

Images

Accessibility & Multi-Screen Design

Overview

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







5144×1698px

≥ 11 1024×768px 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 [RICG](#).)

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



The img element

```

```

The alt attribute

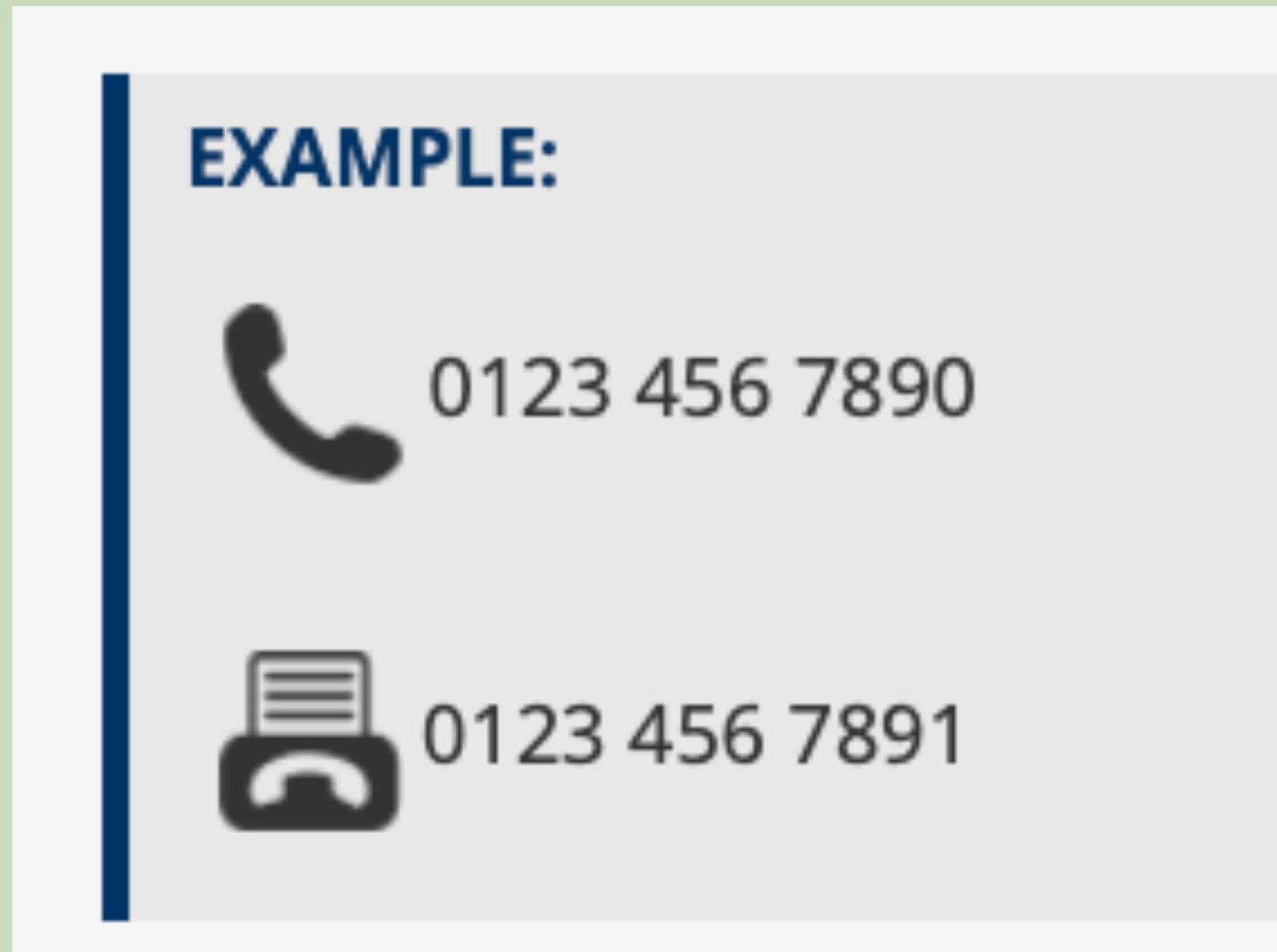
The alternative text (alt) describes an image in a way that the purpose or content of the image is clear without seeing the image.

WAI Images Tutorial

Image Types

- Informative Images
 - add to the content
- Decorative Images
 - are purely visual
- Functional Images
 - can be interacted with

Informative Image



0123 456 7890

0123 456 7891

Decorative Image

EXAMPLE:



Don't miss the impressive Tropical House - displays examples of exotic plant-life from the planet.

``

Functional Image

EXAMPLE:



```
<a href="https://www.w3.org/">  
    
</a>
```

Functional Image (2)



```
<a href="https://www.w3.org/">  
   W3C Home  
</a>
```

Responsive Images

Everything starts with an img element



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 SVG

High Density Images

ppi = pixel per inch



www.GSMArena.com



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 (=2x)

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

srcset

```

```

comma-separated list

display density

If we take our watch image and base it on a 320px width for 1x resolution, we could 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 6x,  
       watch-7x.jpg 7x,  
       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

```

```

width of the image source

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 image.

Of course it is not that easy: 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.*



Images are nearly same size as viewport

The screenshot shows the Walmart Grocery homepage. At the top, the Walmart logo is visible, followed by a blue header bar with the text "GROCERY.WALMART.COM", "Go to Walmart.com", "Help", and "Hello, Sign in". Below the header, a large green headline says "Save time and money" with the subtitle "while shopping online for groceries and more". There is a search bar with "Your Zip Code" placeholder and an orange "Check Availability" button. Below the search bar, three delivery options are listed: "Your choice of delivery times", "Delivery to your door", and "Same Every Day Low Prices". A large image of various grocery items like bread, bananas, cereal, and medicine is centered below these options. At the bottom, there's a section titled "Why choose Walmart Grocery?" with three sub-sections: "Guaranteed freshness in all your produce, meat, bakery, deli and seafood", "Save time and money by shopping online, with the same low prices you know and love", and "Get it when you choose with convenient delivery windows". A red bracket highlights the first two sub-sections, and another red bracket highlights the third one. A red arrow points from the right side of the page towards the text "1540px".

1540px

Viewport Tells Us Little

254px

What to do?!

sizes

sizes: required when using width descriptors

FTW!

media condition (subset of media queries)

sizes="(max-width: 480px) 100vw,

length can be
absolute, relative
or even calc()
→ 254px"

(max-width: 900px) 33vw,

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

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.

```

```

Media Conditions

Subset of media queries:

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

Size

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

delivery.walmart.com

Hello, Sign in

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 products.



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



Get it when you choose

sizes="

(max-width: 480px) 100vw,

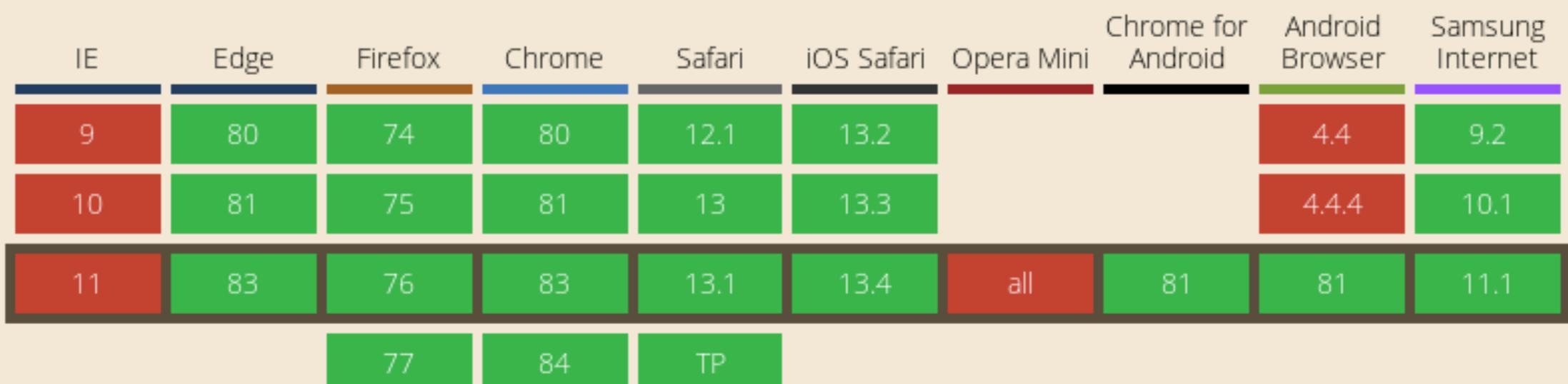
(max-width: 900px) 33vw,

254px"

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).



Data from caniuse.com | Embed from caniuse.bitsofco.de

4 June 2020

(Polyfill: Picturefill – Don't use it unless you have to)

Source: Can I use... Support tables for HTML5, CSS3, etc

<picture>

```
<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 element (required)

**media attribute =
*real media query***

media attribute is a directive, not a suggestion



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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,
                homepage-person@desktop-2x.png 2x"
          media="(min-width: 990px)">
  <source srcset="homepage-person@tablet.png,
                homepage-person@tablet-2x.png 2x"
          media="(min-width: 750px)">
  <img srcset="homepage-person@mobile.png,
                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.

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

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.

`<picture>` *is for art direction or for using
niche image formats*

Thanks!