Improving UX Through Front End Performance

dyn.com/webperf

for slides, links and extra stuff

or follow @laraswanson

Lara Swanson, User Experience Manager at Dyn DNS EMAIL LABS

flickr.com/photos/walkingsf/5112926909/

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#webperf is kind of a big deal.

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Adding 500ms decreased Google traffic and ad revenues by 20%.

source: websiteoptimization.com

Every additional 100ms
decreased Amazon sales by 1%.

source: websiteoptimization.com

Google Maps reduced their home page size.

10% more traffic the first week
25% in the following 3 weeks

source: websiteoptimization.com

Users expect 2 seconds.

source: gomez.com

After 3 seconds 40% will abandon your site.

source: gomez.com

DoubleClick: one client-side redirect

12% increase in click-through rate

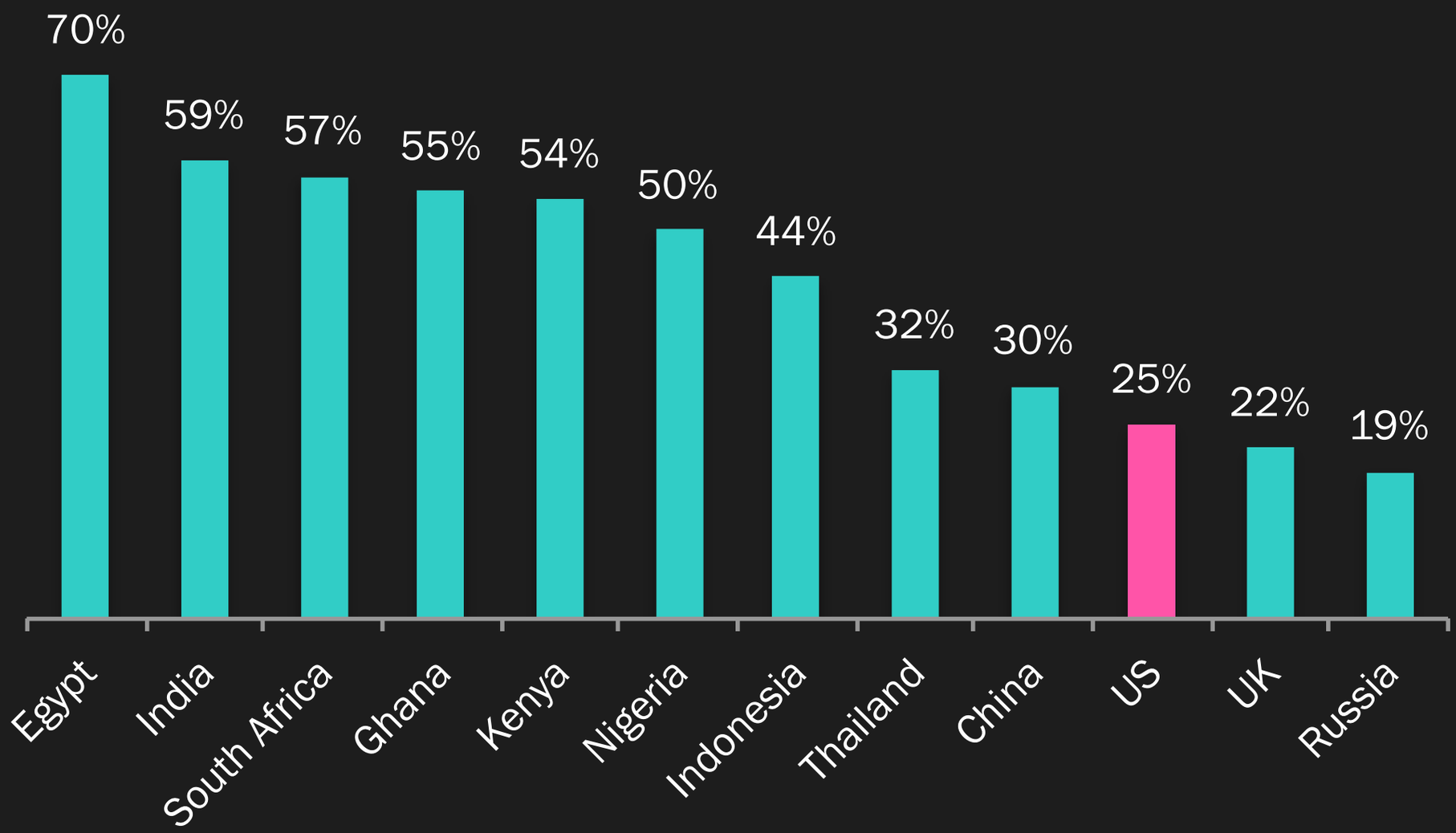
source: doubleclickadvertisers.blogspot.com

75% of shoppers who experience an issue will not buy from that site.

source: akamai.com

>56% of shoppers left for a competitor's site rather than suffer delays.

source: gomez.com



Mobile-only Internet Users

source: OnDevice Research

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A cellular device has to establish a radio channel before it can send/get data.

more at Taming the Mobile Beast

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Mobile is only a little bit faster than
old dialup connections.

Round Trip Time

Desktop Wifi	Mobile Network
50ms	344ms

Downlink Throughput

Desktop Wifi	Mobile Network
5mbps	1.6mbps

more at Taming the Mobile Beast

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We have not designed for mobile.

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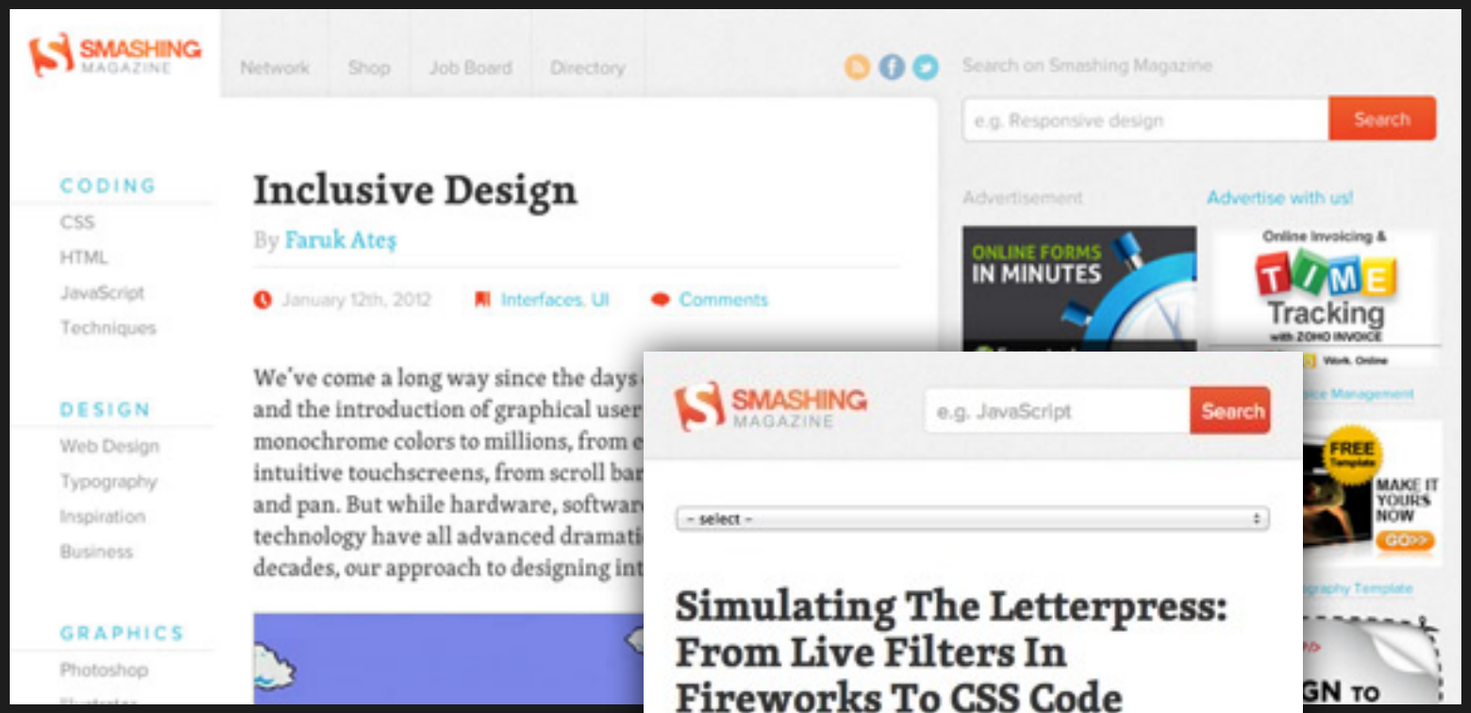
SMASHING MAGAZINE
Network
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e.g. Responsive design
Search
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CSS
HTML
JavaScript
Techniques
DESIGN
Web Design
Typography
Inspiration
Business
GRAPHICS
Photoshop
Inclusive Design
By Faruk Ateş
January 12th, 2012
Interfaces, UI
Comments
We've come a long way since the days
and the introduction of graphical user
monochrome colors to millions, from e
intuitive touchscreens, from scroll bar
and pan. But while hardware, softwar
technology have all advanced dramati
decades, our approach to designing int
Advertisement
Advertise with us!
ONLINE FORMS IN MINUTES
Online Invoicing &
TIME Tracking
with ZOHO INVOICE
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SMASHING MAGAZINE
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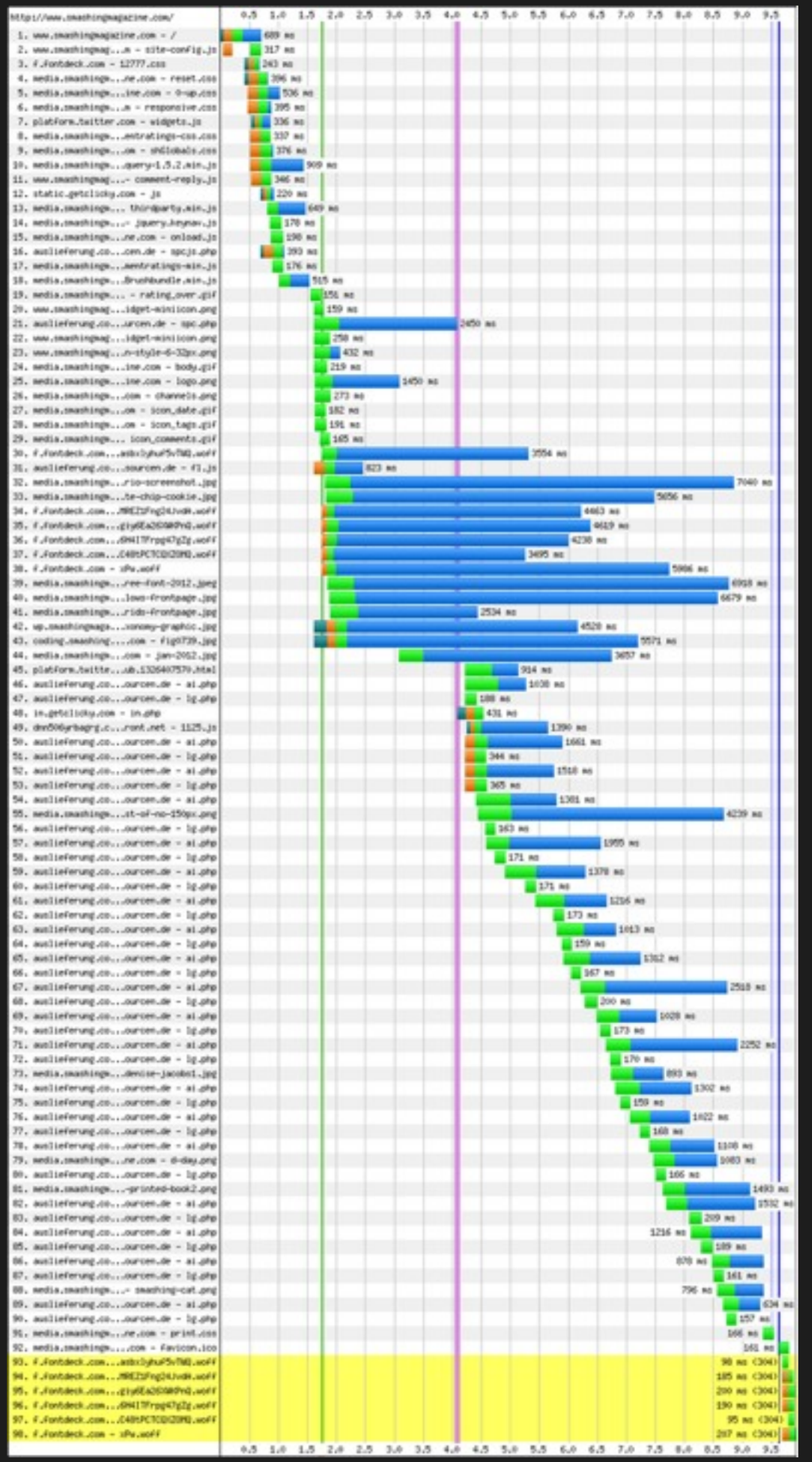
Simulating The Letterpress: From Live Filters In Fireworks To CSS Code
By Jose Olarte
July 23rd, 2012
CSS
7 Comments
One of the visual effects that is a mainstay in my Web design toolkit is the letterpress effect. Used properly, it's a quick way to make text blend better with the layout, as if it were machine-stamped onto the background. Think of what a home appliance marquee or a professional business card looks (and feels) like, and you'll know what I'm talking about.
SHADOW (#000000)
HIGHLIGHT (#FFFFFF)
Knock out
Knock out
Smashing


http://www.smashingmagazine.com/
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1. www.smashingmagazine.com - /
2. www.smashingmag...n - site-config.js
3. f.fontdeck.com - 12777.css
4. media.smashingm...ne.com - reset.css
5. media.smashingm...ine.com - 0-up.css
6. media.smashingm...n - responsive.css
7. platform.twitter.com - widgets.js
8. media.smashingm...entratings-css.css
9. media.smashingm...om - shGlobals.css
10. media.smashingm...query-1.5.2.min.js
11. www.smashingmag...- comment-reply.js
12. static.getclicky.com - js
13. media.smashingm... thirdparty.min.js
14. media.smashingm...- jquery.keynav.js
15. media.smashingm...ne.com - onload.js
16. auslieferung.co...com.de - spcjs.php
17. media.smashingm...mentratings-min.js
18. media.smashingm...BrushBundle.min.js
19. media.smashingm... - rating_over.gif
20. www.smashingmag...idget-minicon.png
21. auslieferung.co...urcem.de - spc.php
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98. f.fontdeck.com - iPe.woff
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

A good user experience
is intuitive and fast.

@laraswanson

Fast page load time
builds trust in your website.

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We need commitment to performance.

Designers, Developers and Clients.

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Website performance starts with design.

lots more at nathanleighdavis.com

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performance + beauty

= overall user experience

impact on page speed

vs.

impact on conversion rate

Question design decisions
with performance in mind.

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Test it.

@laraswanson

Test it.

A/B

Manual

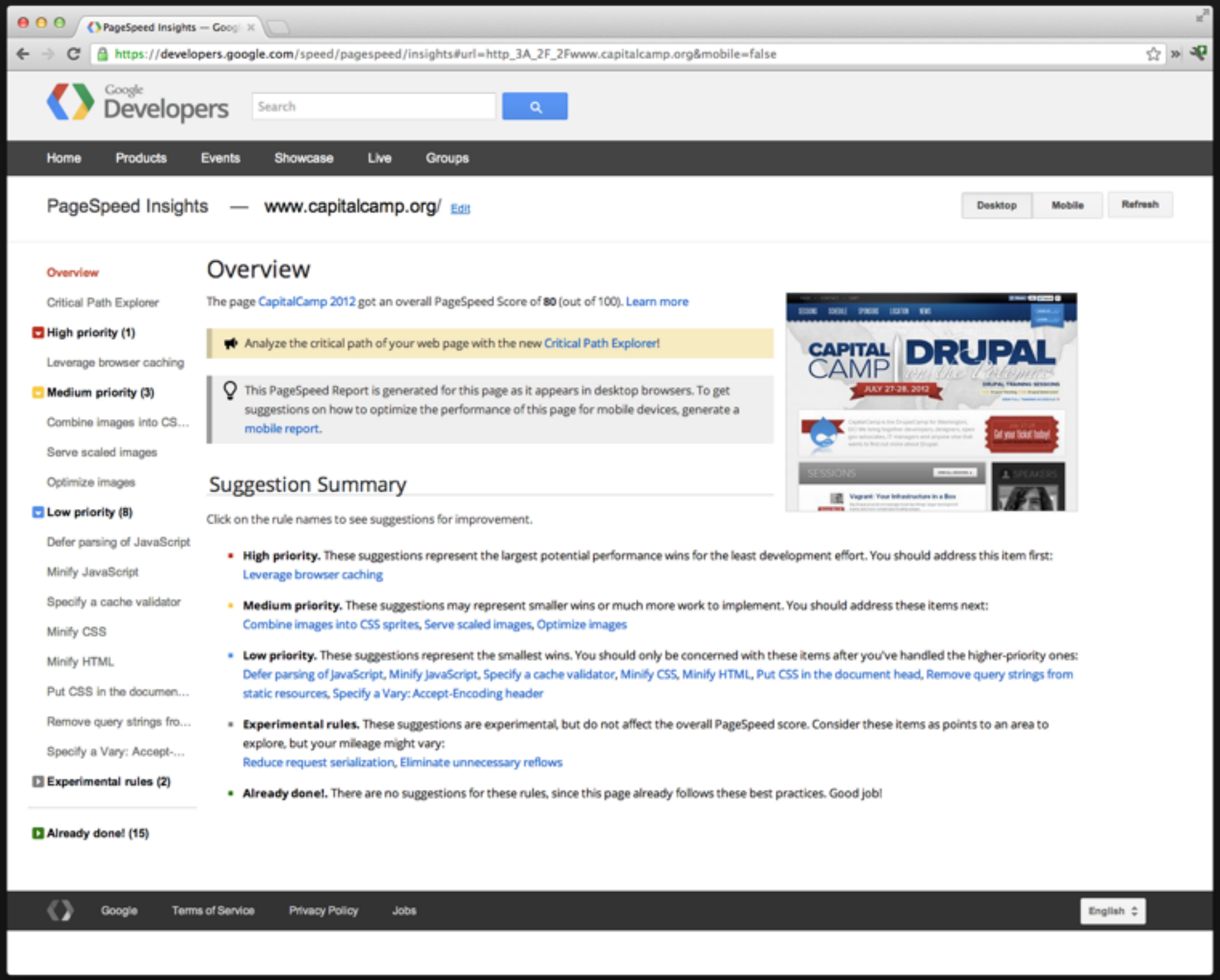
Test it.

A/B

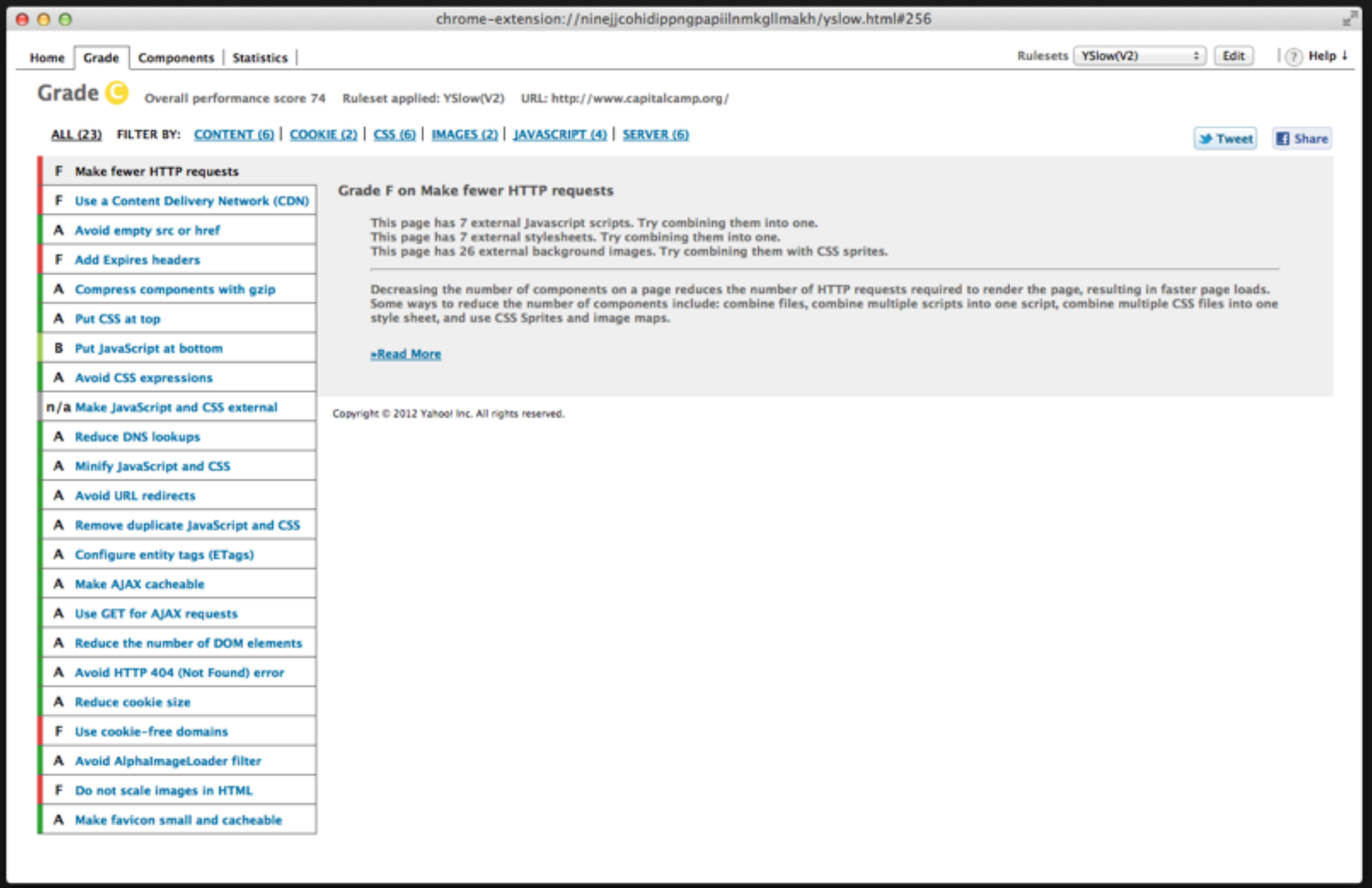
Manual

3/5/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.826s	0.408s	1.699s	1.826s	27	239 KB	3.081s	36	333 KB	15	Increase in load time due to blog image (no image last week) and fonts taking longer
Repeat View	1.472s	0.656s	0.109s	1.472s	5	14 KB	1.718s	6	15 KB		
3/12/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.785s	0.382s	1.801s	1.785s	27	234 KB	3.211s	36	329 KB	15	Decrease in first view load time due to Dan merging 11 cookies into 1. Google adwords will be re improve load time for next week.
Repeat View	1.602s	0.755s	0.138s	1.602s	5	15 KB	1.855s	6	15 KB		
3/19/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.550s	0.393s	1.563s	1.550s	24	233 KB	3.121s	33	358 KB	13	Big improvement = we removed the Google remarketing code.
Repeat View	0.145s	0.583s	0.215s	0.145s	0	0 KB	1.590s	4	29 KB		
3/26/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.499s	0.414s	1.514s	1.499s	24	223 KB	2.895s	32	329 KB	12	Extra call to ssl.gstatic.com removed from previous week after updated Google + button update
Repeat View	0.151s	0.629s	0.231s	0.151s	0	0 KB	1.277s	4	29 KB		
4/2/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.625s	0.390s	1.641s	1.625s	24	239 KB	3.050s	32	346 KB	12	Increased load time observations: Google plusone and apis code is taking longer.
Repeat View	0.151s	0.503s	0.196s	0.151s	0	0 KB	1.277s	4	29 KB		
4/9/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.572s	0.390s	1.587s	1.572s	24	233 KB	2.849s	32	339 KB	12	Will go back to investigate
Repeat View	0.151s	0.546s	0.206s	0.151s	0	0 KB	1.182s	4	29 KB		
4/16/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First View	1.582s	0.400s	1.600s	1.582s	25	236 KB	3.019s	33	343 KB	12	user_data.js added to help cookie tracking with Varnish - saved 5.4% by using ImageOptim on b
Repeat View	0.405s	0.372s	0.169s	0.405s	2	5 KB	1.320s	5	30 KB		
4/23/12	Load Time	First Byte	Start Render	Time	Requests	Bytes In	Time	Requests	Bytes In	# Connections	
First	1.840s	0.179s	1.584s	1.840s	25	240	2.814s	32	343	12	Switched to using Varnish with Dyn.com

Benchmarking



PageSpeed (online and browser add-on)


chrome-extension://ninejjcohidippngpapiilnmkgllmakh/yslow.html#256
Home
Grade
Components
Statistics
Rulesets
YSlow(V2)
Edit
Help
Grade C
Overall performance score 74
Ruleset applied: YSlow(V2)
URL: http://www.capitalcamp.org/
ALL (23)
FILTER BY:
CONTENT (6)
COOKIE (2)
CSS (6)
IMAGES (2)
JAVASCRIPT (4)
SERVER (6)
Tweet
Share
F Make fewer HTTP requests
F Use a Content Delivery Network (CDN)
A Avoid empty src or href
F Add Expires headers
A Compress components with gzip
A Put CSS at top
B Put JavaScript at bottom
A Avoid CSS expressions
n/a Make JavaScript and CSS external
A Reduce DNS lookups
A Minify JavaScript and CSS
A Avoid URL redirects
A Remove duplicate JavaScript and CSS
A Configure entity tags (ETags)
A Make AJAX cacheable
A Use GET for AJAX requests
A Reduce the number of DOM elements
A Avoid HTTP 404 (Not Found) error
A Reduce cookie size
F Use cookie-free domains
A Avoid AlphaImageLoader filter
F Do not scale images in HTML
A Make favicon small and cacheable
Grade F on Make fewer HTTP requests
This page has 7 external Javascript scripts. Try combining them into one.
This page has 7 external stylesheets. Try combining them into one.
This page has 26 external background images. Try combining them with CSS sprites.
Decreasing the number of components on a page reduces the number of HTTP requests required to render the page, resulting in faster page loads. Some ways to reduce the number of components include: combine files, combine multiple scripts into one script, combine multiple CSS files into one style sheet, and use CSS Sprites and image maps.
»Read More
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YSlow

WebPagetest Test Result - D

www.webpagetest.org/result/120702_YQ_PT5/

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WEBPAGETEST

HOME | TEST RESULT | TEST HISTORY | FORUMS | DOCUMENTATION | ABOUT | +1 | Tweet

Web Page Performance Test for
www.capitalcamp.org

From: Dulles, VA - IE8 - DSL
Mon Jul 02 2012 15:36:08 GMT-0400 (EDT)

Page Speed 1.12 Score: 81/100 — Need help improving?

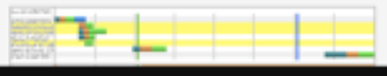
First Byte Time	Keep-alive Enabled	Compress Text	Compress Images	Cache static content	CDN detected
A	A	A	A	F	X

Summary | Details | Performance Review | Page Speed | Content Breakdown | Domains | Screen Shot

Re-run the test

Raw page data - Raw object data
Export HTTP Archive (.har)

	Load Time	First Byte	Start Render	DOM Elements	Document Complete Time	Document Complete Requests	Document Complete Bytes In	Fully Loaded Time	Fully Loaded Requests	Fully Loaded Bytes In
First View	10.404s	0.326s	5.725s	997	10.404s	93	1,756 KB	10.404s	93	1,756 KB
Repeat View	3.047s	0.222s	1.047s	996	3.047s	6	37 KB	3.997s	7	37 KB

	Waterfall	Screen Shot
First View (10.404s)		
Repeat View		

WebPageTest.org

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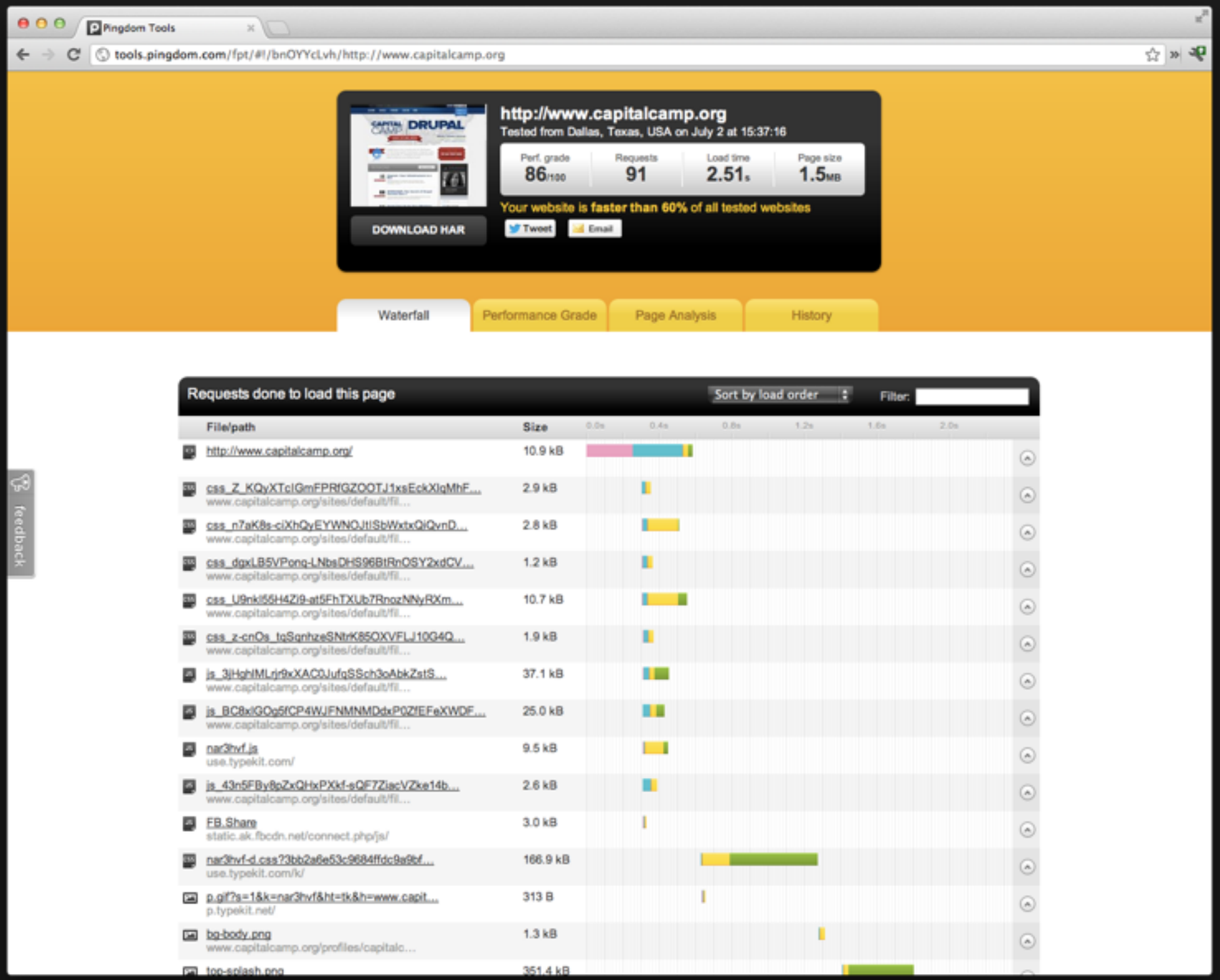

tools.pingdom.com

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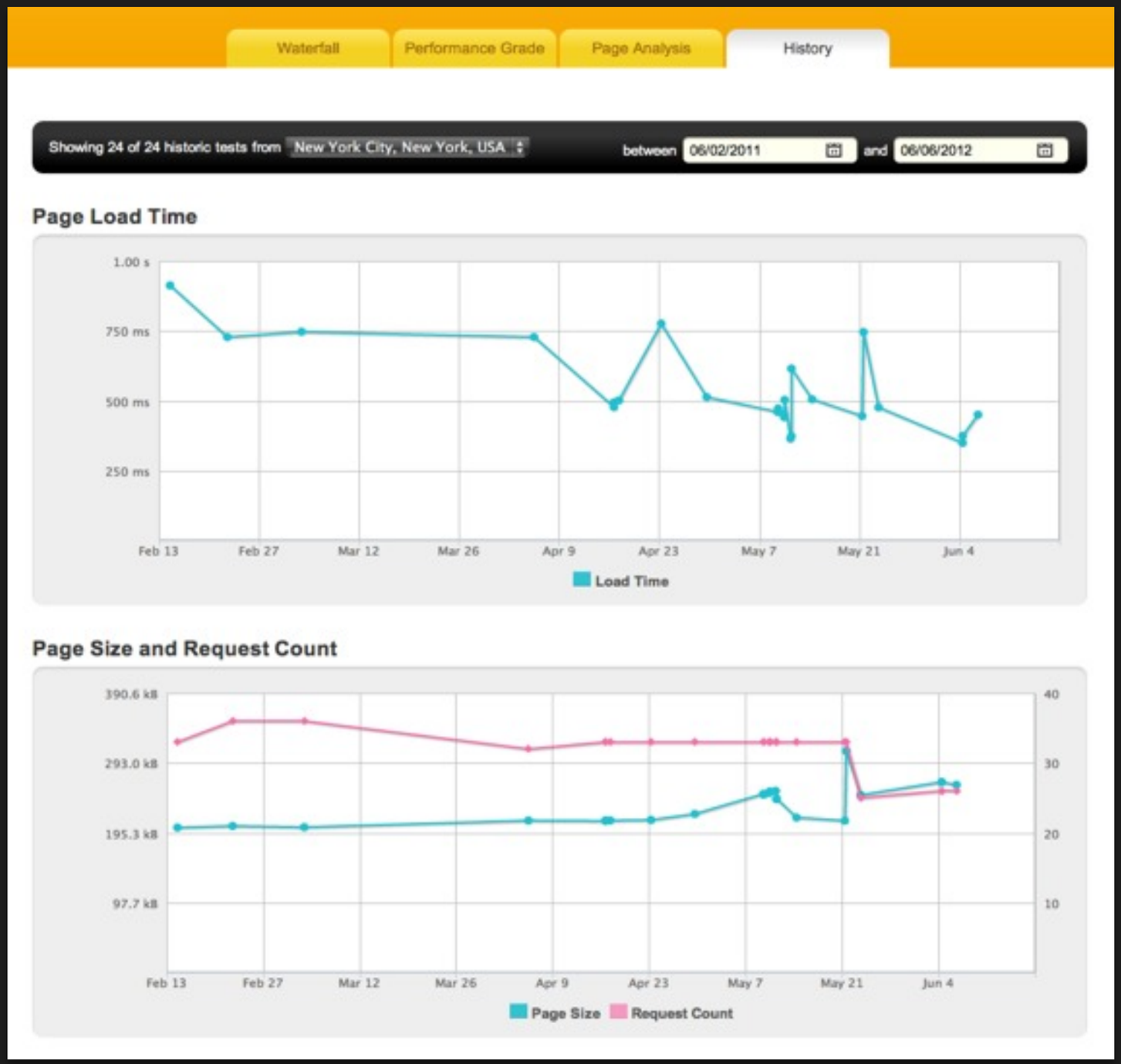

tools.pingdom.com

Clean Your HTML and CSS

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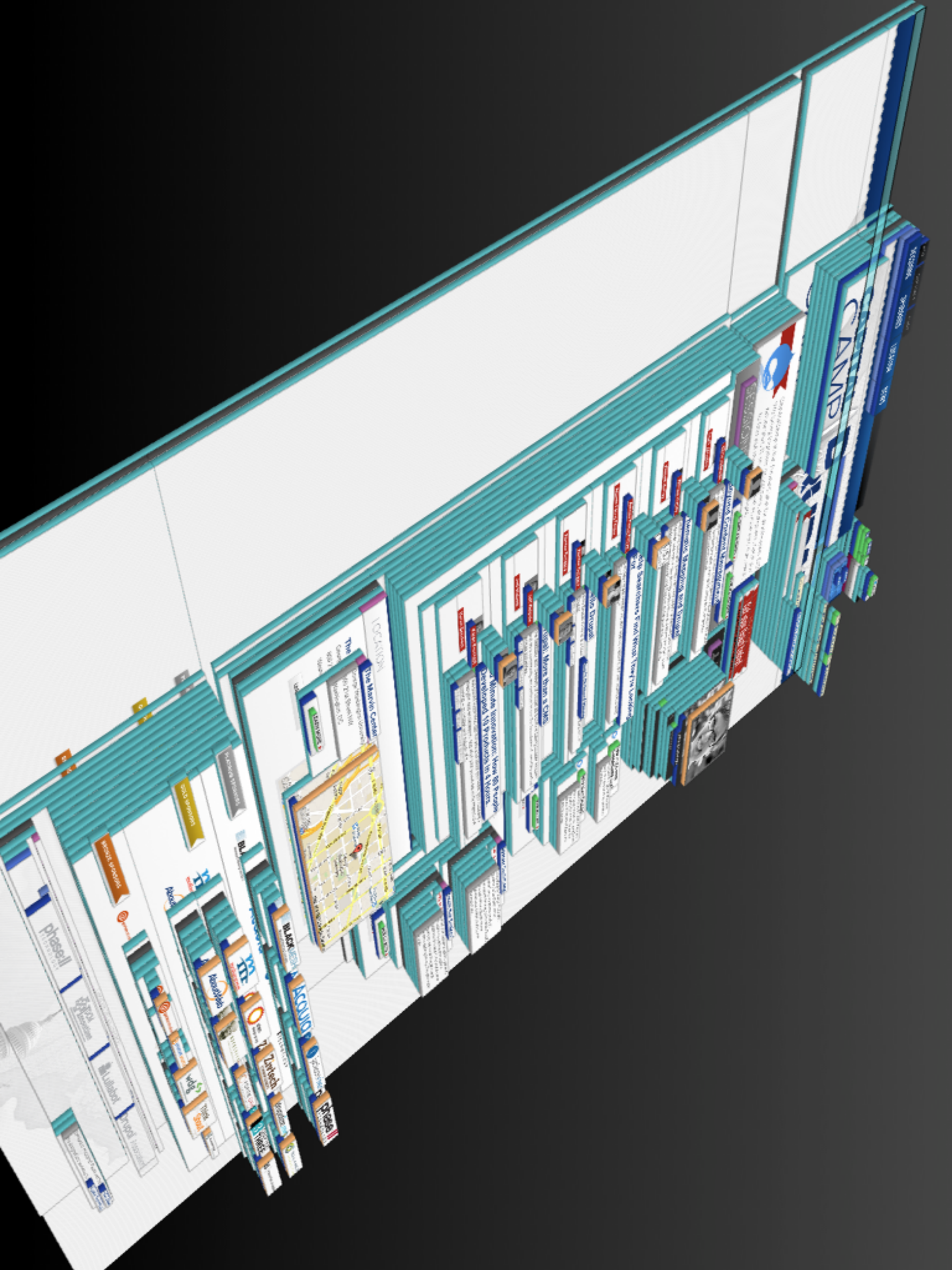
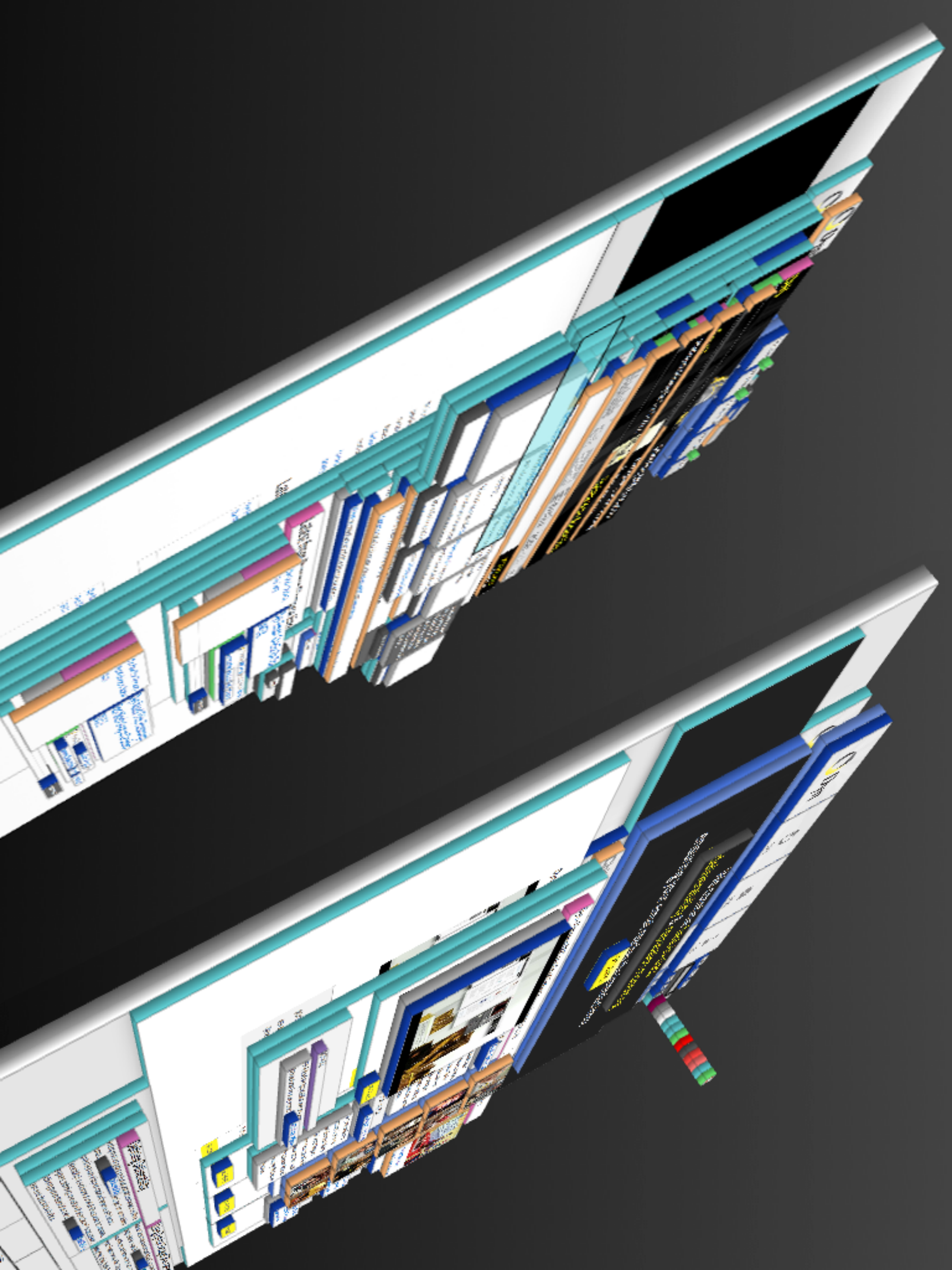
Bloated HTML
leads to bloated CSS,
and vice versa.





HTML: Rename unsemantic elements

HTML

```
<div class="clearfix">
   <p class="blue">
```

CSS

```
.clearfix p.blue { }
```

HTML: Rename unsemantic elements

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   <p class="blue">
```

CSS

```
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```

HTML: Rename unsemantic elements

HTML

```
<div class="clearfix">
   <p class="blue">
```

```
<div id="login">
   <h2>
```

CSS

```
.clearfix p.blue { }
```

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HTML: Rename unsemantic elements

⇢ CSS: Remove inefficient selectors

HTML

```
<div class="clearfix">
   <p class="blue">
```

```
<div id="login">
   <h2>
```

CSS

```
.clearfix p.blue { }
```

HTML: Rename unsemantic elements

⇢ CSS: Remove inefficient selectors

HTML

```
<div class="clearfix">
   <p class="blue">
```

```
<div id="login">
   <h2>
```

CSS

```
.clearfix p.blue { }
```

```
#login h2 { }
```

HTML: Remove unnecessary elements (divitis)

HTML

```
<div class="content">
   <div class="sidebar">
      <div class="login">
```

CSS

```
.content { margin: 0 auto; }
.sidebar { float: right; }
.login { width: 200px; }
```

HTML: Remove unnecessary elements (divitis)

HTML

```
<div class="content">
   <div class="sidebar">
      <div class="login">
```

CSS

```
.content { margin: 0 auto; }
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HTML: Remove unnecessary elements (divitis)

HTML

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<div class="content">
   <div class="sidebar">
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CSS

```
.content { margin: 0 auto; }
.sidebar { float: right; }
.login { width: 200px; }
```

```
<div class="content">
   <div class="login">
```

HTML: Remove unnecessary elements (divitis)

⇢ CSS: Remove unused styles

HTML

```
<div class="content">
   <div class="sidebar">
      <div class="login">
```

CSS

```
.content { margin: 0 auto; }
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```
<div class="content">
   <div class="login">
```

HTML: Remove unnecessary elements (divitis)

⇢ CSS: Remove unused styles

HTML

```
<div class="content">
   <div class="sidebar">
      <div class="login">
```

CSS

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.content { margin: 0 auto; }
.sidebar { float: right; }
.login { width: 200px; }
```

```
<div class="content">
   <div class="login">
```

```
.content { margin: 0 auto; }
.login { float: right;
         width: 200px; }
```

@laraswanson

HTML: Create repurposable code

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

HTML: Create repurposable code

⇢ CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

HTML: Create repurposable code

⇢ CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

```
.post, .article { }
.headline, .article h2 { }
.byline, .subtitle { }
```

HTML: Create repurposable code

⇢CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

```
.post, .article { }
.headline, .article h2 { }
.byline, .subtitle { }
```

HTML: Create repurposable code

⇢ CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

```
<div class="article">
   <h2>
      <p class="byline">
```

```
.post, .article { }
.headline, .article h2 { }
.byline, .subtitle { }
```

HTML: Create repurposable code

⇢ CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

```
<div class="article">
   <h2>
      <p class="byline">
```

```
.post, .article { }
.headline, .article h2 { }
.byline, .subtitle { }
```

HTML: Create repurposable code

⇢ CSS: Combine/condense styles

HTML

```
<div class="post">
   <p class="headline">
      <p class="byline">
...
<div class="article">
   <h2>
      <p class="subtitle">
```

CSS

```
.post { }
.article { }
.headline { }
.article h2 { }
.byline { }
.subtitle { }
```

```
<div class="article">
   <h2>
      <p class="byline">
```

```
.article { }
.article h2 { }
.byline { }
```

Optimize Your Images

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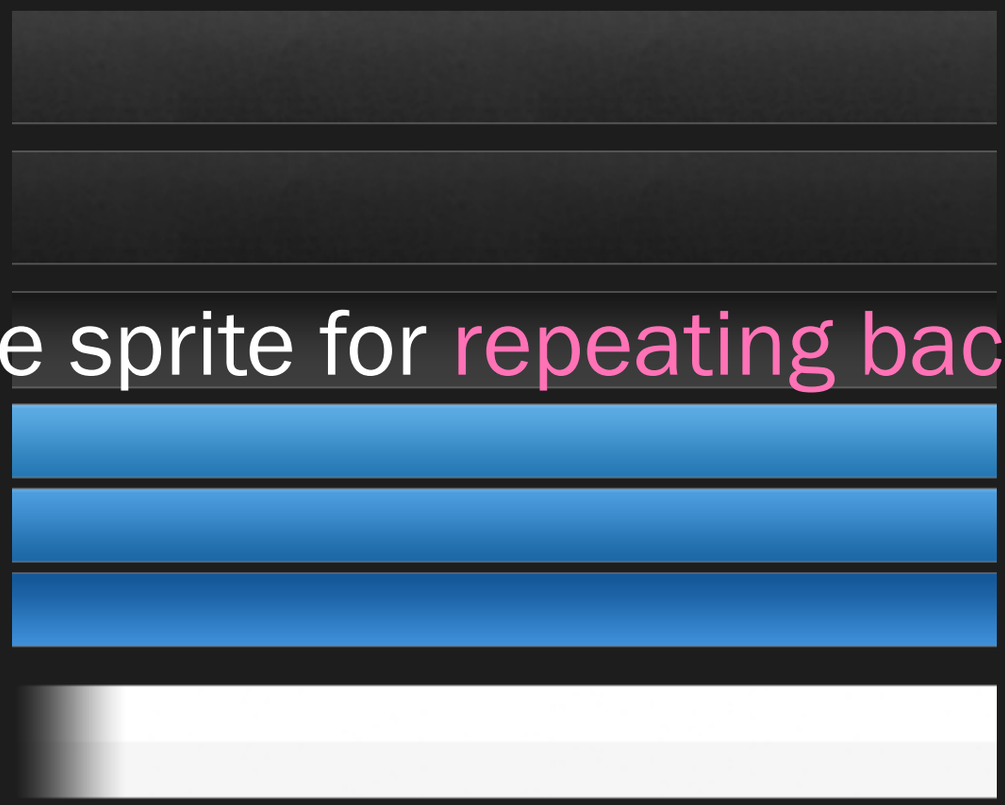
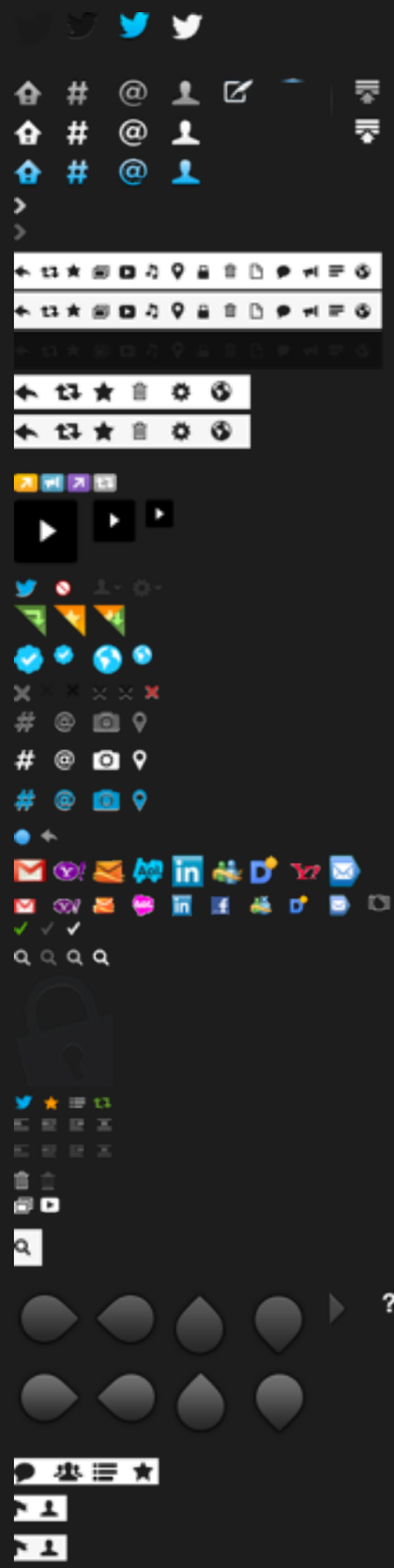
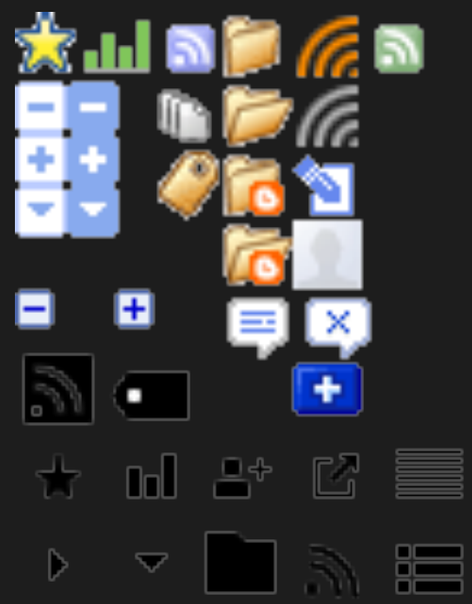
Create one sprite for repeating backgrounds.



Create one sprite for `no-repeat` backgrounds.





even more info: css-tricks.com/css-sprites/

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Regenerate images
using the right format
(PNG-8, PNG-24, or JPG)
and optimize them.

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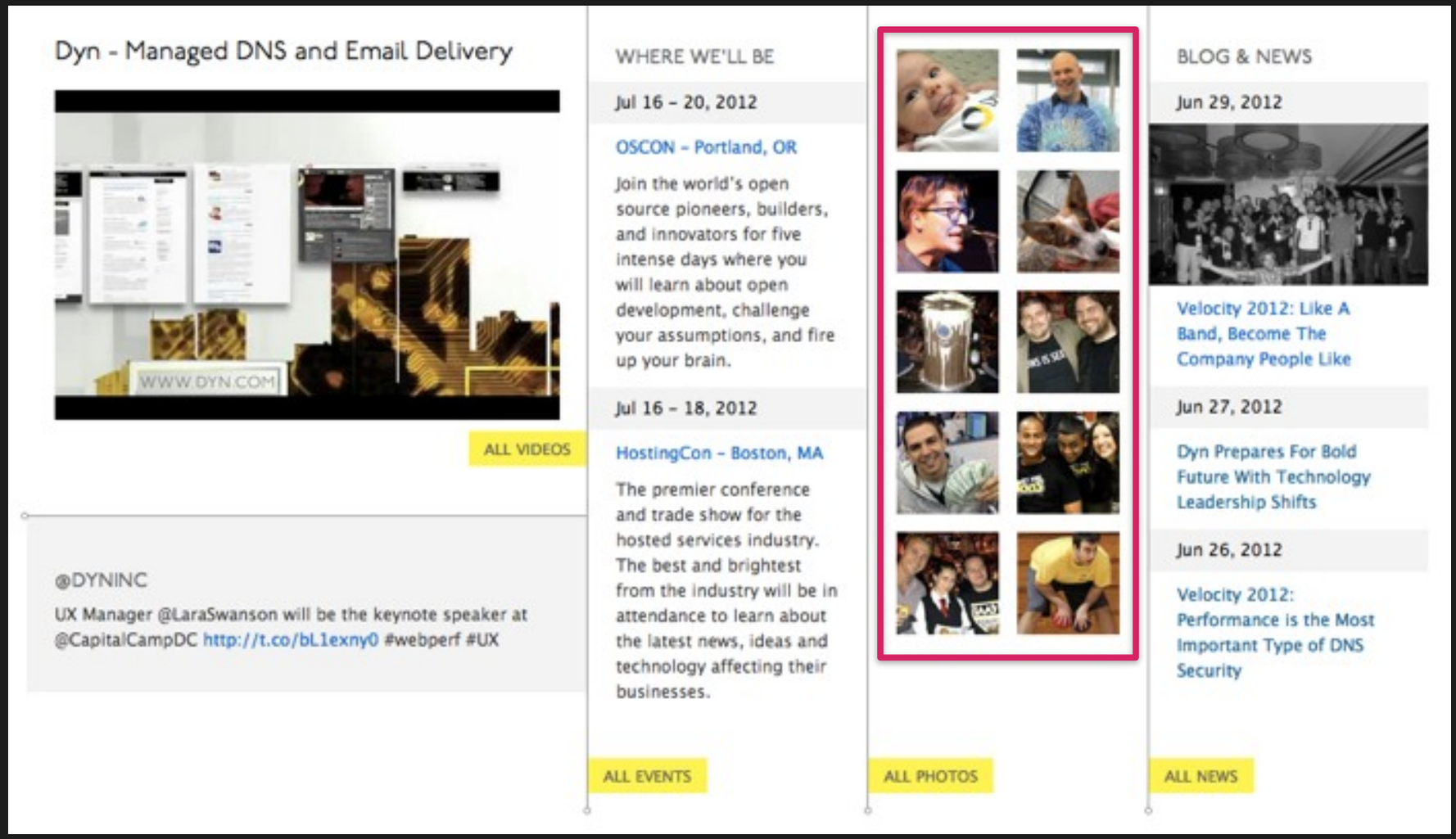


Spriting increased total home page size by 60K

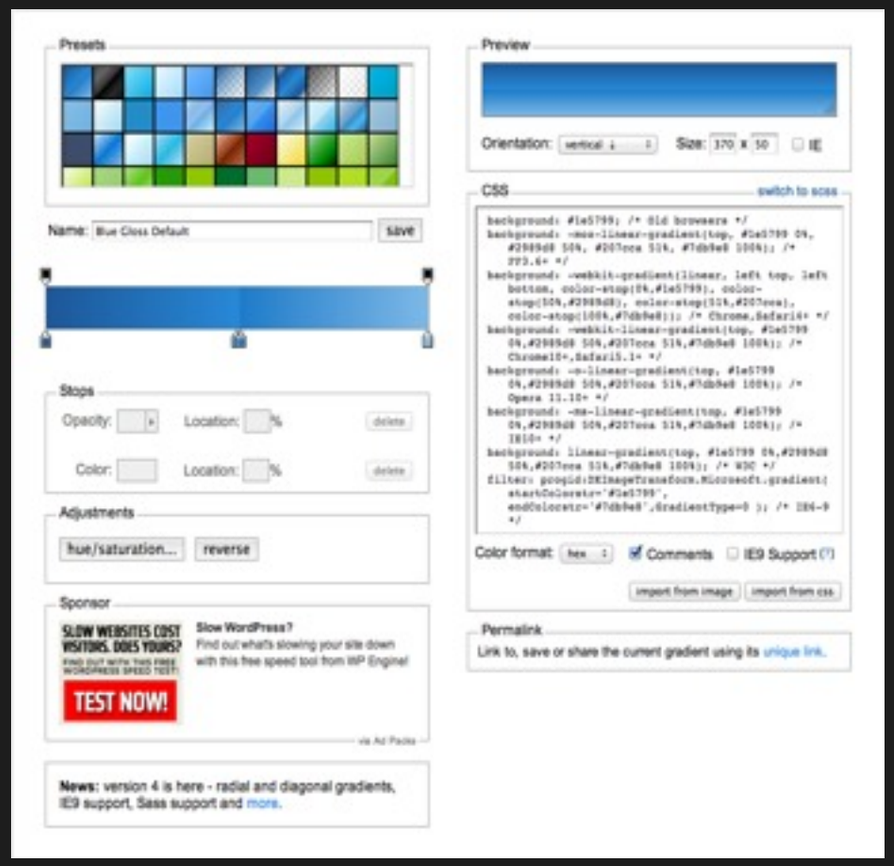
Decreased requests by 21%

Cut home page load time by 35%

Use CSS3 gradients instead of a repeating background image.

Case Study

- Added 2.7% CSS file size
- Saved 22% requests
- Saved 2.8% page load time



http://www.colorzilla.com/gradient-editor/

	Original	New	Improvement
CSS	11.8K (gzipped)	7.2K (gzipped)	39%
Images	121.5K	63.85K	47.4%
Requests	22	9	59%
Page Speed grade	95%	99%	4.2%
Time to fully load	3.550s	1.569s	55.8%

(full details at dyn.com)

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Optimize Your Requests

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The number of parallel connections varies greatly across mobile browsers.

from Taming the Mobile Beast

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Only serve content when it’s needed.

Minify Javascript and CSS.

Load JavaScript asynchronously.

Limit third-party scripts.

Load them asynchronously.

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What are you looking for?

About

Blog

We are Infrastructure-as-a-Service (IaaS) experts, powering DNS & email delivery for enterprise, small business & personal users. Uptime is the Bottom Line

GET STARTED WITH DNS

GET STARTED WITH EMAIL

Mashable

KIVA

mediafed

neverblue

invitemedia

Meetup

Dyn - Managed DNS and Email Delivery

WHERE WE'LL BE

06.11.2012 - 06.14.2012

Cloud Expo - New York, NY

Cloud Expo offers a selection of technical and strategic breakout

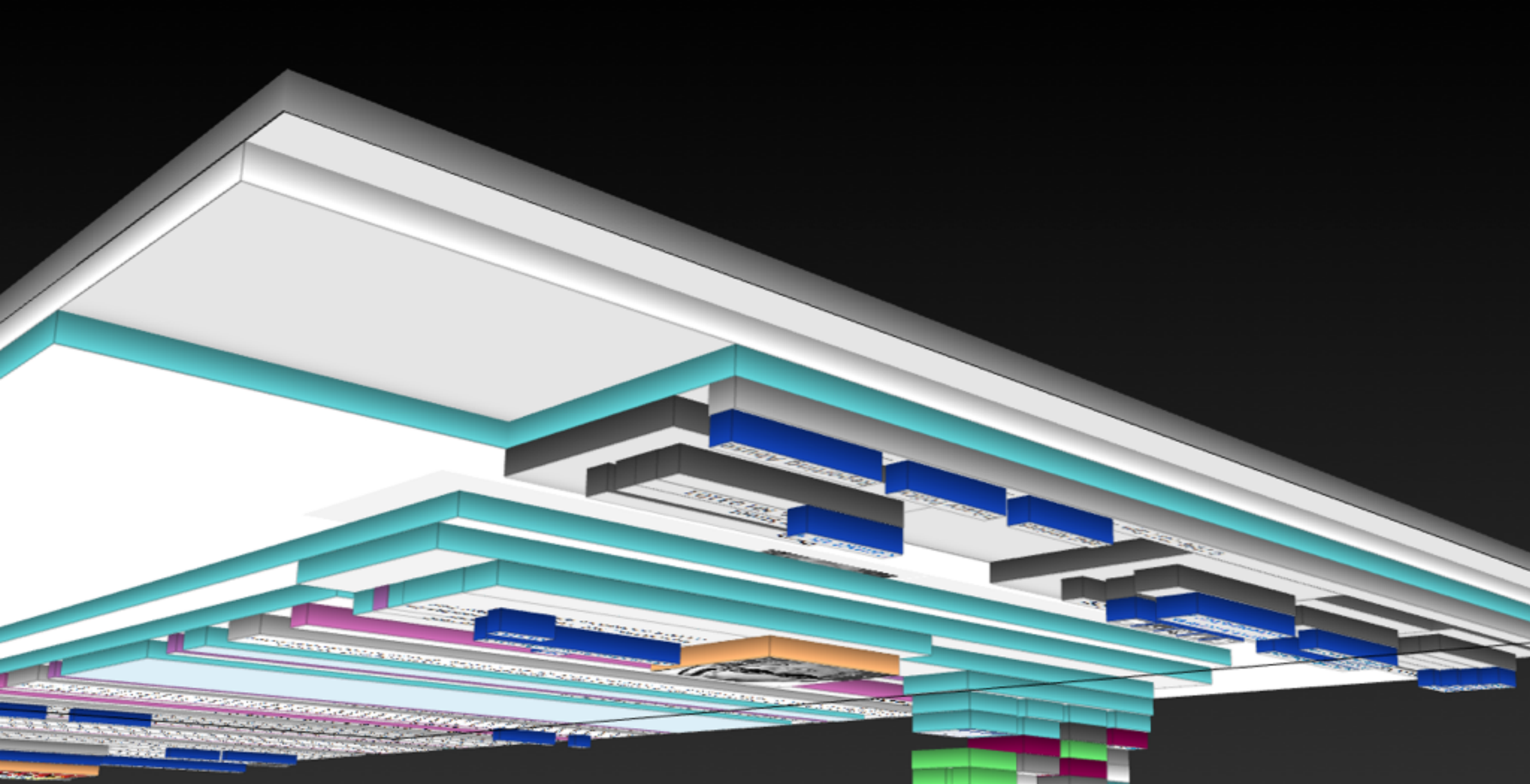
BLOG & NEWS

06.11.2012

The Amazing DNS Race: Advantages Of Real Time Traffic Manager

06.08.2012

The Strange And Magical



Learn best practices:

writegoodcode.com

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Performance Results

Roll over each test name to see more details. Click on a test name to see the test page.

Baseline		Page Load Time			
Test	Size	IE7	IE8	IE9	Chrome
Basic Page	23.4K	0.643s	0.521s	0.602s	0.434s

HTML Tests		Page Load Time			
Test	Size	IE7	IE8	IE9	Chrome
HTML5 Doctype	23.4K	0.653s	0.521s	0.580s	0.408s
Transitional Doctype	23.4K	0.648s	0.587s	0.578s	0.412s
+10KB HTML	24.0K	0.689s	0.550s	0.619s	0.447s

CSS Tests		Page Load Time			
Test	Size	IE7	IE8	IE9	Chrome
Unused CSS	23.7K	0.648s	0.518s	0.602s	0.410s
not using shorthand styles	23.6K	0.652s	0.531s	0.588s	0.407s

We created a baseline test page.

We performance tested poorly-crafted HTML, CSS, and images against it.

Using @import added +7.6% load time

Using inefficient CSS selectors: +5.5%

Adding 10kb of extra HTML: +4.8%

(See them all: writegoodcode.com)

Convince Clients

There will be extra development time ($$$) now.

Why?

A better user experience leads to

better conversion rates

A better user experience leads to

brand trust

A better user experience leads to visitors choosing you over a competitor

A better user experience leads to

more returning visitors

As an industry,
we need to focus
on the end user.

dyn.com/webperf

for more info and tools

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Scalable Stylesheets - 3pm today in Room 308

Beginner's Guide to Performance - 9am tomorrow in Room 310

The Fight Against Divitis - 9am tomorrow in Room 307