

Effective Web Application Development with Apache Sling

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ApacheCon Core Europe 2015

Who I am

- \$DAYJOB
 - Adobe Experience Manager
 - Apache Sling
 - Apache Jackrabbit
 - Apache Felix
- FOSS
 - Apache Sling
 - MantisBT
 - Mylyn Connector for MantisBT
 - Mylyn Connector for Review Board

```
Speaker.currentSpeaker().interrupt();
```

Agenda

- Quick facts and figures
- Conceptual foundations
- Building blocks
- Building Sling applications

Quick facts and figures

Quick facts and figures

200x
Pre-Apache

2007
incubation

2009
TLP

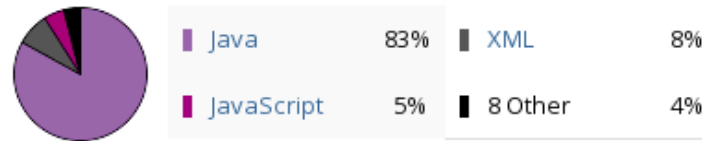
2014
Version 7

High-level View of the Code

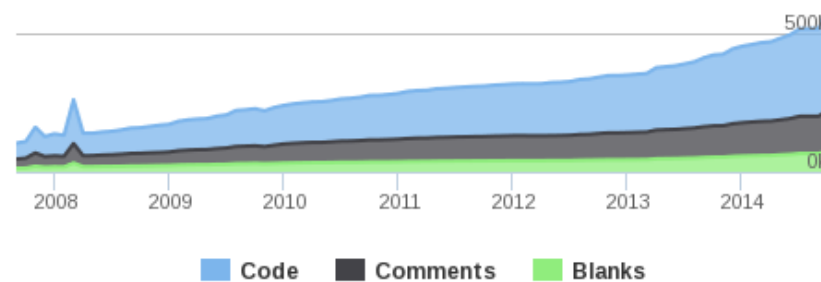
In a Nutshell, Apache Sling...

- ... has had 11,113 commits made by 26 contributors representing 366,232 lines of code
- ... is mostly written in Java with an average number of source code comments
- ... has a well established, mature codebase maintained by a large development team with increasing Y-O-Y commits
- ... took an estimated 97 years of effort (COCOMO model) starting with its first commit in September, 2007 ending with its most recent commit 4 days ago

Languages



Lines of Code



Source: OpenHub

Level of activity

Activity

30 Day Summary

Sep 17 2014 — Oct 17 2014

374 Commits

11 Contributors

12 Month Summary

Oct 17 2013 — Oct 17 2014

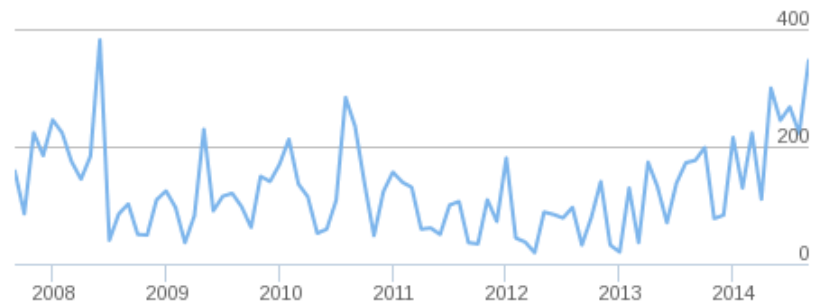
2552 Commits

Up +1187 (86%) from previous 12 months

16 Contributors

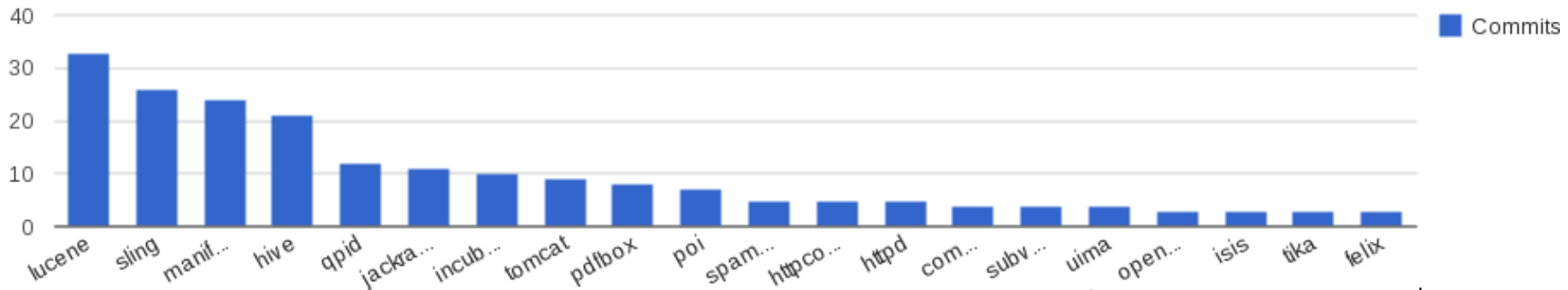
Up +2 (14%) from previous 12 months

Commits per Month



Source: OpenHub

Most active subversion projects today




Source: status.apache.org

Community involvement

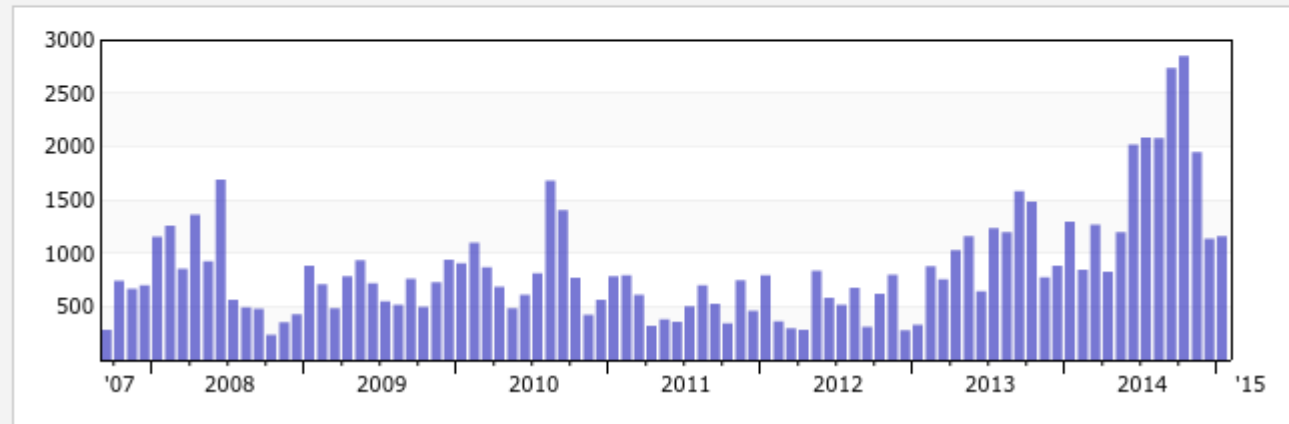
Summary of "sling" Messages

Search for:

Search 

Searching **3 lists** and **77,178 messages**. First list started in **September 2007**. There are **3 active lists**, recently accumulating **35 messages per day**. You can browse [recent emails](#).

Traffic (messages per month):



Source: Markmail

Conceptual foundations

Conceptual foundations

REST-based

Content-driven

OSGi-powered

Apache

Scripting inside

Apache Open Source Project

17
Felix

4
Aries

1
ServiceMix

7
Commons

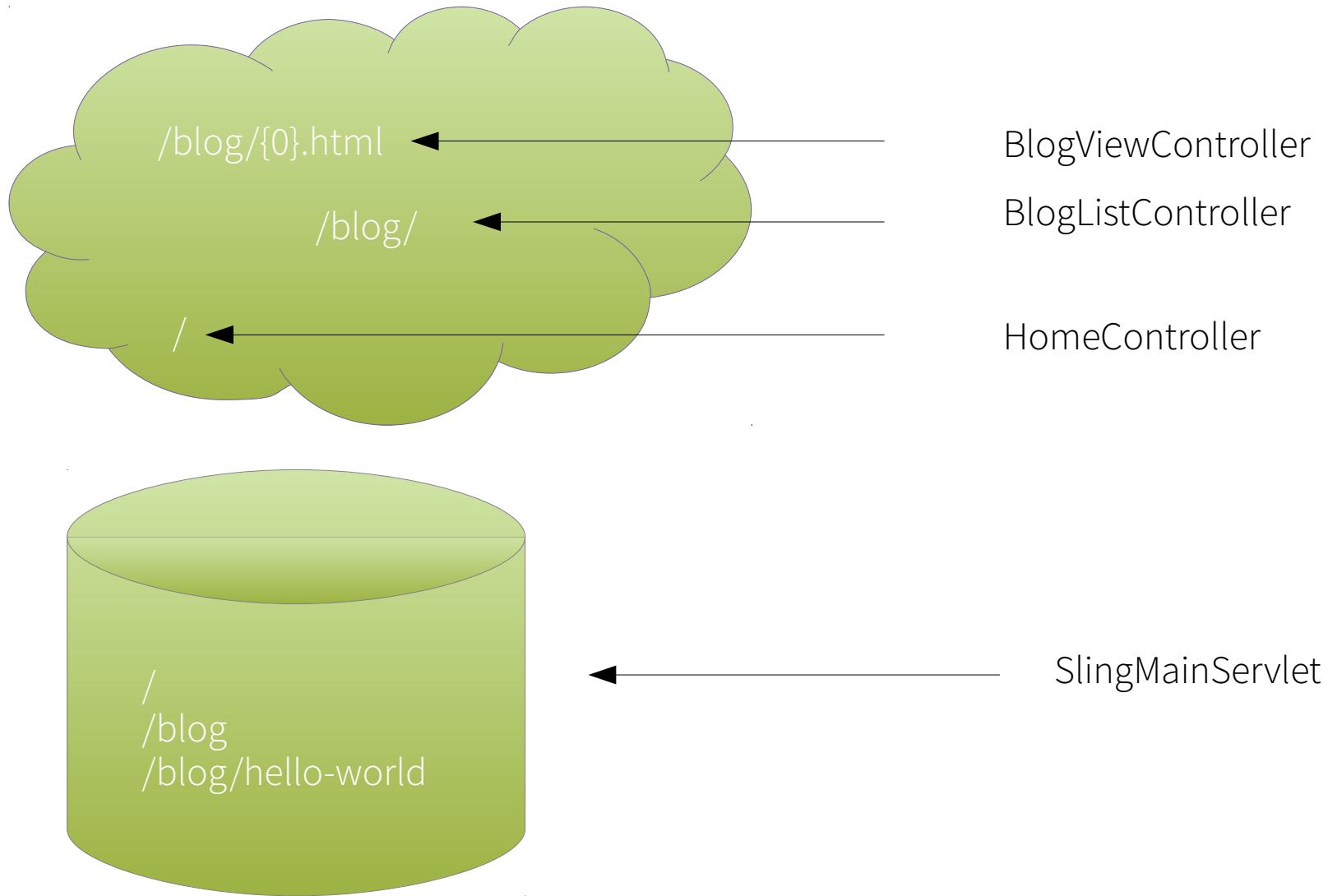
3
Geronimo

6
Jackrabbit

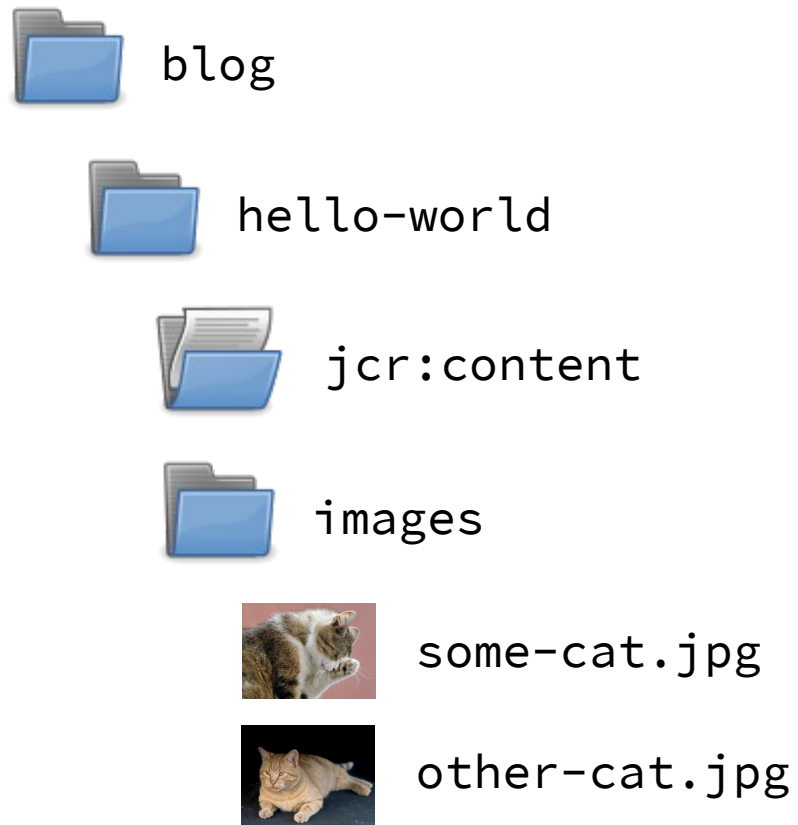
1
Derby

2
Tika

REST-based



Content-driven



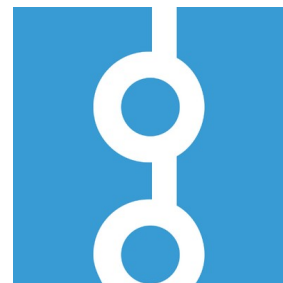
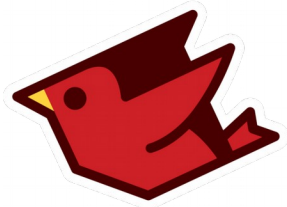
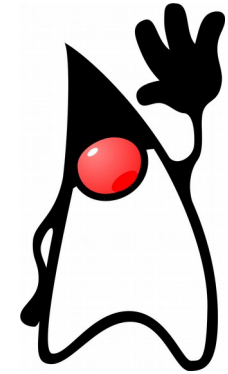
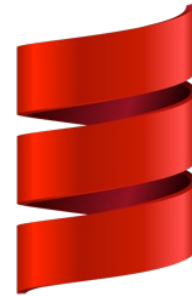
Content-driven



some-cat.jpg

- jcr:primaryType = app:asset
- jcr:title = Some Cat
- jcr:description = A longer description of this picture of a cat
- jcr:created = 2014-06-03T00:00:00.000+02:00
- jcr:lastUpdated = 2014-06-03T11:00:00.000+02:00
- tags = [Animal, Cat, Color]
- width = 400
- height = 600

Scripting inside



Scripting inside

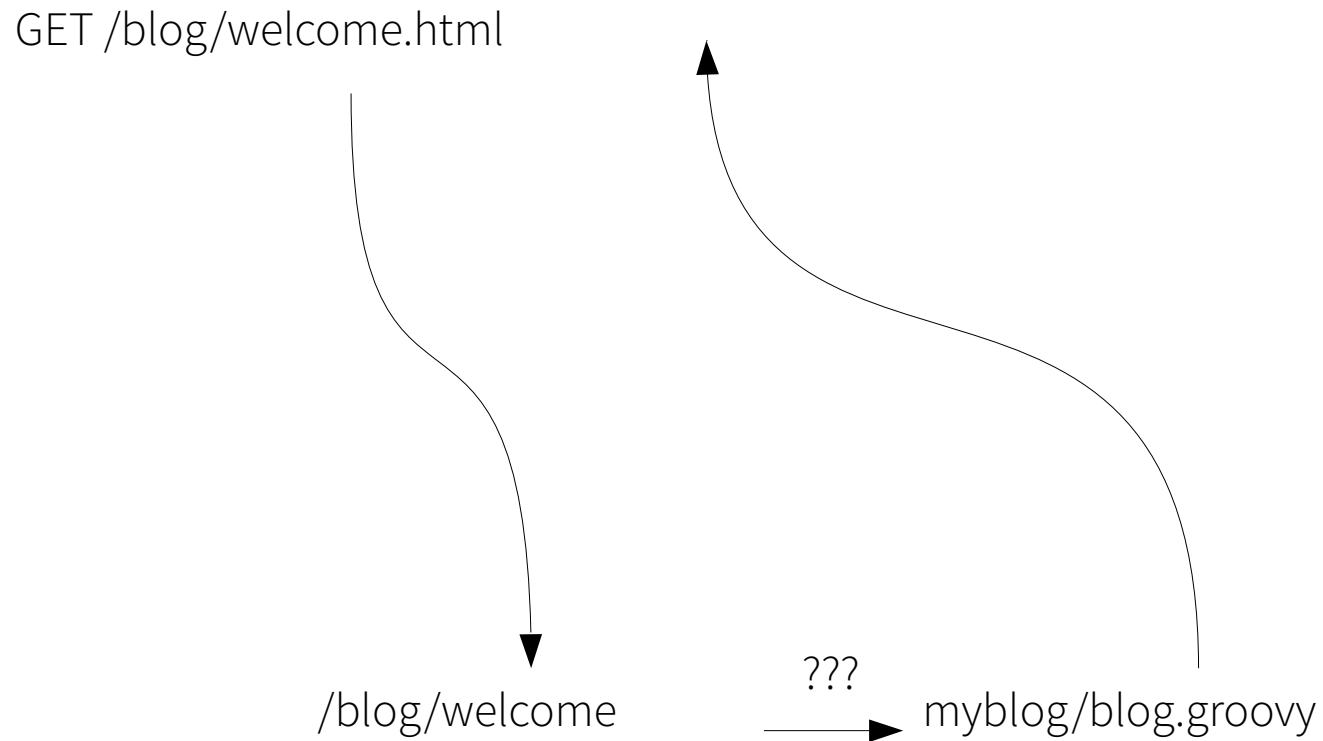


OSGi powered

- Provision and deploy bundles
- Configure, register and lookup services
- Eventing
- Web Console

Building blocks

Serving a request



Resource Types



blog [blogapp/listing]



hello-world



jcr:content [blogapp/blog/content]



images



some-cat.jpg



other-cat.jpg

Script resolution

GET /blog.html

Type: blogapp/listing
Extension: html
Method: GET

/libs/blogapp/listing.jsp

/libs/blogapp/listing/html.jsp

@SlingServlet(resourceTypes="blogapp/listing",...)

Request selectors

GET /blog.rss.xml

Type: blogapp/listing

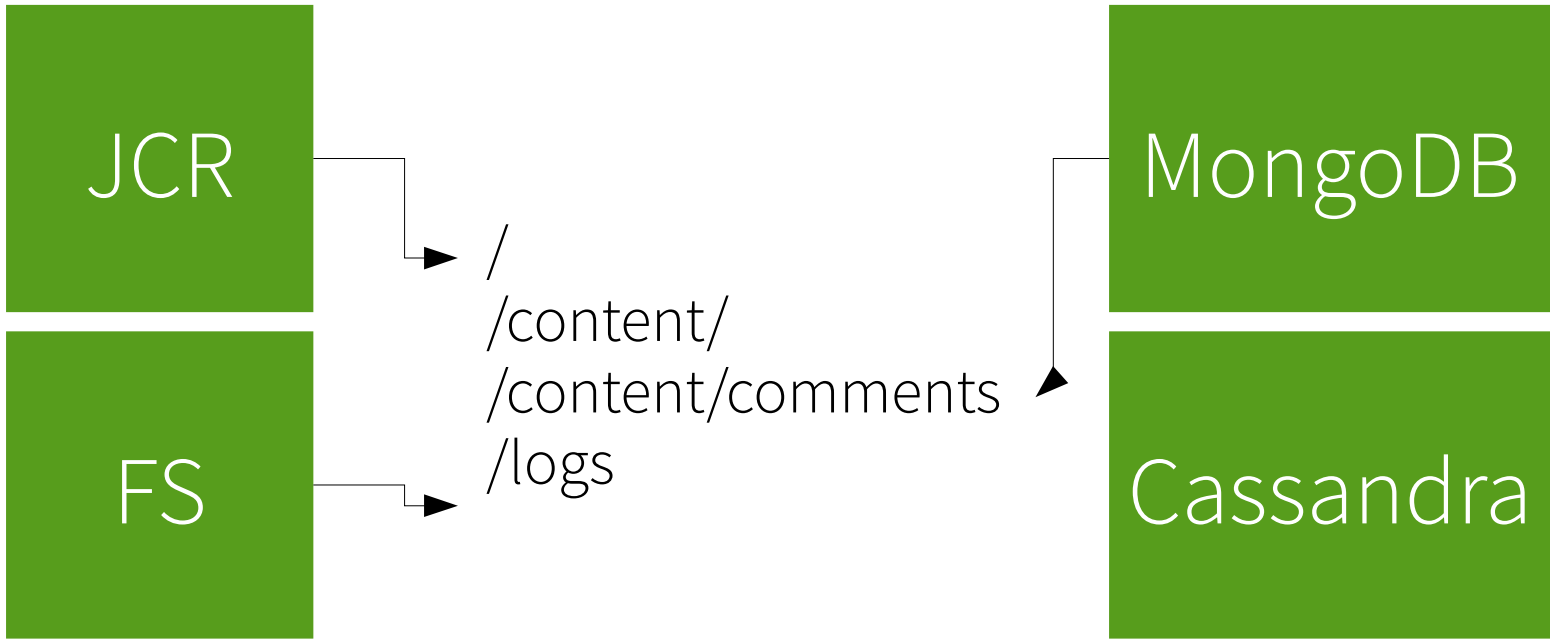
Extension: xml

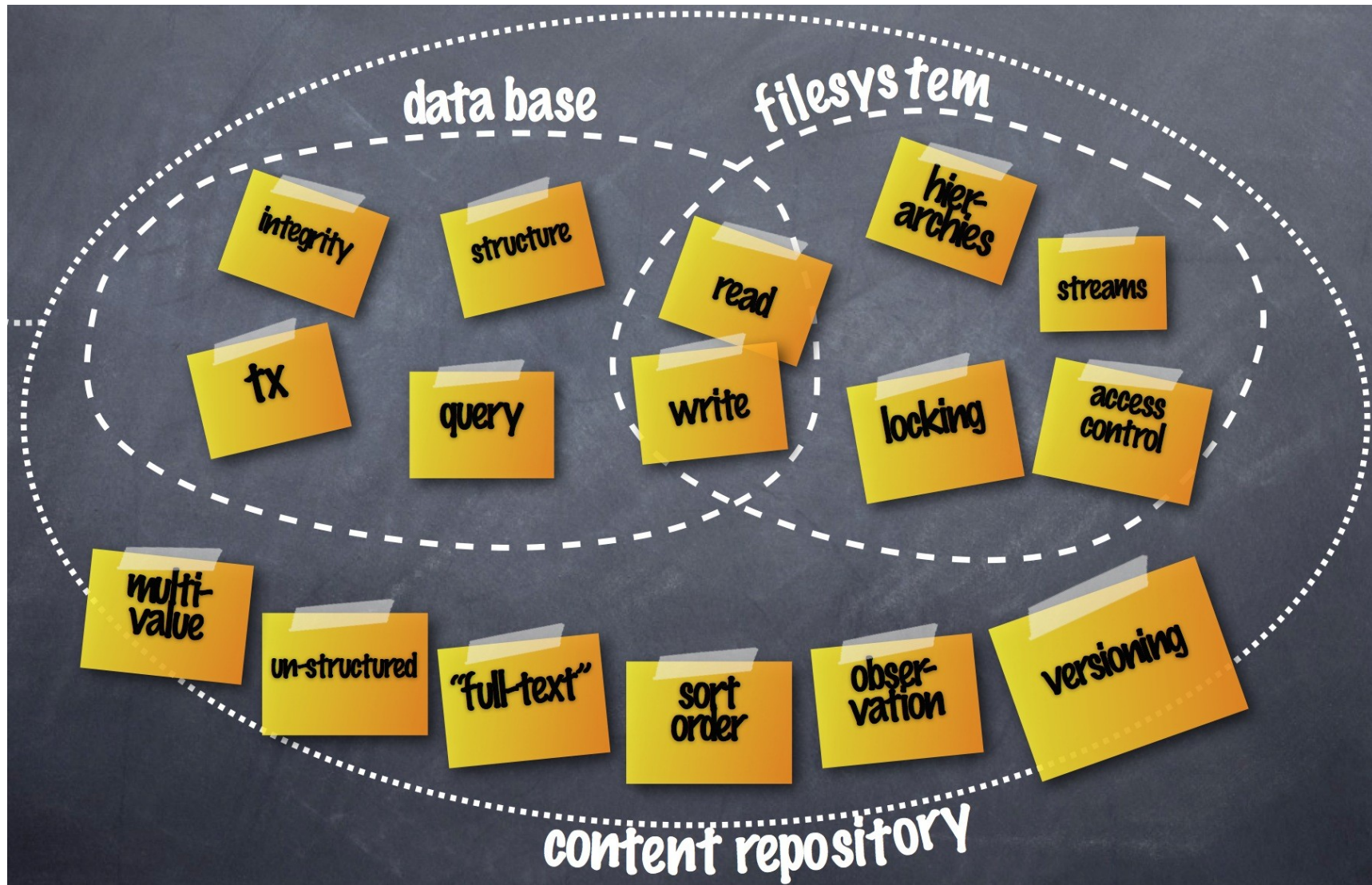
Selector: rss

Method: GET

/libs/blogapp/listing/rss.html

Resource Providers





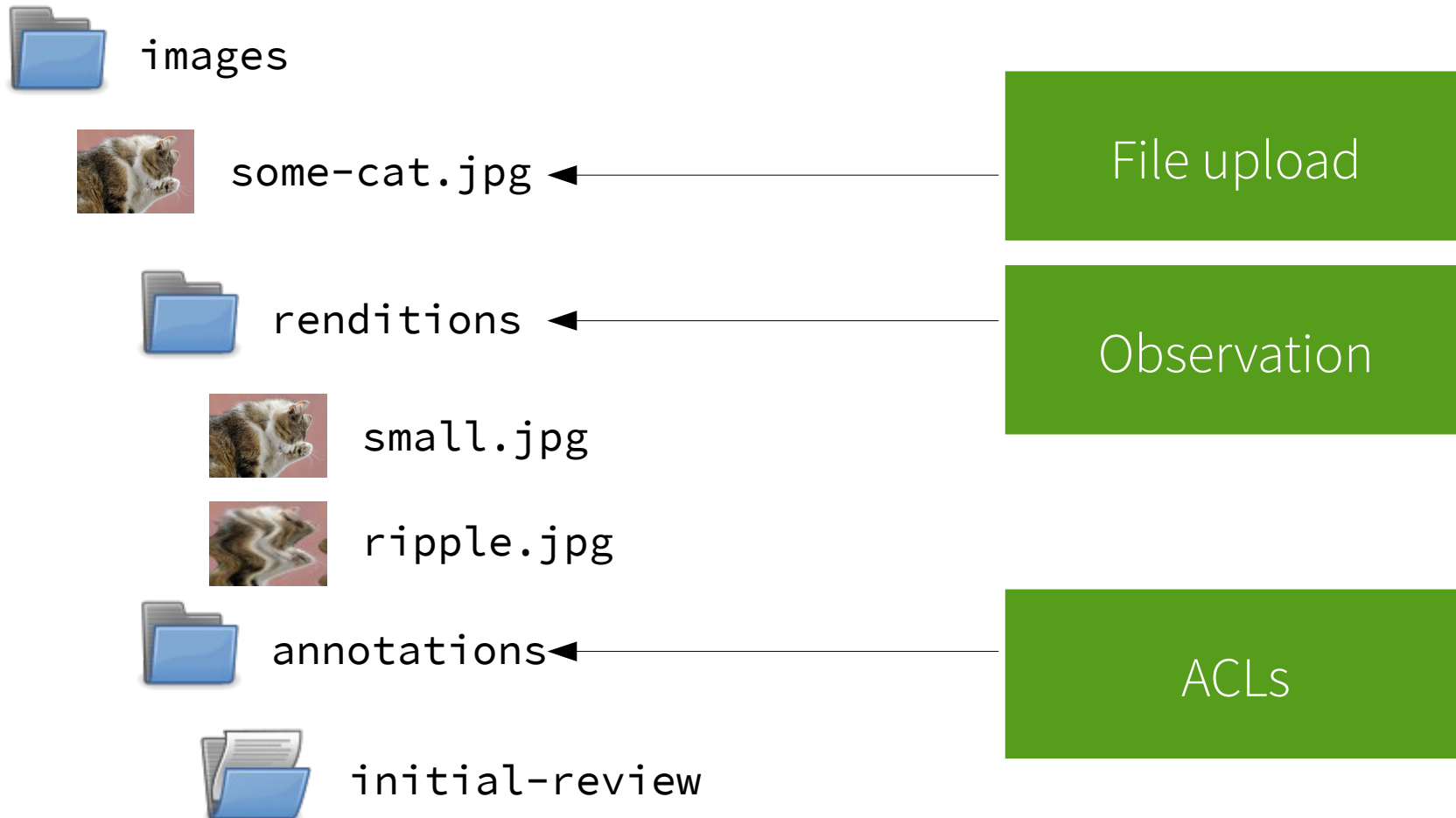
JCR Implementations



Apache Jackrabbit Oak

Building Sling Applications

JCR Modeling



JCR Modeling



etc



rendition



ripple

- orientation = /etc/rendition/ripple/options/↵
orientation/vertical
- antialiasing = true
- edges = /etc/rendition/ripple/options/↵
edges/wrap
- wave type = /etc/rendition/ripple/options/↵
wave_type/simple
- period = 20
- amplitude = 5

Everything is a resource

Reading from the repository

```
@SlingServlet(resourceTypes =
"blogapp/listing",
    extensions = "xml", methods = "GET")
public class RSSFeedServlet extends
    SlingSafeMethodsServlet {
    @Override
    protected void
doGet(SlingHttpRequest request,
SlingHttpResponse response) throws
ServletException, IOException {
    // actual implementation
}
}
```

Reading from the repository

```
Resource res = request.getResource();  
ValueMap properties =   
    res.adaptTo(ValueMap.class);  
String title = properties.get("jcr:title",  
    "Missing");  
Post post = res.adaptTo(Post.class);  
title = post.getTitle();
```

Another templating language?

- Secure by default – XSS protection
- Batteries not included to encourage separation of concerns
- Natural templating by blending in HTML5 documents

Sightly

```
<h4
  class="card--${card.itemprop['customStyle']}">
  ${card.itemprop['description']}
</h4>

<div data-sly-list="${resource.listChildren}">
  <article data-sly-resource="${childResource}"/>
</div>

<section data-sly-include="template.html"/>

<div data-sly-use.logic="logic.js">
  ${logic.hi}
</div>
```

Sightly server-side logic

```
/* logic.js */  
use(function() {  
  return {  
    hi: "hello, world"  
  }  
})
```

```
/* Logic.java */  
public class Logic{  
  public String getHi() {  
    return "Hello, world"  
  }  
}
```

Extensions

- Thread Pools and Scheduled Tasks
- I18n
- Caching
- Models
- Health Checks
- Eventing

Get the closest Folder parent

```
$(resource).parents("sling:Folder").last();
```

Get the second child of each resource

```
$(resource1, resource2).children(":eq(1)");
```

Find children named en or de

```
$(resource).children("#en, #de")
```

Deployment

- Single executable Jar or War file – the Sling launchpad
- Configuration defined in multiple text files, defining bundles, configuration, variables, bootstrap commands, etc

Provisioning model

```
[feature name=main]
```

```
[variables]
```

```
  io.version=1.4
```

```
[configurations]
```

```
org.apache.jackrabbit.....SegmentNodeStoreService  
  name="Default\ NodeStore"  
  repository.home="sling/oak/repository"
```

```
[artifacts startLevel=5]
```

```
  commons-io/commons-io/${io.version}/jar  
  commons-fileupload/commons-fileupload/1.3.1/jar
```


Web Console – runtime configuration

The screenshot shows the configuration interface for the Apache Sling GET Servlet. The dialog is titled "Apache Sling GET Servlet" and contains the following sections:

- Description:** The Sling GET servlet is registered as the default servlet to handle GET requests.
- Extension:** A text input field.
- Aliases:** A text input field with a description: "The aliases can be used to map several extensions to a single servlet. For instance 'xml:pdf,rtf' maps the extensions '.pdf' and '.rtf' to the servlet helper handling the '.xml' extension. (aliases)".
- Auto Index:** A checkbox that is currently unchecked. Description: "Controls whether a simple directory index is rendered for a directory request. A directory request is a request to a resource with a trailing slash (/) character, for example http://host/apps/. If none of the index resources exists, the default GET servlet may automatically render an index listing of the child resources if this option is checked, which is the default. If this option is not checked, the request to the resource is forbidden and results in a status 403/FORBIDDEN. This configuration corresponds to the 'Index' option of the Options directive of Apache HTTP Server (httpd). (index)".
- Index Resources:** A list of resources with '+' and '-' buttons. The list contains "index" and "index.html". Description: "List of child resources to be considered for rendering the index of a 'directory'. The default value is ['index', 'index.html']. Each entry in the list is checked and the first entry found is included to render the index. If an entry is selected, which has not extension (for example the 'index' resource), the extension '.html' is appended for the inclusion to indicate the desired text/html rendering. If the resource name has an extension (as in 'index.html'), no additional extension is appended for the inclusion. This configuration corresponds to the <DirectoryIndex> directive of Apache HTTP Server (httpd). (index.files)".
- Enable HTML:** A checked checkbox. Description: "Whether the renderer for HTML of the default GET servlet is enabled or not. By default the HTML renderer is enabled. (enable.html)".
- Enable Plain Text:** A checked checkbox. Description: "Whether the renderer for plain text of the default GET servlet is enabled or not. By default the plain text renderer is enabled. (enable.txt)".
- Enable JSON:** A checked checkbox. Description: "Whether the renderer for JSON of the default GET servlet is enabled or not. By default the JSON renderer is enabled. (enable.json)".
- Enable XML:** A checked checkbox. Description: "Whether the renderer for XML of the default GET servlet is enabled or not. By default the XML renderer is enabled. (enable.xml)".
- JSON Max results:** A text input field with the value "200". Description: "The maximum number of resources that should be returned when doing a node.5.json or node.infinity.json. In JSON terms this basically means the number of Objects to return. Default value is 200. (json.maximumresults)".
- Configuration Information:**
 - Persistent Identity (PID): org.apache.sling.servlets.get.DefaultGetServlet
 - Configuration Binding: Unbound or new configuration

At the bottom right of the dialog are buttons for "Cancel", "Reset", "Delete", "Unbind", and "Save".

Tooling

- Maven Plugins
 - Bundle deployment
 - Launchpad creation
- Maven Archetypes
- IDE Tooling
 - Eclipse
 - Netbeans (external)

Resources

- <http://sling.apache.org/>
- <http://jackrabbit.apache.org/>
- <http://www.slideshare.net/rombertw>