Responsive Design Principles and Techniques

Paving the way for a more flexible web

Introduction

- Dedicated sites require more maintenance
- A design that responds
- Single design, optimized for many outcomes
- Unified experience

Tim Cook snakker med pressen etter 16 måneder som Apple CEO – TechStorm
Siste nyhet: «Tim Cook snakker med pressen etter 16 måneder som Apple CEO les mer...»
SNARE
TECHSTORM
Tim Cook snakker med pressen etter 16 måneder som Apple CEO
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Teknologientusiast med stor interesse for koding, design, film, data, trening (seriously) og masse annet.
Har bachelor i Økonomi og administrasjon og jobber med webutvikling ved siden av å holde denne siden oup and runnings.
TechStorm er en teknologifokusert publikasjon som ble startet i 2011

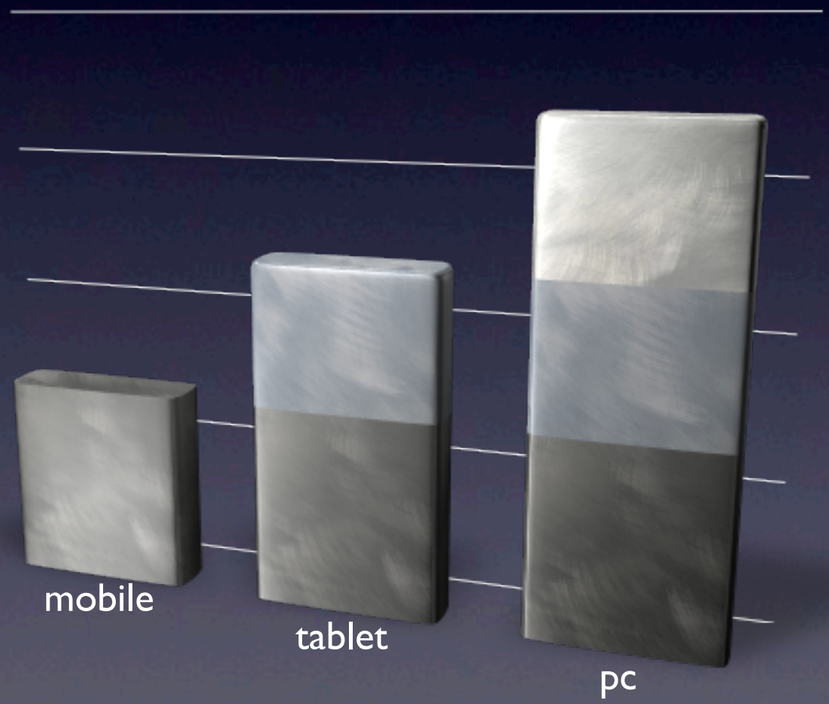
Basic principles

- Mobile First
- “Desktop First”
- Looking at the foundation

Mobile First

- Mobile at the core
- + Tablet styles
- + Laptop / PC styles

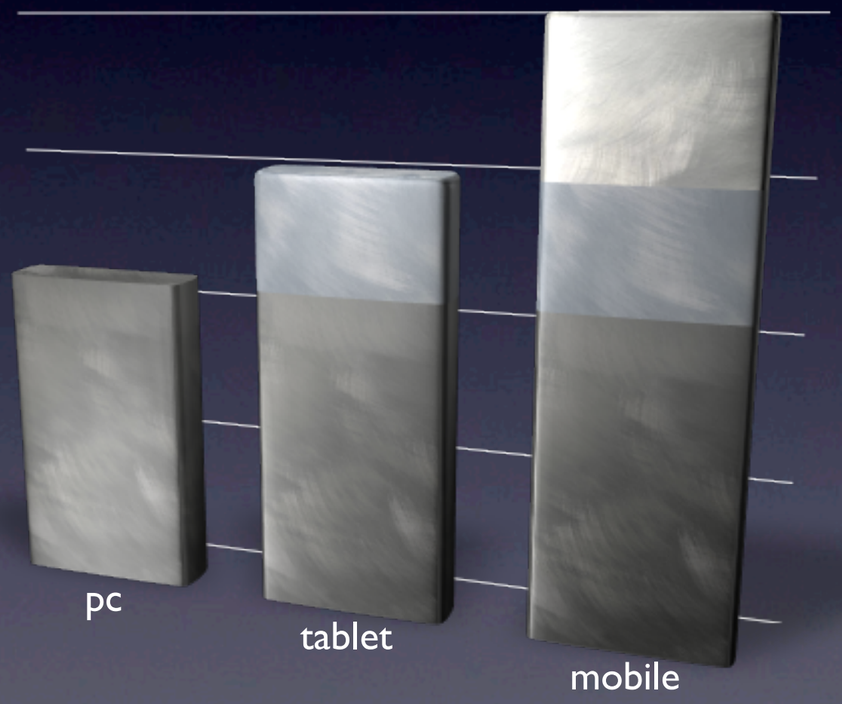
- Bigger screen = More rules



“Desktop First”

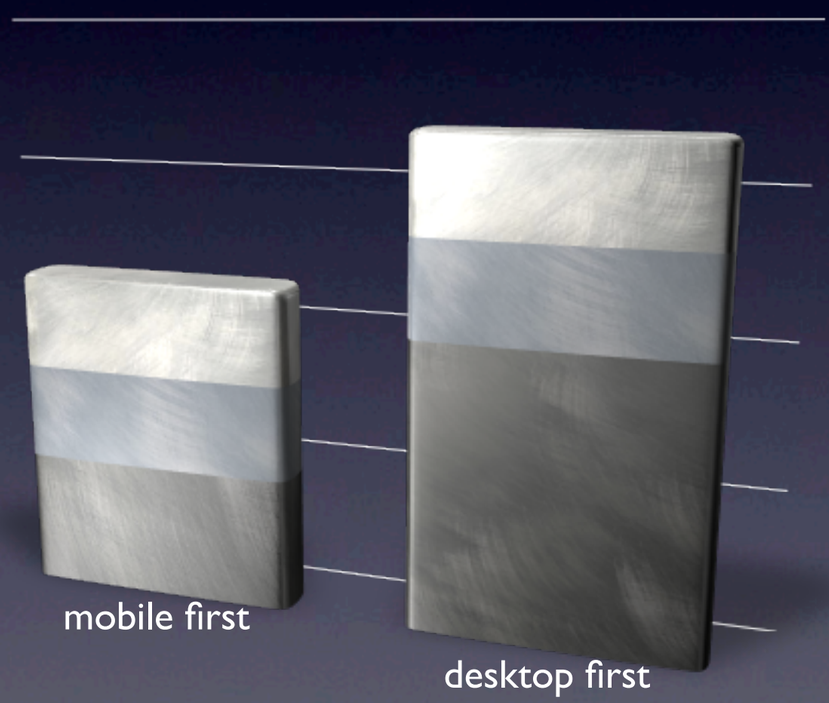
- Desktop design at the core
- + Rewrite styles for tablet
- + Rewrite styles for mobile

- Smallest screen gets most rules



Who cares?

- Smaller devices = less performance
- Less complicated for mobile
- Mobile design is simpler
- Rewriting styles takes more space
- Not always an option



How Responsive Design works

- Two main methods:
  - Fluid design
  - Breakpoints
    - Adapts to specific widths
- Hybrid - best of both worlds

Demo time

Basic examples and code

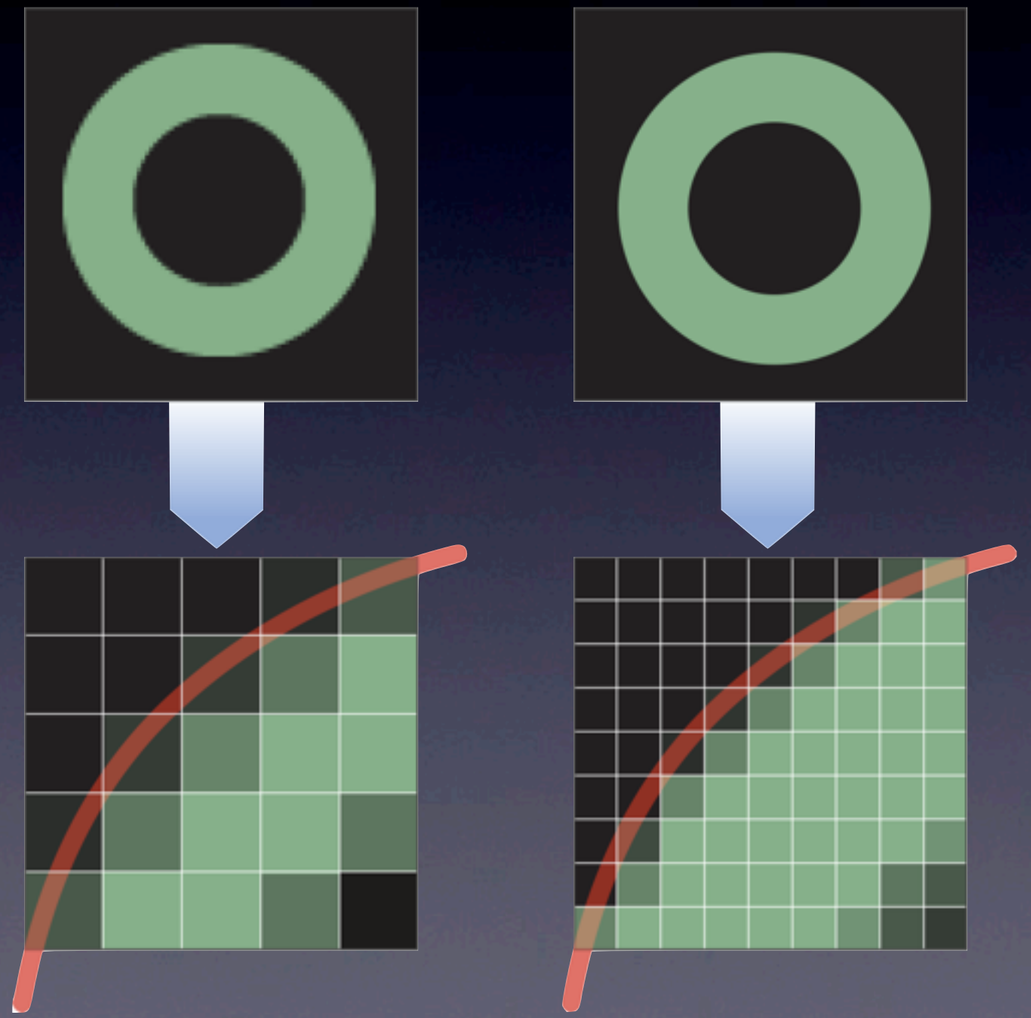
- Images
- Breakpoints
- Fluid
- Specific examples
  - Embedded YouTube / Vimeo videos

From resolution to pixel density

Preparing for the HiDPI web

An introduction to HiDPI

- Mainly for text
- One “display point” vs. “one pixel”
- OS requirements
- Non-mainstream usage for many years



HiDPI devices

2010

Early 2012

Mid 2012

Browser support

since Chrome 21

since Firefox 18

since Opera 12.10

since Safari 6

What do we get for free?

- Fonts - also includes web-fonts
- CSS Styles - gradients, shadows, borders
- Vector graphics
- Basically everything except....

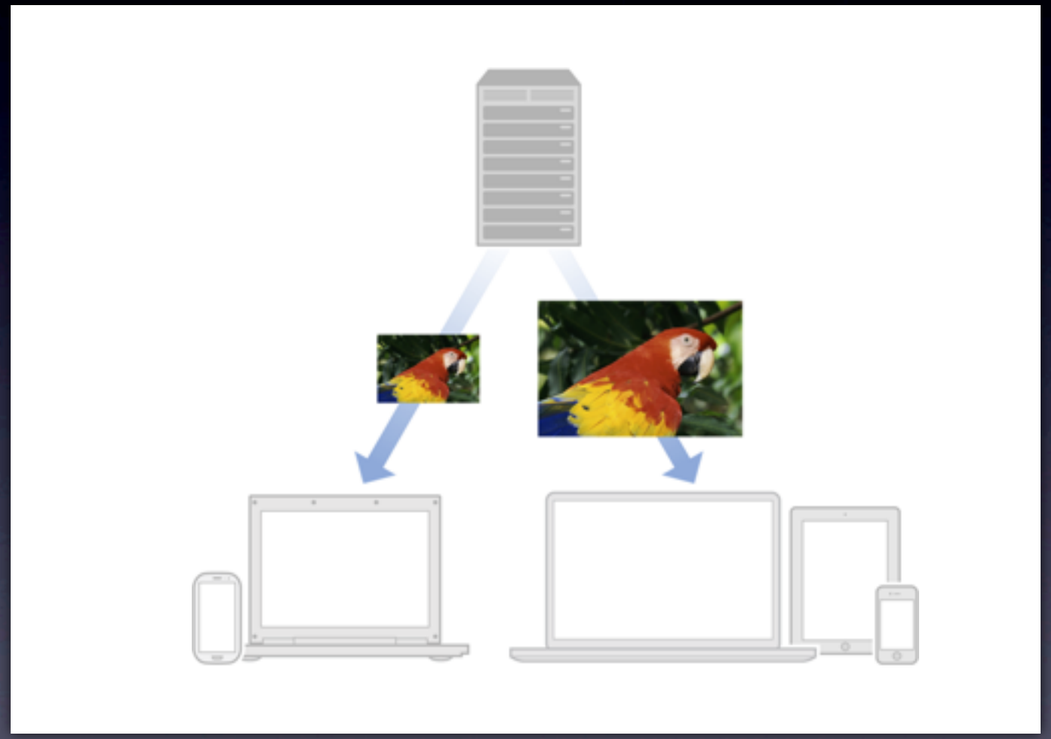
Static graphical elements

- Images
  - Logos
  - In content
  - Backgrounds
- Video

What is the problem?

- The server doesn’t know
- The browser knows, but doesn’t have a standard to handle it
- Responsive design
- All HiDPI screens are not equal

What is the problem?



Static graphical elements

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How do the others do it?

- Most simply don’t.
- CSS methods
- JavaScript method - reactive
- JavaScript method - proactive
- Alternative solutions

CSS3

- Media queries
  - Conditional background image
  - Background size
- CSS3 hacks
  - Set image content

```
@media only screen and (min-device-pixel-ratio: 2) {
    .replace-2x {
        background-image: url(....);
        background-size: 100px 100px;
    }
}
```

JavaScript - reactive

- Load site with normal images
- Replace images after page-load if retina display
- Problems:
  - Uses more bandwidth

```
if(window.devicePixelRatio > 1) {
    var els = jQuery(".replace-2x").get();
    for(var i = 0; i < els.length; i++) {
        var src = els[i].src
        var j = src.lastIndexOf(".");
        src = src.substr(0,j) + "@2x" + src.substr(j);
        els[i].src = src;
    }
}
```

JavaScript - proactive

- Offer two images
- Check the pixel density of the browser
- Show the correct image

```
document.write(
    retina_post_image(
        '/wp-content/uploads/2012/08/youtube-ios6-640x400.jpg',
        '/wp-content/uploads/2012/08/youtube-ios6.jpg',
        'YouTube appen fjernet i iOS 6',
        400,
        640
    )
);
```

Alternative solution

- JPEG with 2x the pixel size, but same file size?
- Compression and downscaling
- Compression and retina display
- JPEG only!

*http://blog.netvlies.nl/design-interactie/retina-revolution/

JPEG compression

Base resolution (300 x 200 px)	**Retina resolution** (600 x 400 px)
Jpg compression 80 / 21 kb	Jpg compression 31 / 16 kb (**75%** of base)

srcset

- Addition to the img tag
- W3C Draft and Living Standard
- Ignored by old browsers
- Supports viewport width, height and density

```
<img src="review-640x426.jpg"
     srcset="review.jpg 2x, review-320x218.jpg 320w, review-640x426.jpg 320w x2"
     alt="Responsive design test" >
```

Solution for WordPress

- Theme
  - CSS media queries for logos
  - Don’t use images for text
- Content
  - Plugins

More resources

- Hammy plugin for WordPress
- Smashing magazine - “Towards A Retina Web”

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