

**adaptTo()**

APACHE SLING & FRIENDS TECH MEETUP  
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**DEVICE DETECTION WITH APACHE DEVICEMAP**

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# Device Detection

I want to know, what device I run my code on.

# I want to know, what device I run my code on.

- Really?  
I have no idea what to do  
with a **T-Mobile G2x**



I want to know, what the browser can do.

# I want to know, what the browser can do.

CSS3 Background-image options [Table][Single feat]	Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square
CSS3 Border images [Table][Single feat]	Auto(m)	Visual-square	Visual-square			Visual-square	Visual-square		
CSS3 Border-radius (rounded corners) [Table][Single feat]	Auto(m)	Visual-square				Visual-square			
CSS3 Animation [Table][Single feat]	Auto(m)	Visual-square				Visual-square			
CSS3 Box-shadow [Table][Single feat]	Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square
CSS Gradients [Table][Single feat]	Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square
CSS3 Opacity [Table][Single feat]	Auto(m)	Visual-square				Visual-square			
CSS3 Text-shadow [Table][Single feat]	Auto(m)	Visual	Visual	Visual-square		Visual	Visual	Visual-square	
CSS3 Transitions [Table][Single feat]	Auto(m)		Interact			Interact			
CSS3 Colors [Table][Single feat]	Auto(m)	Visual-square	Visual-square						
Flexible Box Layout Module [Table][Single feat]	Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square
@font-face Web fonts [Table][Single feat]	Auto(m)								
CSS3 Multiple backgrounds [Table][Single feat]	Auto(m)	Visual-square							
CSS3 Multiple column layout [Table][Single feat]	Auto(m)	Visual-square	Visual-square			Visual-square	Visual-square		
CSS3 Transforms [Table][Single feat]	Auto(m)	Visual-square				Visual-square			
CSS3 3D Transforms [Table][Single feat]	Auto(m)	Visual-square				Visual-square			
Font feature settings [Table][Single feat]		Visual LORE; <b>LORE</b> Combine L&O and R&E (current syntax)	Visual LORE; <b>LORE</b> Combine L&O and R&E (old syntax)	Visual LORE; <b>LORE</b> Combine L&O and R&E (current syntax)	Visual LORE; <b>LORE</b> Combine L&O and R&E (old syntax)	Visual LORE; <b>LORE</b> Combine L&O and R&E (old syntax)	Visual LORE; <b>LORE</b> Combine L&O and R&E (old syntax)	Visual-square	Visual-square



Device Name  
HTML5  
Hardware  
Streaming  
Environment  
Video Player  
Web Browser  
Audio Player  
JavaScript  
DRM  
Network  
Protocols  
JavaVM  
Beta Properties  
where you helped  
where you can help  
conflicted values

## Samsung GT-I9305

Device Name		HTML5	
Device Vendor	Samsung	HTML Audio	True
Device Model	GT-I9305	HTML Canvas	True
Marketing Name	Galaxy S3 LTE	HTML Inlinesvg	True
Year Released	2012	HTML SVG	True
		HTML Video	True
		CSS Animations	True
		CSS Columns	-
		CSS Transforms	True
		CSS Transitions	True
		JS Application	
		Cache	True
		JS Geo Location	True
		JS Indexeddb	True
		JS Local Storage	True
		JS Session	
		Storage	True
		JS Web GL	True
		JS Web Sockets	True
		JS Web SQL	
		Database	True
		JS Web Workers	True
		JS Device	
		Orientation	True
		JS Device Motion	-
		JS Touch Events	True
		JS Query Selector	True
Hardware		Streaming	
Mobile Device	True	Stream 3GP	+
Primary	True	H.264 Level 1.0	-
Hardware Type	Mobile Phone	Stream 3GP	+
Touch Screen	True	H.264 Level 1.0b	-
Screen Width	720	Stream 3GP	+
Screen Height	1280	H.264 Level 1.1	-
Diagonal Screen		H.264 Level 1.2	-
Size	4.8	Stream 3GP	+
Display PPI	306	H.264 Level 1.3	-
Device Pixel Ratio	-	Stream 3GPP	+
Screen Color		AAC LC	-
Depth	24	Stream 3GPP	+
NFC	True	H.263	-
Camera	8.0	Stream 3GPP	+
Is Mobile Phone	True	AMR NB	-
Is Tablet	False	Stream 3GPP	+
Is EReader	False	AMR WB	-
Is Games	False	Stream MP4	+
Console	False	H.264 Level 1.1	+
Is TV	False	Stream MP4	+
Is Set Top Box	False	H.264 Level 1.3	-
Is Media Player	False	Stream MP4 AAC	+
version	-		
Environment			
OS Name	Android		
OS Android	True		
OS Bada	False		
OS IOS	False		
OS Rim	False		
OS Symbian	False		
OS Windows	False		
Mobile	False		
OS Windows	False		
Phone	False		
OS Windows RT	False		
OS Web OS	False		
OS Version	-		
OS Proprietary	-		
Developer Platform	-		
Developer Platform	-		
Developer Platform Version	-		

Well, let's start with a device group.

# Device Groups

- **smartphone**
- **feature phone**
- **touch**
- **tablet**
- **game console**
- **high resolution display**
- **modern browser**
- **old browser**



# Detection

# Detect Device: I want to ...

## On server side:

- Send to an optimized version of my site
- Deliver an optimized version of my site

## Client Side

- Send to an optimized version of my site
- Optimize the version loaded

On server side:

- Deliver an optimized version of my site

RESS: “Responsive Design + Server Side Components”

Client Side

- Optimize the version loaded

“Progressive enhancement”

# Device Detection Server Side

## HTTP Request

GET / HTTP/1.1

Host: www.adaptto.org

User-Agent: User-Agent:Mozilla/5.0 (Linux; U; Android  
4.1.2; en-gb; GT-I9305 Build/JZO54K)  
AppleWebKit/534.30 (KHTML, like Gecko)  
Version/4.0 Mobile Safari/534.30

Accept:

text/html,application/xhtml+xml,application/xml;q  
=0.9,\*/\*;q=0.8

Accept-Language: en-us

Accept-Encoding: gzip, deflate

# HTTP: Device Detection Server Side

```
User-Agent:Mozilla/5.0 (Linux; U; Android 4.1.2; en-gb;  
GT-I9305 Build/JZO54K) AppleWebKit/534.30 (KHTML, like  
Gecko) Version/4.0 Mobile Safari/534.30
```

```
User-Agent:Mozilla/5.0 (Linux; U;
Android 4.1.2; en-gb; GT-I9305
Build/JZO54K) AppleWebKit/534.30
(KHTML, like Gecko) Version/4.0 Mobile
Safari/534.30
```

**DDR**



Samsung GT-I9305

Device Name	
Device Vendor	Samsung
Device Model	GT-I9305
Marketing Name	Galaxy S3 LTE
Year Released	2012

Hardware	
Mobile Device	True
Primary	
Hardware Type	Mobile Phone
Touch Screen	True
Screen Width	720
Screen Height	1280
Diagonal Screen	
Size	4.8
Display PPI	306
Device Pixel	
Ratio	-
Screen Color	
Depth	24
NFC	True
Camera	8.0
Is Mobile Phone	True
Is Tablet	False
Is EReader	False
Is Games	
Console	False
Is TV	False
Is Set Top Box	False
Is Media Player	False
version	-

HTML5	
HTML Audio	True
HTML Canvas	True
HTML Inlinesvg	True
HTML SVG	True
HTML Video	True
CSS Animations	True
CSS Columns	-
CSS Transforms	True
CSS Transitions	True
JS Application	
Cache	True
JS Geo Location	True
JS Indexeddb	True
JS Local Storage	True
JS Session	
Storage	True
JS Web GL	True
JS Web Sockets	True
JS Web SQL	
Database	True
JS Web Workers	True
JS Device	
Orientation	True
JS Device	
Motion	-
JS Touch Events	True
JS Query	
Selector	True

## Device Description Repository (DDR)

- WURFL (commercial license since 2011, ~30k records)
- Device Atlas
- 51 Degree
- OpenDDR (Open Source)
- ...

→ Various offers based on repositories



- Keep it up to date needs effort that requires a business model as paid subscriptions
- Offers include
  - Direct install
  - Cloud Service calls
- Can run on each layer on your server infrastructure

# RegEx based groups

```
User-Agent:Mozilla/5.0 (Linux; U;
Android 4.1.2; en-gb; GT-I9305
Build/JZO54K) AppleWebKit/534.30
(KHTML, like Gecko) Version/4.0 Mobile
Safari/534.30
```

RegEx

- mobile phone
- tablet
- modern browser
- old browser
- desktop

<http://detectmobilebrowsers.com>

```
RewriteCond %{HTTP_USER_AGENT}
(android|bb\d+|meego).+mobile|avantgo|bada\/|blackberry|blazer|compal|elaine|fennec|hiptop|iemobile|ip(hone|od)|iris|kindle|lge\
|maemo|midp|mmp|mobile.+firefox|netfront|opera\ m(ob|in)i|palm(\
os)?|phone|p(ixi|re)\/|plucker|pocket|psp|series(4|6)0|symbian|treo|up\.(browser|link)|vodafone|wap|windows\ (ce|phone)|xda|xiino
[NC,OR]

RewriteCond %{HTTP_USER_AGENT} ^(1207|6310|6590|3gso|4thp|50[1-6]i|770s|802s|a\ wa|abac|ac(er|oo|s\-
) |ai(ko|rn) |al(av|ca|co)|amoi|an(ex|ny|yw)|aptu|ar(ch|go)|as(te|us)|attw|au(di|\-m|r\ |s\
) |avan|be(ck|ll|nq)|bi(lb|rd)|bl(ac|az)|br(e|v)w|bumb|bw\-(n|u)|c55\/|capi|ccwa|cdm\-(cell|chtm|cldc|cmd\
|co(mp|nd)|craw|da(it|ll|ng)|dbte|dc\-s|devi|dica|dmob|do(c|p)o|ds(12|\-d)|el(49|ai)|em(l2|ul)|er(ic|k0)|esl8|ez([4-
7]0|os|wa|ze)|fetc|fly(\-|_) |g1\ u|g560|gene|gf\-5|g\-mo|go(\.w|od)|gr(ad|un)|haie|hcrit|hd\-(m|p|t)|hei\-(hi|pt|ta)|hp(\ i|ip)|hs\
c|ht(c\-\ | \_|a|g|p|s|t)|tp)|hu(aw|tc)|i\-(20|go|ma)|i230|iac(\ | \-
|\/)|ibro|idea|ig01|ikom|im1k|inno|ipaq|iris|ja(t|v)a|jbro|jemu|jigs|kddi|keji|kgt(\ |\/)|klon|kpt\ |kwc\-\ |kyo(c|k)|le(no|xi)|lg(\
g|\/(k|l|u)|50|54| \-[a-w])|libw|lynx|m1\-w|m3ga|m50\/|ma(te|ui|xo)|mc(01|21|ca)|m\-cr|me(rc|ri)|mi(o8|oa|ts)|mmef|mo(01|02|bi|de|do|t(\
| \ |o|v)|zz)|mt(50|pl|v\ )|mwbp|mywa|n10[0-2]|n20[2-3]|n30(0|2)|n50(0|2|5)|n7(0|0|1)|10)|ne((c|m)\-
|on|tf|wf|wg|wt)|nok(6|i)|nzph|o2im|op(ti|wv)|oran|owg1|p800|pan(a|d|t)|pdxg|pg(13| \-([1-8]|c))|phil|pire|pl(ay|uc)|pn\
2|po(ck|rt|se)|prox|psio|pt\-g|qa\-a|qc(07|12|21|32|60| \-([2-7]|i\
) |qtek|r380|r600|raks|rim9|ro(ve|zo)|s55\/|sa(ge|ma|mm|ms|ny|va)|sc(01|h\-\ |oo|p\-\ )|sdk\/|se(c(\-|0|1)|47|mc|nd|ri)|sgh\-\ |shar|sie(\-
|lm)|sk\-\ |sl(45|id)|sm(al|ar|b3|it|t5)|so(ft|ny)|sp(01|h\-\ |v\-\ |v\ ) |sy(01|mb)|t2(18|50)|t6(00|10|18)|ta(gt|lk)|tcl\-\ |tdg\
|tel(i|m)|tim\-\ |t\-\ mo|to(pl|sh)|ts(70|m\-\ |m3|m5)|tx\-\ 9|up(\.b|g1|si)|utst|v400|v750|veri|vi(rg|te)|vk(40|5[0-3]| \-
v)|w(3c| \-| \ )|webc|whit|wi(g |nc|nw)|wmlb|wonu|x700|yas\-\ |your|zeto|zte\-\ ) [NC]
RewriteRule ^$ http://detectmobilebrowser.com/mobile [R,L]
```

## Advantages

- minimize bandwidth usage
- can run effectively on each layer on your server infrastructure
- redirect or deliver w/in the first request
- no requirements on client side

## Disadvantages

- Might require vary-headers caching (REST?)
- needs recent updates on DDR or might not be precise
- performance impact if run on every request

# Device Detection Client Side

# Device-Capability Detection Client Side

CSS3 Background-image options <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square	Visual-square
CSS3 Border images <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square				Visual-square	Visual-square		
CSS3 Border-radius (rounded corners) <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square					Visual-square			
CSS3 Animation <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square					Visual-square			
CSS3 Box-shadow <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square	Visual-square	Visual-square		Visual-square	Visual-square	Visual-square	
CSS Gradients <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square	Visual-square			Visual-square	Visual-square	Visual-square	
CSS3 Opacity <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square					Visual-square			
CSS3 Text-shadow <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual	Visual	Visual-square			Visual	Visual	Visual-square	
CSS3 Transitions <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)		Interact <input type="checkbox"/>					Interact <input type="checkbox"/>		
				<i>Green square must (briefly) appear on hover</i>					<i>Green square must (briefly) appear on hover</i>		
CSS3 Colors <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square							
Flexible Box Layout Module <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square	Visual-square			Visual-square	Visual-square	Visual-square	
@font-face Web fonts <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)									
CSS3 Multiple backgrounds <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square								
CSS3 Multiple column layout <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square	Visual-square				Visual-square	Visual-square		
CSS3 Transforms <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square					Visual-square			
CSS3 3D Transforms <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Auto(m)	Visual-square					Visual-square			
Font feature settings <a href="#">[Table]</a> <a href="#">[Single feat]</a>		Visual <b>LORE; lERE</b> <i>Combine L&amp;O and R&amp;E (current syntax)</i>		Visual <b>LORE; lERE</b> <i>Combine L&amp;O and R&amp;E (old syntax)</i>		Visual <b>LORE; lERE</b> <i>Combine L&amp;O and R&amp;E (current syntax)</i>		Visual <b>LORE; lERE</b> <i>Combine L&amp;O and R&amp;E (old syntax)</i>		Visual-square 	

<http://tests.caniuse.com>

# Capability Detection Client Side

- Primarily based on JavaScript/Modernizr
- Runs on client browser
- Fundamental to “progressive enhancement”

## Advantages

- detects effective capabilities (e.g. incl. current window size)
- can load resources only if a feature is supported
- fully cacheable

## Disadvantages

- needs to run on client, esp. for redirect scenario additional round trips
- requires JavaScript enabled and standard compliant browsers

# Client Side *Or* Server Side?



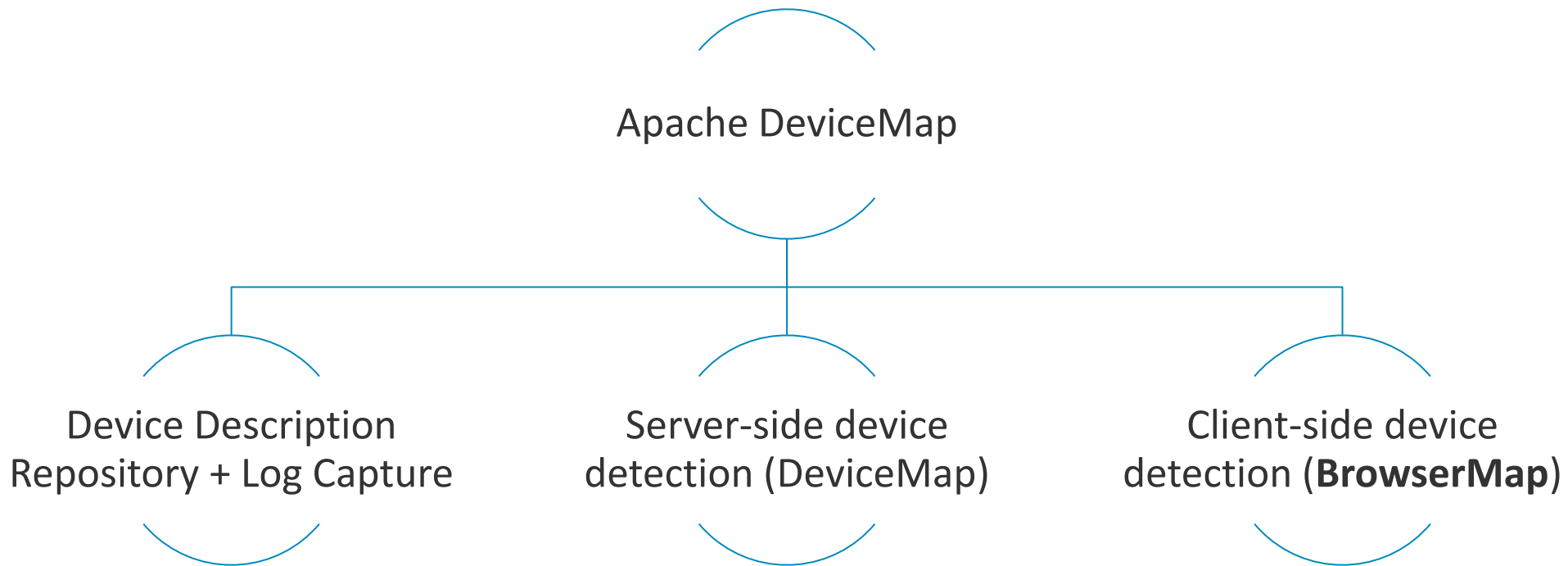
# Client Side *Or* Server Side?

- It's not one **or** the other – pick what fits best!

# Example

- <http://www.dhl.co.uk>
- Server Side Detect and Redirect:
  - Mobile → m.dhl.co.uk
  - anything else → www.dhl.co.uk
- Client Side:
  - Responsive image handling
  - Image size by effective slot size
  - Image size by device-pixel-ratio
  - Image quality by effective bandwidth

# Practical Example



<http://www.w3.org/TR/DDR-Simple-API/>

# BrowserMap

- YABFDL - yet another browser features detection library
- modular probes and code snippets that detect specific features of the client
- detect the client's type and optimize page rendering or provide the client with alternate website versions
- detect the device groups a client belongs to

- The following groups are provided by default:
  - **smartphone** - feature phones / smartphones
  - **tablet** - various tablets, based on screen size and the presence of touch capabilities
  - **highResolutionDisplay** - devices with pixel ratio greater than or equal to 2
  - **browser** - desktop browsers capable of CSS 3D transitions
  - **oldBrowser** - less modern desktop browsers

# Implementing Multichannel



# Generate from Archetype

```
mvn archetype:generate
```

```
-DarchetypeGroupId=org.apache.sling
```

```
-DarchetypeArtifactId=sling-initial-content-archetype
```

```
-DarchetypeVersion=1.0.1-SNAPSHOT
```

```
groupId: org.adaptto
```

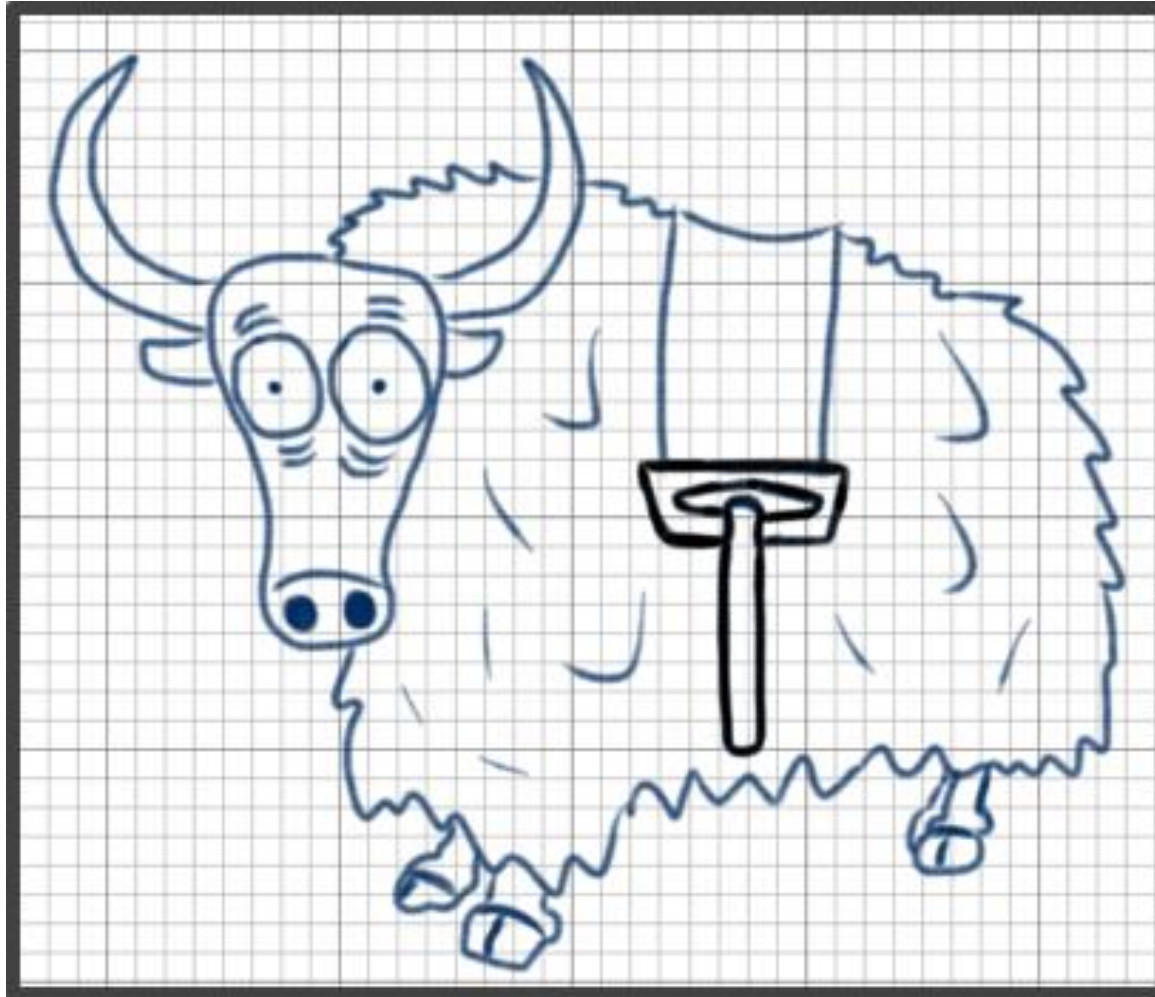
```
artifactId: multichannel
```

```
version: <default>
```

```
package: <default>
```

[http://www.andrewsavory.com/presentations/CQCon\\_2013\\_CQ\\_Maven\\_Methods/](http://www.andrewsavory.com/presentations/CQCon_2013_CQ_Maven_Methods/)

# Aside: Yak Shaving



Yak Shaving by snapperwolf

<http://www.flickr.com/photos/snapperwolf/6952219933/>

# Archetype fixes

```
[asavory@waif initial-content]$ pwd
svn-apache/sling/tooling/maven/archetypes/initial-content
[asavory@waif initial-content]$ svn status
M    src/main/resources/META-INF/maven/archetype-metadata.xml
M    src/main/resources/META-INF/maven/archetype.xml
A +  src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT
A +  src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/apps
M +  src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/apps/html.esp
D    src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/scripts
D    src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/scripts/html.esp
A    src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/content/my-first-node.json
D    src/main/resources/archetype-resources/src/main/resources/SLING-CONTENT/content/my-first-node.xml
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/scripts
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/scripts/html.esp
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/content
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/content/my-first-node.xml
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/nodetypes
D    src/main/resources/archetype-resources/src/main/resources/SLING-INF/nodetypes/nodetypes.cnd
M    src/main/resources/archetype-resources/pom.xml
```

multichannel

| -src

| ---main

| ----resources

| -----SLING-CONTENT

| -----apps

| -----multichannel

| -----content

**mvn -PautoInstallBundle install**

# *Demo*

# Adding BrowserMap

# Adding BrowserMap

```
<!-- BrowserMap feature detection library and dependencies -->
<script [..] src="/content/demo/js/browsermap/bmaputil.js"></script>
< [..] src="/content/demo/js/browsermap/bmap.js"></script>
< [..] src="/content/demo/js/externals/modernizr/modernizr.custom.js"></script>
< [..] src="/content/demo/js/externals/matchMedia/matchMedia.js"></script>
< [..] src="/content/demo/js/browsermap/probes.js"></script>
< [..] src="/content/demo/js/browsermap/devicegroups.js"></script>
```

```
<!-- Decide if the client should be forwarded to the best matching alternate link, depending on the detected device group. -->
<script language="javascript">
  BrowserMap.forwardRequest();
</script>
```

# *Demo*



# Controlling alternates

# rel="alternate"



- The keyword creates a hyperlink referencing an alternate representation of the current document.



- When used with the media attribute, it means a link to a version of the current document, especially for the specified device or medium indicated by the media attribute.



- A way of determining the correct URL to which a client should be forwarded, depending on its device group

## rel="alternate"

```
<link rel="alternate" hreflang="en" data-bmap-devgroups="smartphone"  
href="index.smartphone.html" />
```

```
<link rel="alternate" hreflang="fr" data-bmap-devgroups="tablet"  
href="/fr/index.tablet.html" />
```

```
<link rel="alternate" hreflang="de" data-bmap-  
devgroups="highResolutionDisplay"  
href="de/index.highResolutionDisplay.html" />
```

# Why is “alternate” important?

The Google logo is displayed in its classic multi-colored font. The letters are: 'G' (blue), 'O' (red), 'O' (yellow), 'g' (blue), 'l' (green), and 'e' (red). The letters have a slight 3D effect with shadows.

# Controlling BrowserMap #1

```
<link rel="alternate" data-bmap-devgroups="tablet" href="index.tablet.html" />
<[.] data-bmap-devgroups="smartphone" href="index.smartphone.html" />
<[.] data-bmap-devgroups="browser" href="index.browser.html" />
<[.] data-bmap-devgroups="oldBrowser" href="index.oldBrowser.html" />
```

```
{
  "jcr:primaryType" : "nt:unstructured",
  "sling:resourceType" : "/apps/multichannel/components/page",
  "jcr:title" : "Hello World",
  "title" : "Hello World",
  "description" : "This node is a demo node.",
  "data-bmap-devgroups" : ["browser", "oldBrowser", "smartphone"]
}
```

(+= highResolutionDisplay)

# Controlling BrowserMap #2

```
<%  
final ValueMap attributes = ResourceUtil.getValueMap(resource);  
final String[] bmapDevGroups = attributes.get("data-bmap-devgroups",  
                                             String[].class);  
  
for (String bmapDevGroup : bmapDevGroups) { %>  
    <link rel="alternate"  
          hreflang="en"  
          data-bmap-devgroups="<%= bmapDevGroup %>"  
          href="index.<%= bmapDevGroup %>-adaptTo.html" />  
  
<%  
}  
%>
```

# *Demo*

# What's next?

- Network speed detection (foresight.js)
- Minification / bundling of resources
- Server-side capability detection with DeviceMap
- ...



- [http://radu.cotescu.com/talks/2013.06.27\\_BJUG13/#/](http://radu.cotescu.com/talks/2013.06.27_BJUG13/#/)
- <http://incubator.apache.org/devicemap/>
- <https://github.com/savs/multichannel-demo>
- <https://github.com/raducotescu/devicemap-demo>

Thank You.  
Questions?