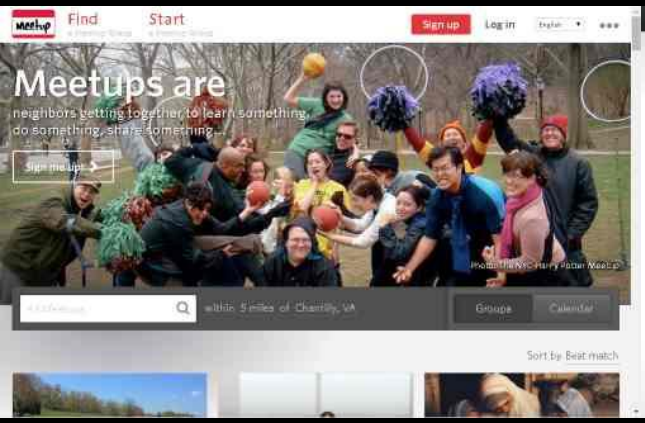
Measuring Performance

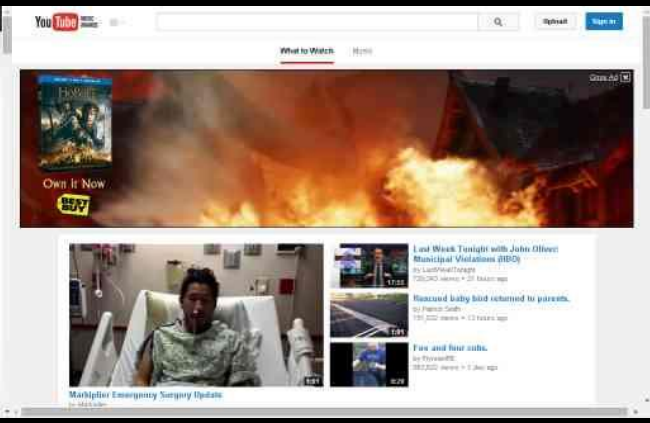
is your site as fast as you think?

which is fastest?

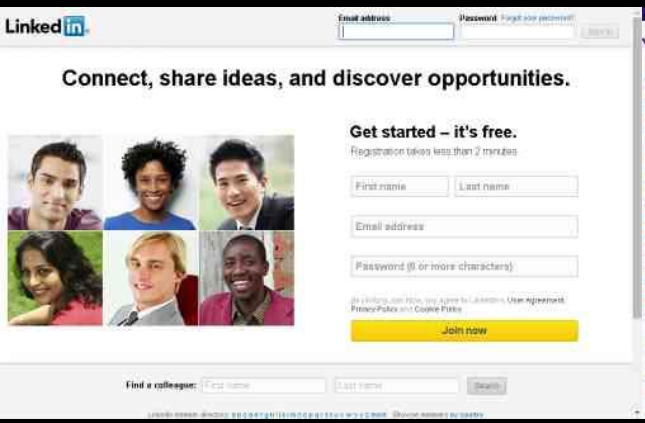


meetup.com

angularjs.org



youtube

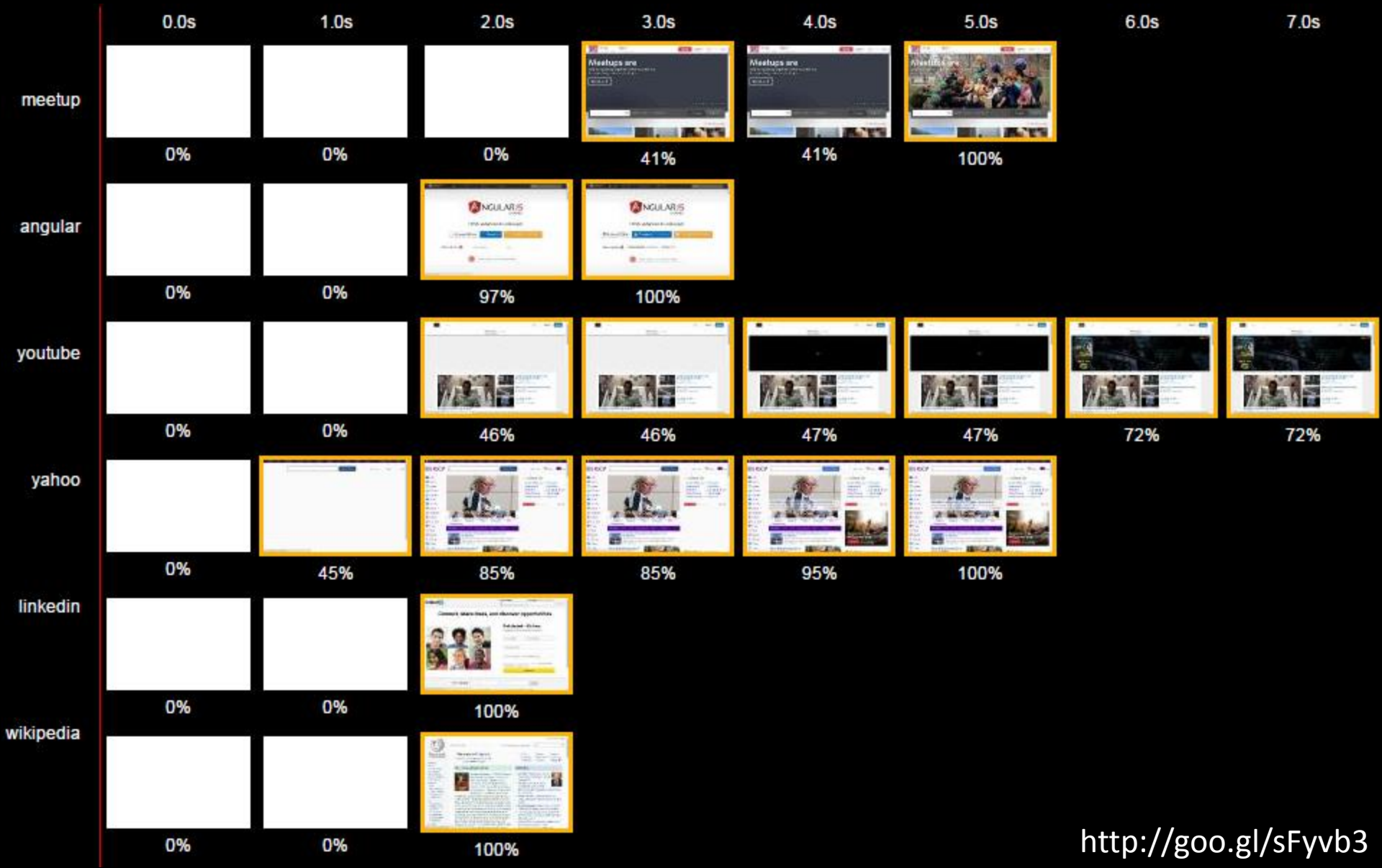


linkedin

yahoo

wikipedia

and the results are in

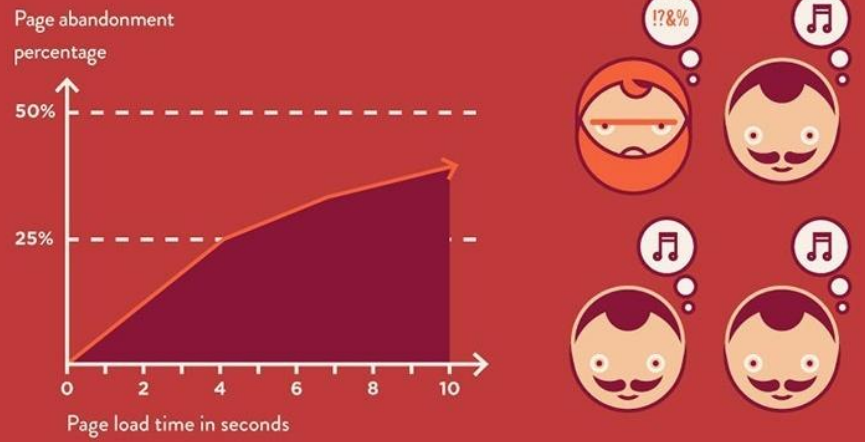


http://goo.gl/sFyvb3

Why invest in a fast site?

12%

1 IN 4 PEOPLE ABANDON A WEB PAGE THAT TAKES MORE THAN FOUR SECONDS TO LOAD.



Amazon.com makes about $67 million in sales each day.

IT COULD POTENTIALLY LOSE
UP TO $1.6 BILLION
PER YEAR BECAUSE OF A
1 SECOND WEB PAGE DELAY.

http://goo.gl/nBhm7H

http://flic.kr/p/mrr1qo

blog.cowchimp.com

@cowchimp

MEASUREMENT

"No science attains maturity until it acquires methods of measurement"

- Dr. Logan Clendening

(science wins!)

User Experience =

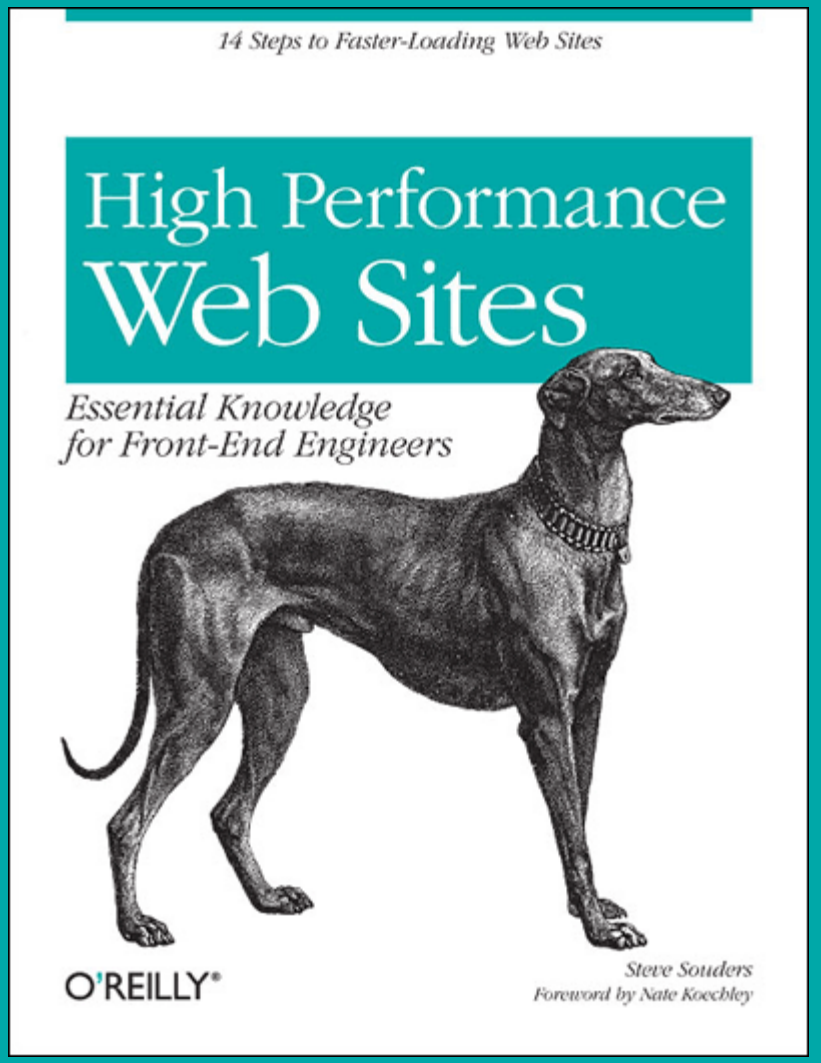
Serverside +

Clientside

Only 10-20% of the end user response time is spent downloading the HTML document.

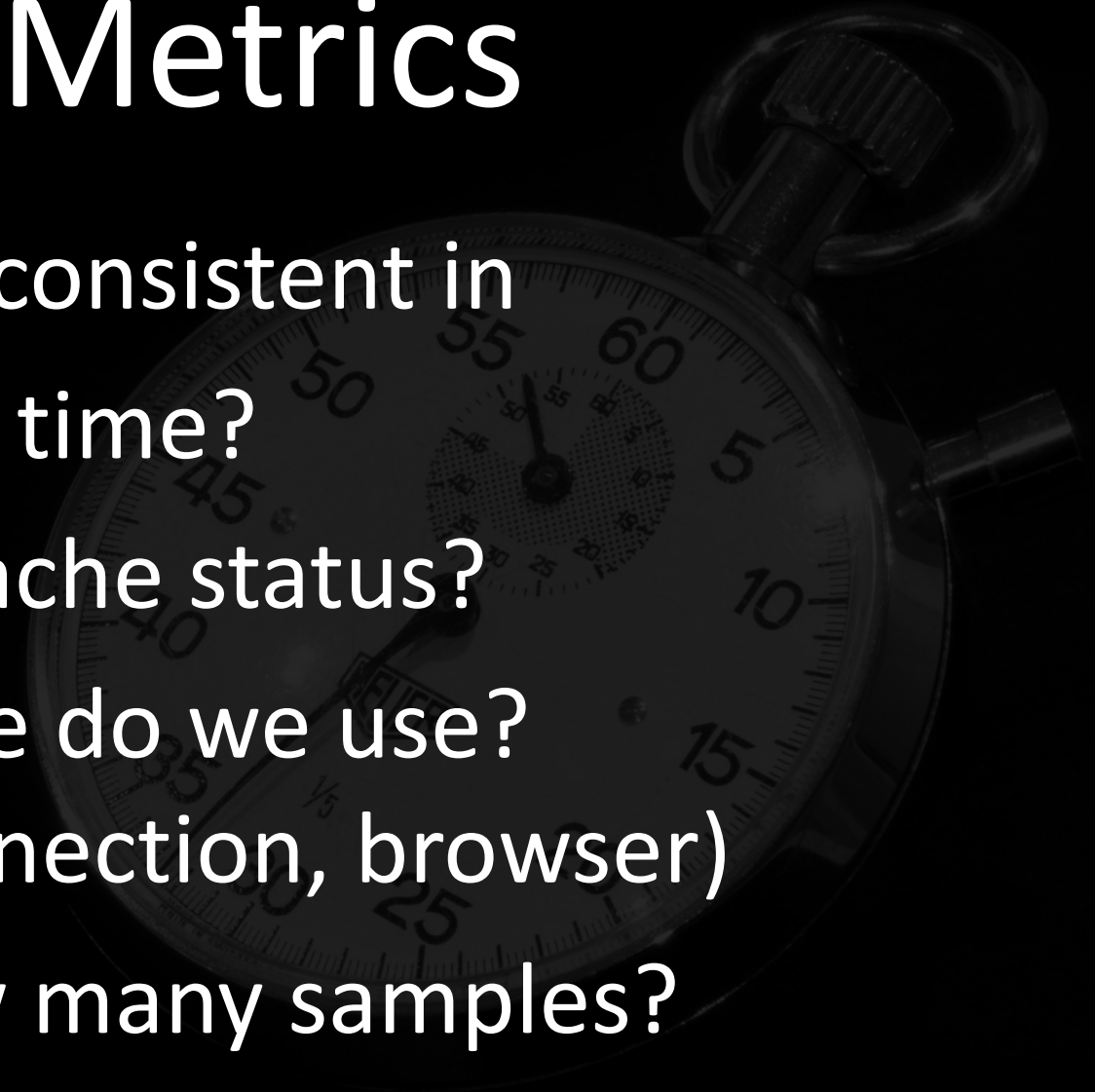
The other 80-90% is spent downloading all the components on the page.

- Steve Souders
"High Performance Web Sites" (O'Reilly)



http://goo.gl/2kjAf8

Metrics

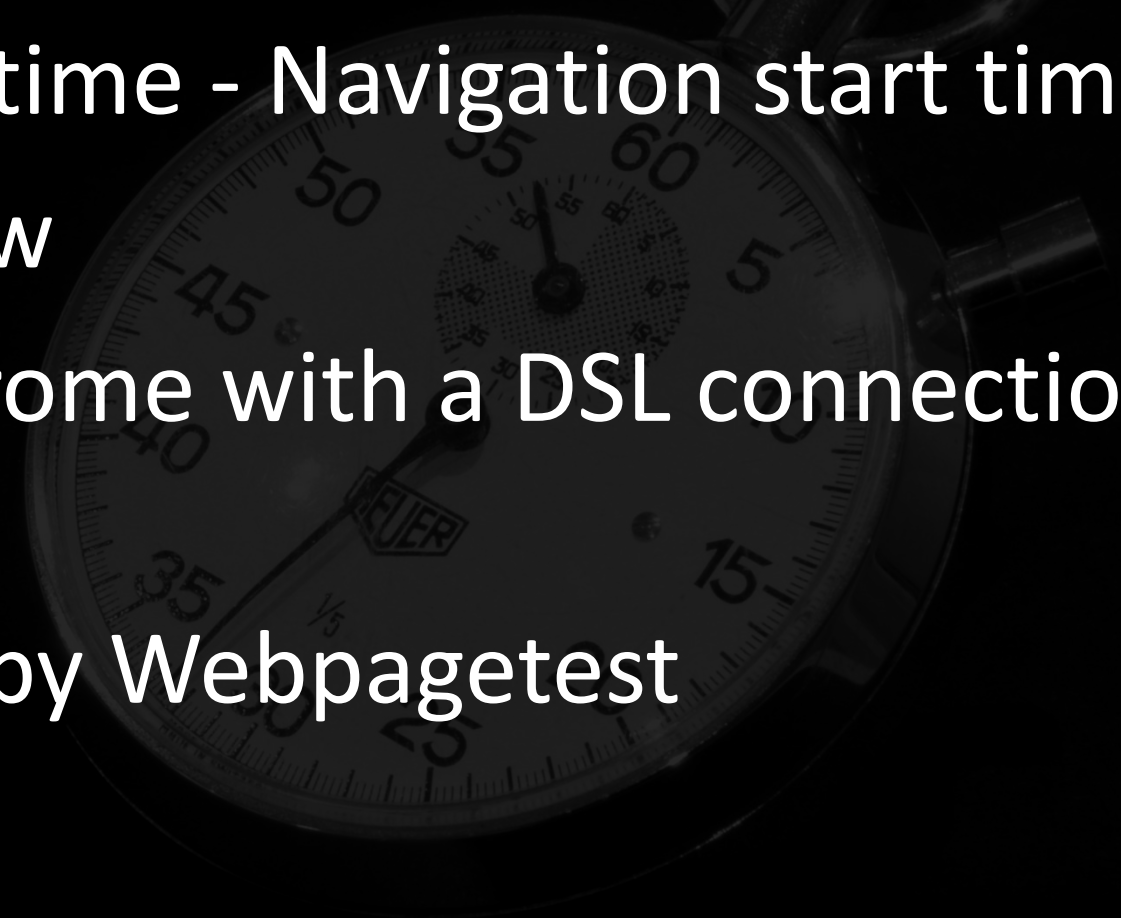


We need to be consistent in

- What point in time?
- What is the cache status?
- What machine do we use? (location, connection, browser)
- Based on how many samples?

Example Metric

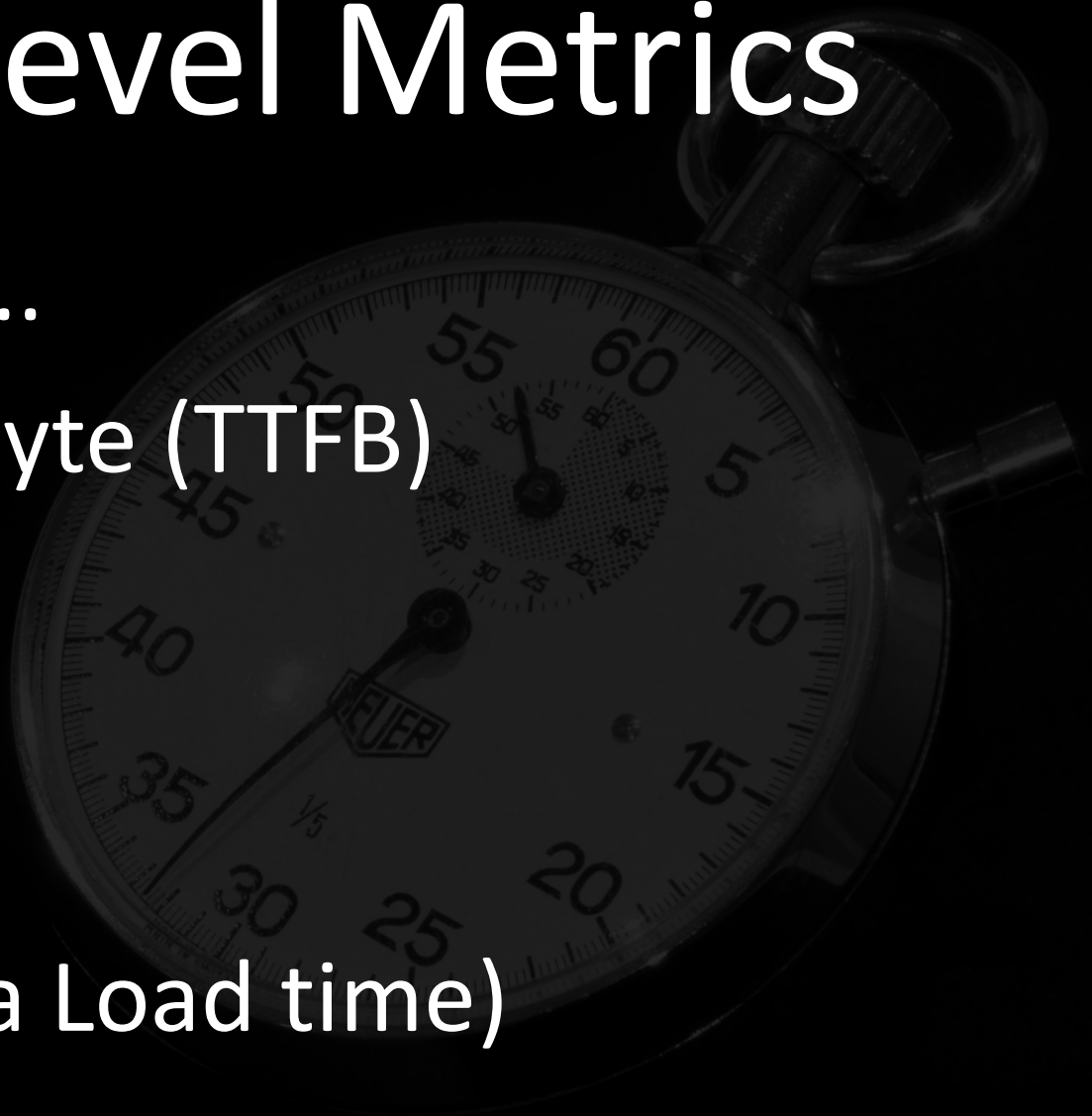
- x = Page load time - Navigation start time
- Of cached view
- Running a Chrome with a DSL connection in Virginia
- As measured by Webpagetest



Top Level Metrics

from start until...

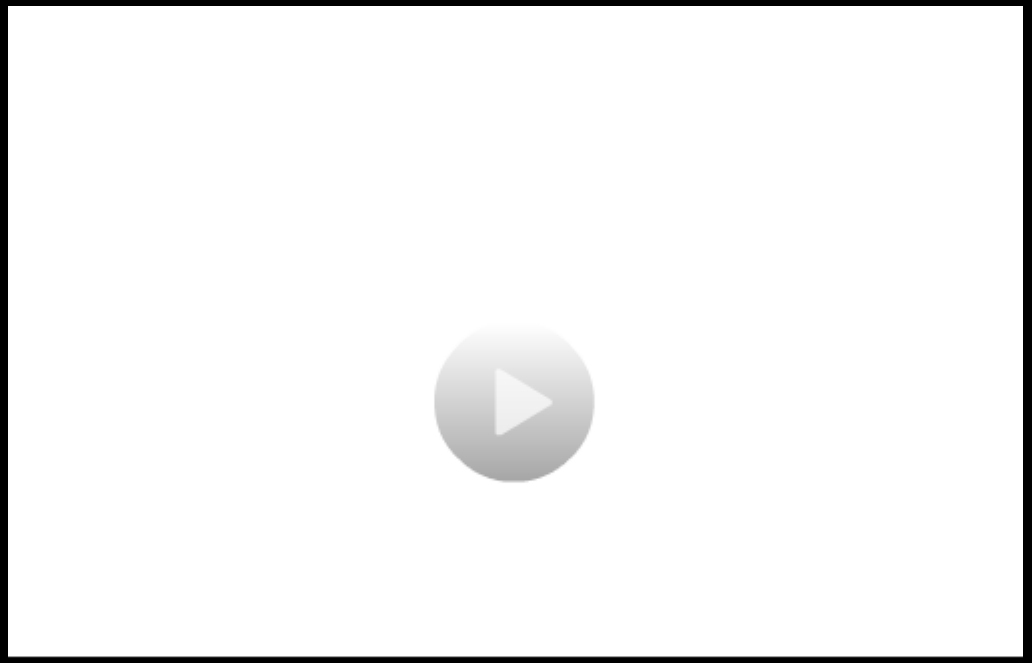
- Time to First Byte (TTFB)
- Start Render
- Page Load (aka Load time)



Good enough?

- These metrics do a good job at measuring generic **network\browser** events

- But do they do a good job of reflecting the **User Experience**?

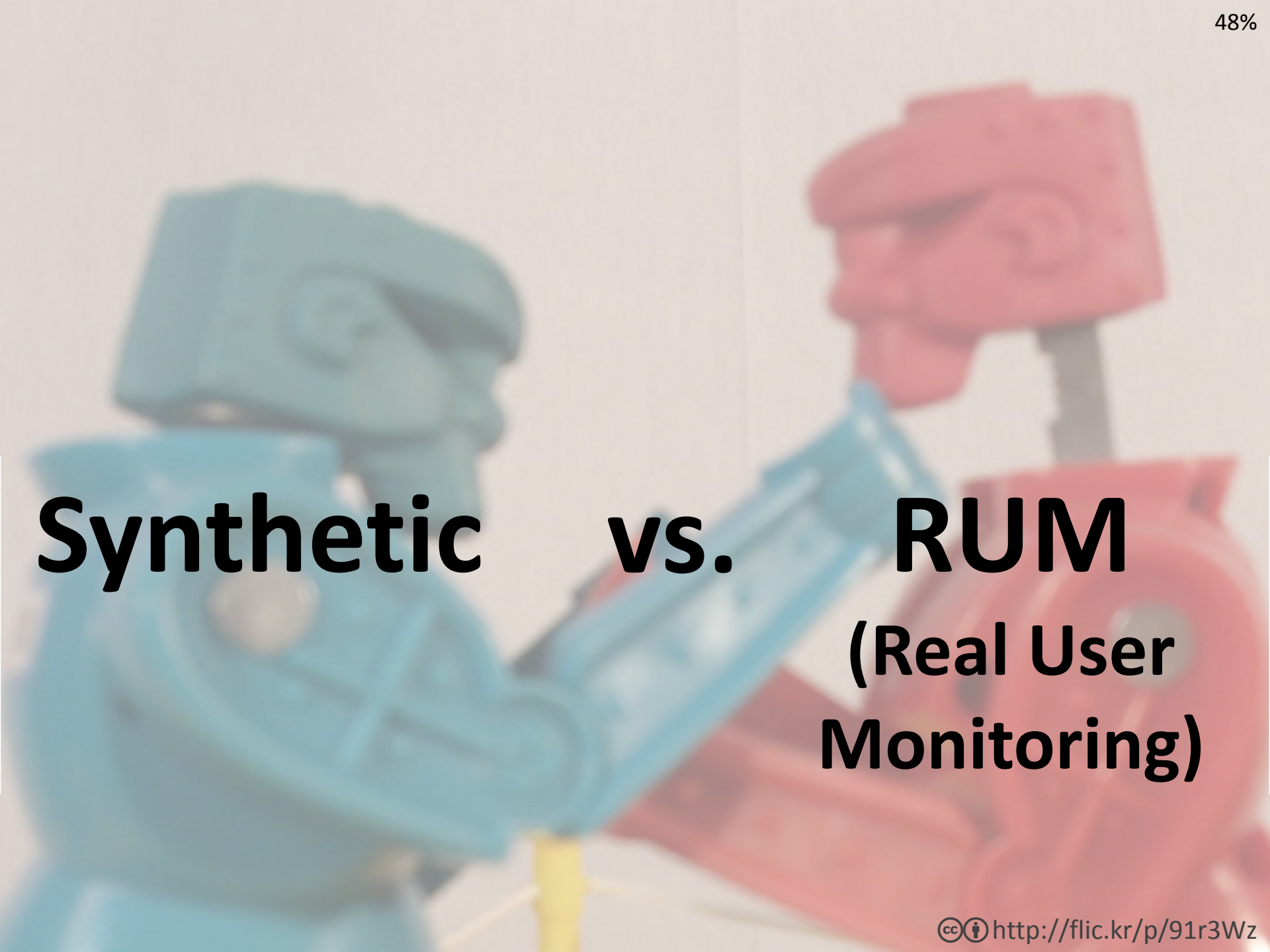


0.0

The reported Load time for this page is 3.959s

Perceived Performance

Monitoring



Synthetic vs. RUM (Real User Monitoring)

Webpagetest.org (WPT)

WEBPAGETEST

HOME | TEST RESULT | TEST HISTORY | FORUMS | DOCUMENTATION | ABOUT

Test a website's performance

Analytical Review | Visual Comparison | Traceroute

www.hbo.com

START TEST

Test Location: Dulles, VA USA (IE 8-11,Chrome,Firefox,Android,iOS) | Select from Map

Browser: Chrome

Advanced Settings ▶

1 run, Cable connection, results are public

http://goo.gl/1qiL62

WEBPAGETEST

HOME | TEST RESULT | TEST HISTORY | FORUMS | DOCUMENTATION | ABOUT

Web Page Performance Test for

www.hbo.com/#/

From: Dulles, VA - **Chrome - Cable**
6/17/2014, 9:04:59 PM

Need help improving?

C	A	F	F	F	X
First Byte Time	Keep-alive Enabled	Compress Transfer	Compress Images	Cache static content	Effective use of CDN

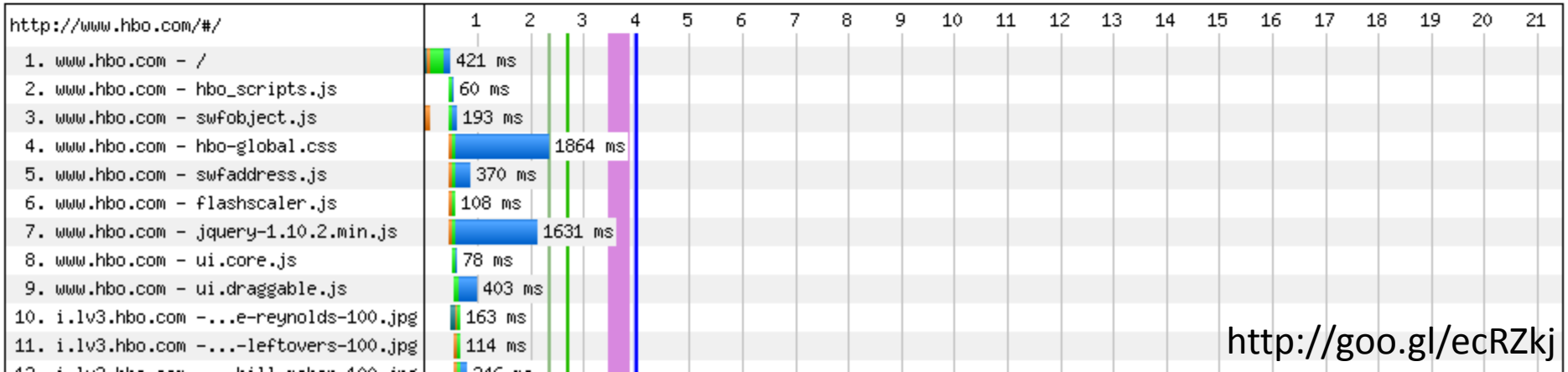
Summary | Details | Performance Review | Content Breakdown | Domains | Screen Shot

Tester: IE9102-192.168.101.92
First View only
Test runs: 3

Export HTTP Archive (.har)

							Document Complete			Fully Loaded		
Load Time	First Byte	Start Render	Visually Complete	Speed Index	DOM Elements	Result (error code)	Time	Requests	Bytes In	Time	Requests	Bytes In
3.959s	0.341s	2.690s	22.400s	18126	139	0	3.959s	104	1,664 KB	21.427s	175	7,883 KB

Waterfall View



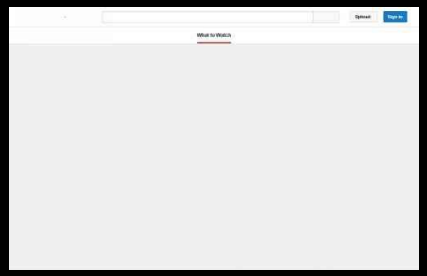
http://goo.gl/ecRZkj

Video frame analysis

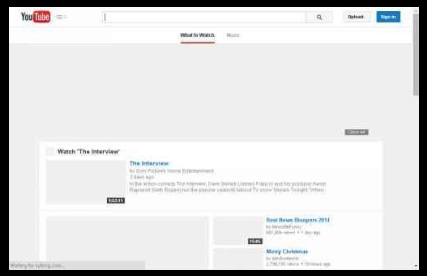
WPT captures screenshots at 10 frames / 1 sec

0.0 s

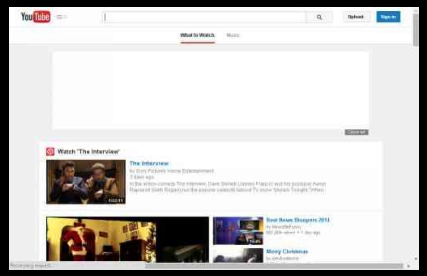
2.2 s



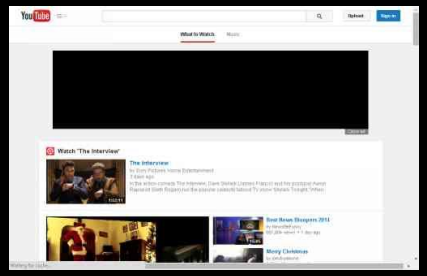
2.8 s



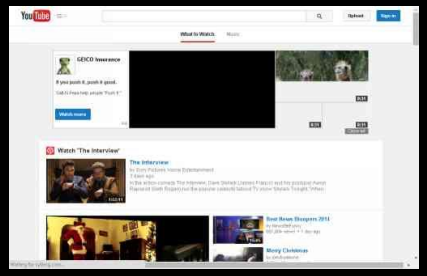
3.3 s



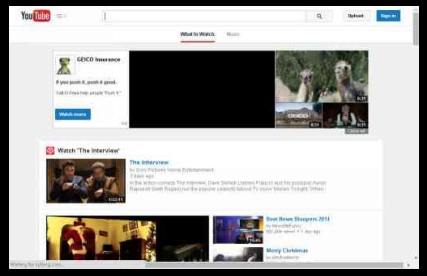
3.6 s



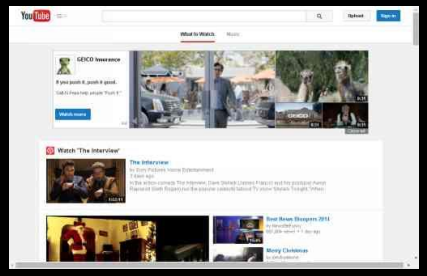
4.0 s



4.2 s



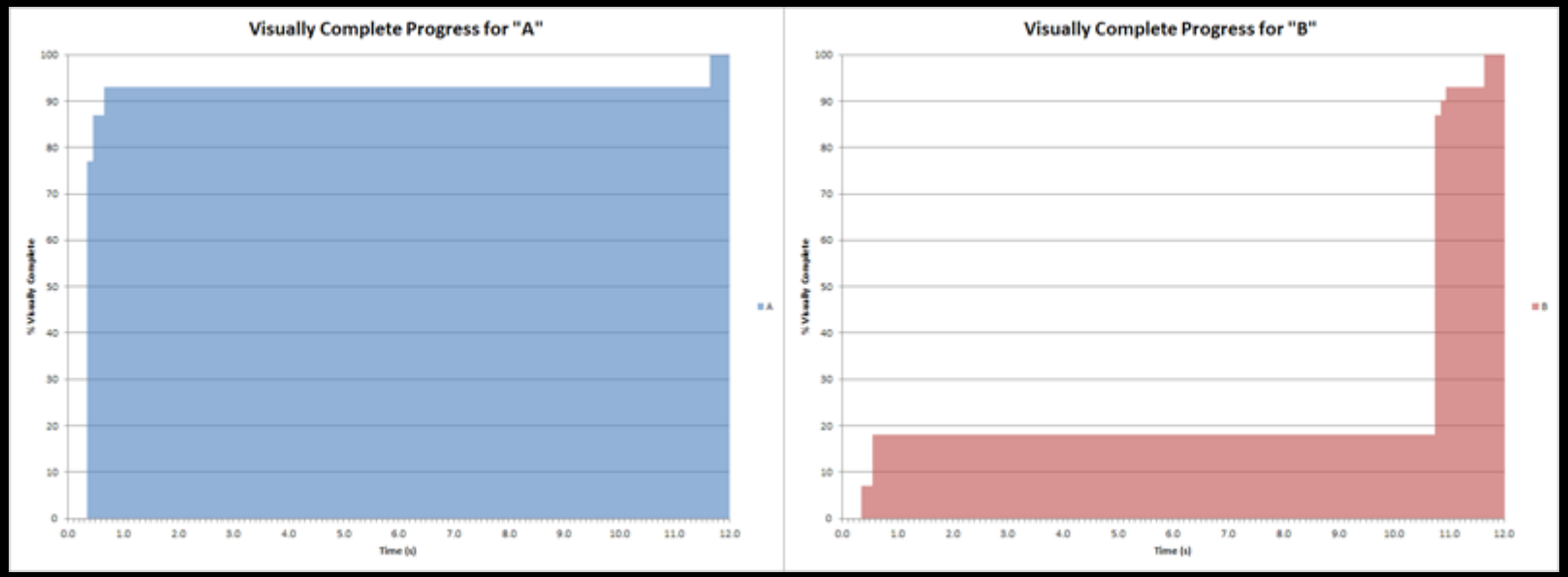
7.6 s



Source: http://goo.gl/kJF9JU

Video frame analysis

For each frame it calculates % of visual completeness compared the last frame



Source: http://goo.gl/kJF9JU

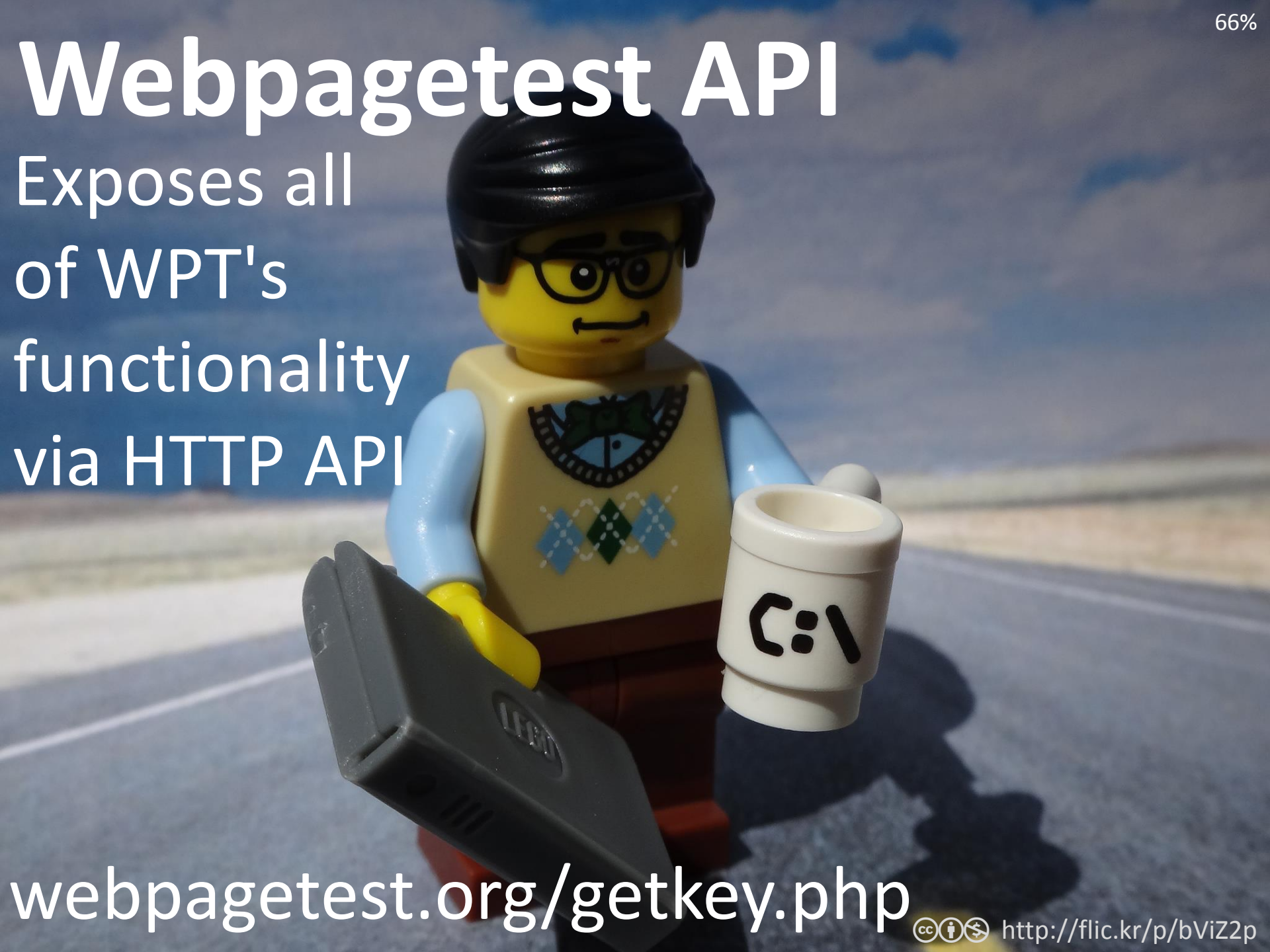
“Speed Index”

- New metric defined by WPT
- **Provides an excellent representation of the User Experience**
- Aggregates the visual completeness score of all frames into 1 final score

Source: http://goo.gl/kJF9JU

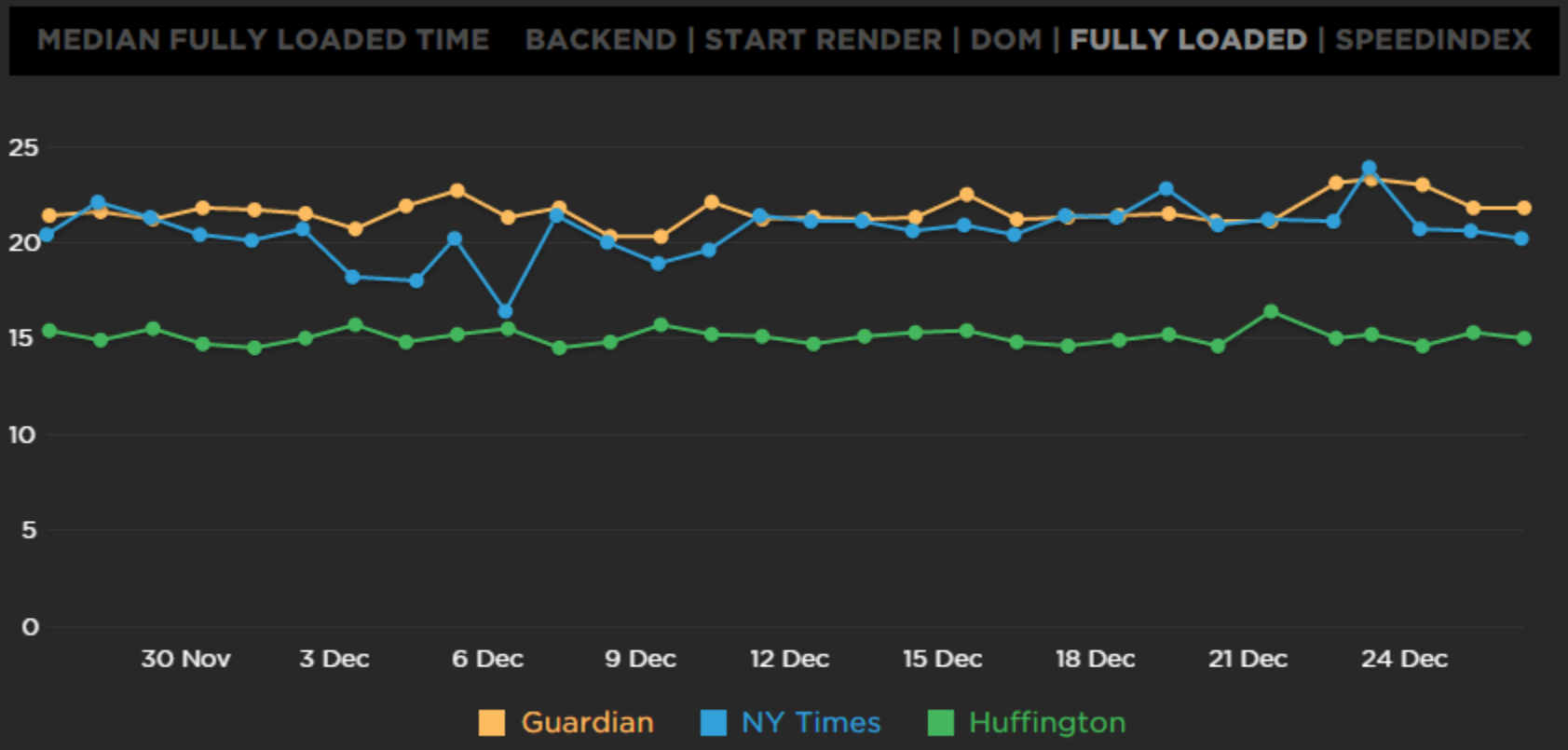
Webpagetest API

Exposes all of WPT's functionality via HTTP API



webpagetest.org/getkey.php

SpeedCurve



speedcurve.com

RUM

Real User Monitoring

Poor Man's RUM

```
var startDate = new Date().getTime();
$(window).on('load', function() {
 var endDate = new Date().getTime();
 var diff = endDate - startDate;
  $.ajax('/-/my-rum-endpoint', {
   url: window.location.href,
   pageLoad: diff
  });
});
```

3rd party

Open source

YAHOO!
Boomerang

HubSpot
Bucky

Commercial

catchpoint

keynote

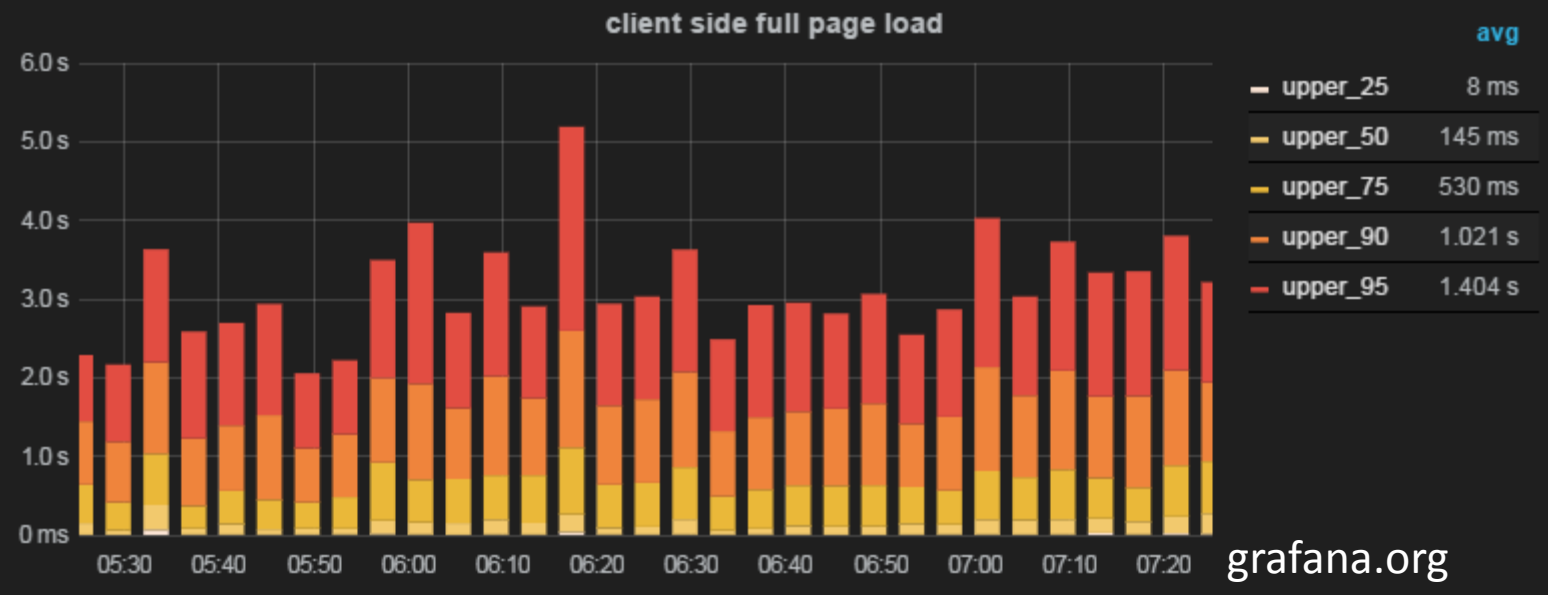
New Relic

SOASTA

pingdom

Do It Yourself

```
$(window).on('load', function() {
 var pageName = $('body').attr('id');
 var t = window.performance.timing;
 var diff = t.loadEventStart - t.navigationStart;
 var url = baseUrl + '?' + pageName + '=' diff;
 new Image().src = url;
});
```



grafana.org

Timing Browser APIs

- New browser APIs
  - Navigation timing
  - Resource Timing
  - User Timing
    measure custom events with
    `performance.mark("task1")`
- `navigationStart`
  is the **real** navigation start

Spec: http://goo.gl/c79glK

Synthetic & RUM

Page metrics & Speed Index & Custom events

Approach “Light Speed” !

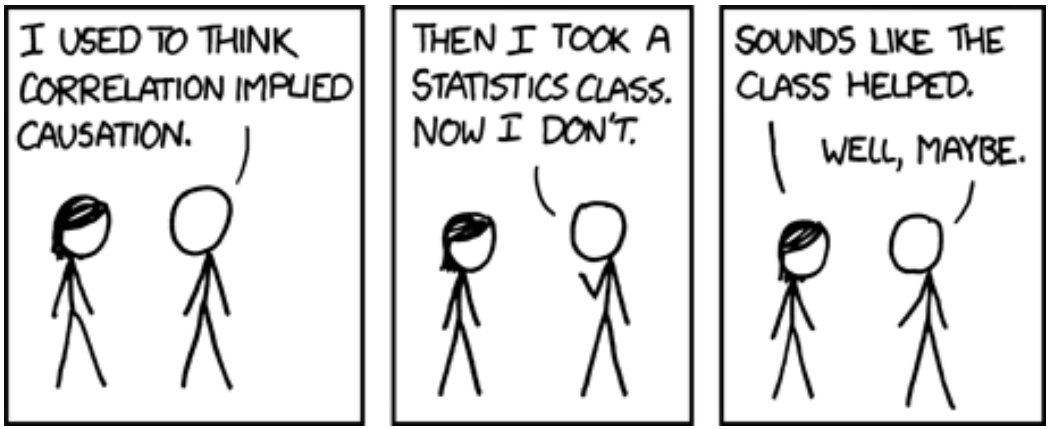
- Calculate your page’s “Light Speed”: The fastest possible speed at which you can serve your UX
- Approach Light Speed

Existing project:

New project:

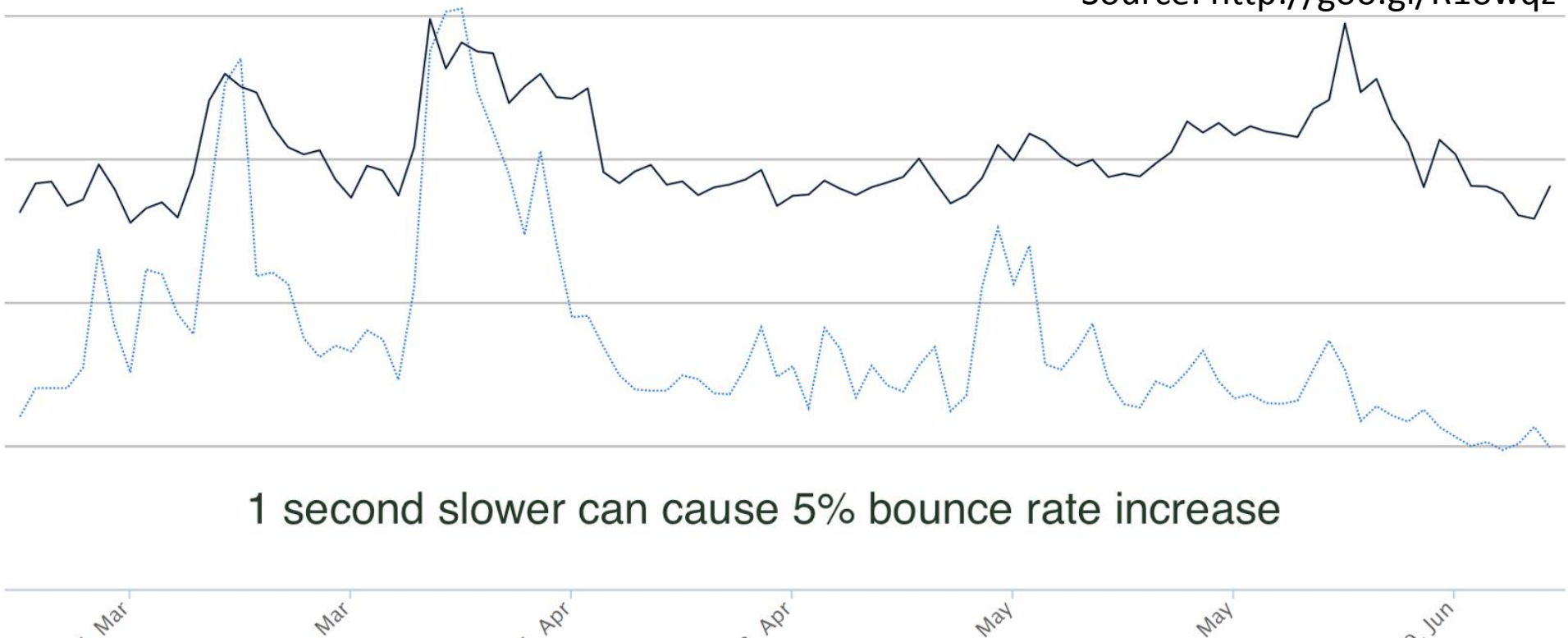
“Light Speed” coined by Tony Gentilcore http://goo.gl/B6ePS2

Correlation



xkcd.com/552

Source: http://goo.gl/R1owqz



In the future…

Analyzing & improving


100%
Riddles?
now or on
twitter
@cowchimp
http://flic.kr/p/kVkLHU