

Web Technologies

2016



Agenda

How We Got Here?

What Can We Do?

Where Are We Going?

The Old Web 1996-1997

The screenshot shows the AltaVista search engine homepage. At the top, the AltaVista logo is displayed with the tagline "Technology, Inc." Below the logo is a banner with the text "View Multimedia From Our Vantage Point". A blue link below the banner reads "Click here for advertising information - reach millions every month!". The main search interface features a search bar with the placeholder text "Search the Web" followed by a plus sign and "Display the Results in Standard Form". To the right of the search bar is a "Submit" button. Below the search bar, a link says "Search with Digital's Alta Vista [Advanced Search]". There is also a box containing a pencil icon and the text "Add your URL to the most popular Search Engines". At the bottom of the page, there are three promotional boxes: "Free Software" (with a download link), "Contests" (with a laugh icon), and "Creative Web" (with a star icon). Two "FREE WEB SITES!" banners are positioned at the very bottom.

The screenshot shows the homepage of the Jaffa Hebrew Learning website. At the top right, there's a large orange fruit with a green stem and leaf. To its left, the word "אשונב" (Ashonb) is written in blue, with a red outline around the 'א' and 'ו'. Above that, the text "עוד פרויקט של" (Another project by) is in black. Below the orange, the word "תפוז" (Tfuz) is written in large, stylized orange letters. Underneath "תפוז", the text "האנדרטם הראשון של אתריות עבריות" (The first monument to Hebrew websites) is displayed. In the center, there's a large orange button with the word "מאות אתריות אינטראקטיביות" (Hundreds of interactive websites) in white. Below this button, another orange button says "קסלוון מפותח של כל המאתרים בעלי תוכן עברי" (A developed ksalown of all Hebrew websites). On the left side, there are three smaller boxes: one for "מתכונים" (Recipes) with "Jaffa" and "לחץ כאן" (Click here), one for "אתר אינטרנט" (Website) with "משלך!" (Connect!) and "לחץ כאן", and one for "כrown" with a small crown icon.



Massachusetts Institute of Technology

MIT is an independent, coeducational university located in Cambridge, Massachusetts. For more information, see the MIT Student Information Processing Board's [SIPB WWW Server](#).

[Spotlight: Spring 1997 HASS Guide](#)

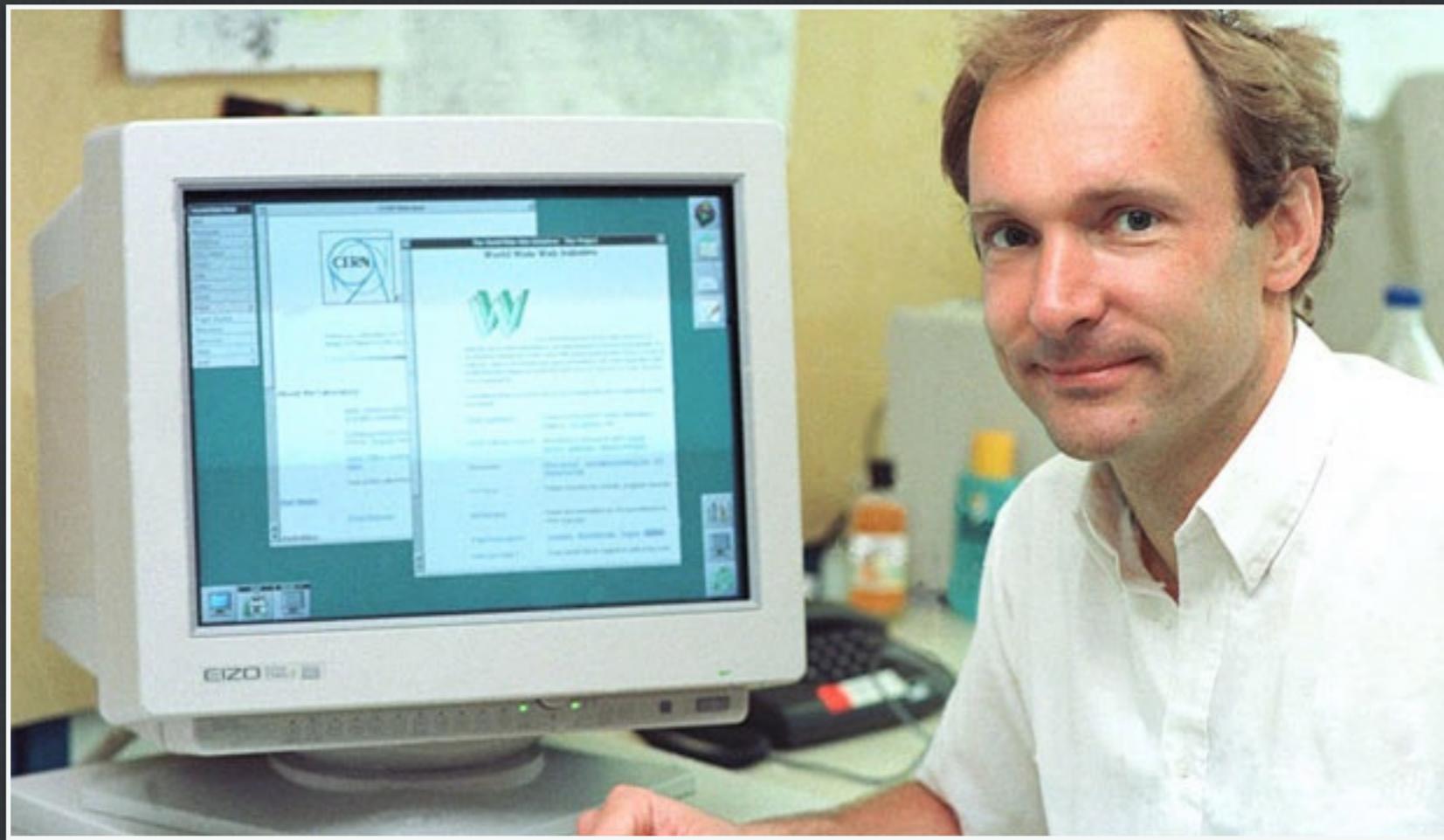
But Now...

- Everything's changed
- Focuses on Apps

Let's See Some Demos

- <https://drive.google.com/drive/#>
- <http://hexgl.bkcore.com/>
- <http://www.adityaravishankar.com/projects/games/command-and-conquer/>
- <http://developer.kaazing.com/portfolio/second-screen-application/>

Say Hi To Tim Berners-Lee



“I found it frustrating that in those days, there was different information on different computers, but you had to log on to different computers to get at it.”

-Tim Berners-Lee

Before HTTP

```
Internet Gopher Information Client v2.1.-1

Suomen gopherit (finnish)

1. ----- Suomen Gopherit, Finnish Gophers -----
2. Finnish University and Research Network, FUNET/
3. Svenska Handelsh|gskolan (Hanken)/
4. Teknillinen Korkeakoulu, TKY/
5. Teknillinen Korkeakoulu/
6. Helsingin Kauppatieteiden Korkeakoulu/
--> 7. Helsingin Yliopisto/
8. Joensuun Yliopisto/
9. Jyv{skyl{n Yliopisto/
10. Kuopion Yliopisto/
11. Lapin Yliopisto/
12. Lappeenrannan Teknillinen Korkeakoulu/
13. Oulun Teknillinen Oppilaitos/
14. Oulun Yliopisto/
15. Tampereen Teknillinen Korkeakoulu/
16. Tampereen Yliopisto/
17. Turun yliopisto/
18. Valtion Teknillinen Tutkimuskeskus (VTT)/

Press ? for Help, # to Quit, U to go up a menu      living Directory...
```

Ideas Glued Together

- A single format for research documents named HTML
- A new communication protocol named HTTP
- A software to display and write HTML pages

How It Works

- What happens when you click on a link?
- <http://s.codepen.io/ynonp/debug/oxNrRv>

HTTP Protocol

Client



Server



GET Data

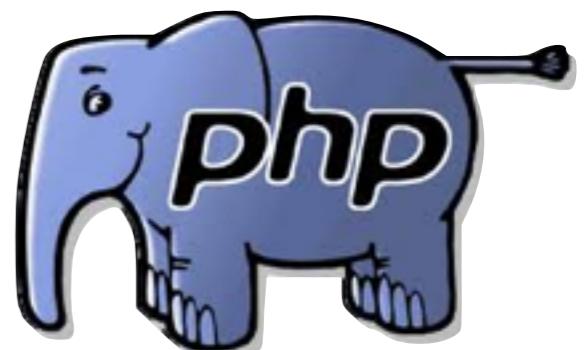
Send Response

Server Side

Creates data and sends back to client

Data can be: HTML, JSON, XML, Images and more

Choose your flavour



Client Side

Web browser takes data
and renders on screen

Browsers: IE, Firefox,
Chrome, Safari

Languages: JavaScript,
ActionScript, Java
(Applets)



Data In HTTP Packet

- Query
- Headers
- Content

Query String Parameters

- <https://duckduckgo.com/?q=ducks>
- Demo:
<https://codepicnic.com/consoles/rails-server-demo>

HTTP Cookies

- Little pieces of data saved in the browser and sent to the server with every request
- Used for:
 - Identification
 - Tracking
 - Sessions

Sessions

- Secret index in cookie, Data on server
- Encrypted data in cookie
- Demo

Slow Start

- 1991 first website
- 1992 only 26 websites

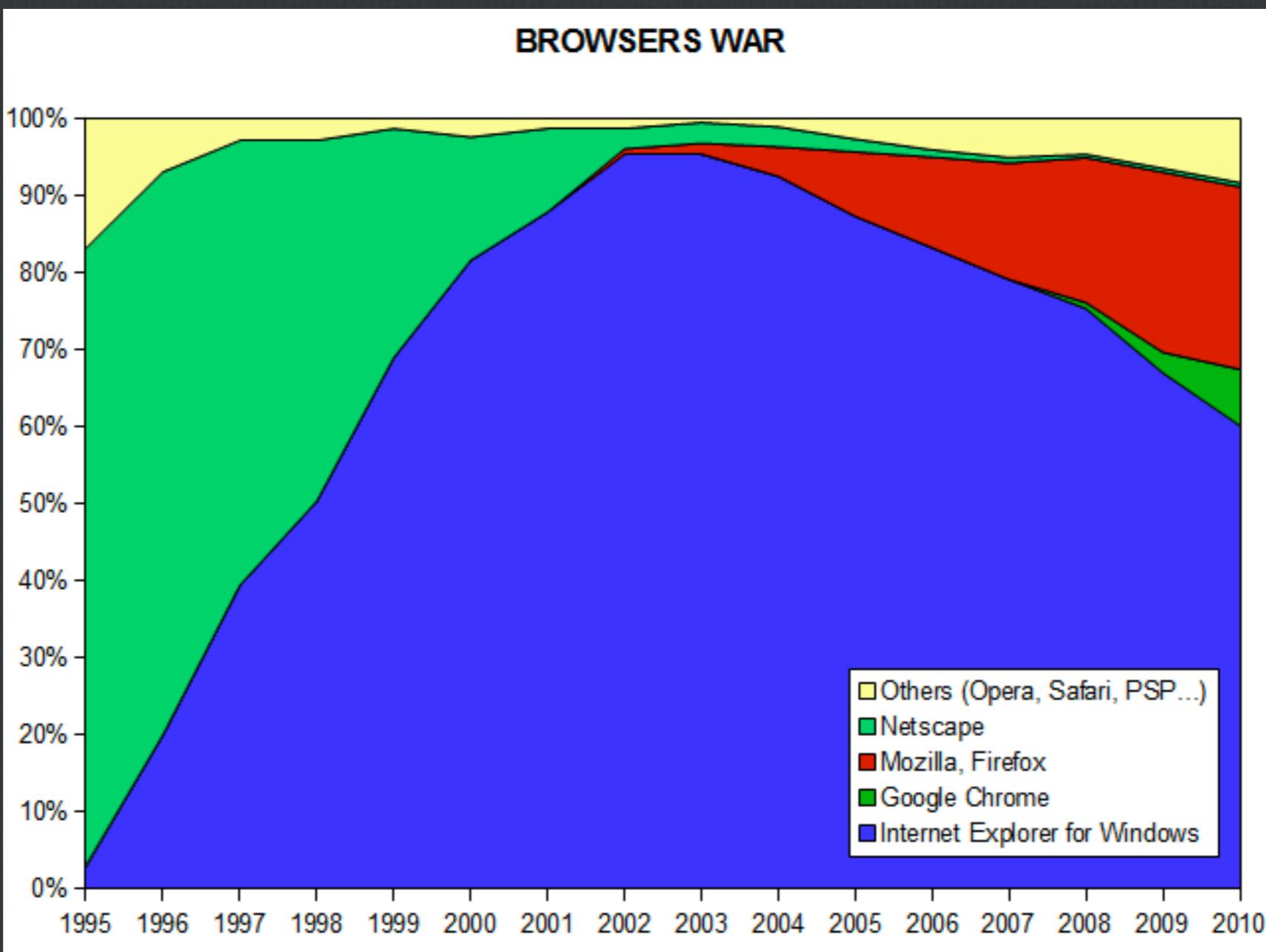
Netscape Revolution



Dynamic HTML with JS



- 1995 Brendan Eich joins Netscape to build interactivity into the web
- 1996 MS answers with their own JScript



JS Survives

- Outlived Java Applets



JS Survives

- Outlived Flash



JS Survives

- Outlived Silverlight



Demo: HTML, JavaScript and CSS

CSS

JS

Video

Img

CSS

JS

Video

Img

CSS

HTML

HTML

- Used to describe web documents
- Every web page starts there

1991 HTML1

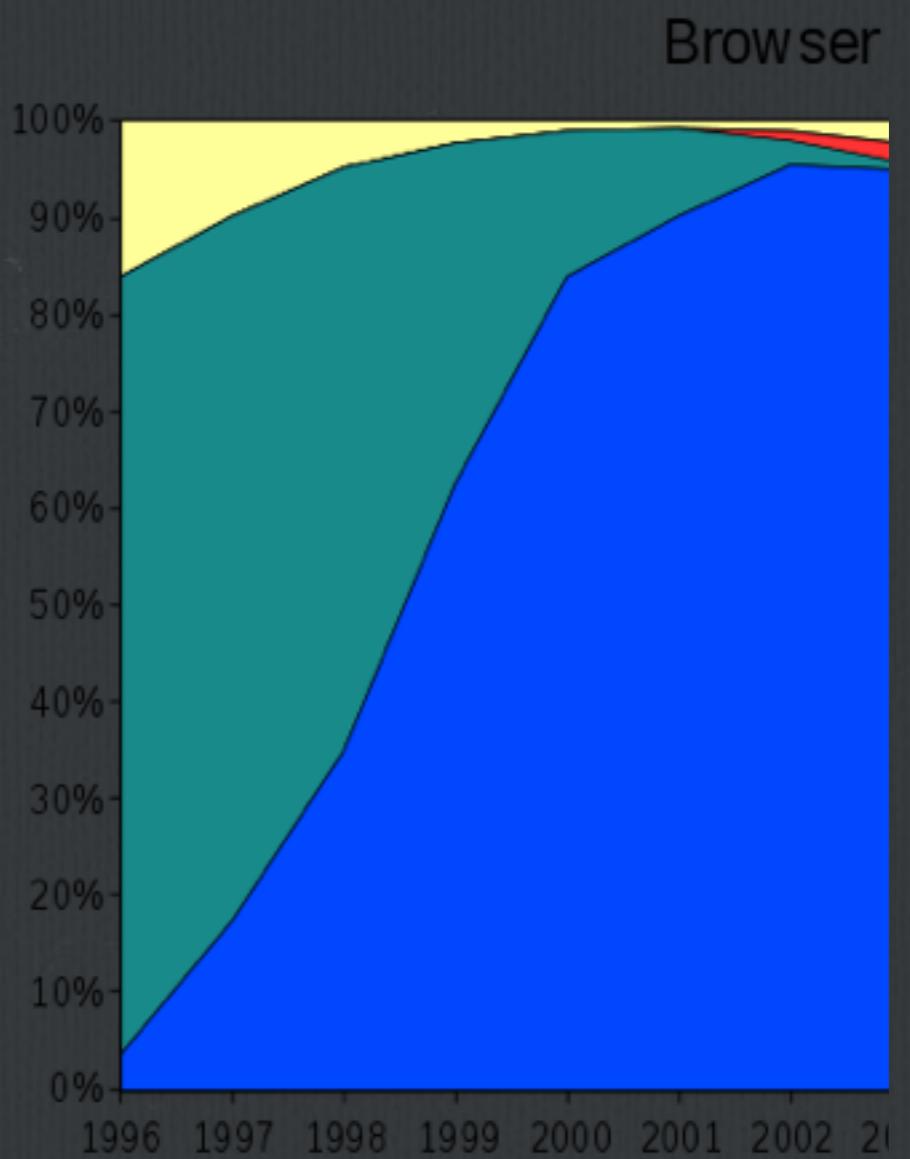
- Described in a document called “HTML Tags”
- Included 20 elements
- Influenced by SGML

1995 HTML2

- One year after Netscape was founded
- Forms
- Tables
- Image Maps

1997 HTML3

- Dropping Netscape's
blink and MS marquee
- On the right:
Blue - IE
Light green - Netscape



After The Browser Wars



- 1999 HTML4
- W3C starts to work on XHTML, MathML, SVG and others XML based technologies
- HTML is considered finished

CSS

- 1996 CSS1
- 1998 CSS2
- 2011 CSS2.1
- CSS3 + 4 are modular

JavaScript

- 1997 ES1
- 1998 ES2
- 1999 ES3
- 2009 ES5
- 2015 ES6

“We aimed to provide a glue language for the Web designers and part time programmers”

–Brendan Eich

HTML5 History

- 2004 WhatWG
- Web Hypertext Application Technology Working Group

HTML5 Timeline

- 1999 HTML4
- 2009 W3C closes XHTML
- 2014 HTML5 is marked W3C Recommendation

What's it all about?

- Web Storage
- Geolocation
- Web SQL
- Device Orientation
- Application Cache
- Forms
- Web Workers
- Audio & Video
- Web Sockets
- Canvas
- Desktop Notifications
- Web GL
- Drag & Drop
- History API
- File System API
- And More...

Demo Time

- <https://webcamtoy.com/>
- <http://browserquest.mozilla.org/>
- <https://www.google.com/maps>
- https://images.google.com/?gws_rd=ssl
- <http://www.waves.com/plugins>

The Change: 2007-

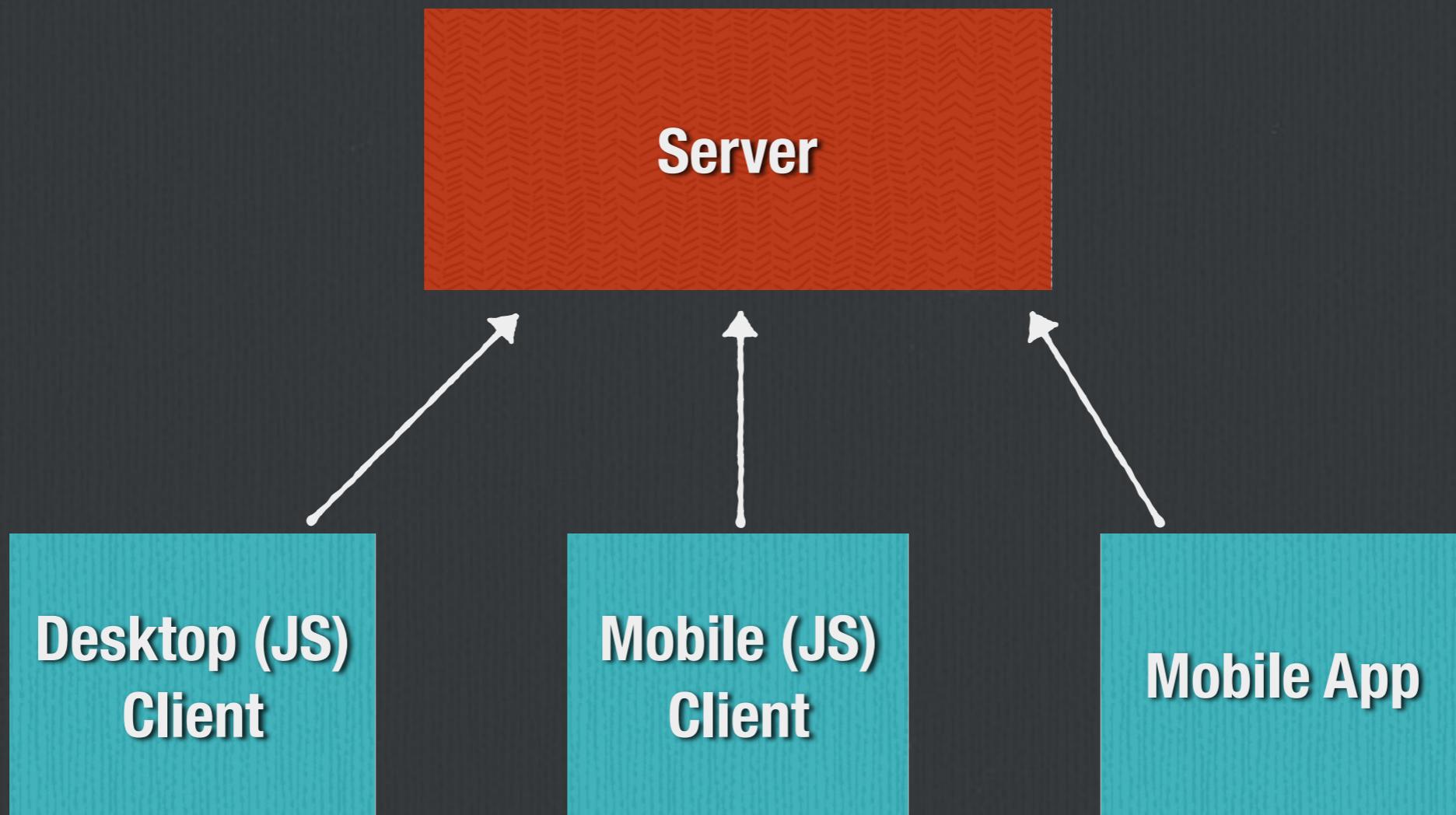


This Is The Web



- A Brad Frost concept

Web APIs



Demo Time

- Server side code rendering “normal” HTML
- Server side code returning JSON API and rendering client-side:
<http://codepen.io/ynonp/pen/dMPPQN>

Cross Origin Communication

Origin

<https://duckduckgo.com/about>

The Danger

Honest User



Evil Site



The Bank

Protecting Users

- To protect users, cross origin reads are not allowed
- Web APIs use the special HTTP header:
 - Access-Control-Allow-Origin

Thanks For Listening

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