

# Microsoft Edge, a break from the past

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Senior Program Manager  
@davrous



# Agenda



Why a new engine?

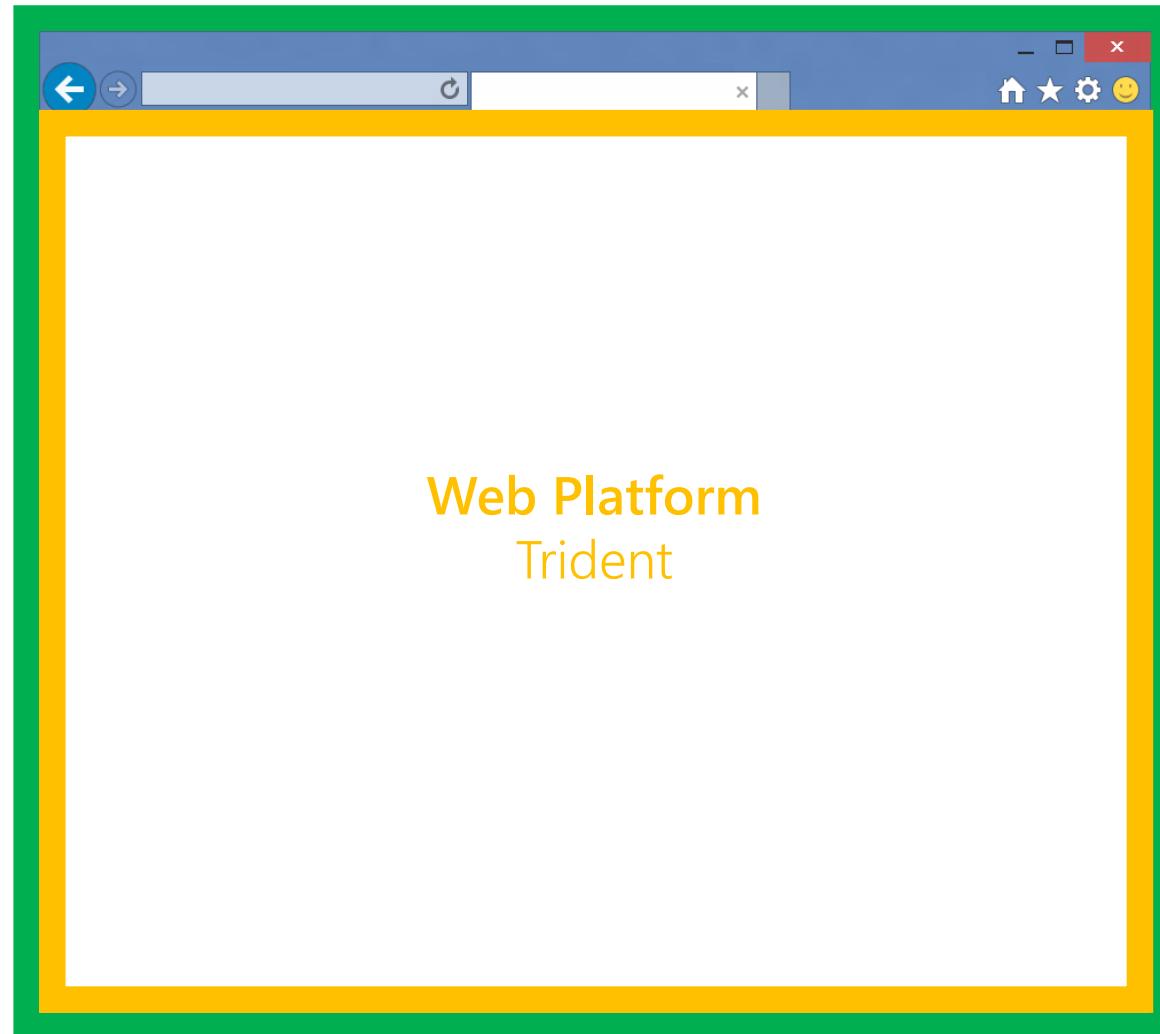
Modern web interoperability

New features

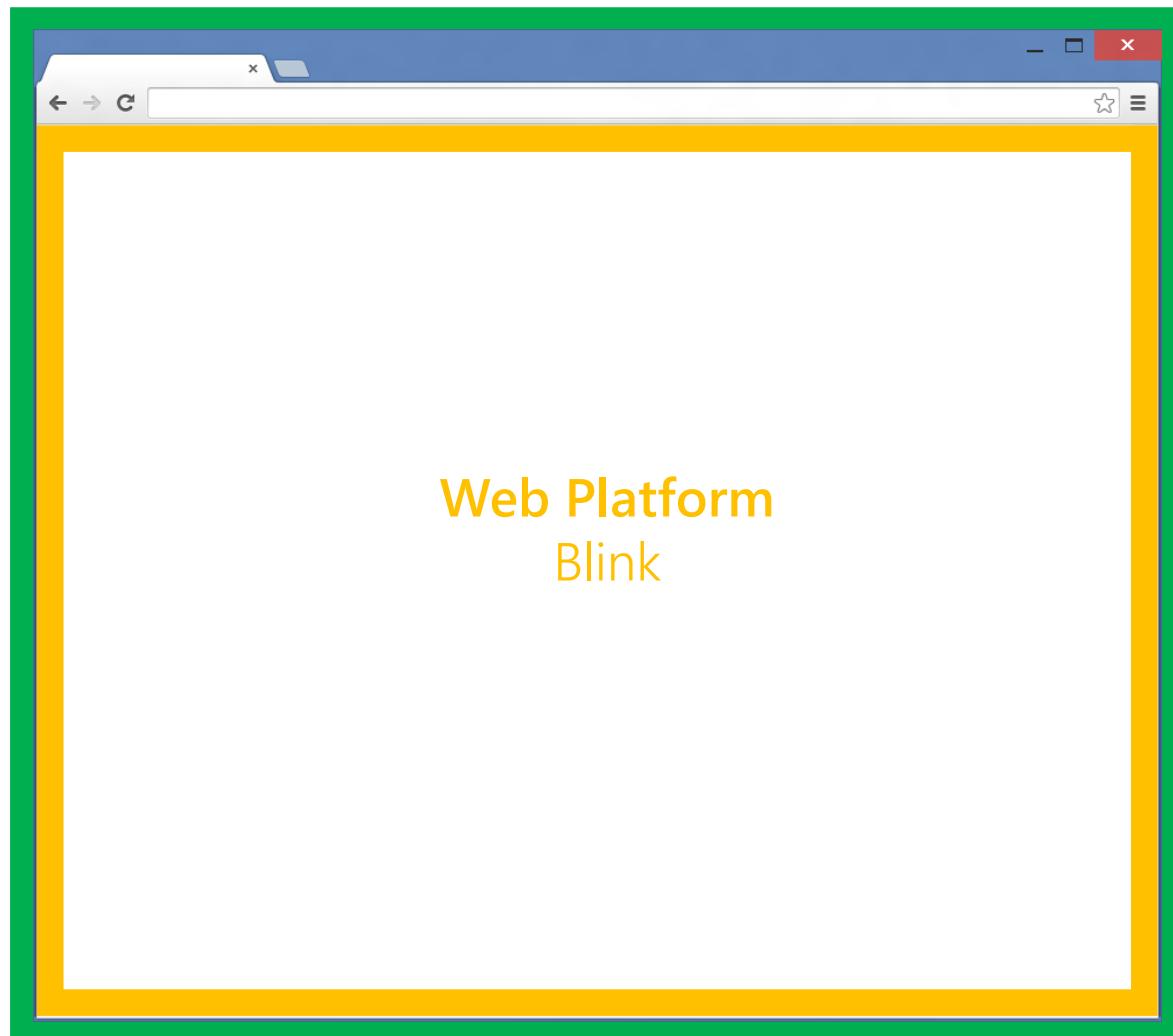
# A fork from the past



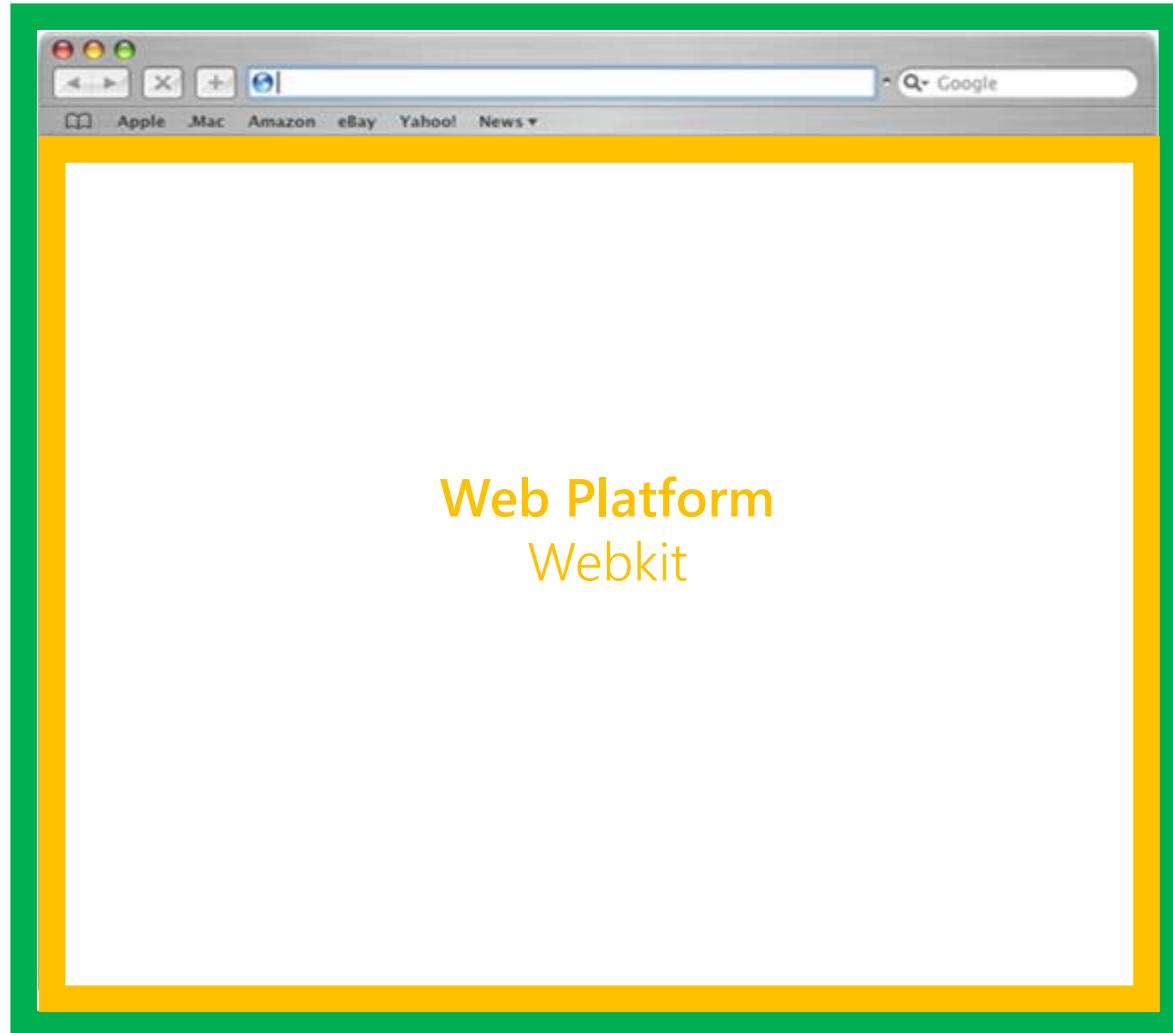
**Browser**  
Internet Explorer



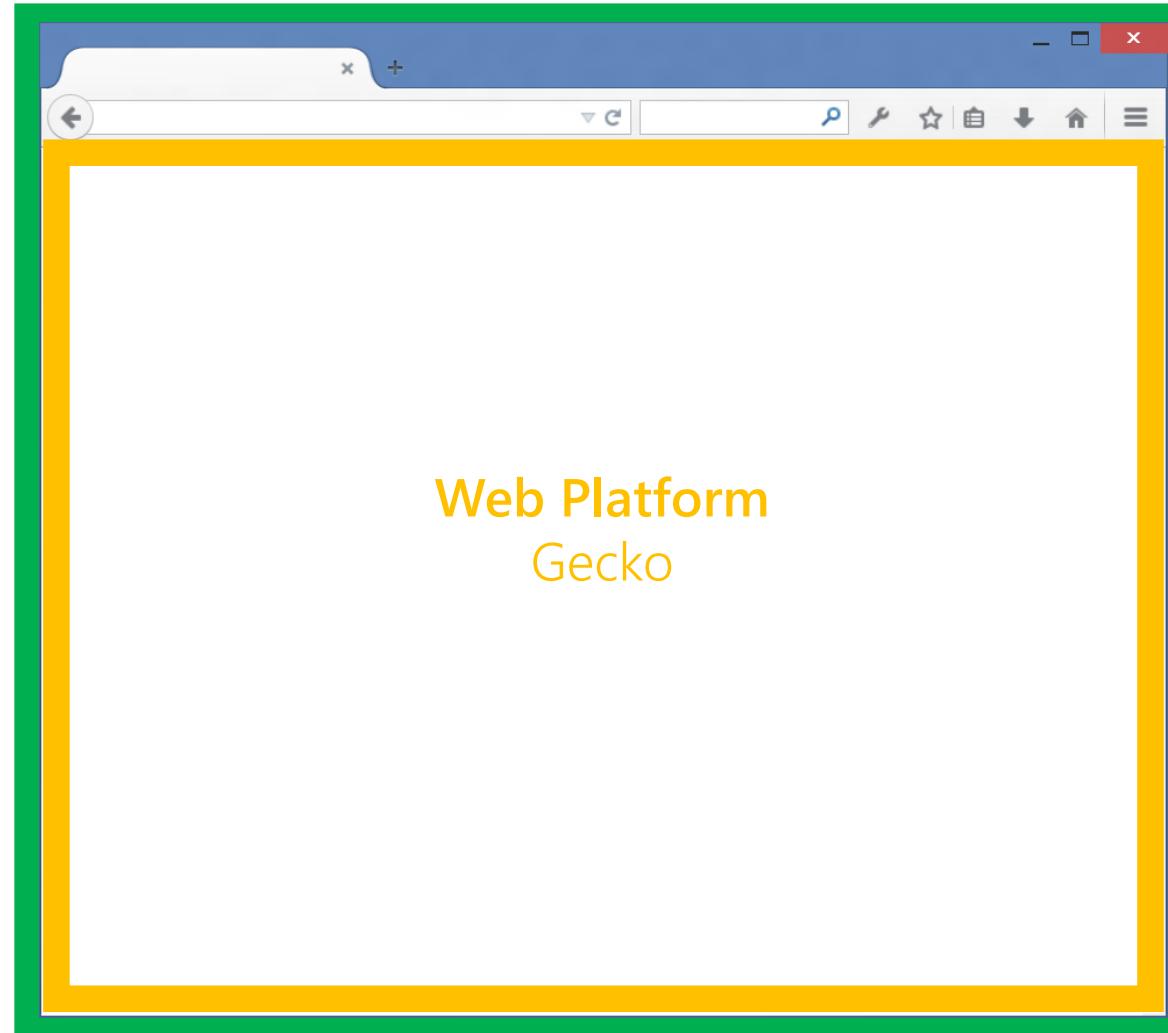
**Browser**  
Chrome



**Browser**  
Safari



**Browser**  
Firefox



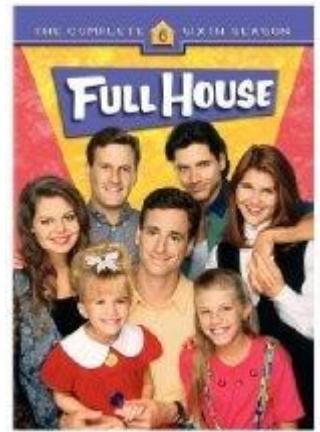
1995

2015



Trident

1995 was 20 years ago...



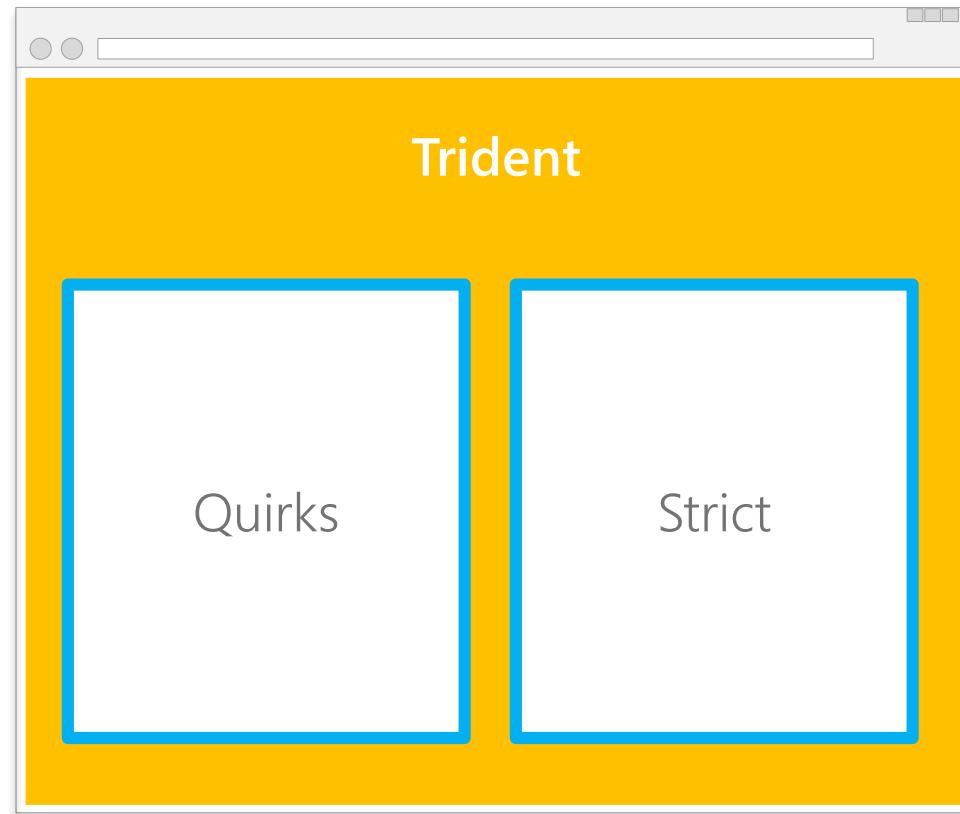
## HTML4, ES3, CSS2

1995

2015



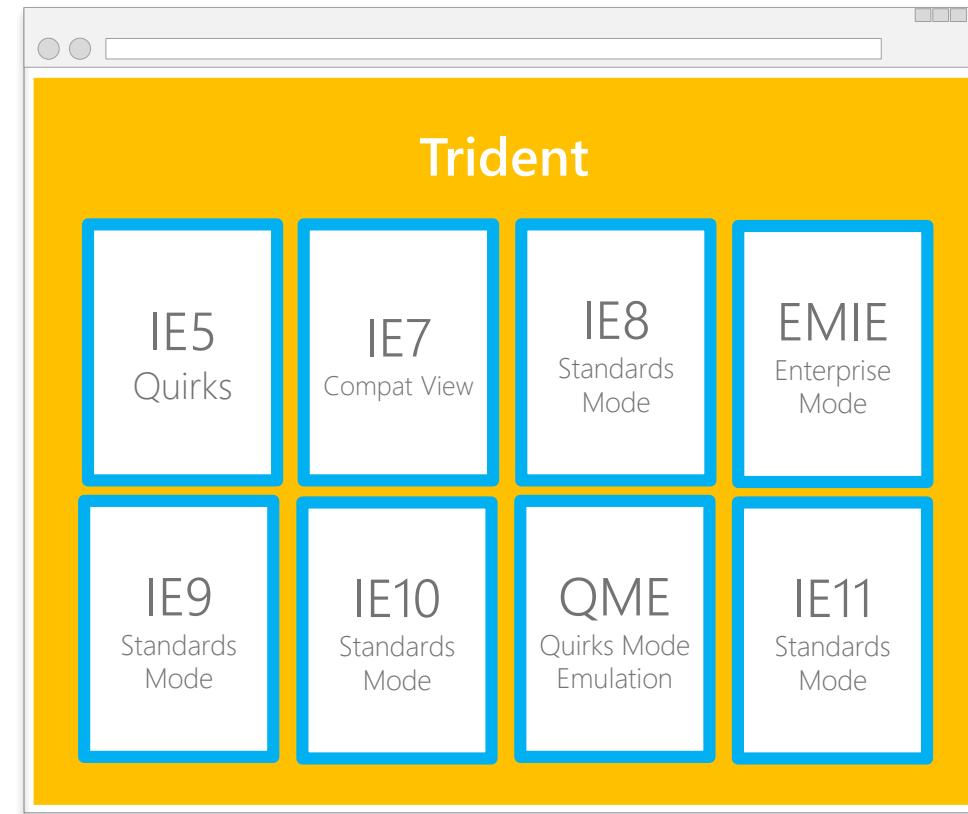
!DOCTYPE



1995



!DOCTYPE  
x-ua-compatible



Always up-to-date  
Update frequently  
Single doc model



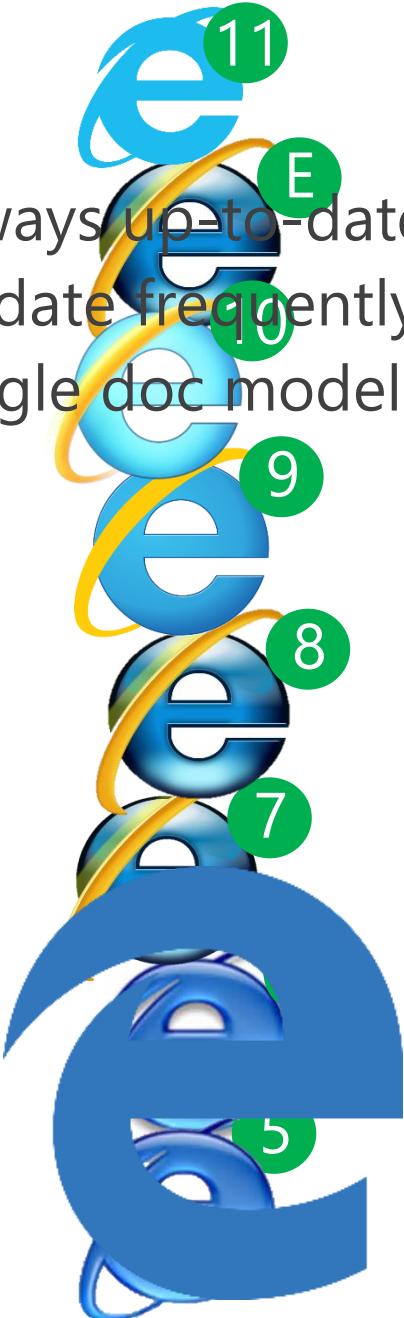
Always up-to-date  
Update frequently  
Single doc model



Ever Green Engine  
Update frequently  
Single doc model



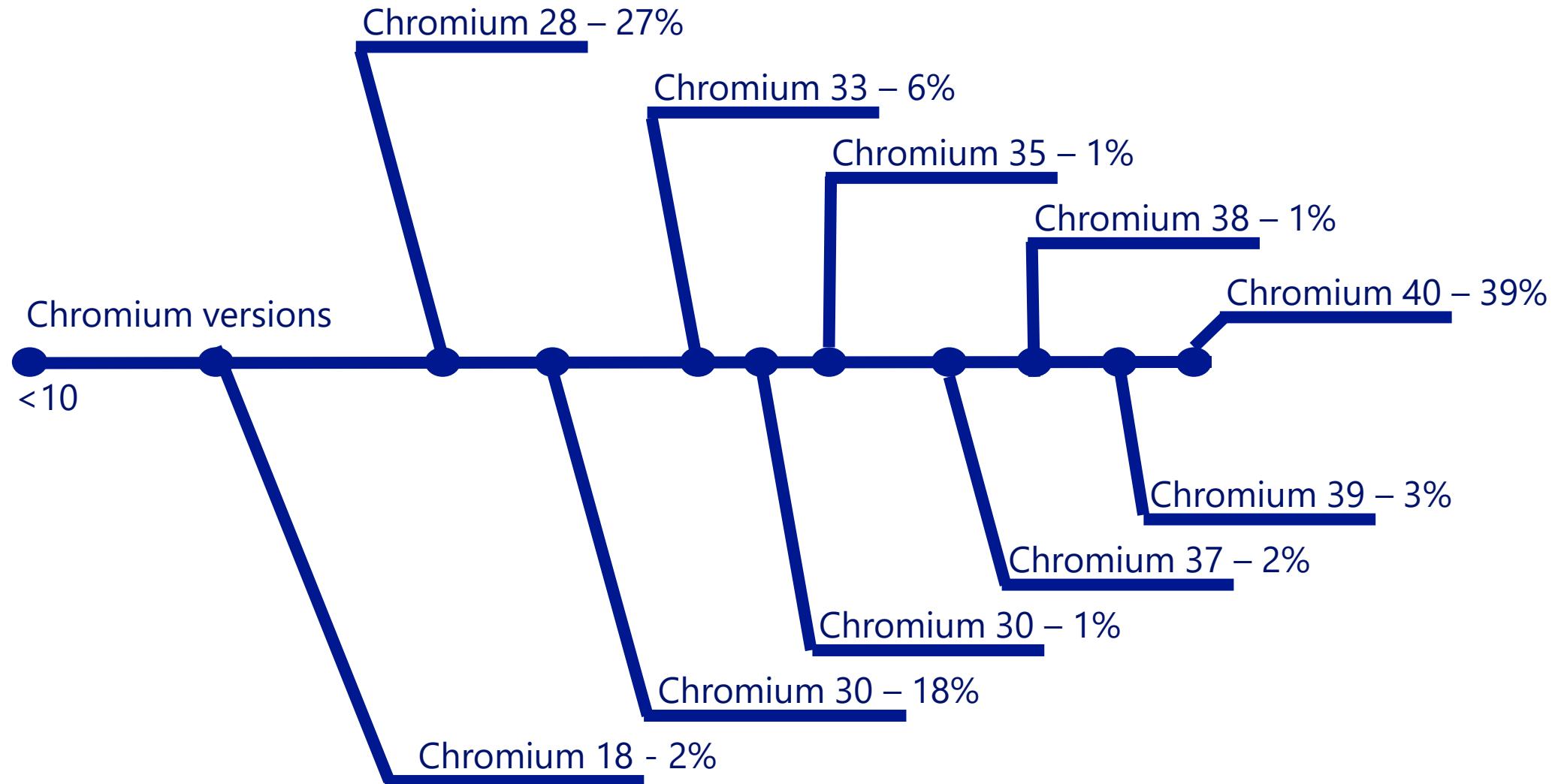
Always up-to-date  
Update frequently  
Single doc model



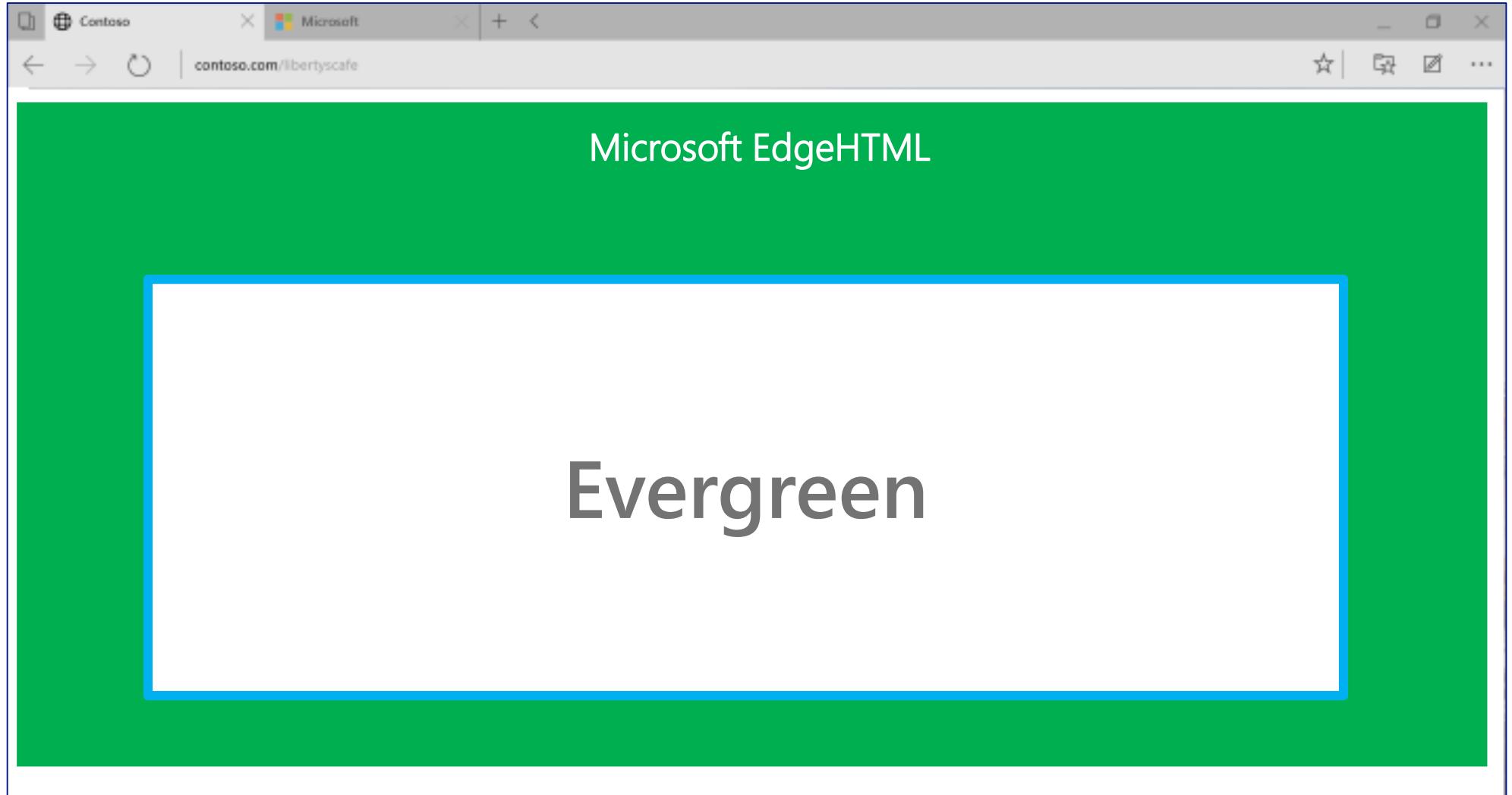
Ever Green Engine  
Update frequently  
Single doc model



# Mobile Chromium usage across forks



# Microsoft Edge



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10-YR BOND 2.51% -0.02 ▼ -0.71% ▼

Quote Lookup

**JUST POSTED**

Yeah, LeBron James Totally Won Free Agency 2:33 PM ET

Glass Door Knob Starts a House Fire Because Everything Is Terrible 2:29 PM ET

Texas Shooting Suspect Passes Out in First Court Appearance 2:12 PM ET

Career Lessons from LeBron James and Carmelo Anthony 2:07 PM ET

LeBron's Decision Sets Off Tweets of Congratulations and Wizard of Oz Puns 1:55 PM ET

Ask me anything

**THE BRIEF**

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Quote Lookup

**JUST POSTED**

WATCH: Brazilian Women's Love/Hate Relationship With World Cup Tourists 8:00 AM ET

This Map Shows Where Gas is Taxed the Most 6:04 PM ET

Kerry Arrives in Afghanistan to Meet Candidates 4:00 PM ET

U.S. Spy Scandal in Germany Is Music to Putin's Ears 3:00 PM ET

The Emmy Nominations and Other Fascinating News on the Web 2:36 PM ET

Girl 'Dress' of MTV Has Retracted 2:31 PM ET

**When They Fight, Putin Wins**

New accusations of U.S. spying have widened the rift between President Barack Obama and German Chancellor Angela Merkel, and it couldn't come at a better time for Russia.

**TIME** WORLD WAR ZERO

World War Zero: How Hard Will It Be to Fight to Your Side? Read more

**IN THE MAGAZINE**

**Lebron's going home**

Jose Antonio Vargas, a Pulitzer-Prize winning journalist who became a prominent immigration activist after openly admitting his undocumented status, was detained by border patrol agents at a Texas airport on Tuesday as he attempted to board a flight.

\* Jose Antonio Vargas: TIME Cover Story: Not Legal  
\* Not Leaving  
\* Return to Murder City  
\* Pope Francis: Protect Child Migrants to U.S.

time.com

# Interoperability: a new approach



“The web should just work for everyone  
– users, developers, and businesses.”

# The web is on a wider variety of devices than ever



The dream: Write once, run anywhere

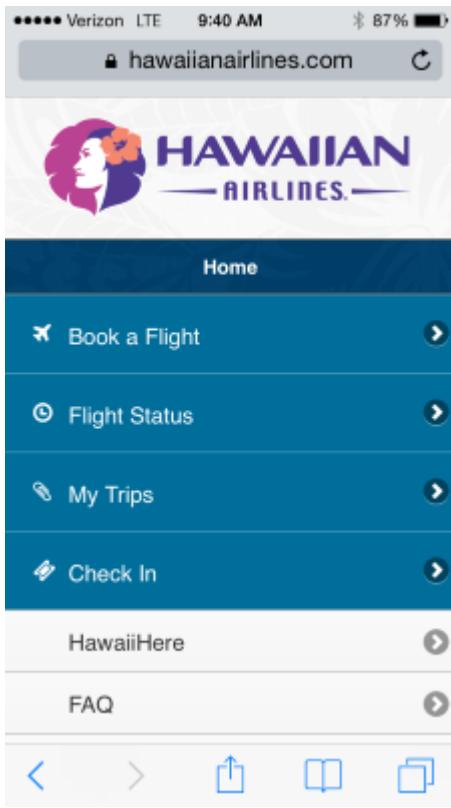


The screenshot shows the Hawaiian Airlines website as it appears in Mozilla Firefox. The interface includes a header with links for Help, Contact Us, Optional Fees, HawaiianMiles, and Quick Links. Below the header is a search bar and a main navigation menu with options like EXPLORE, BOOK TRAVEL, and MANAGE. A large central banner features a couple sitting on a beach with the text "SAVE more TOGETHER". Below the banner are sections for "BOOK FLIGHT", "BOOK FLIGHT + HOTEL", and "VIEW ROUTES & SCHEDULES". There are also sections for "EARN 35,000 Bonus Miles", "Vacation Packages", and "Featured Fares". At the bottom, there are social media links for Twitter and Facebook, and a sign-up form for "Get Our Low Fares Emails".

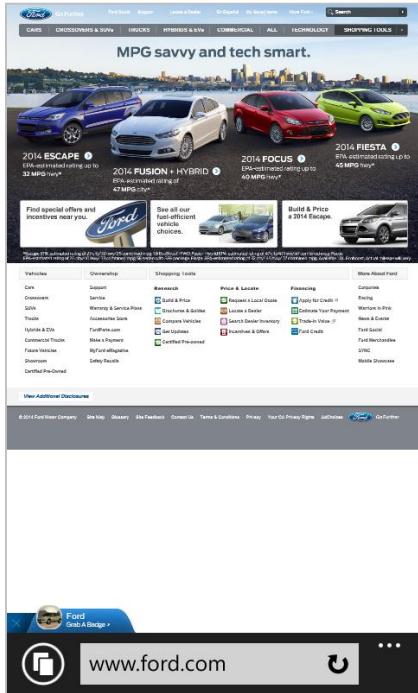
This screenshot shows the same Hawaiian Airlines website as seen in Google Chrome. The layout is identical to the Firefox version, with the same header, search bar, and main menu. The central banner with the couple on the beach and the "SAVE more TOGETHER" message is present. The "BOOK FLIGHT", "BOOK FLIGHT + HOTEL", and "VIEW ROUTES & SCHEDULES" sections are visible. The "EARN 35,000 Bonus Miles", "Vacation Packages", and "Featured Fares" sections are also present. The bottom of the page includes social media links and a sign-up form for low fares emails.

The screenshot shows the Hawaiian Airlines website as it appears in Microsoft Internet Explorer. The overall layout is consistent with the other browsers, featuring the same header, search bar, and main menu. The central banner with the couple on the beach and the "SAVE more TOGETHER" message is displayed. The "BOOK FLIGHT", "BOOK FLIGHT + HOTEL", and "VIEW ROUTES & SCHEDULES" sections are visible. The "EARN 35,000 Bonus Miles", "Vacation Packages", and "Featured Fares" sections are also present. The bottom of the page includes social media links and a sign-up form for low fares emails.

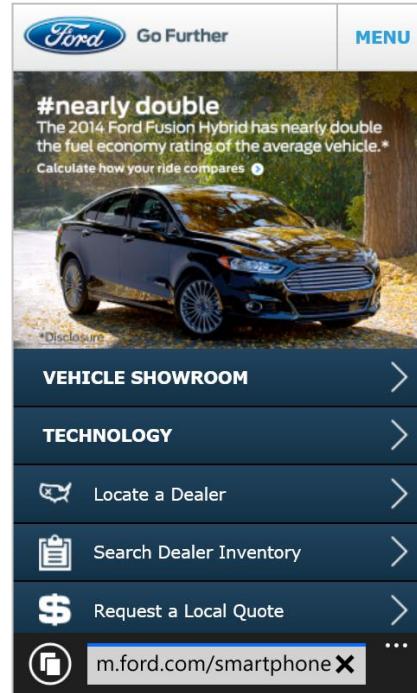




# Mobile User Agent String Issues



before



# User-Agent Strings



Mozilla/5.0 (Windows NT 10.0; WOW64; rv:39.0) Gecko/20100101 Firefox/39.0



Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_10\_1) AppleWebKit/600.1.25 (KHTML, like Gecko)  
Version/8.0 Safari/600.1.25



Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/44.0.2403.89 Safari/537.36



Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/42.0.2311.135 Safari/537.36 Edge/12.10240

# User-Agent Strings



Mozilla/5.0 (Windows NT 10.0; WOW64; rv:39.0) Gecko/20100101 Firefox/39.0



Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_10\_1) AppleWebKit/600.1.25 (KHTML, like Gecko)  
Version/8.0 Safari/600.1.25



Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/44.0.2403.89 Safari/537.36



Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/42.0.2311.135 Safari/537.36 Edge/12.10240

# User-Agent Strings



Mozilla/5.0 (Windows NT 10.0; WOW64; rv:39.0) Gecko/20100101 Firefox/39.0



Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_10\_1) AppleWebKit/600.1.25 (KHTML, like Gecko)  
Version/8.0 Safari/600.1.25



Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/44.0.2403.89 Safari/537.36



Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)  
Chrome/42.0.2311.135 Safari/537.36 Edge/12.10240



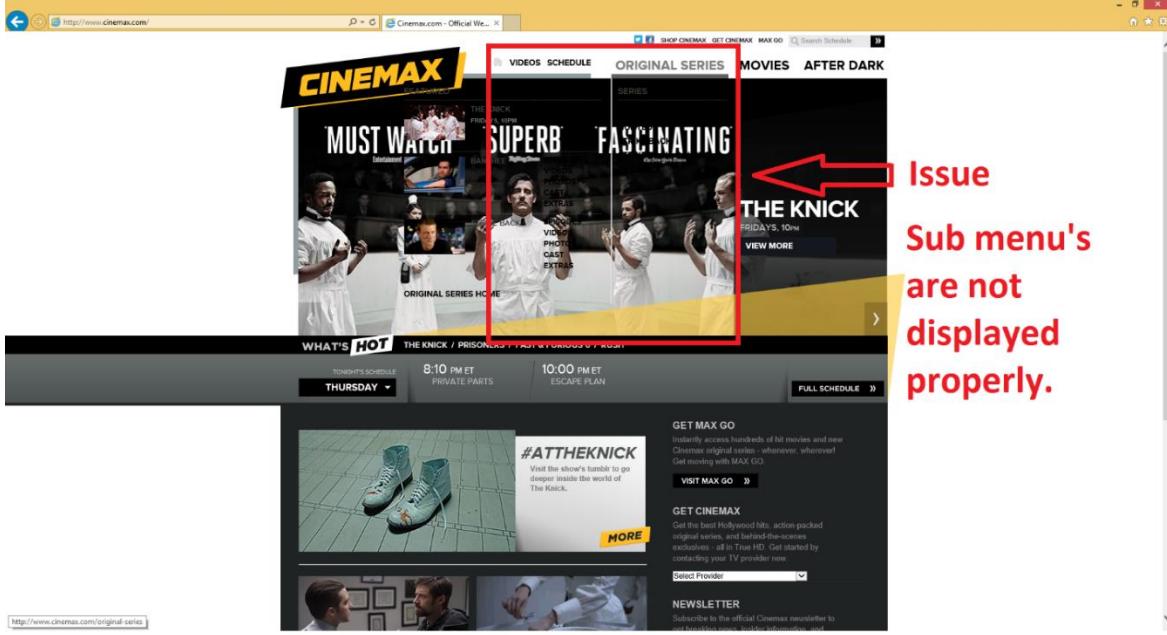
# if (Mobile)

```
window.mobileCheck = function() {
    var check = false;
(function(a){if(/(android|bb\d+|meego).+mobile|avantgo|bada\/*|blackberry|blazer|compal|elaine|fennec|hiptop|iemobile|ip(hone|od)|iris|kindle|lge |maemo|midp|mmp|mobile.+firefox|netfront|opera m(ob|in)i|palm(os)?|phone|p(ixi|re)\/*|plucker|pocket|psp|series(4|6)0|symbian|treo|up\.(browser|link)|vodafone|wap|windows(ce|phone)|xda|xiino/i.test(a)||/1207|6310|6590|3gso|4thp|50[1-6]i|770s|802s|a wa|abac|ac(er|oo|s\-\-)|ai(ko|rn)|al(av|ca|co)|amoi|an(ex|ny|yw)|aptu|ar(ch|go)|as(te|us)|attw|au(di|\-\-m|r |s)|avan|be(ck|ll|nq)|bi(lb|rd)|bl(ac|az)|br(e|v)w|bumb|bw\-(n|u)|c55\/*|capi|ccwa|cdm\-\-|cell|chtm|cldc|cmd\-\-|co(mp|nd)|craw|da(it|ll|ng)|dbte|dc\-\-s|devi|dica|dmob|do(c|p)o|ds(12|\-\-d)|el(49|ai)|em(12|ul)|er(ic|k0)|esl8|ez([4-7]0|os|wa|ze)|fetc|fly(\-\_|_)|g1 u|g560|gene|gf\-\-5|g\-\-mo|go(\.\.w|od)|gr(ad|un)|haie|hcit|hd\-\-(m|p|t)|hei\-\-|hi(pt|ta)|hp(i|ip)|hs\-\-c|ht(c(\-\_|_|a|g|p|s|t)|tp)|hu(aw|tc)|i\-\-(20|go|ma)|i230|iac( |\-\-|\-\-)|ibro|idea|ig01|ikom|im1k|inno|ipaq|iris|ja(t|v)a|jbro|jemu|jigs|kddi|keji|kgt( |\-\-)|klon|kpt |kwc\-\-|kyo(c|k)|le(no|xi)|lg( g|\-\/(k|l|u)|50|54|\-\-[a-w])|libw|lynx|m1\-\-w|m3ga|m50\/*|ma(te|ui|xo)|mc(01|21|ca)|m\-\-cr|me(rc|ri)|mi(o8|oa|ts)|mmef|mo(01|02|bi|de|do|t(\-\_|_o|v)|zz)|mt(50|p1|v )|mwbp|mywa|n10[0-2]|n20[2-3]|n30(0|2)|n50(0|2|5)|n7(0(0|1)|10)|ne((c|m)\-\-)|on|tf|wf|wg|wt)|nok(6|i)|nzph|o2im|op(ti|wv)|oran|owg1|p800|pan(a|d|t)|pdxg|pg(13|\-\-([1-8]|c))|phil|pire|pl(ay|uc)|pn\-\-2|po(ck|rt|se)|prox|psio|pt\-\-g|qa\-\-a|qc(07|12|21|32|60|\-\-2-7)|i\-\-)|qtek|r380|r600|raks|rim9|ro(ve|zo)|s55\/*|sa(ge|ma|mm|ms|ny|va)|sc(01|h\-\-oo|p\-\-)|sdk\/*|se(c(\-\-0|1)|47|mc|nd|ri)|sgh\-\-shar|sie(\-\-m)|sk\-\-0|sl(45|id)|sm(al|ar|b3|it|t5)|so(ft|ny)|sp(01|h\-\-|v\-\-v)|sy(01|mb)|t2(18|50)|t6(00|10|18)|ta(gt|1k)|tc1\-\-tdg\-\-tel(i|m)|tim\-\-t\-\-mo|to(pl|sh)|ts(70|m\-\-m3|m5)|tx\-\-9|up(\.\.b|g1|si)|utst|v400|v750|veri|vi(rg|te)|vk(40|5[0-3]|\-\-v)|vm40|voda|vulc|vx(52|53|60|61|70|80|81|83|85|98)|w3c(\-\-)|webc|whit|wi(g |nc|nw)|wmhb|wonu|x700|yas\-\-|your|zeto|zte\-\-|i.test(a.substr(0,4)))check =
true})(navigator.userAgent||navigator.vendor||window.opera);
return check; }
```

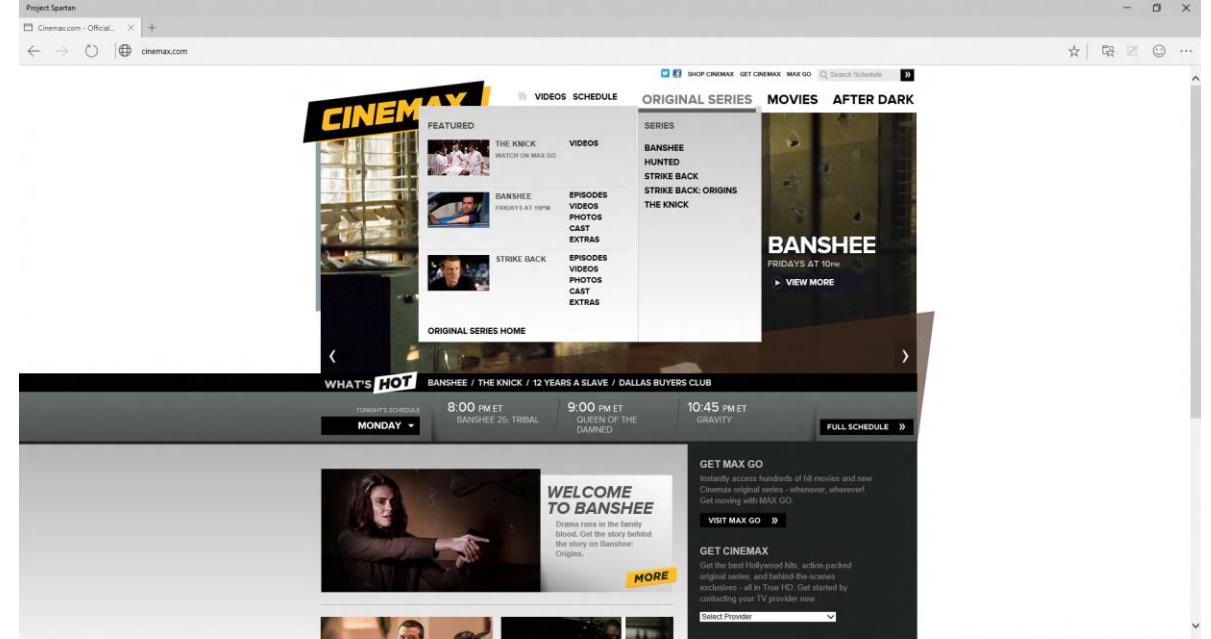
Please don't do UA sniffing

~~Please don't do UA sniffing~~  
Please avoid UA sniffing as much as possible

Always do feature detection  
(If isolating a bug) Sniff for specific browser versions  
Assume unknown browsers are good



IE11 on Windows 8.1



Microsoft Edge:  
With support for -webkit transitions

# About:flags

Experimental Features    X    +

← → ⌂ ms-appx-web://microsoft.windows.spartan/Assets/flags.htm

Compatibility settings

Use Microsoft compatibility lists

Experimental features

Put on your safety goggles. These features are experimental and might lead to some unexpected browser behavior.

Styling

Use a full stacking context for fixed position elements

Improve performance by using independent composition for preserve-3d content

Enable CSS filter property

Scrolling

Use independent scrolling for mouse, keyboard, and scrollbar

Apply scroll properties to bodyElement instead of documentElement

Touch

Touch events

# Removing code (yay!)

attachEvent()

VML

X-UA-Compatible

IE Layout Quirks

VB Script

currentStyle

Conditional Comments

MS-prefixed Events

# 220k+

Unique LoC Removed

6 document modes  
300+ APIs removed

# 300k+

Unique LoC Added

49 New Major Features  
4200+ Interop Fixes

/b

# New features

One engine means faster pace

# Planning in the open

The screenshot shows the Microsoft Edge browser window displaying the 'Platform status' page from dev.modern.ie. The page lists various web features and their status in Microsoft Edge.

**Platform status**  
What we've built and our roadmap

219 features found

Sort features by: Feature name

Filter features

Search name or description text: Enter text to search...

Categories: All

Feature	Status
a[download] attribute	In Development
Ambient Light Events	In Development
Application Cache	Supported
ARIA Landmark Roles	Supported
ARIA role 'none'	In Development
Array.prototype.includes (ES2016)	Under Consideration
Arrow function	Supported

The arrow (=>) provides a shorthand for the function keyword with lexical 'this' binding.

# What's available in Microsoft Edge now

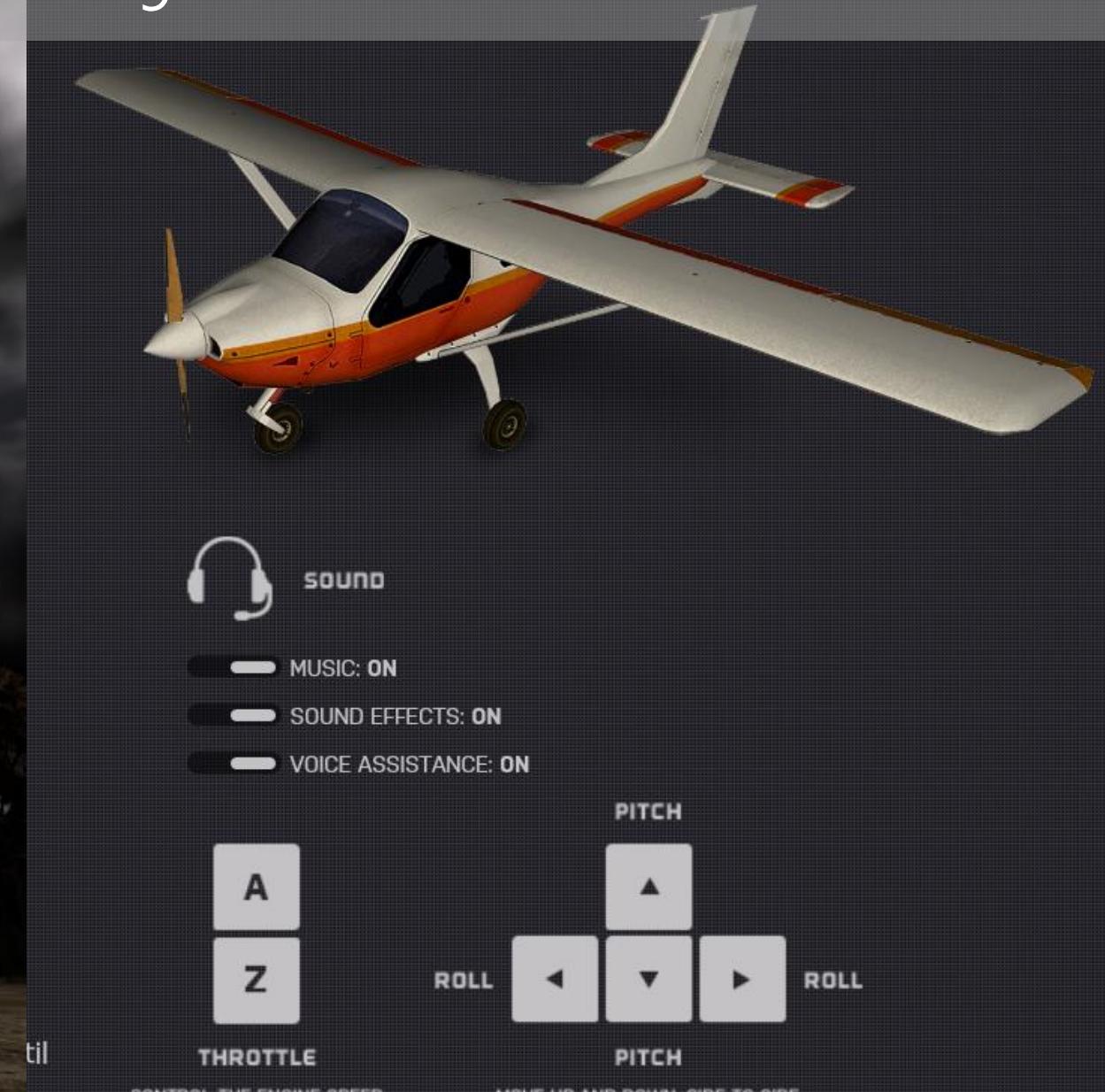
ARIAs Landmark Roles	ES6 Object Literal Enhancements	Object Built-ins (ES6)
Arrow function	Filters	Promises (ES6)
ASM.js	Fullscreen API	Proxies (ES6)
Classes (ES6)	GamePad API	RegExp Built-ins (ES6)
Conditional Rules	Generators	Rest parameters
Content Security Policy	HTTP/2	Selection API
CSS Gradient Midpoints	HTTP Live Streaming (HLS)	Spread (ES6)
CSS Transforms - preserve-3d	HTTP Strict Transport Security (HSTS)	String Built-ins (ES6)
CSS Transitions & Animations for SVG elements	<img srcset>	Symbols
Date related input types	JS iterators (i.e. the for-of feature)	Template Strings (ES6)
Default parameter	<main> element	Touch Events
DOM Event Constructors	Math Built-ins (ES6)	Video tracks
DOM Level 3 XPath	Media Capture and Streams	WAV Audio Support
dppx Unit for the resolution Media Query	Media Queries Level 4: Interaction	WeakSet (ES6)
ES6 Numeric Literals	Number Built-ins (ES6)	Web Audio API

ON DETAIL



Microsoft Edge  
LEARN MORE →

# What's possible today with just a browser...



# Some features...

- WebAudio
- Pointer events
- CSS filters
- Image srcset
- ECMAScript 6 2015
- http/2
- ForeignObject

# How we think about what's beyond that

6,224 votes

**Shadow DOM (unprefixed)**

Enables DOM tree encapsulation. Without it, widgets may inadvertently break pages by using conflicting CSS selectors, class or id names, or JavaScript variables.

<http://dvcs.w3.org/hg/webcomponents/raw-file/tip/spec/shadow/index.html>

32 comments · HTML · Flag idea as inappropriate...

**e** ON THE BACKLOG · Microsoft Edge UserVoice (Admin, Windows Developer) responded  
See <http://blogs.windows.com/msedgedev/2015/07/14/bringing-componentization-to-the-web-an-overview-of-web-components/> (part 1) and <https://blogs.windows.com/msedgedev/2015/07/15/microsoft-edge-and-web-components/> (part 2) for more information on our Web Components thoughts, plans, and roadmap.

4,910 votes

**Custom Elements**

Method for registering (creating) custom elements in script.

Spec: <http://www.w3.org/TR/custom-elements/>

17 comments · HTML · Flag idea as inappropriate...

**e** ON THE BACKLOG · Microsoft Edge UserVoice (Admin, Windows Developer) responded  
See <http://blogs.windows.com/msedgedev/2015/07/14/bringing-componentization-to-the-web-an-overview-of-web-components/> (part 1) and <https://blogs.windows.com/msedgedev/2015/07/15/microsoft-edge-and-web-components/> (part 2) for more information on our Web Components thoughts, plans, and roadmap.

4,652 votes

**Template Element**

Spec: <http://www.w3.org/html/wg/drafts/html/master/scripting-1.html#the-template-element>

69 comments · HTML · Flag idea as inappropriate...

**e** WORKING ON IT · Microsoft Edge UserVoice (Admin, Windows Developer) responded

## Real World Usage Data

## Developer/Partner Feedback

## Standards Stability

## Development Capacity

