



**adaptTo()**

APACHE SLING & FRIENDS TECH MEETUP  
BERLIN, 25-27 SEPTEMBER 2017

# Extensible Components with Sling Models and HTL

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# About us: ref-squad



- WCM Components in AEM
- Core Components
- Demo Time: We.Retail
- Demo Time: Building from Scratch
- Conclusion and Get started
- Q & A Section

# Components and WCM

# WCM Components in AEM

## Why?

- Speed up the time to get a WCM project done (increase ROI)
- Showcase the latest AEM technology and capabilities
- No need to reinvent the wheel on every customer project
- Provide guidelines / best practice for Component development for (new) developers

## How?

- Foundation Components (OOTB)
- since AEM 6.3: Core Components (samplecontent / GitHub)

## Foundation Components

- Development started with CQ 5.0 (2008)
- ~70 Components shipped with AEM OOTB
- Placed in
  - `/libs/foundation/components` (JSP based)
  - `/libs/wcm/foundation/components` (based on HTL and JS logic)
- Usage:
  - By Customers in WCM projects (as-is or basis for there own components)
  - In AEM demos (Geometrixx) and other parts of the product (eg. Commerce, Mobile, Social)

# Foundation Components: The Challenges

- Hard to evolve new features or to drop outdated functionalities
  - Components directly used in customer projects (e.g. parsys)
  - Components inherited by subcomponents (e.g. page)
- Not a state of the art best practice for component development
  - Logic placed inline in JSP as scriptlets
  - No testing coverage with unit tests
- No consistent support of latest AEM features like TouchUI or Editable Templates



# Core Components





# Core Components: Overview

## Page authoring

Page

Breadcrumb

Title

Text

Image

List

Sharing

## Form

Container

Text field

Options field

Hidden field

Button

## Sandbox

Navigation

Language navigation

Teaser

Search

# Core Components: Open Source

- <https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components>
- Stable branch - **master**
  - AEM 6.3
  - Maintenance + fixes
- Development branch - **development**
  - Sandbox versions
    - Preview
    - Experiment
    - Do not use in production
- Feedback and contributions are greatly appreciated

# Core Components: Documentation

- README.md  
[https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/tree/master/content/src/content/jcr\\_root/apps/core/wcm/components/title/v1/title](https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/tree/master/content/src/content/jcr_root/apps/core/wcm/components/title/v1/title)
- Wiki:  
<https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/wiki>
- AEM docs:  
<https://docs.adobe.com/docs/en/aem/6-3/develop/components/core-components.html>
- Tutorial:  
<https://helpx.adobe.com/experience-manager/kt/sites/using/getting-started-wknd-tutorial-develop.html>

# Core Components: Tested

- Unit tests
  - Coverage > 80%
  - <https://codecov.io/gh/Adobe-Marketing-Cloud/aem-core-wcm-components>
- UI tests
  - Hobbes JS - <https://docs.adobe.com/docs/en/aem/6-3/develop/ref/test-api/index.html>
  - <https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/tree/master/testing/it/ui-js>
  - How to run:
    - Manually
    - Integrated in internal build pipelines (Jenkins) with multiple browsers

# Core Components: Technology

- HTL markup
  - Clean, HTML-based templating language
  - Use-objects
    - Sling Models
    - POJOs
    - Javascript
  - Open source
    - <https://github.com/Adobe-Marketing-Cloud/htl-spec>
    - <https://github.com/apache/sling/tree/trunk/bundles/scripting/sightly>
- Standardized BEM-style classes: `cmp-breadcrumb__item--active`

\*BEM = Block Element Modifier

# Core Components: Technology

## HTL

```
<div class="cmp-title"
    data-sly-use.title="com.adobe.cq.wcm.core.components.models.Title"
    data-sly-test.text="${title.text}">
    <h1 class="cmp-title__text" data-sly-element="${title.type}">${text}</h1>
</div>
```

## Sling Model

```
public interface Title {
    String getText();
    String getType();
}
```

## Implementation

```
@Model(adaptables = SlingHttpServletRequest.class, adapters = Title.class, resourceType =
"core/wcm/components/title/v1/title")
public class TitleImpl implements Title {...}
```

# Core Components: Versions

- HTL
  - Path-based versions  
`apps/core/wcm/components/title/v1/title`
  - Inheritance through `sling:resourceSuperType`
- Sling Models - interfaces
  - `@since` annotation
  - default methods

```
...
 * @return the title's text
 * @since com.adobe.cq.wcm.core.components.models 11.0.0; marked <code>default</code> in
12.1.0
 */
default String getText() {
    throw new UnsupportedOperationException();
}
```

# Core Components: Versions

- Sling Models - implementations
  - Target specific rendering component version using `@Model(resourceType)`

```
@Model(adaptables = SlingHttpServletRequest.class, adapters = Title.class, resourceType =  
TitleImpl.RESOURCE_TYPE)  
public class TitleImpl implements Title {  
    protected static final String RESOURCE_TYPE = "core/wcm/components/title/v1/title";  
    ...  
}
```



# Core Components: Extensible

- Proxy pattern
  - Core components are hidden by default
  - Create proxy components - `sling:resourceSuperType`
- Customize
  - HTL script
  - Sling Models implementation
  - Dialog tabs
- Composition
  - Include components using `data-sly-resource`
  - Reuse Sling Model implementation

## Reference implementation for WCM and Commerce

- 1.0 - AEM 6.2
  - Custom components
  - HTL + JavaScript
- 2.0 - AEM 6.3
  - Core components
  - HTL + Java
- Future
  - More core components
  - HTL + Sling Models

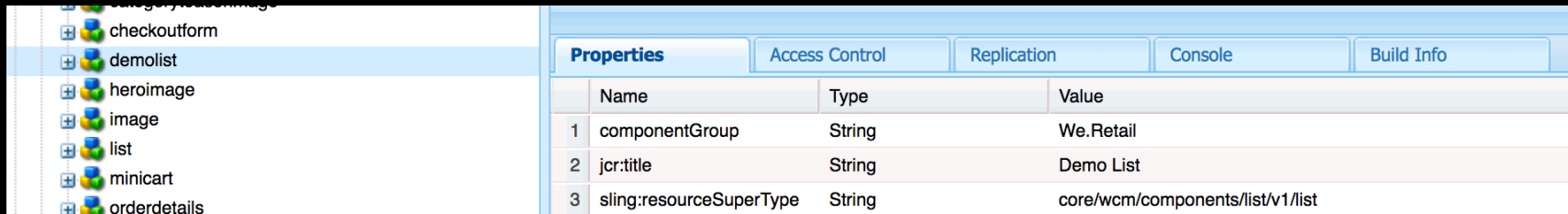
## ■ We.Retail - Breadcrumb

```
<?xml version="1.0" encoding="UTF-8"?>
<jcr:root xmlns:sling="http://sling.apache.org/jcr/sling/1.0"
  xmlns:cq="http://www.day.com/jcr/cq/1.0" xmlns:jcr="http://www.jcp.org/jcr/1.0"
  jcr:primaryType="cq:Component"
  jcr:title="Breadcrumb"
  jcr:description="Displaying breadcrumb navigation"
  sling:resourceSuperType="core/wcm/components/breadcrumb/v1/breadcrumb"
  componentGroup="We.Retail"/>
```

The background of the slide is a photograph of various colorful wooden blocks scattered on a light-colored wooden surface. Some blocks are stacked into small towers, while others are lying flat. The colors include red, yellow, green, blue, and orange. A prominent white triangle-shaped block is visible in the upper right, and a blue triangle-shaped block is in the center. The lighting is soft, creating gentle shadows.

# Demo Time: We.Retail

- Create a proxy component



Properties				
Access Control				
Replication				
Console				
Build Info				
Name	Type	Value		
1	componentGroup	String	We.Retail	
2	jcr:title	String	Demo List	
3	sling:resourceSuperType	String	core/wcm/components/list/v1/list	

- Customize rendering

```

<ol data-sly-use.list="com.adobe.cq.wcm.core.components.models.List"
  data-sly-list.item="{list.items}">
  <li>{item.title}</li>
</ol>

```

- Customize Sling Model implementation

```
@Model(  
    adaptables = {SlingHttpServletRequest.class},  
    adapters = {List.class},  
    resourceType = {"weretail/components/content/demolist"}  
)  
public class DemoListImpl implements List {  
  
    @Override  
    public Collection<Page> getItems() {  
        return Arrays.asList(new Page[] {  
            new DemoPage( title: "Test1"),  
            new DemoPage( title: "Test2")  
        });  
    }  
}
```

The background of the slide is a close-up photograph of various colorful wooden blocks. In the foreground, two blocks are stacked to form a simple house shape: a reddish-brown rectangular block at the base and a reddish-brown triangular block on top. To the right, another similar structure is made with a reddish-brown rectangular base and a teal triangular top. The background is filled with many other blocks in various colors (green, yellow, orange, blue, white) and shapes (cubes, cylinders, arches), some scattered on a light-colored wooden surface.

# Demo Time: Build a new Website from Scratch

The background of the slide is a close-up, shallow depth-of-field photograph of a large pile of unsorted LEGO bricks. The bricks are in various colors including white, blue, yellow, red, brown, and grey. Some bricks are in sharp focus, while others are blurred in the foreground and background. A solid blue horizontal band is overlaid across the middle of the image, containing the section header text.

# Conclusion and Get started



# Core vs. Foundation Components (1/2)

## ■ Open

	Core	Foundation
License	Apache 2.0 License	Proprietary
Contributions	GitHub Pull requests	Not possible
Support	Yes	Yes

## ■ Documentation & Tests

	Core	Foundation
Documentation	Better	Some
Tests	Unit Tests, Integration Tests	Integration Tests

# Core vs. Foundation Components (2/2)

- Technology

	Core	Foundation
Versioning	Yes	No
Logic	Sling Models	Scriptlets, JavaScript Use-API
Scripting	HTL	JSP, HTL
CSS	BEM	Custom
JSON	Sling Model Exporter	Default Get Servlet
XSS	HTL	Manual
UI Dialog Support	TouchUI (Coral3)	ClassicUI, TouchUI (Coral2)

# Core Components: Get Started

## 1. Check out We.Retail Demo List (5 mins)

- <https://github.com/Adobe-Marketing-Cloud/aem-sample-we-retail/compare/demo/adaptto2017>

## 2. Create a new project (30 mins)

- Checkout & install <https://github.com/Adobe-Marketing-Cloud/aem-project-archetype>
- Create new project
- Deploy to AEM 6.3

## 3. For existing projects on AEM 6.3 (1 hour)

- Download and install the latest released version of the core-components  
<https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/releases>
- Create proxy component for core-components you want to use / extend

# Core Components: Start contributing

- **Feedback**
- **Issues on GitHub**  
<https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/issues>
- **Code contributions and pull requests are more than welcome**  
<https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components/blob/master/CONTRIBUTING.md>



# Q & A Session



Thank You!

# Appendix

# Core Components: Summary

- Open developed
- Backward compatible
- Make use of latest capability in component development
- Provide a best practice in component development of today
- Configurable via Content Policies
- Can easily be extended with custom functionality
- Can be automatically tested and have a high test coverage
- Well documented
- Provide a nice experience for authors and users



- Core Components – Source Code:  
<https://github.com/Adobe-Marketing-Cloud/aem-core-wcm-components>
- Core Components – Documentation:  
<https://docs.adobe.com/docs/en/aem/6-3/develop/components/core-components.html>
- Maven Project Archetype – Source Code:  
<https://github.com/Adobe-Marketing-Cloud/aem-project-archetype>