THE ANATOMY OF A RESPONSIVE PAGE LOAD

Andy Hume
WhiskyWeb II, 2013
Music

Grammys 2013: five things we learned

Beyoncé can't stop winning, Ed Sheeran can't dress and Chris Brown can't go anywhere without acting like a douche...
Indictment of NHS attitudes, practices and organisations.

Francis made no fewer than 290 recommendations, which he said were designed to ensure that patients' interests became the top priority for the NHS and that in future any lapses in care standards are detected and stopped right away, unlike at Stafford hospital.

Ministers will have to contemplate further changes to the NHS's system of regulation - which Francis has found to be seriously wanting - and monitoring of hospitals.

David Cameron, apologising on behalf of the government and country for the way the system had allowed "horrific abuse to go unchecked and unchallenged" for so long, said the report's evidence of systemic failure means "we cannot say with confidence that failings of care are limited to one hospital".

He confirmed a new post of chief inspector of hospitals would be created from the autumn and demanded that the General Medical Council and Nursing and Midwifery Council, the professional bodies policing doctors and nurses, explain why no one had been struck with...
WHY CARE?

WHY CARE?

WHY CARE?

WHY CARE?

WHY CARE?

WHY CARE?

(speed ➔ profit)

http://goo.gl/JNRPt
WHY CARE?

- Speed → Profit
  http://goo.gl/JNRPt

- Speed → high search ranking
  http://goo.gl/XhVfk
The web has bitten us
PERFORMANCE

- battery life
- fast interface
- page load time
- server capacity
- reliability
- bandwidth

Friday, 12 April 13
PERFORMANCE

battery life
fast interface
page load time
server capacity
reliability
bandwidth
RESPONSE TIME

- Server-side response time?
- End-user response time?
- Time to last byte?

ALWAYS DEFINE IT
TIME TO FIRST BYTE

- Request to start of response
- Normally HTML
- Nothing displayed yet
- Includes network latency
- Includes server-side
Content begins to display

 Doesn’t mean it’s useful content

 Things can still block afterwards
LOAD TIME

- Full page loaded
- Scripts, images, etc...
- Site might be usable before this
RANGE OF METRICS

- Time to first byte
- Start render time
- Load time

KNOW WHICH ONE
<table>
<thead>
<tr>
<th>Load Time</th>
<th>First Byte</th>
<th>Start Render</th>
<th>Result (error code)</th>
<th>Time</th>
<th>Requests</th>
<th>Bytes In</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.160s</td>
<td>0.930</td>
<td>0.864s</td>
<td>0</td>
<td>3.160s</td>
<td>17</td>
<td>233 KB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document Complete</th>
<th>Fully Loaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time   Requests Bytes In</td>
<td>Time Requests Bytes In</td>
</tr>
<tr>
<td>4.418s</td>
<td>32</td>
</tr>
<tr>
<td>Load Time</td>
<td>First Byte</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>3.16s</td>
<td>0.1930</td>
</tr>
</tbody>
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<td>0.1930</td>
</tr>
<tr>
<td>WebPagetest.org</td>
<td>iPhone 4 / iOS 5.1</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Load Time: 3.160s</td>
<td>First Byte: 0.1930</td>
</tr>
<tr>
<td>Start Render: 0.864s</td>
<td>Result (error code): 0</td>
</tr>
<tr>
<td>Time: 3.160s</td>
<td>Requests: 17</td>
</tr>
<tr>
<td>Bytes In: 233 KB</td>
<td>Fully Loaded Time: 4.418s</td>
</tr>
<tr>
<td>Requests: 32</td>
<td>Bytes In: 297 KB</td>
</tr>
</tbody>
</table>
WEBPAGETEST.ORG

- iPhone 4 / iOS 5.1
- 3G (2/1 Mbps, 150ms RTT)
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- iPhone 4 / iOS 5.1
- 3G (2/1 Mbps, 150ms RTT)
- Dulles, Virginia
http://www.guardian.co.uk/law/2013/feb/...
THREE LEVELS

Content
Enhancement
Leftovers
THREE LEVELS

- Content
- Enhancement
- Leftovers
THREE LEVELS

Content
Enhancement
Leftovers
THREE LEVELS

- Content
- Enhancement
- Leftovers
<table>
<thead>
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<th>Enhancement</th>
<th>Leftovers</th>
</tr>
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</table>

Friday, 12 April 13
**DOMContentLoaded event**

- main.min.a84f9eb52c54e6886336f6a2af36...
- app.cd7631953ef7899d2012006dfdf1234d.js
- sprite.db45261b996632c8196f0cf4f1231e...
- WebEgyptian.woff.d9a50e6d2278a4ef6441...
- Labour-leader-Ed-Milliband-006.jpg
- Horsemeat-found-in-beef-p-006.jpg
- Doctor-wearing-stethoscope-004.jpg
- Dan-Cole-England-Clan-Hea-004.jpg
- Cristiano-Ronaldo-008.jpg
- Sarah-Taylor-England-004.jpg
- Heart-with-Cupids-arrow-008.jpg
- An-old-Chinese-man-lo-008.jpg
- London-school-children-006.jpg
- most-read.json
- Steven-Gerrard-Liverpool-004.jpg
- top-stories.json
- Eastleigh-By-election-004.jpg
- Items-on-a-Lid-conveyor--004.jpg
- Sir-Paul-McCartney-on-sta-004.jpg
- frontscores

- Miami-Beach-Florida-009.jpg
- Laurie-Anderson-006.jpg
- One-Born-Every-Minute-006.jpg
- Laura-Barnett-006.jpg

- 054e10cc-5535-43e2-a626-a91c73d5d696...
- omniture.ac762078bb4bf18060e66f297bb2...
- gw.js
- 831989577.js
- 295770202@Top.x55.Bottom
- empty.gif
- 1360753025
- r2
- orphan.min.js
- t.gif
Enhancement

DOMContentLoaded event

- main.min.a84f9eb52c54e6886336f6a2af36...
- app.cd7631953ef7899d201206dfdf1234d.js
- sprite.db45261b996632381960cf4f1231e...
- WebEgyptian.woff.d9a50e6d2278a4ef6441...
- Labour-leader-Ed-Millband-006.jpg
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- Laura-Barnett-006.jpg
- 054e10cc-5535-43e2-a626-a91c7d35d696-...
- omniture.ac762078bb4bf18060e66f297b52...
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Leftovers

Load event
<table>
<thead>
<tr>
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<th>Leftovers</th>
</tr>
</thead>
</table>

DOMContentReady event
Enhancement

DOMContentLoaded event
- (i) main.min.a84f9eb52c54e6886336f6a2af36...
- (i) app.js7631953ef7899d20120066fd1234d.js
- (i) sprite.db45261b996632c81960cf1231e...
- (i) WebEgyptian.woff.d9a50e6d2278a4ef6441...
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- (i) omniture.ac762078bb4bf18060e66f297bb2...
- (i) gw.js
- (i) 831989577.js
- (i) 295770202@Top.x55.Bottom
- (i) empty.gif
- (i) 1360753025
- (i) r2
- (i) ophan.min.js
- (i) t.gif
LOADING CSS

- Compressed
- Long cache time
- One file

---

Content-Encoding: gzip

---

Cache-Control: max-age=315360000
<html>
  <head>
    <link href="main.css" rel="stylesheet" />
  </head>
  <body>
    <p>Content goes here</p>
  </body>
</html>
<html>
  <head>
    <link href="small.css" rel="stylesheet" />
    <!-- For larger viewports -->
    <link href="larger.css" media="screen and (min-width: 640px)" rel="stylesheet" />
  </head>

  <body>
    <p>Content goes here</p>
  </body>
</html>
<html>
  <head>
    <link href="main.css" rel="stylesheet" />
    <!-- For gallery pages -->
    <link href="gallery.css" rel="stylesheet" />
  </head>
  <body>
    <p>Content goes here</p>
  </body>
</html>
DOMContentLoaded event

- main.min.a84f9eb52c54e6886336f6a2af36.js
- app.c41c7631953ef7899d2012006d7f1234d.js
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LOADING JAVASCRIPT

- Compressed
- Long cache time
- One file

Content-Encoding: gzip

Cache-Control: max-age=315360000
<html>
    <head>
        <link href="main.css" rel="stylesheet" />
        <!-- For larger viewports -->
        <link href="larger.css" media="screen and min-width: 640px)" rel="stylesheet" />
        <script src="app.js"></script>
    </head>
    <body>
        <p>Content goes here</p>
    </body>
</html>
<html>
  <head>
    <link href="main.css" rel="stylesheet" />
    <!-- For larger viewports -->
    <link href="larger.css" media="screen and min-width: 640px)" rel="stylesheet" />
  </head>
  <body>
    <p>Content goes here</p>
    <script src="app.js"></script>
  </body>
</html>
<script>

var s = document.createElement('script');
s.src = "app.js";
document.head.appendChild(s);

</script>
Cutting the Mustard

The browser is a hostile development environment and supporting a wide range of desktop browsers can be tough work.

One of the immediate challenges we discovered when we first started the responsive news prototype was the large range of devices that we would have to support. It terrified us. This article is about a solution we use to alleviate this problem.
<script>
if (isModernBrowser()) {
    var s = document.createElement('script');
    s.src = "app.js";
    document.head.appendChild(s);
}
</script>
var isModernBrowser = function() {
    return (‘querySelector’ in document &&
            ‘addEventListener’ in window &&
            ‘localStorage’ in window
    );
};
DOMContentLoaded event

Load event
IMAGES: SPRITES
Text Egyptian Web Regular
Just sit at "home" methodically ‘typing’ the most grotesque and inflammatory “statements” you can think of.

Text Egyptian Web Regular Italic
Just sit at "home" methodically ‘typing’ the most grotesque and inflammatory “statements” you can think of.

Text Egyptian Web Medium
Just sit at "home" methodically ‘typing’ the most grotesque and inflammatory “statements” you can think of.

Text Egyptian Web Medium Italic
Just sit at "home" methodically ‘typing’ the most grotesque and inflammatory “statements” you can think of.

http://www.flickr.com/photos/spacemanbob/1084139169/
FONT LOADING

Progressive enhancement
Progressive enhancement

Cuts the mustard
FONT LOADING

Progressive enhancement

Cuts the mustard

Supports WOFF
FONT LOADING

Progressive enhancement
- Cuts the mustard
- Supports WOFF
- localStorage available
PRE-RENDER

CUT THE MUSTARD? NO

SUPPORT WOFF? NO

FONTS IN STORAGE? NO

NO FONTS

SHOW FONTS

Friday, 12 April 13
POST-RENDER

STORAGE AVAILABLE?

NO

DOWNLOAD FONTS: BASE64 ENCODED IN JSON

CACHE FONTS IN STORAGE

NO FONTS

SHOW FONTS
Average Bytes per Page by Content Type: Top 1000 Sites (March 2013)

httparchive.org/interesting.php
IMAGES: NEW SPECS

srcset attribute

```html
<img alt="Describes the image." src="medium.jpg" srcset="small.jpg 640w, small-hd.jpg 640w 2x, med-hd.jpg 2x" />
```
IMAGES: NEW SPECS

Picture element

```html
<picture alt="Describes the image.">
  <source src="s.jpg">
  <source media="(min-width:320px)" src="m.jpg">
</picture>
```
RBS boss admits 'chastening' year as losses breach £5bn
Losses at Royal Bank of Scotland widen but Stephen Hester says the privatisation of the bailed-out bank is getting closer.
IMAGES: ON DEMAND

Money

1 hour ago
UK job market shows signs of improvement
The six months to February saw small increase in vacancies, though average salary plummeted, research reveals

Travel

13 min ago
Seoul: a soundtrack to the city
Korea and Syria are high on the agenda at G8 talks in London, with foreign ministers also pledging to work to end sexual violence in conflict.

**Thatcher funeral guest list released**
11 April 2013
All surviving US presidents and UK prime ministers are among the 2,000 people invited to Baroness Thatcher’s funeral.

**Goal-line technology given go-ahead**
11 April 2013
The Premier League has voted to introduce goal-line technology from the 2013-14 season, using Hawk-Eye technology.
IMAGES: ON DEMAND

<div data-alt="Describes the image."
data-src="small.jpg"
data-src-high="large.jpg"
data-width="180"
data-height="100"
>
</div>
# IMAGES: APPROPRIATE

<table>
<thead>
<tr>
<th>Interface</th>
<th>Content</th>
<th>Decorative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector (SVG)</td>
<td>Optimised bitmap ~80% quality</td>
<td>Optimised bitmap ~60% quality</td>
</tr>
<tr>
<td>Icon font</td>
<td>&lt;img src=&quot;&quot;/&gt;</td>
<td>&lt;div data-imgsrc=&quot;&quot;/&gt;</td>
</tr>
<tr>
<td>CSS image replacement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank-you!

http://lanyrd.com/cmhcd
@andyhume

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