Effective Web Application Development with Apache Sling

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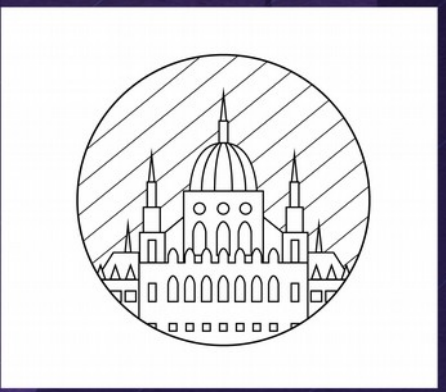


APACHECON EUROPE

CORINTHIA HOTEL
BUDAPEST, HUNGARY
NOVEMBER 17-21, 2014

About the Speaker

- Apache Sling PMC member
  - Fanboy of the Sling/JCR/OSGi stack
- Enthusiastic Open-Source contributor
- Senior Computer Scientist at Adobe in Romania

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

Presentation Flow

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

Quick facts and figures

Apache Sling - History

200x
Pre-Apache

2007
incubation

2009
TLP

2014
Version 7

Apache Sling – High-level View of the Code

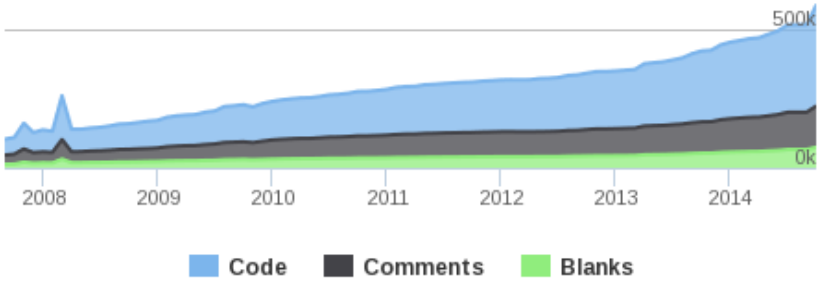
In a Nutshell, Apache Sling...

- ... 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

Java	83%	XML	8%
JavaScript	5%	8 Other	4%

Lines of Code



Source: OpenHub

Apache Sling - Activity Level

Activity

30 Day Summary

Sep 17 2014 — Oct 17 2014

374 Commits

11 Contributors

12 Month Summary

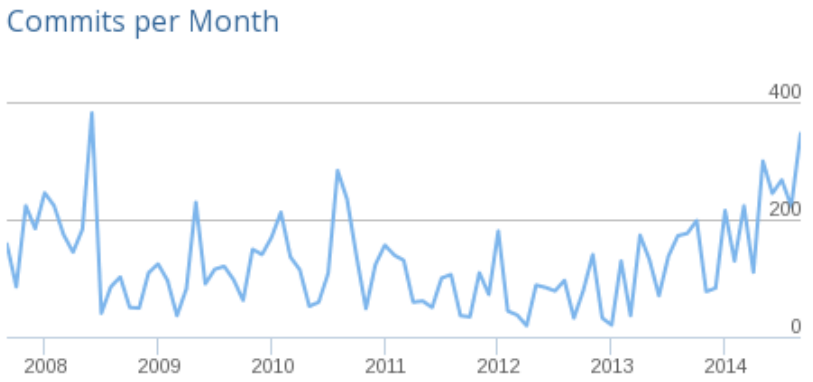
Oct 17 2013 — Oct 17 2014

2552 Commits

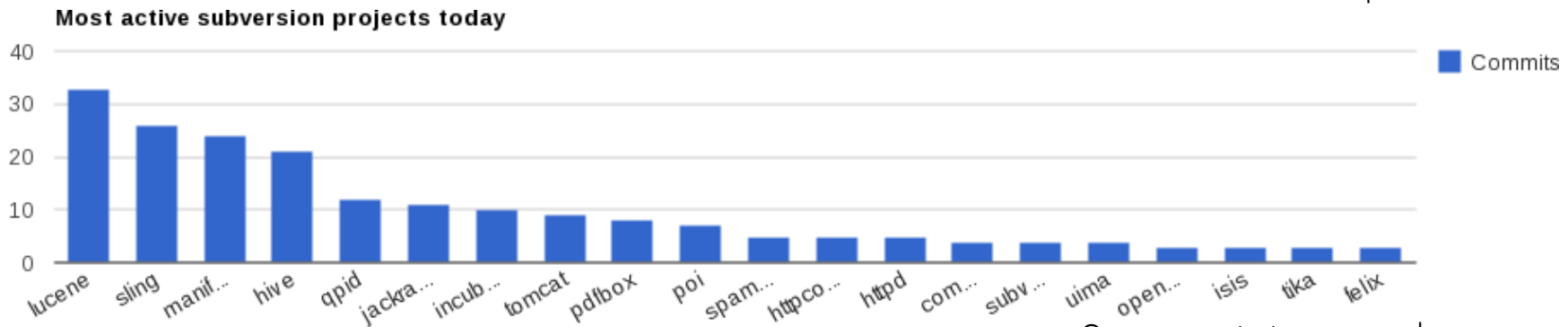
Up +1187 (86%) from previous 12 months

16 Contributors

Up +2 (14%) from previous 12 months



Source: OpenHub



Source: status.apache.org

Conceptual Foundations

Apache Sling – Conceptual Foundations

REST-based

Content-driven

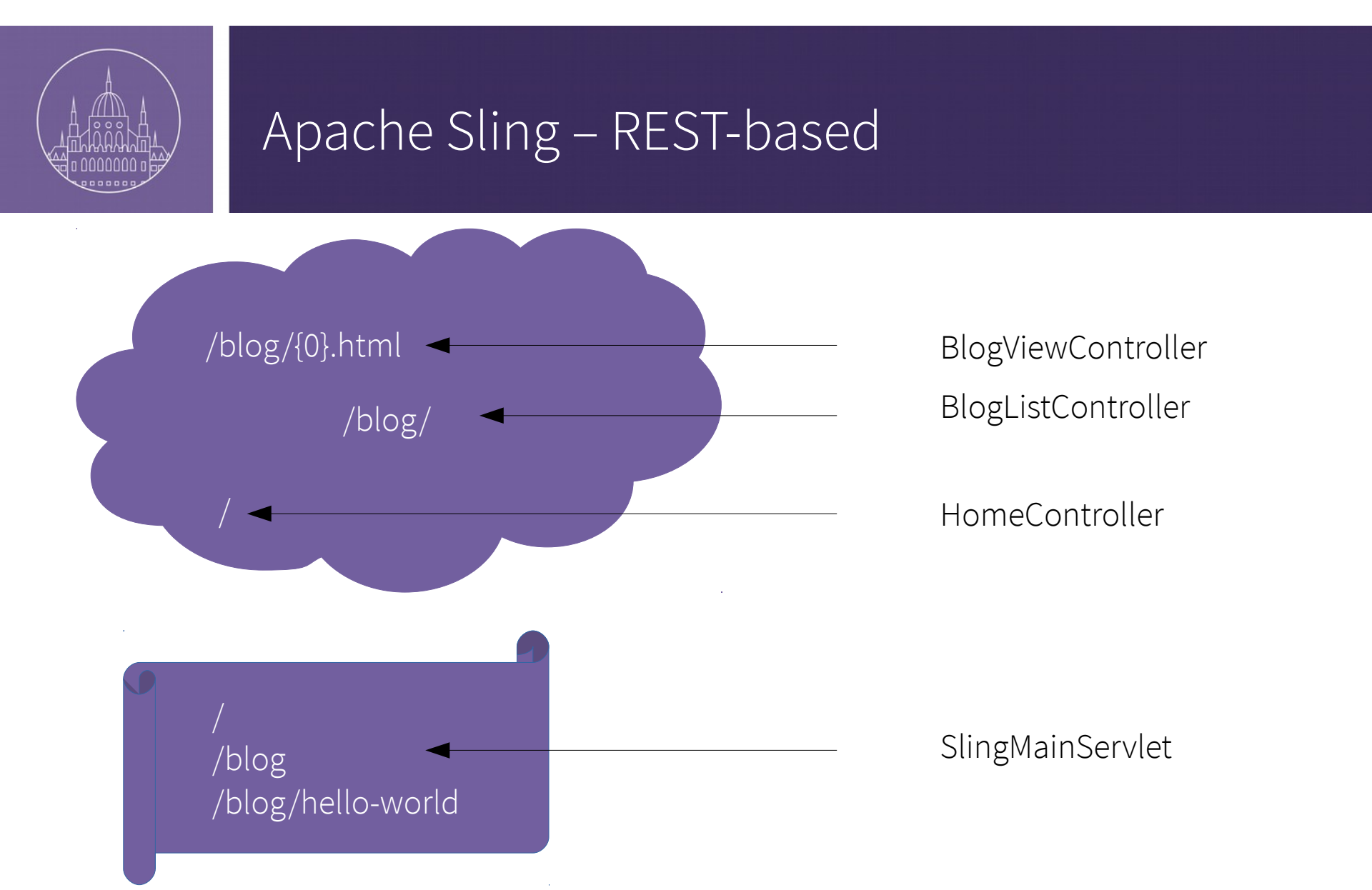
OSGi-powered

Apache

Scripting inside

Apache Sling – Apache Open Source

17 Felix	4 Aries	1 ServiceMix	7 Commons
3 Geronimo	6 Jackrabbit	1 Derby	2 Tika



Apache Sling – REST-based

/blog/{0}.html

/blog/

/

BlogViewController

BlogListController

HomeController

/
/blog
/blog/hello-world

SlingMainServlet

Apache Sling – Content-Driven

blog

hello-world

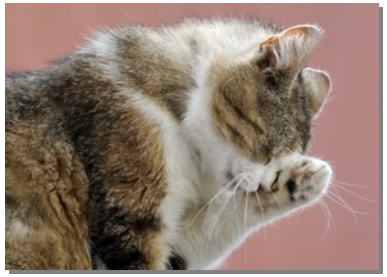
jcr:content

images

some-cat.jpg

other-cat.jpg

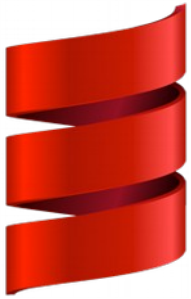
Apache Sling – Content-Driven

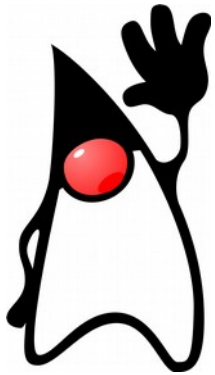


some-cat.jpg

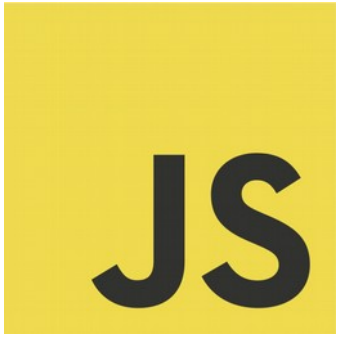
```
- jcr:primaryType = app:asset
- jcr:title = Some Cat
- jcr:description = A longer description of this picture
of a cat
- jcr:created = 2014-06-03T00:00:00.000+02:00
- jcr:lastUpdated = 2014-06-03T11:00:00.000+02:00
- tags = [Animal, Cat, Color]
- width = 400
- height = 600
```

Apache Sling – Scripting Inside





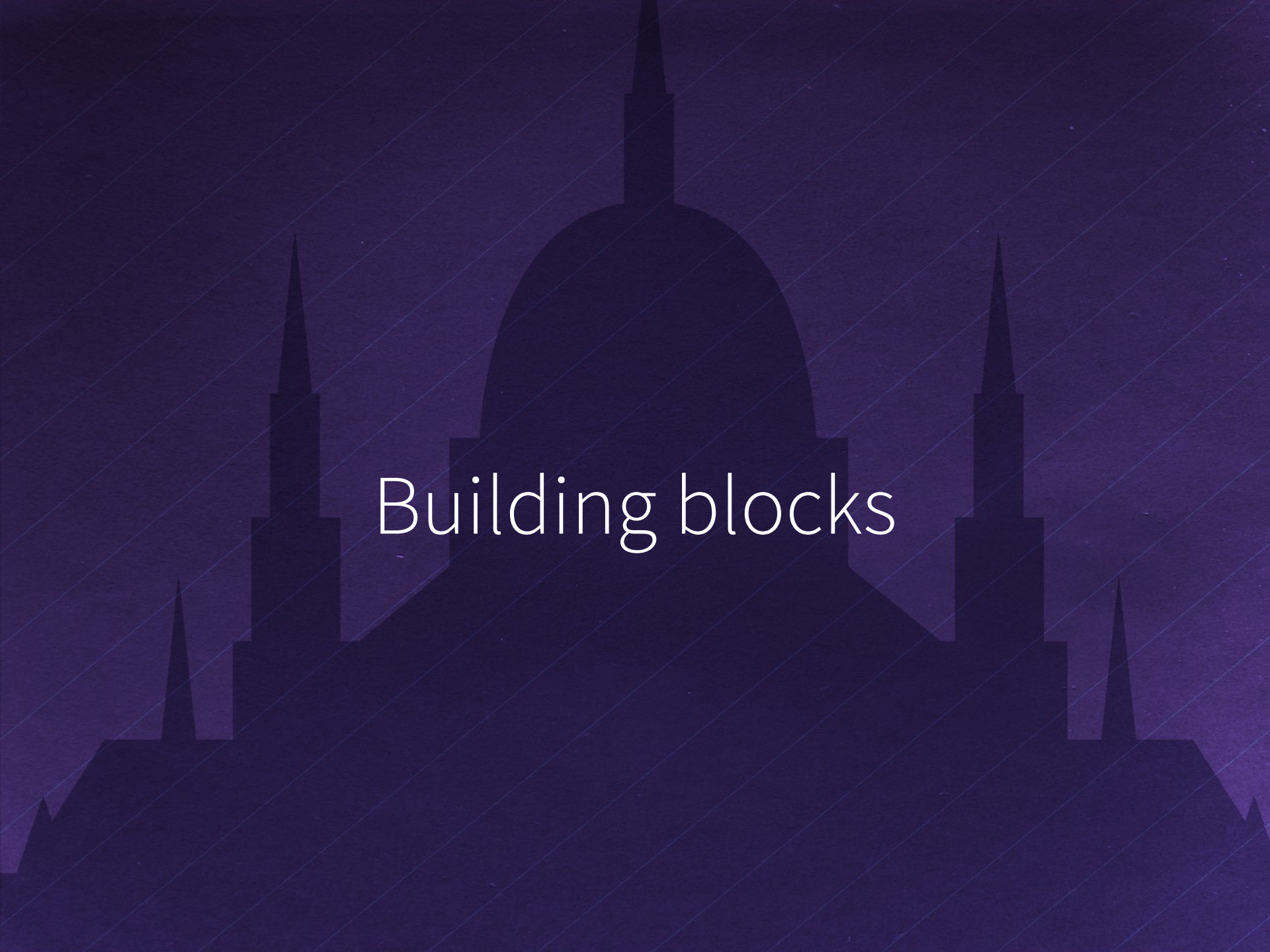
JSP



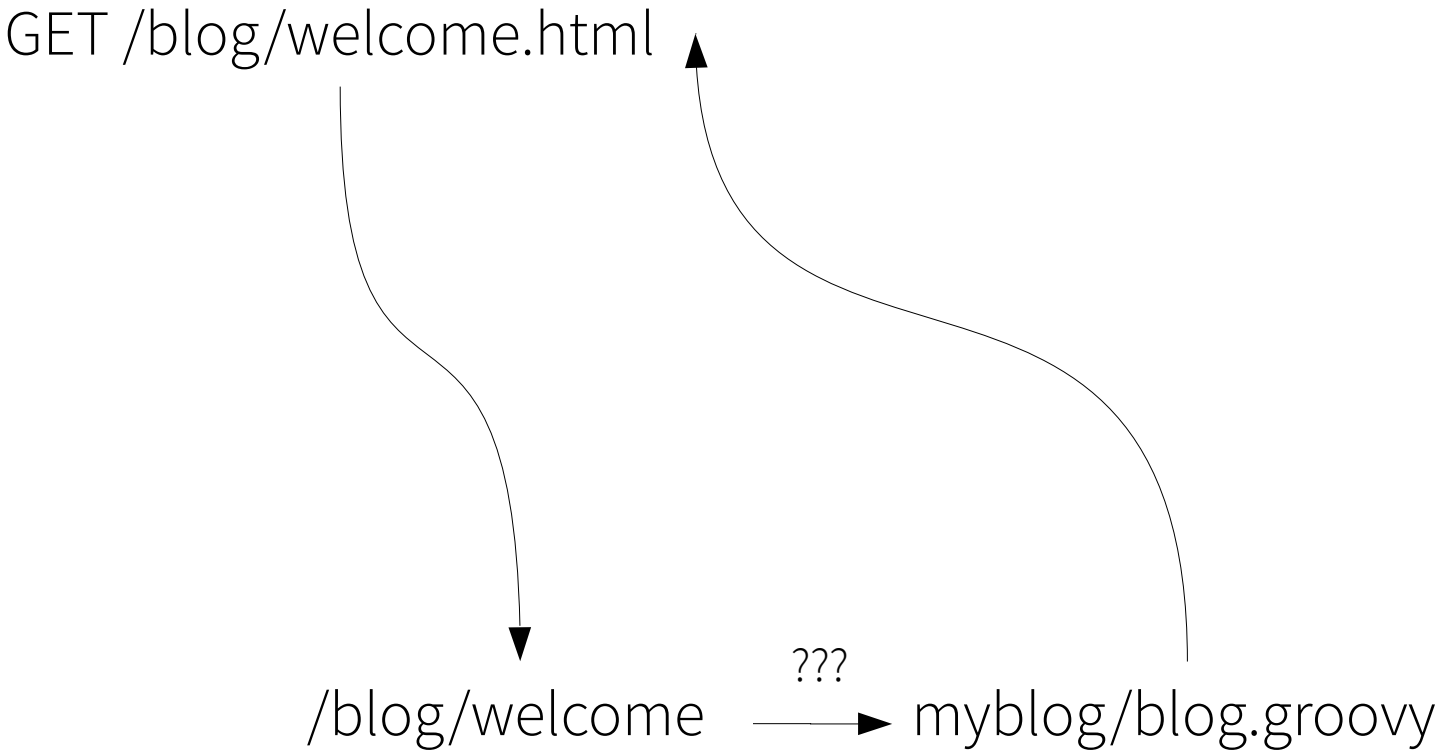
Apache Sling – Scripting Inside

Apache Sling – OSGi-powered

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


Building blocks

Apache Sling – Serving a request



Apache Sling – Resource Types

blog [blogapp/listing]

hello-world

jcr:content [blogapp/blog/content]

images

some-cat.jpg

other-cat.jpg

Apache Sling – Script Resolution

```
GET /blog.html
```

```
Type: blogapp/listing
Extension: html
Method: GET
```

```
/libs/blogapp/listing.jsp
```

```
/libs/blogapp/listing/html.jsp
```

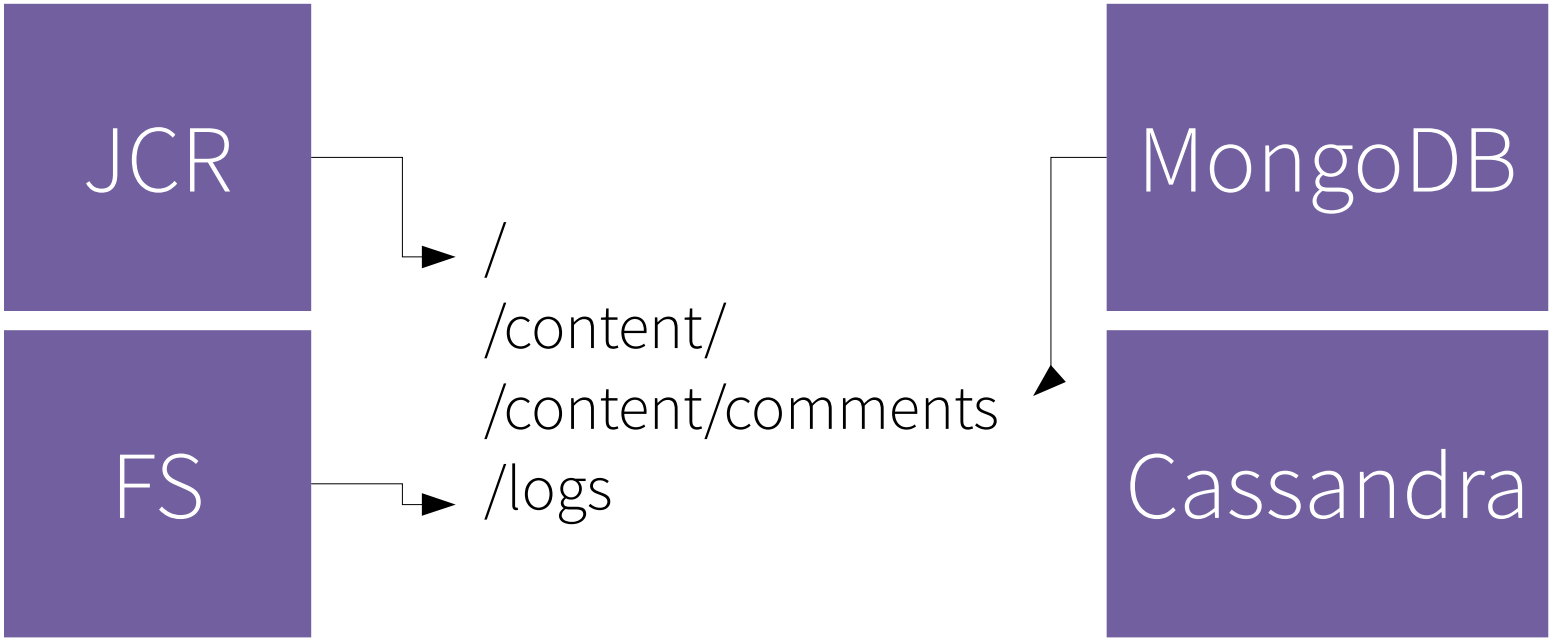
```
@SlingServlet(resourceTypes="blogapp/listing",...)
```

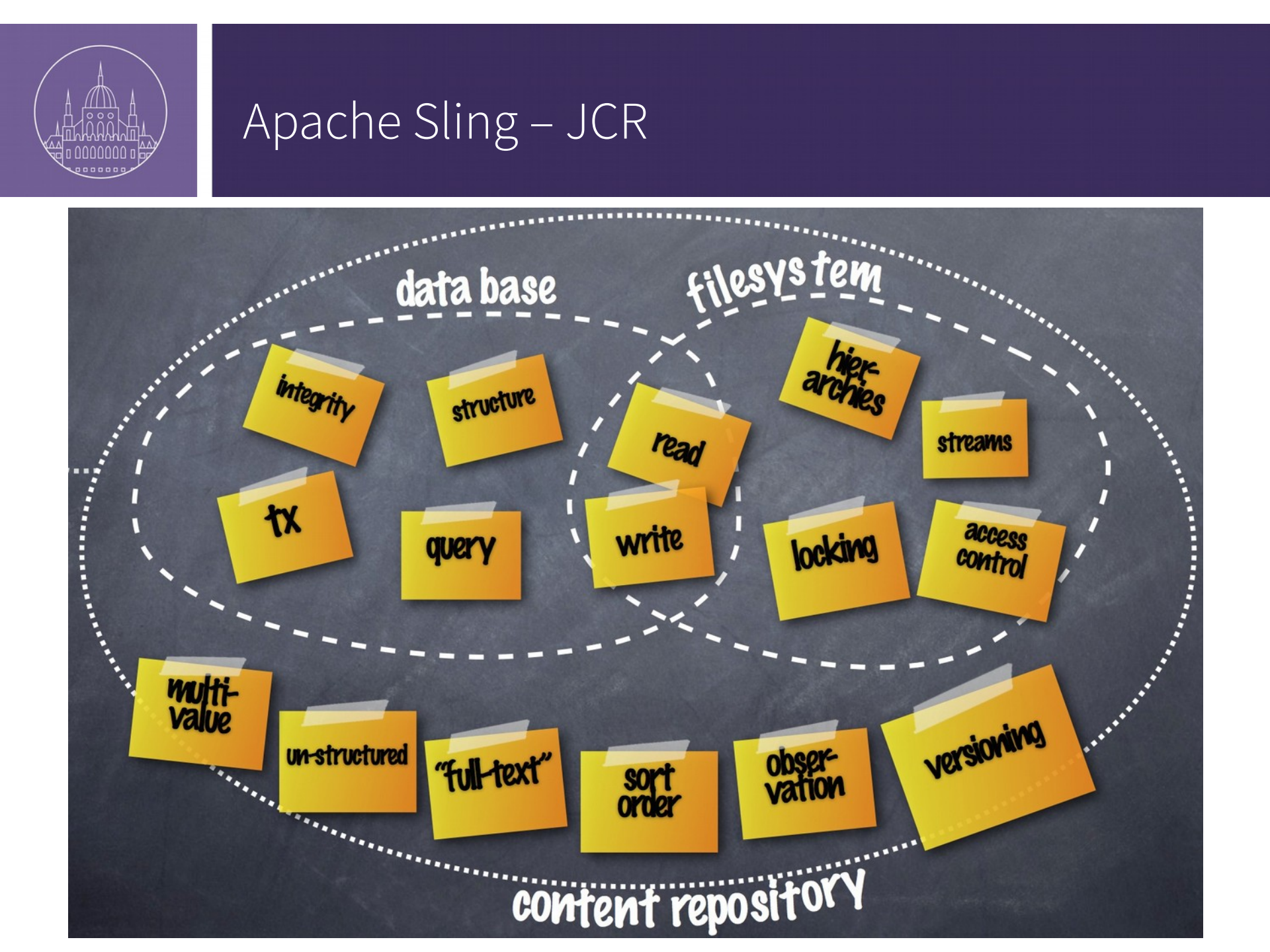
Apache Sling – Request Selectors

```
GET /blog.rss.xml   Type: blogapp/listing
                    Extension: xml
                    Selector: rss
                    Method: GET
```

/libs/blogapp/listing/rss.html

Apache Sling – Resource Providers





Apache Sling – JCR

Apache Sling – JCR implementations

Apache Jackrabbit™

Apache Jackrabbit Oak

Building Sling Applications

Apache Sling – JCR modeling

images

some-cat.jpg

renditions

small.jpg

ripple.jpg

annotations

initial-review

File upload

Observation

ACLs

Apache Sling - JCR

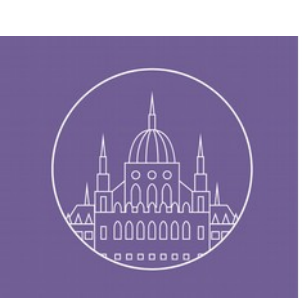
etc

rendition

ripple

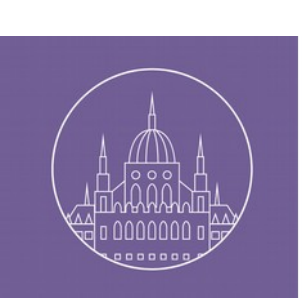
```
- orientation = /etc/rendition/ripple/options↵
/orientation/vertical
- antialiasing = true
- edges = /etc/rendition/ripple/options/↵
edges/wrap
- wave type = /etc/rendition/ripple/options/↵
wave_type/simple
- period = 20
- amplitude = 5
```

Everything is a Resource



Apache Sling – Reading from the Repository

```
@SlingServlet(resourceTypes = "blogapp/listing",
    extensions = "xml", methods = "GET")

public class RSSFeedServlet extends
    SlingSafeMethodsServlet {

    @Override
    protected void doGet(SlingHttpServletRequest request,
SlingHttpServletResponse response) throws
ServletException, IOException {

        // actual implementation

    }

}
```



Apache Sling – 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();
```

Apache Sling - Extensions

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

Apache Sling - SlingQuery

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")
```

Apache Sling - Deployment

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

Apache Sling – 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
```

Apache Sling - Tooling

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

Resources

- http://sling.apache.org/
- http://jackrabbit.apache.org/