Trends in HTML5

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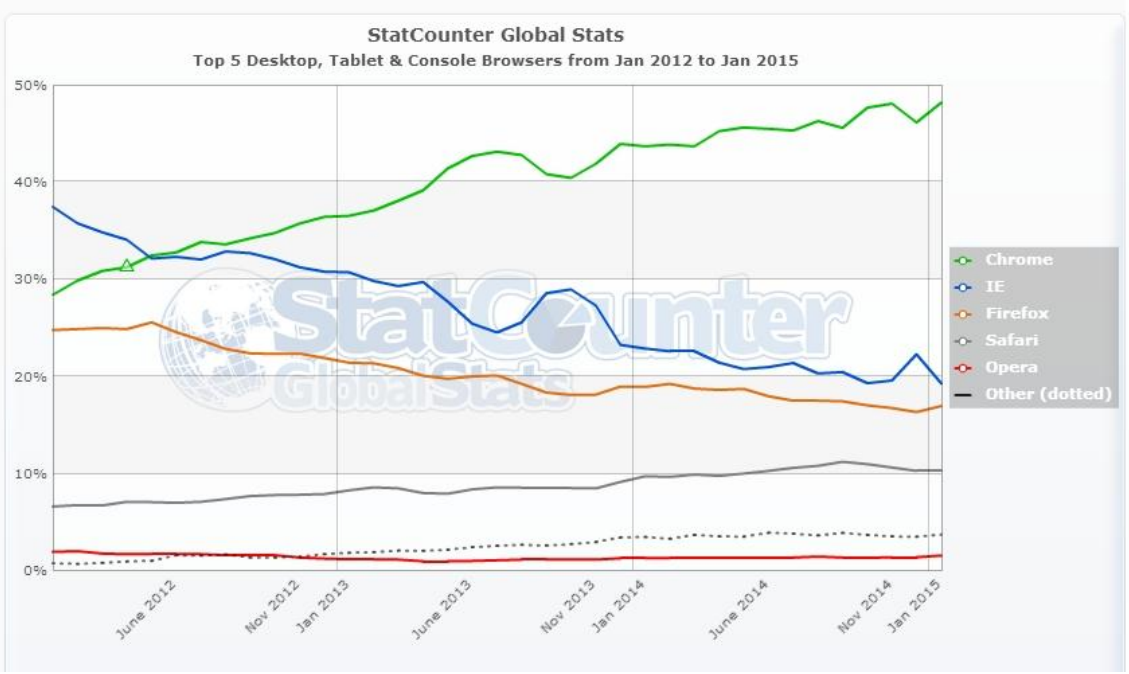
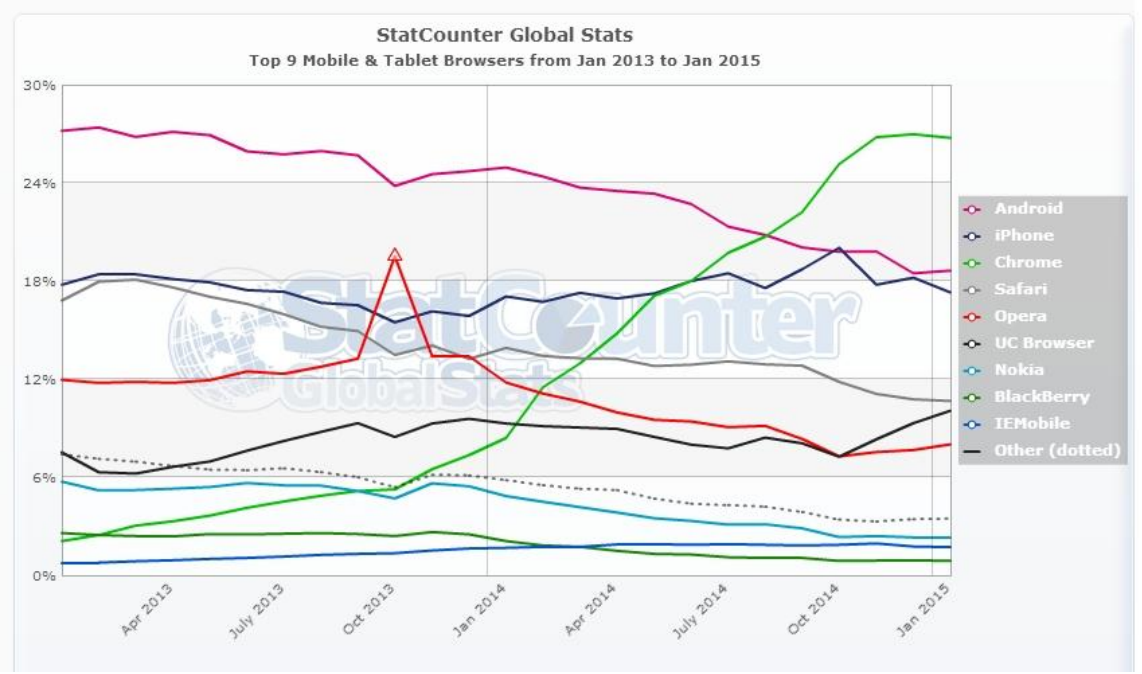
Where to focus?

Chrome is the worlds leading browser - by a large margin





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Chrome or Chromium, what's the difference

- Chromium is an open source browser
- Open governance
- http://www.chromium.org/Home
- All key development happens here

- Chrome built on Chromium
- Google added 'magic sauce'
  - Single signon
  - Global history
  - …

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The flavours of Chrome

Chrome Canary

- Daily release
- Experimental features
- Latest developer tools

Chrome Beta

- Weekly release
- Maturing features

Chrome

- 6 weekly release
- Mature features

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Chrome architecture

The 60,000ft view

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HTML5 Ratified ……. finally!

After 7 years of development, the HTML5 specification was ratified on 28th October '14

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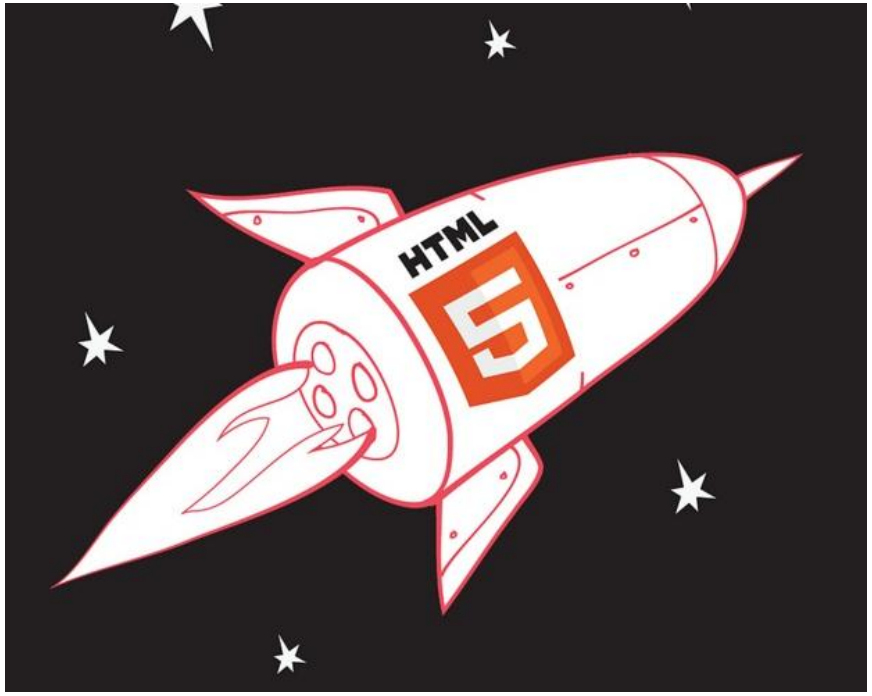

Over 22 new Semantic element, 3 new Form elements, 29 new input types

2 new Graphics Elements, 5 new Media elements, plus lots more!

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HTML5 Ratified …….

But the platform has not finished evolving

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Web Facing changes

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Web Components

http://webcomponents.org/

- A core problem of HTML5 is Modularity
  - I can't implement a 'tile' and import the functionality into my page
  - I can't control how the main page styling affects my 'tile'
- Luckily web-components comes to save the day

- HTML Imports (http://www.w3.org/TR/html-imports/)
  - Allows me to import HTML into my document
- Templates (http://www.w3.org/TR/html-templates/)
  - Allows definition of template HTML content
- Custom Elements (http://www.w3.org/TR/custom-elements/)
  - Allows me to define a custom <my-element> style tag
- Shadow DOM (http://www.w3.org/TR/shadow-dom/)
  - Allows hiding content and styling from the rest of the page

Web Components - in action

Using the Polymer Polyfill for Web Components

index.html

```
… snip boilerplate …

<link rel="import" href="my-comp.html">

<my-comp></my-comp>
```

my-comp.html

```
<polymer-element name='my-comp'>
    <style>
        <!-- component specific styling -->
    </style>
    <template>
        <!-- component template -->
    </template>
    <script>
        <!-- components scripts (optional) -->
    </script>
</polymer-element>
```


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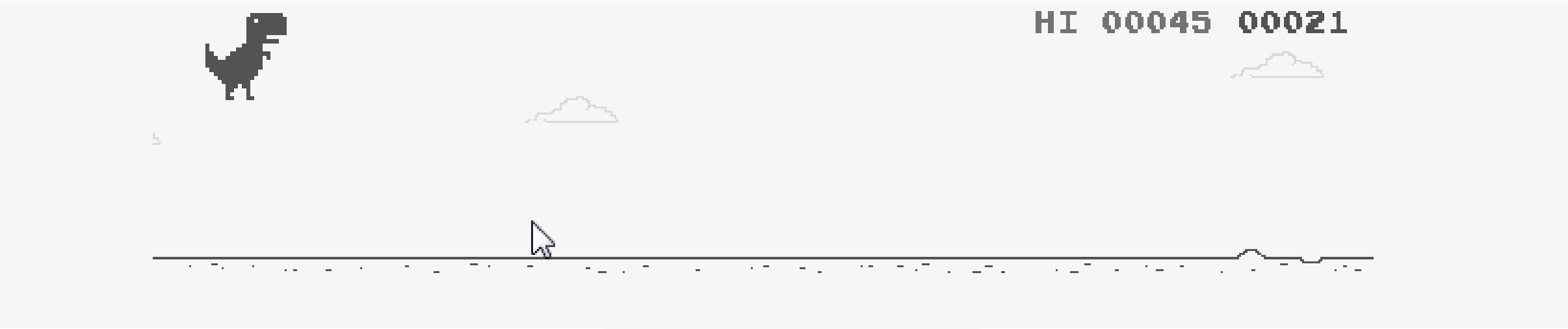
Service Workers

https://github.com/slightlyoff/ServiceWorker

- Creating HTML apps has an inherent problem
  - "How can I function when I am offline?"



- This does not create a compelling offline offering - it does not act like a native app

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Service Workers - in action

https://github.com/w3c-webmob/ServiceWorkersDemos

- Service workers allow you to define a script that
  - Runs off the main browser thread
  - Has a lifecycle that is independent of the page that initiates it
  - Can intercept any HTTP request for the domain that served it

- Service Workers can make use of the following new technology
  - Caches (https://slightlyoff.github.io/ServiceWorker/spec/service_worker/#cache-objects)
  - Push Notifications (http://w3c.github.io/push-api/)
  - Background Sync (https://github.com/slightlyoff/BackgroundSync)
  - Geofencing (https://github.com/slightlyoff/Geofencing)

- By using these technologies, HTML app developers can create a truly native experience

https://github.com/w3c-webmob/ServiceWorkersDemos

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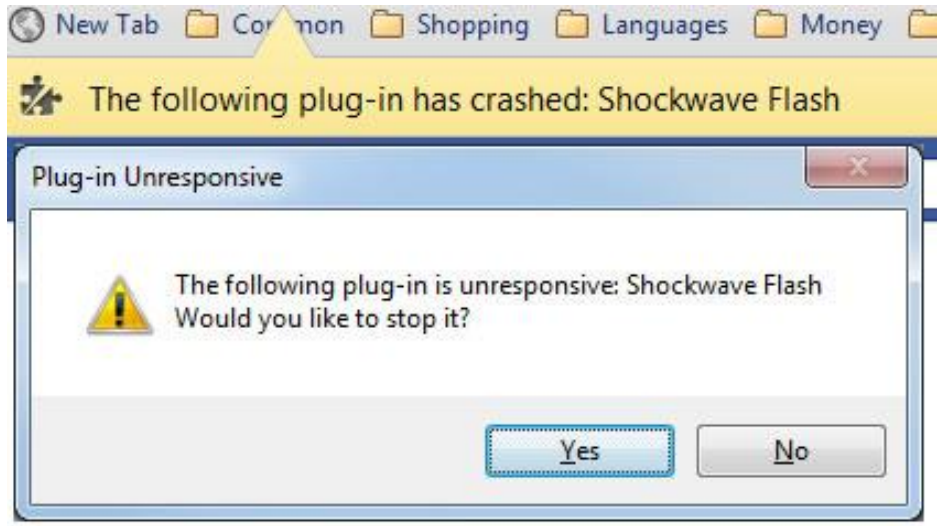
No more Browser Plugins!

- Browser plugins - Java, Flash, Silverlight, … have always been a weak attack surface
- All browser vendors have stated that they will deprecate support for plugins



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Unbundled Android WebView

- WebView is no longer a part of the base Android Platform
- Can be updated independently of the OS
- Chrome, WebView and Blink codebases are being unified
  - WebView will be released on the same 6 week cadence as Chrome
  - WebView will pull in all the new API's
  - WebView will pull in all the performance enhancements
- The net result is a constantly improving, evolving mobile Web Application platform

Cool tech on the horizon

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WebVR

https://github.com/MozVR/webvr-spec

- Goal
  - Create a VR capable platform for the web
- Benefits
  - Target modern VR capable devices directly from the browser
  - Allows true cross platform VR development
- Why of interest
  - Streamlining of the web platform to reduce input latency
  - This will increase the browsers performance for all content
  - Allows direct access to GPU acceleration, much like WebGL

WebGL 2

https://www.khronos.org/registry/webgl/specs/latest/2.0/

- Goal
  - Bring modern Khronos API's to the web platform
- Benefits
  - Allows OpenGL ES 3.0 content to be created for the web
  - Allows Compute Shaders plus other aspects of GLES 3.1 to be exposed through extensions
  - Will allow easier transition of premium game content to be translated over to the web
- Why of interest
  - Should allow application engineers to create more efficient GLES based content for the web
  - Should result in better performance and lower power consumption on modern GPUs

HTTP/2

https://tools.ietf.org/html/rfc7540

- Goal
  - Increase the speed and security of website access
- Benefits
  - Servers can 'push' content to clients, reducing the number of connection requests
  - Allow multiplexing of requests and responses to minimise client blocking on requests
  - Increased security - Firefox and Chrome will only support HTTP/2 over https:// connection
- Why of interest
  - Reduced network chatter will increase mobile performance
  - Increased security will make use of ARM crypto engine which is standard with 64bit architectures
  - Will help to make the web a more mobile/embedded friendly environment

Thank You