Accessibility & Multi-Screen Design

Images

Eric Eggert — Accessibility & Multi-Screen Design – #cos18

Disclaimer

This course is not a W3C course. Views expressed are my own.

Dies ist kein W3C-Kurs. Alle Ansichten sind meine Eigenen.

Overview

- Definitions
- The img element
 - alt attribute
 - srcset attribute for Display Density
 - srcset attribute for Width Descriptions
 - sizes attribute
- The picture element
 - type attribute

Definitions





5144×1698px ≥ 111024×768px monitors!

410kb

Samsung Galaxy J3 (2017)

720 x 1280 pixels

(~294 ppi density)

9.5 phones needed to display the watch image at native resolution.



Two Main Use Cases for Responsive Images

(More defined by <u>RICG</u>.)

1. Switch Resolution & Density



Resolution Switching Includes high-density (retina) images.





2. Art Direction









Browser for MeeGo

Source: Use Cases and Requirements for Standardizing Responsive Images Our fastest browser ever, Browser for MeeGo introduces

EasyHtml5Video.com

The img element



The alt attribute

The alternative text (alt) describes an image in a way that the purpose or content of the image is clear without seeing the image.

WAI Images Tutorial



Does the image contain text?

• Yes:

- ... and the text in the image is also present as real text nearby. Use an empty alt attribute. See <u>Decorative Images</u>.
- ... and the text is only shown for visual effects. Use an empty alt attribute. See <u>Decorative Images</u>.
- ... and the text in the image is not present otherwise. Use the alt attribute to include the text of the image. See Images of Text.
- No: Continue.

Is the image used in a link or a button, and would it be hard or impossible to understand what the link or the button does, if the image wasn't there?



• Use the alt attribute to communicate the destination of the link or action taken. See Functional Images.

• No: Continue.

Does the image contribute meaning to the current page or context?

- Yes:
 - ... and it's a simple graphic or photograph. Use a brief description of the image in a way that conveys that meaning in the alt attribute. See Informative Images.
 - ... and it's a graph or complex piece of information. Include the information contained in the image elsewhere on the page. See Complex Images.
 - ... and it shows content that is redundant to real text nearby. Use an empty alt attribute. See Functional Images.
- No: Continue.

Is the image purely decorative or not intended for the user?

• Yes:

• Use an empty alt attribute. See <u>Decorative Images</u>.

• No:

• End of tree.



Everything starts with an 1mg element in responsive images.





<picture>

srcset

sizes

Icon made by Daniel Bruce from www.flaticon.com is licensed under CC BY 3.0

<source>

media

type

When is it just a simple img element?

• A fixed width, single density web page

• Small differences in file size

• Using vector-based images like <u>SVG</u>

High Density

Images

ppi = pixel per inch





iPhone 1, 3G, 3GS: 320×480px @ ~165ppi





iPhone 4 & 4s: 640×960px @ ~330ppi (**=2×**)

iPhone 5 & 5s: 640×1136px @ ~330ppi (**=2×**)







• iPhone 6, 6s, 7, 8: 750×1334px @ ~326ppi (**=2×**)

• iPhone 6 Plus, 6s Plus, 7 Plus, 8 Plus: 1080×1920px @ ~401ppi (**=3×**)

srcset

 comma-separated list



If we take our watch image and base it on a 320px width for 1x resolution, we'd come up with this:

```
<img srcset="watch.jpg,
            watch-2x.jpg
                           2x,
            watch-3x.jpg
                           3x,
            watch-4x.jpg
                           4x,
            watch-5x.jpg
                           5x,
            watch-6x.jpg
                           бх,
            watch-7x.jpg
                           Ζx,
            watch-8x.jpg 8x,
            watch-9x.jpg 9x,
            watch-10x.jpg 10x,
            watch-11x.jpg 11x,
            watch-12x.jpg 12x,
            watch-13x.jpg 13x,
            watch-14x.jpg 14x,
            watch-15x.jpg 15x,
            watch-16x.jpg 16x">
```

Best for fixed-width images but insufficient for flexible images*

*You remember that flexible images are a core principle of RWD, right?
srcset width descriptors

<img src="cat.jpg" alt="cat"
srcset="cat-160.jpg 160w,</pre> cat-320.jpg <mark>320w</mark>, cat-640.jpg <mark>640w</mark>, cat-1280.jpg 1280w"> Browser picks best source



Browser picks the best source?!

- The browser determines the width of the image on the page
- calculates what size of image is needed and
- downloads that.

Of course it is not that easy!

Introducing: Prefetching

- Browsers fetch images before they know how the website actually looks to make the web faster.
- They fetch images before the CSS is loaded.
- So initially, every image is as wide as the viewport.

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	Details									





mages are nearly same size as viewport





delivery warmard.com

6

Save time and money

while shopping online for groceries and more



Why choose Walmart Grocery?

Guaranteed freshness ri all year preduce, meat, takery, dell sing



Enter ZIP code to check evariability.

Save time and money incepting online, with the same key



Get it when you choose ith convenient delivery windows.







1540px

Viewport Tells Us Little

254px

What to do?!

sizes FTW!

sizes is required

(when using width descriptors)

media condition (subset of media queries) sizes="(max-width: 480px) 100vw, (max-width: 900px) 33vw, length can be absolute, relative or even calc()

if there is no media query, then it is the default length



viewport width unit

We tell the browser how wide the image is in relationship to the viewport (or absolutely).

We also tell the browser when that relationship changes.

```
<img src="cat.jpg" alt="cat"
    srcset="cat-160.jpg 160w,
        cat-320.jpg 320w,
        cat-640.jpg 640w,
        cat-1280.jpg 1280w"
    sizes="(max-width: 480px) 100vw,
        (max-width: 900px) 33vw,
        300px">
```

Media Conditions

Subset of media queries:

(max-width: 480px) or (min-width: 480px)



Size

- Often expressed in viewport width (vw) unit
- 1vw is 1% of the width of the viewport
- 33vw = 33% of the viewport
- Can also be px, em, %
- calc() can be used (for example for calculating margins)

		Hello	, Sign i	n
e e e delivery.walmart.com		Ċ	>>	+

Save time and money

while shopping online for groceries and more

Your Zip Code

Check Availability

Your choice of delivery times Delivery to your door Same Every Day Low Prices



Why choose Walmart Grocery?

Guaranteed freshness on all your produce, meat, bakery, deli and dairy product



Save time and money by shopping online, with the same low prices you'd find at your Walmart.



sizes=" (max-w (max-wi 254px"

(max-width: 480px) 100vw, (max-width: 900px) 33vw,

Browser Support

Srcset and sizes attributes

The srcset and sizes attributes on img (or source) elements allow authors to define various image resources and "hints" that assist a user agent to determine the most appropriate image source to display (e.g. high-resolution displays, small monitors, etc).

Current alig	ned Usage relative Date	relative Apply fi	Iters Show all	?					
IE	Edge	* Firefox	Chrome	Safari	iOS Safari *	Opera Mini *	Chrome for Android	UC Browser for Android	Samsung Internet
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			72		11.4				4
	17	66	73	12	12.1				8.2
11	18	67	74	12.1	12.2	all	74	11.8	9.2
	75	68	75	TP					
		69	76						
			77						
Notes	Known issues (1)	Resources (9)	Feedback						

% of all users	÷	?
92.53% + 0.25% =	92.78	%
93.18% + 0.5% =	93.68	%
90.13% + 0.34% =	90.47	%

Usage Global

U.S.A.

Germany

Polyfill: <u>Picturefill</u> Don't use it unless you have to

<picture>

<source media="(min-width: 900px)"
 srcset="cat-vertical.jpg">
 <source media="(min-width: 750px)"
 srcset="cat-horizontal.jpg">

</picture>

- Picture Container Element
- Multiple Sources with media queries
- Srcset support
- Fallback < img > element (required)

media attribute = real media query media attribute is a directive, not a suggestion





Shopify is everything you need to sell anywhere

Start your free 14-day trial today!

Email address Get started Trusted by over 150,000 store owners



Corrine Anestopoulos

FOUNDER **BIKO JEWELLERY**

```
<picture>
  <source srcset="homepage-person@desktop.png,</pre>
                   homepage-person@desktop-2x.png 2x"
          media="(min-width: 990px)">
  <source srcset="homepage-person@tablet.png,</pre>
                   homepage-person@tablet-2x.png 2x"
          media="(min-width: 750px)">
  <img srcset="homepage-person@mobile.png,</pre>
                homepage-person@mobile-2x.png 2x"
       alt="Shopify Merchant, Corrine Anestopoulos">
</picture>
```

When the image was variable width instead of fixed width, width descriptors and sizes could have been used as well.

type attribute This attribute lets you assign different image formats.

Image Formats

- "Traditional": PNG, GIF, JPG
- "Advanced"
 - SVG
 - WebP
 - JPEG2000
 - HEIC

<picture>
<picture>
<source type="image/svg+xml"
 srcset="logo.xml">
<source type="image/webp"
 srcset="logo.webp">

</picture>

Unless art direction, no media attribute needed.



http://www.useragentman.com/blog/2015/01/14/using-webp-jpeg2000-jpegxr-apng-now-with-picturefill-and-modernizr/

Alpha Channel Dice Image

2000	19.2K
G-XR	95.7K
١G	325.7K
b-P	56K

Size	JPEG 2000	JPEG-XR	PNG	WebP
320×240	2.0kB	22.6kB	55.2kB	112.1kB
600×450	13.5kB	48.5kB	14.3kB	26.6kB
1024×768	19.2kB	95.7kB	325.7kB	56.0kB



Picture element = - LS

A responsive images method to control which image resource a user agent presents to a user, based on resolution, media query and/or support for a particular image format



Usage % of all			users	\$?		
	92.58%						
	93.15%						
	Germany		90.2%				
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			8	.2			
74	11.8		9	.2			

Polyfill: <u>Picturefill</u> Don't use it unless you have to

Summary

For most responsive images: Don't use picture.



Always use for basic support.

Use srcset & sizes to provide resolution and width dependent images.

Remember that picture locks in the choice, the media queries are not negotiable.
is for art direction or for using niche image formats

State 2019

• **Wide Browser Support**

• X Open Issues: image-set in CSS, responsive images in SVG, client hints

Source: <u>Jason Grigsby –</u>

<u>Responsive Images</u>





