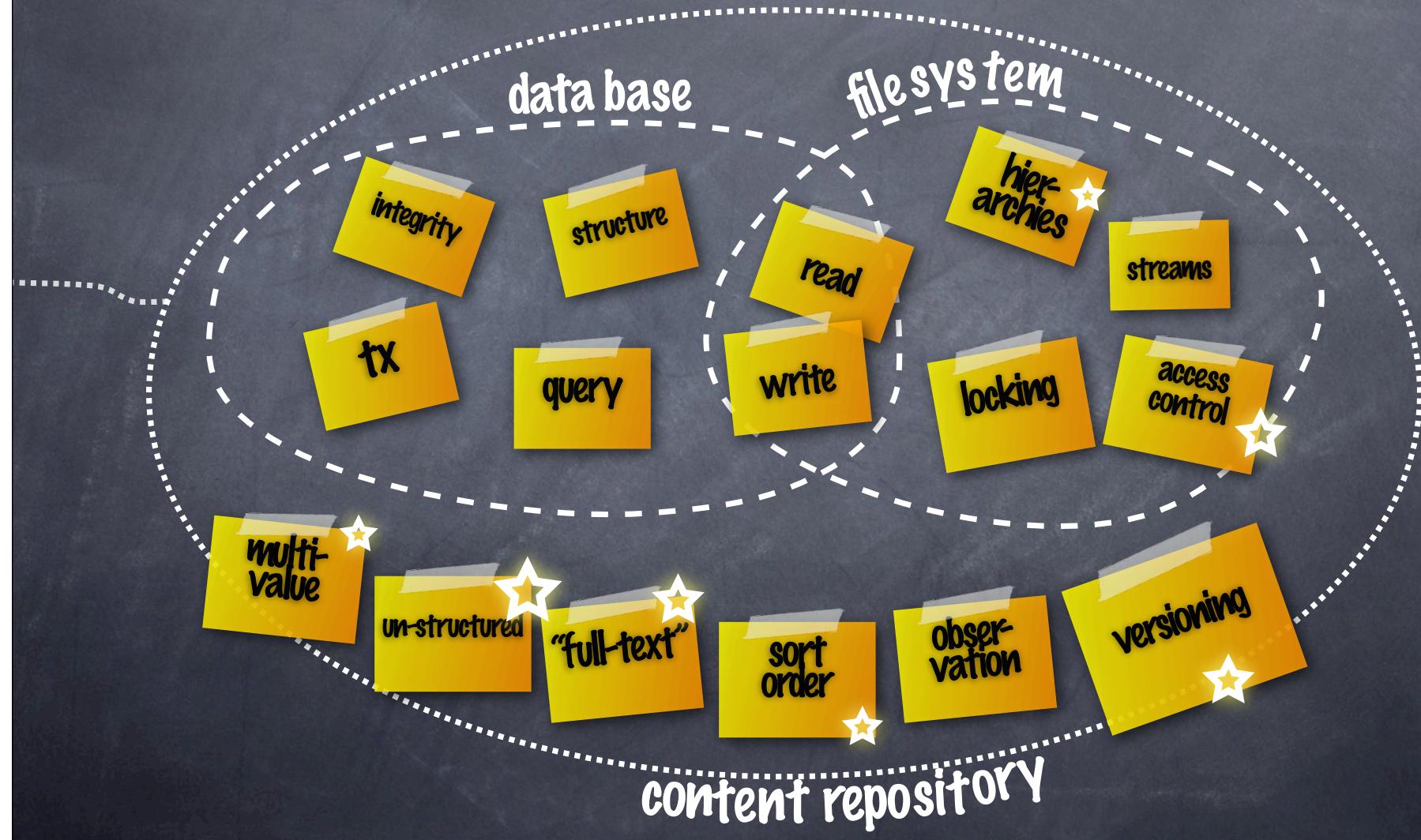
Borland

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What's JCR?

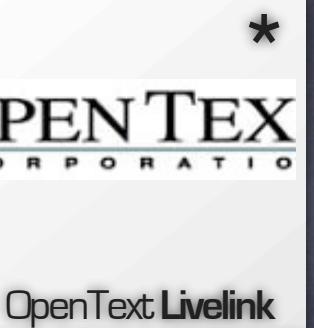
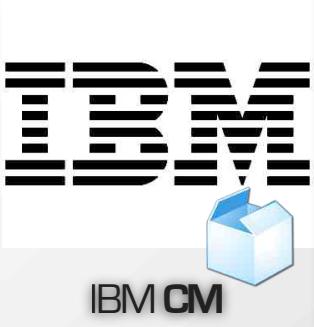
“The API should be a standard, implementation independent, way to access content bi-directionally on a granular level to a content repository. ” ?

Best of both worlds.

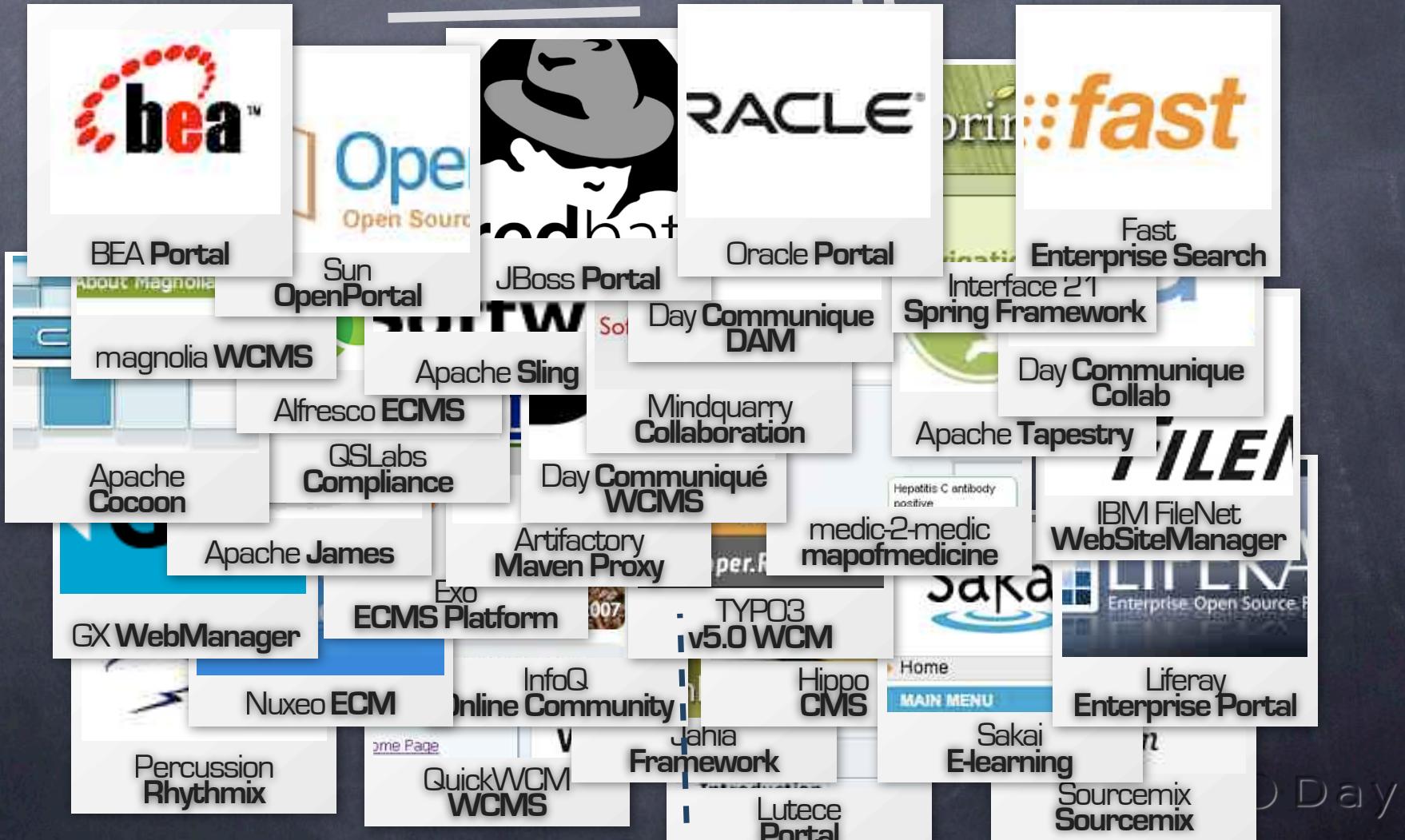


Known compliant Repositories

* using third party connector

 <p>The Apache Jackrabbit 10 years</p>	 <p>ORACLE Oracle XML DB</p>	 <p>exo platf Exo ECMS Platform</p>	 <p>Microsoft Sharepoint</p>	 <p>OPENTEX ORPORATIO OpenText Livelink</p>
 <p>Day CRX 10 years</p>	 <p>FILENET P8</p>	 <p>Xythos Repository</p>	 <p>Alfresco ECM</p>	 <p>Vignette V7</p>
 <p>INTERWOVEN Interwoven Repository</p>	 <p>IBM CM</p>	 <p>EMC documentum EMC Documentum</p>	<p>+hundreds of TCKs registered</p>	<p>How many RDBMS vendors do you need?</p>

Some known JCR Applications



JCR code excerpt

```
Repository repository = new TransientRepository();
Session session = repository.login(...);
```

```
// Create content
Node root = session.get rootNode();
Node hello = root.addNode("hello");
Node world = hello.addNode("world");
```

```
world.setProperty("message", "Hello, World!");
session.save();
```

```
// Retrieve content
Node node = root.getNode("hello/world");
print(node.getPath());
print(node.getProperty("message").getString());
```

On to Sling

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Sling builds on top of JCR

Scriptable applications layer on top of JCR

OSGi-based industrial-strength framework

Simple, powerful, JCR inside

Runs on Apache Jackrabbit by default



<http://incubator.apache.org/sling>



Sling == REST over JCR

UNIVERSITY OF CALIFORNIA,
IRVINE

Architectural Styles and the Design of Network-based Software Architectures

DISSERTATION

submitted in partial satisfaction of the requirements for the degree

DOCTOR OF PHILOSOPHY

in Information and Computer Science

by

Roy T. Fielding

REST → Roy T. Fielding

JCR: David Nuescheler

Day CQ5WCM

Refresh Page Workflow User Tools Resto

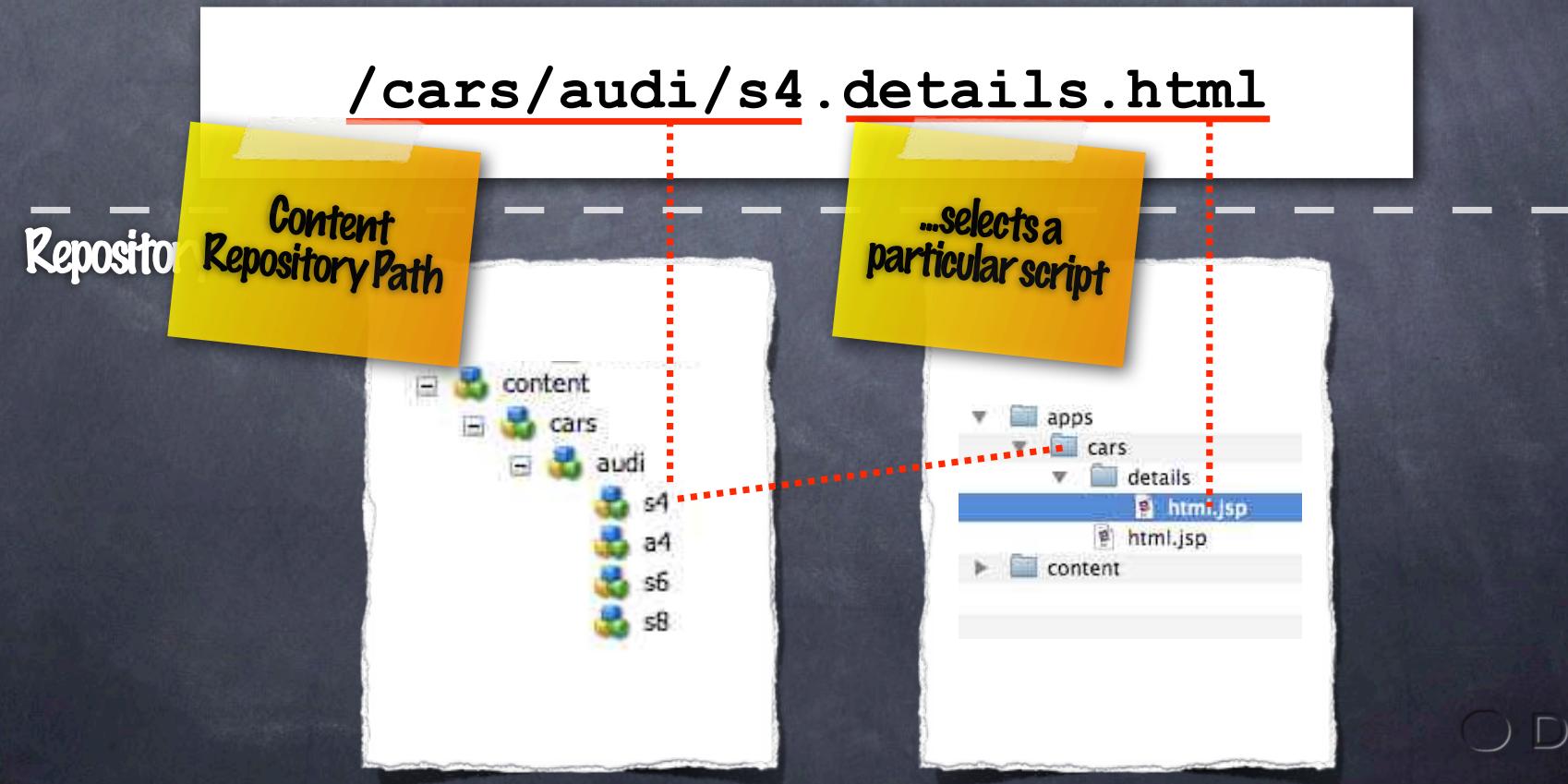
Title	Label	Pub	Mod	In	W	Is	L	Imp
1 Banking Services	banking							
2 Certification Serv	certification							
3 Strategic Consult	strategic							
4 Technical Consult	technical							

Content Repository API
for Java™ Technology
Specification

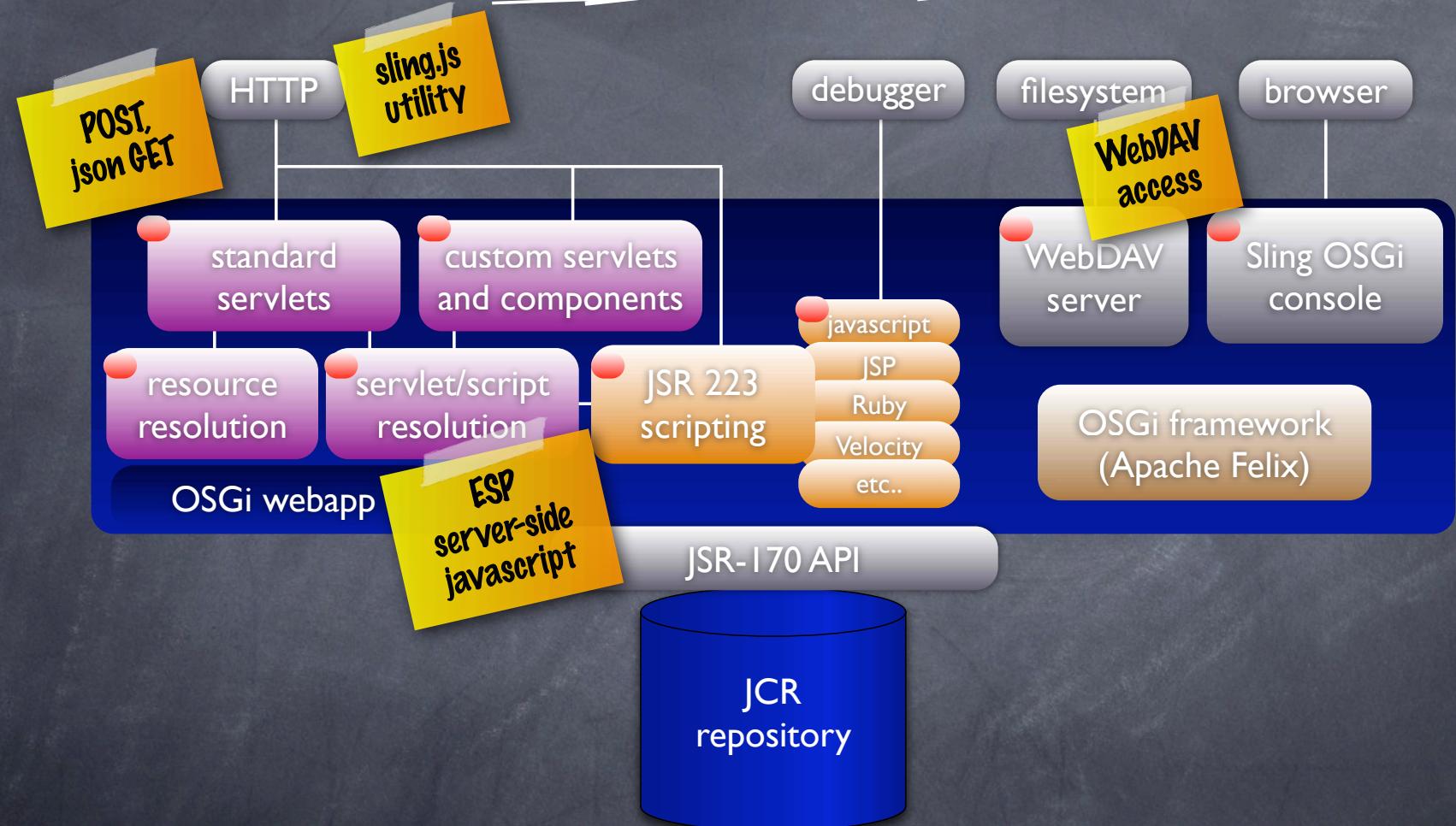
Java Specification Request 170
version 1.0
11 May 2005

v1.0 released 2005
+300 pages

Reclaiming the web. Sling URL decomposition.



Sling architecture



get the code from
dev.day.com:
[http://tinyurl.com/
slingblog46](http://tinyurl.com/slingblog46)

A minimal Sling blog

Consisting of one .esp script

```
cat /Volumes/localhost/apps/blog/blog.esp | wc -l  
54
```

Sling POST servlet

```
# POST to Sling
```

```
curl -F title=hello http://localhost:8888/foo  
-> 200 OK
```

```
# GET created node in json format
```

```
curl http://localhost:8888/foo.tidy.json
```

```
{
```

```
  "jcr:primaryType": "nt:unstructured",
```

```
  "title": "hello"
```

```
}
```

POST
parameters set
node properties

blog step 1: create content

```
<form method="POST">  
  Title:  
  <input type="text" name="title" style="width:100%"/>  
  
  Text:  
  <textarea style="width:100%" name="text"></textarea>  
  
  <input type="submit" value="save"/>  
  
  <input type="hidden" name=":redirect" value="*"/>  
</form>
```

Form fields drive
the content
model



blog step 2: retrieve content

```
<script src="/system/sling.js"></script>
<form method="POST">
...
</form>
```

```
<!-- initialize form fields from current node values -->
<script>Sling.wizard();</script>
```

Title of the current post

Title:
Title of the current post

Text:
And text here.

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blog step 3: navigation

```
<ul>
  <li>
    <a href="/content/blog/*">
      [Create new post]</a>
    </li>
  <script>
    var posts = Sling.getContent("/content/blog", 2);
    for(var post in posts) {
      document.write(
        "<li><a href=\"" + post + "\">" +
        + posts[post].title + "</a></li>");
    }
  </script>
</ul>
```

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Navigation

- [\[Create new post\]](#)
- [Hello my friends](#)
- [A second post, for you](#)
- [Me and you](#)
- [New Orleans at dawn](#)
- [Title of the current post](#)



we got a blog!

html form + Sling.wizard() + Sling.getContent()

The ESP blog sample

ESP scripting + java + javascript

OSGi bundle, initial content, WebDAV, observation, RAD



Code under sling/samples
[http://tinyurl.com/
slingblogesp](http://tinyurl.com/slingblogesp)

ESP blog in action

New post

Title

Body

File Browse...

Sling ESP blog sample

Hello, ApacheCon!

This is a sample post for my ApacheCon Sling talk

Comments

Bertrand said:

I like it, thanks!

Hello, ApacheCon!

Title

This is a sample post for my ApacheCon Sling talk

Body

File Browse...

create

thumbnails



retrieve

thumbnails

Blog admin

Title	Date	Controls
Hello, ApacheCon!	2009-03-20 22:38	View Edit Delete

update

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ESPblog demo

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ESP blog source files

admin.esp

edit.esp

html.esp

list.esp

menu.esp

xml.esp (RSS feed)

constants.esp

header.esp

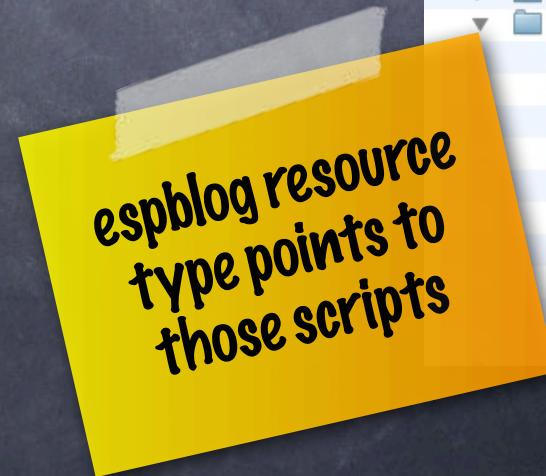
pom.xml

ThumbnailGeneratorService.java

ThumbnailGeneratorServiceImpl.java

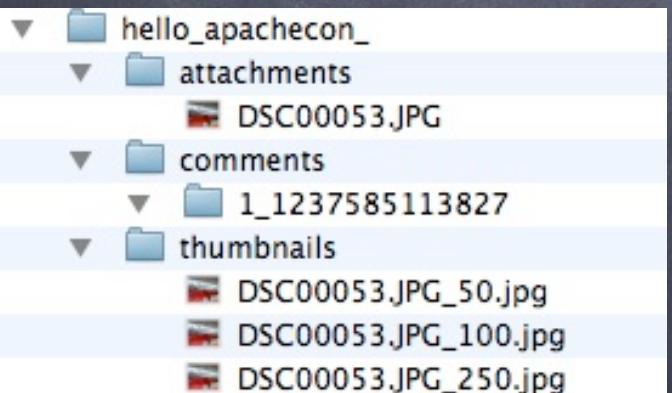
espblog.css

sling-logo.png



ESP blog content structure

```
created: "Fri Mar 20 2009 22:38:14 GMT+0100",
jcr:primaryType: "nt:unstructured",
posttext: "This is a sample post for my ApacheCon Sling talk",
title: "Hello, ApacheCon!",
- attachments: {
    jcr:primaryType: "nt:unstructured",
    - DSC00053.JPG: {
        jcr:created: "Fri Mar 20 2009 22:38:14 GM
        jcr:primaryType: "nt:file",
        - jcr:content: {
            jcr:primaryType: "nt:resource",
            :jcr:data: 119212,
            jcr:mimeType: "image/jpeg",
            jcr:uuid: "5ef09129-6e06-449f-9183-194af99f51c6",
            jcr:lastModified: "Fri Mar 20 2009 22:38:14 GMT+0100"
        }
    }
},
```



```
- thumbnails: {
    jcr:created: "Fri Mar 20 2009
    jcr:primaryType: "nt:folder",
    + DSC00053.JPG_50.jpg: { ... },
    + DSC00053.JPG_100.jpg: { ... },
    + DSC00053.JPG_250.jpg: { ... }
},
- comments: {
    jcr:primaryType: "nt:unstructured",
    - 1_1237585113827: {
        commenter: "Bertrand",
        commenttext: "I like it, thanks!",
        jcr:primaryType: "nt:unstructured"
    }
}
```

JSON dump

WebDAV view

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ESP blog edit script

```
<%
pageTitle = currentNode.title; load("header.esp");
%>
<body>
  <form method="POST" action="<%= currentNode %>">
    <p><label>Title</label>
    <input name="title" type="text"
      value="<%= currentNode.title %>"></p>
    ...
    <input type="hidden" name="created"/>
    <input name=":redirect" type="hidden"
      value="/content/espblog/posts.admin.html"/>
    <input type="submit" value="Post" class="button">
  </form>
  ...
</body>
```

ESP blog thumbnails: OSGi service

```
/**  
 * Observe the espblog content for changes, and generate  
 * thumbnails when images are added.  
 *  
 * maven-scr-plugin uses annotations to generate the OSGi  
 * Declarative Services XML configuration files  
 * @scr.service  
 * @scr.component immediate="true"  
 *  
 */  
public class ThumbnailGeneratorServiceImpl  
    implements ThumbnailGeneratorService, EventListener {
```

ESP blog thumbnails: observation

```
/** @scr.reference (framework injects it automatically) */
private SlingRepository repository;

/** called by framework when service is activated */
protected void activate(ComponentContext context) {
    Session s = repository.loginAdministrative(null);
    // Listen for nt:file NODE_ADDED repository events
    ObservationManager m =
        s.getWorkspace().getObservationManager();
    String[] types = { "nt:file" };
    m.addEventListener(
        this,
        Event.NODE_ADDED,
        contentPath, ...);
```

ESP blog thumbnails: NODE_ADDED

```
/** Called by JCR Observation manager for events that this
 * EventListener registered for
 */
public void onEvent(EventIterator it) {
    while (it.hasNext()) {
        Event event = it.nextEvent();
        if (event.getType() == Event.NODE_ADDED
            && !(event.getPath().contains("thumbnails")))
        {
            String p = event.getPath();
            Node n = session.getRootNode().getNode(p);
            createThumbnails(addedNode);
        }
    }
}
```

...

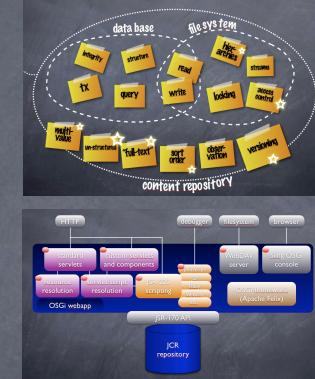
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We got a typical Sling application!

JCR features: WebDAV,
observation, nt:unstructured.

Sling goodies: simple script
mappings (BYOL), POST servlet, RESTful
interface.

OSGi bundle, code + initial
content, Maven plugins.



ESPblog source
code is found under
sling/samples



Where is Sling going?

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Where is Sling going? (aka conclusion)

First web framework designed for JCR.
Embrace the web, act like a very clever
web server!

Intelligent HTTP/JSON storage?
OSGi, organic app growth.

Growing community, graduate
in 2009?

<http://incubator.apache.org/sling>

<http://dev.day.com>

<http://contentcentric.org/>

join the
fun!

