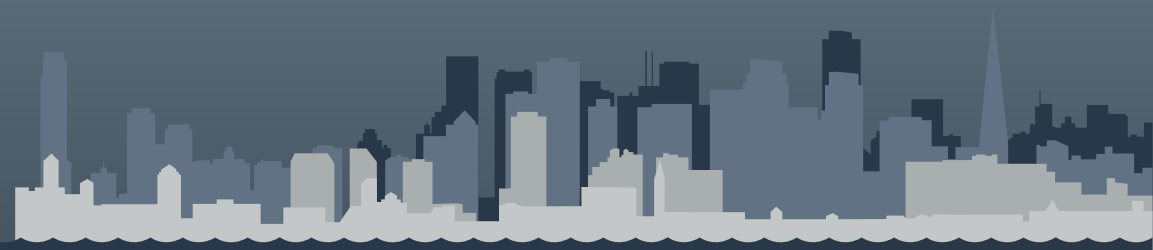


TIZEN™ DEVELOPER CONFERENCE MAY 7-9, 2012



HTML5 & IVI

Ethan Coh
ethan.coh@obigo.com

Prologue



40 years



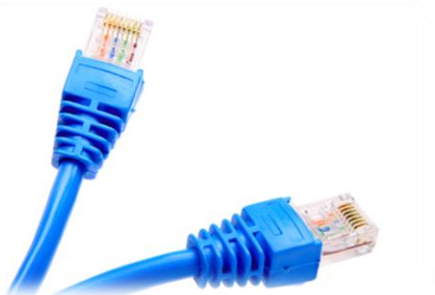
20 years



*All of the technology required to transform industries through **software** finally works and **can be delivered at global scale.***



Over 2 billion

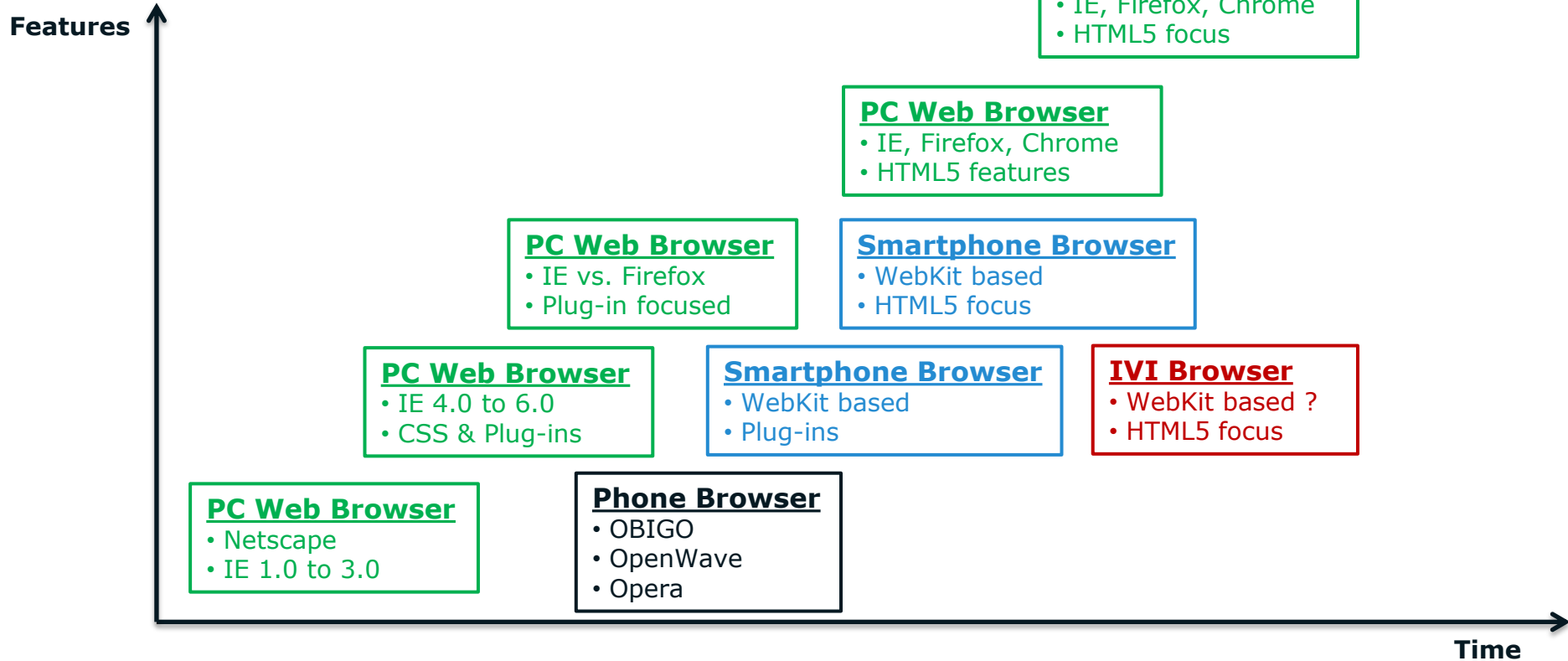


Up from 50 million a decade ago

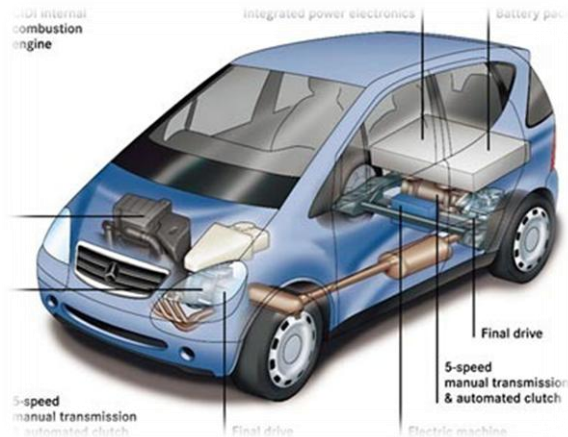


*At least **5 billion** people to own smartphones in the next ten years, giving every individual with such a phone instant access to the full power of the internet, every moment of every day.*

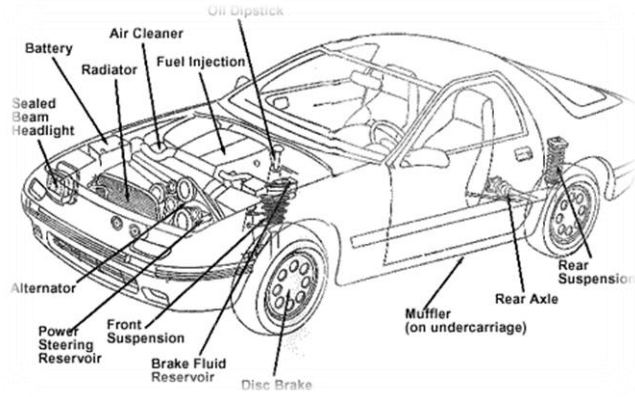
Browser Evolution



What about automobiles... ?



Software, software... and software



Opportunities and cost

€ 230 billion



2006

2015

Market for automobile electrical systems and electronics

This prediction included equipment for safety and comfort as well as infotainment. Oliver Wyman, "Electronics are driving the development of the automobile industry."

Source : http://www.oliverwyman.com/ow/pdf_files/1_en_PR_Automotive_Elektronics.pdf

The worldwide market for automobile electrical systems and electronics is expected to grow at a rate of 5.9% per year, reaching 230 billion euros by the year 2015 and ultimately representing more than 30% of the automobile value.





W3C, NeXT, Tim Berners-Lee and Steve Jobs

W3C®



The historic NeXT computer used by Tim Berners-Lee in 1990, on display in the Microcosm exhibition at CERN. It was the first web server, hypermedia browser and web editor.



Tim Berners-Lee
Born : 8 June, 1955

World's first-ever web site and web server, running on a NeXT computer at CERN. The first web page address was <http://info.cern.ch/hypertext/WWW/TheProject.html>



HTML (HyperText Markup Language)

- First created and developed by Tim Berners-Lee in 1989.
- HTML 2.0, HTML 3.2 and then HTML 4.01 in 1999 was major driving momentum in internet industry.

However...

In 2002, newly developed XHTML 1.0 and XHTML 2.0 standards were turned away by the industry.

Tim Berners-Lee, "Reinventing HTML"

- Proposes a new working group to evolve HTML incrementally.
<http://dig.csail.mit.edu/breadcrumbs/node/166>

*Reinventing HTML or,
Yes we admit it, XHTML failed.*



Reinventing HTML

Submitted by [timbl](#) on Fri, 2006-10-27 16:14. ::

Making standards is hard work. Its hard because it involves listening to other people and figuring out what they mean, which means figuring out where they are coming from, how they are using words, and so on.

There is the age-old tradeoff for any group as to whether to zoom along happily, in relative isolation, putting off the day when they ask for reviews, or whether to get lots of people involved early on, so a wider community gets on board earlier, with all the time that costs. That's a trade-off which won't go away.

The solutions tend to be different for each case, each working group. Some have lots of reviewers and some few, some have lots of time, some urgent deadlines.

A particular case is HTML. HTML has the potential interest of *millions* of people: anyone who has designed a web page may have useful views on new HTML features. It is the earliest spec of W3C, a battleground of the browser wars, and now the most widespread spec.

The perceived accountability of the HTML group has been an issue. Sometimes this was a departure from the W3C process, sometimes a sticking to it in principle, but not actually providing assurances to commenters. An issue was the formation of the breakaway WHAT WG, which attracted reviewers though it did not have a process or specific accountability measures itself.

There has been discussion in blogs where Daniel Glazman, Björn Hörmann, Molly Holzschlag, Eric Meyer, and Jeffrey Zeldman and others have shared concerns about W3C works particularly in the HTML area. The validator and other subjects cropped up too, but let's focus on HTML now. We had a W3C retreat in which we discussed what to do about these things.

Some things are very clear. It is really important to have real developers on the ground involved with the development of HTML. It is also really important to have browser makers intimately involved and committed. And also all the other stakeholders, including users and user companies and makers of related products.

Some things are clearer with hindsight of several years. It is necessary to evolve HTML incrementally. The attempt to get the world to switch to XML, including quotes around attribute values and slashes in empty tags and namespaces all at once didn't work. The large HTML-generating public did not move, largely because the browsers didn't complain. Some large communities did shift and are enjoying the fruits of well-formed systems, but not all. It is important to maintain HTML incrementally, as well as continuing a transition to well-formed world, and developing more power in that world.

? Welcome to the WHATWG community

Maintaining and evolving HTML since 2004

The Web Hypertext Application Technology Working Group (WHATWG) is a community of people interested in evolving HTML and related technologies. The WHATWG was founded by individuals from Apple, the Mozilla Foundation and Opera Software in 2004



A brief history of HTML

- HTML 1.0 03.1993
- HTML 2.0 11.1995
- HTML 3.0 04.1996
- HTML 3.2 01.1997
- HTML 4.0 12.1997
- HTML 4.01 12.1999
- XHTML 1.0 01.2000
- XHTML 1.1 05.2001
- XHTML 2.0 07.2006



Currently widely used HTML

HTML + XML

No backward compatibility

Market Status

Adobe to STOP work on *Mobile Flash*, concentrate on **HTML5**

Exclusive: Adobe ceases
development on mobile browser
Flash, refocuses efforts on HTML5
(UPDATED)

By Jason Perlow | November 8, 2011, 9:17pm PST

Summary: *Adobe has briefed developers on the impending cessation of mobile flash browser plugin development.*



If you can't beat'em, join'em.

Source : <http://www.zdnet.com/blog/perlow/exclusive-adobe-ceases-development-on-mobile-browser-flash-refocuses-efforts-on-html5-updated/19226?tag=content:siu-container>

Will there be a Silverlight 6 (and does it matter) ?



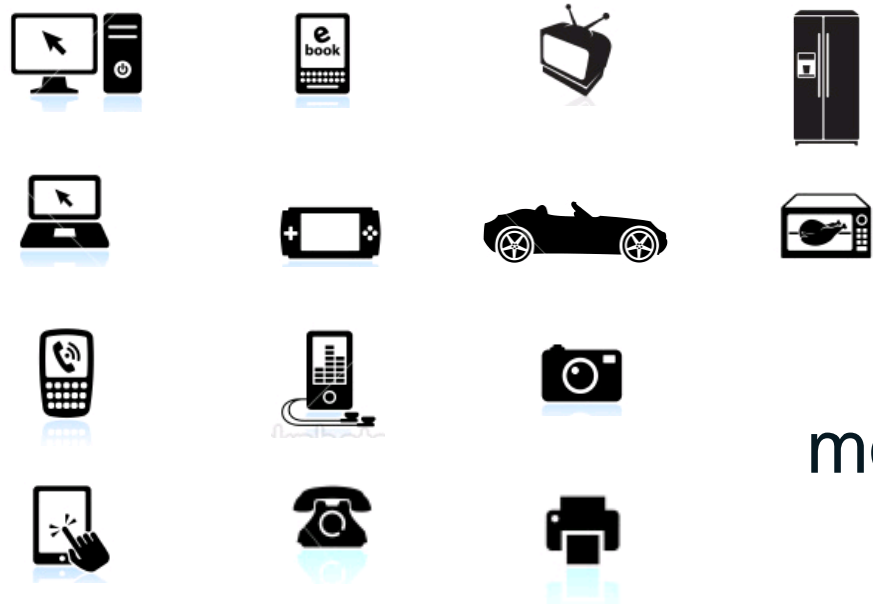
Microsoft®
Silverlight™

By Mary Jo Foley | November 8, 2011, 12:13pm PST

Summary: *Microsoft is poised to release to manufacturing Silverlight 5. There's word from some of my contacts that this might be the last major release of Silverlight, but Microsoft isn't confirming or denying.*

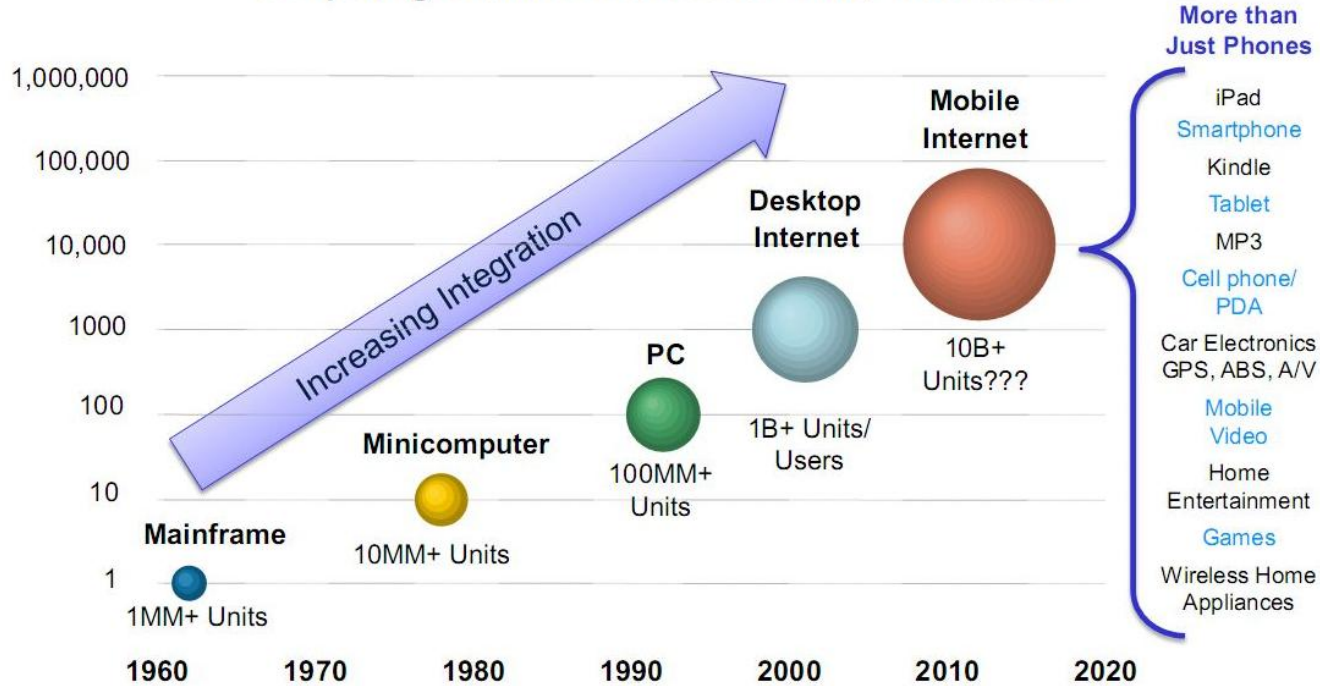
Source : <http://www.zdnet.com/blog/microsoft/will-there-be-a-silverlight-6-and-does-it-matter/11180>

Rapid growth in number of internet-connected devices



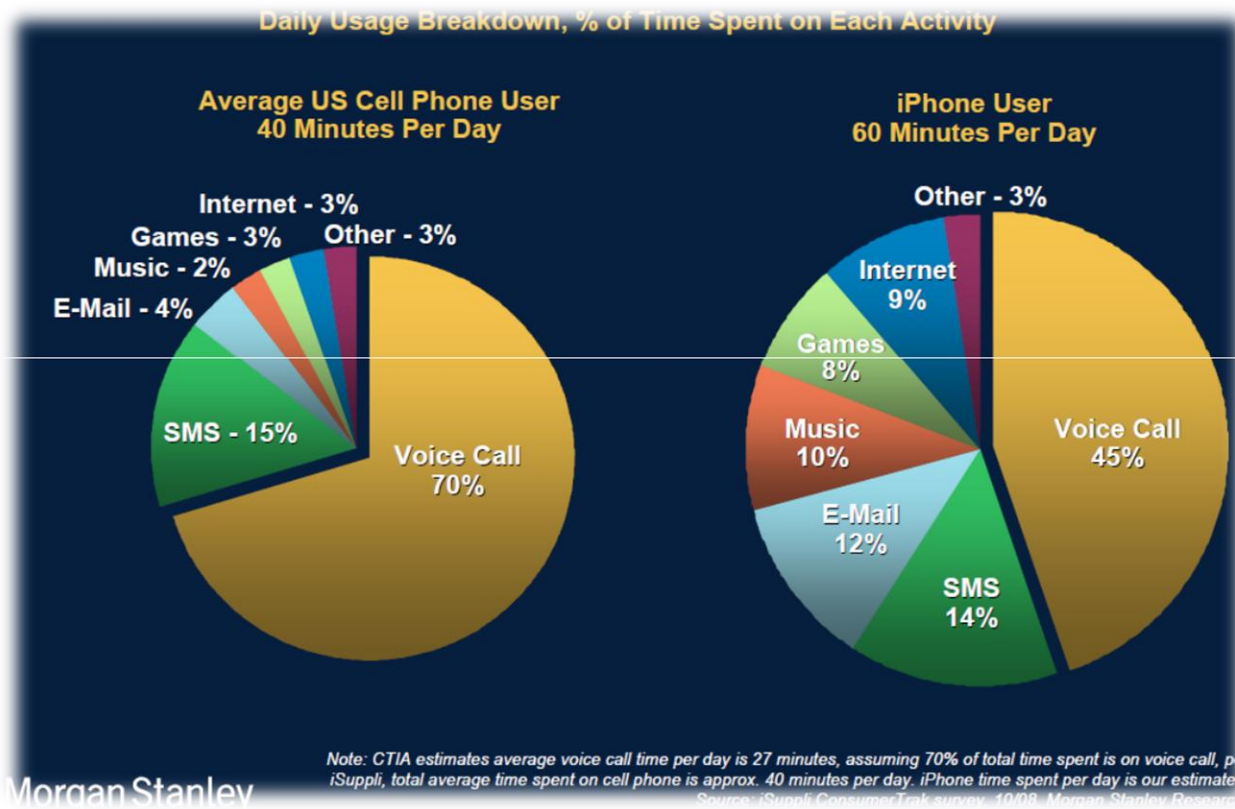
more...

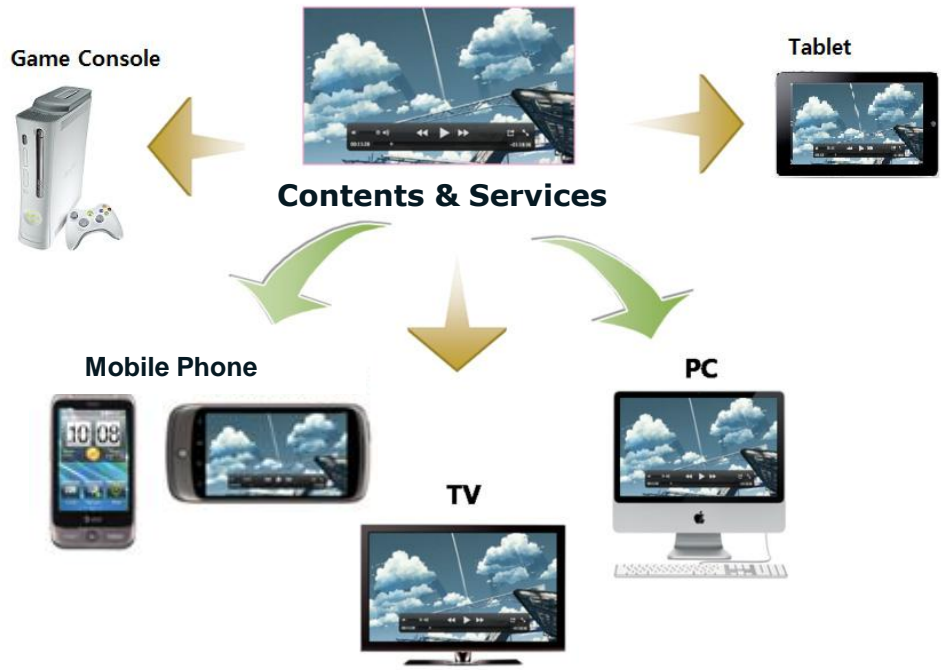
Computing Growth Drivers Over Time, 1960-2020E



Source : ITU, Mark Lipacis, Morgan Stanley Research

An interesting thing is that smartphone usage is about **data**, not voice anymore.

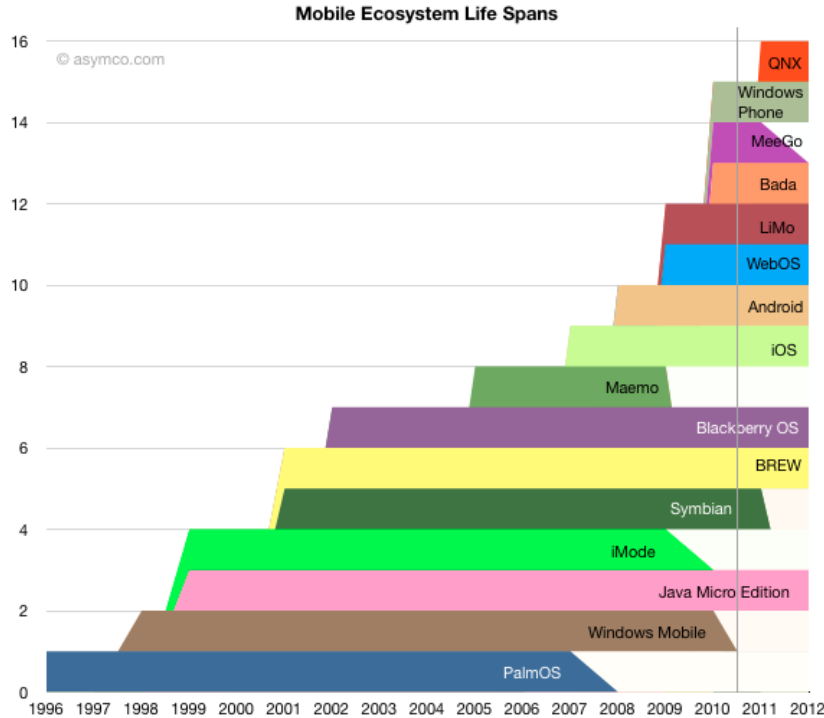




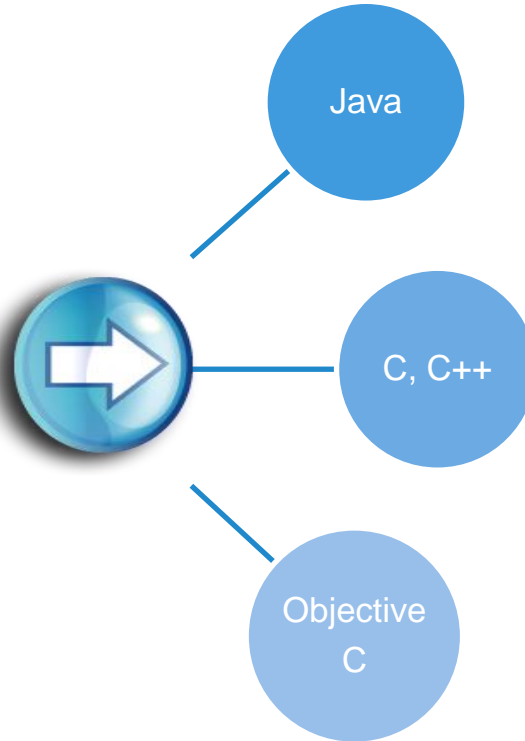
And, of course...



*Different hardware,
Different operating systems,
Different languages...*



source: <http://www.asymco.com>



There's a problem...



*Different hardware,
Different operating systems,
Different languages...*



High cost to support various platforms
(Contents & service provider)

“Even Google was not rich enough to support all of the different mobile platforms from Apple’s App Store to those of the BlackBerry, Windows Mobile, Android and the many variations of the Nokia platform”

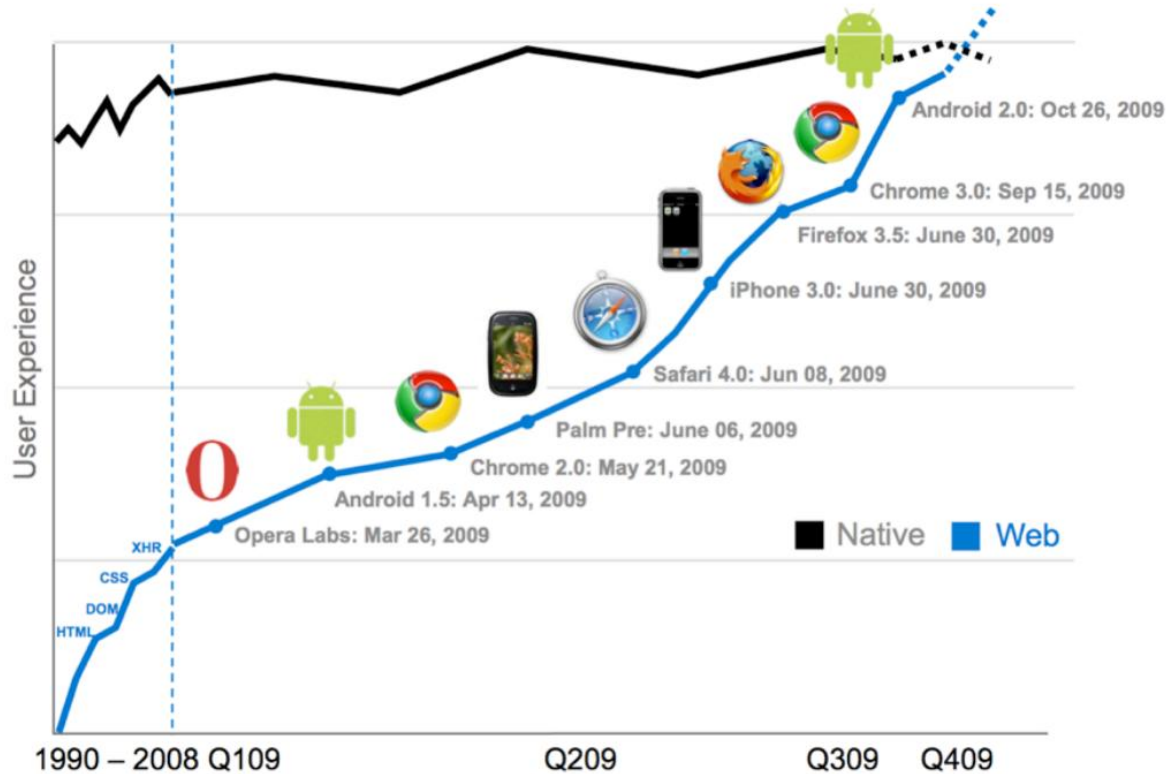
- Vic Gundotra, Google Engineering VP



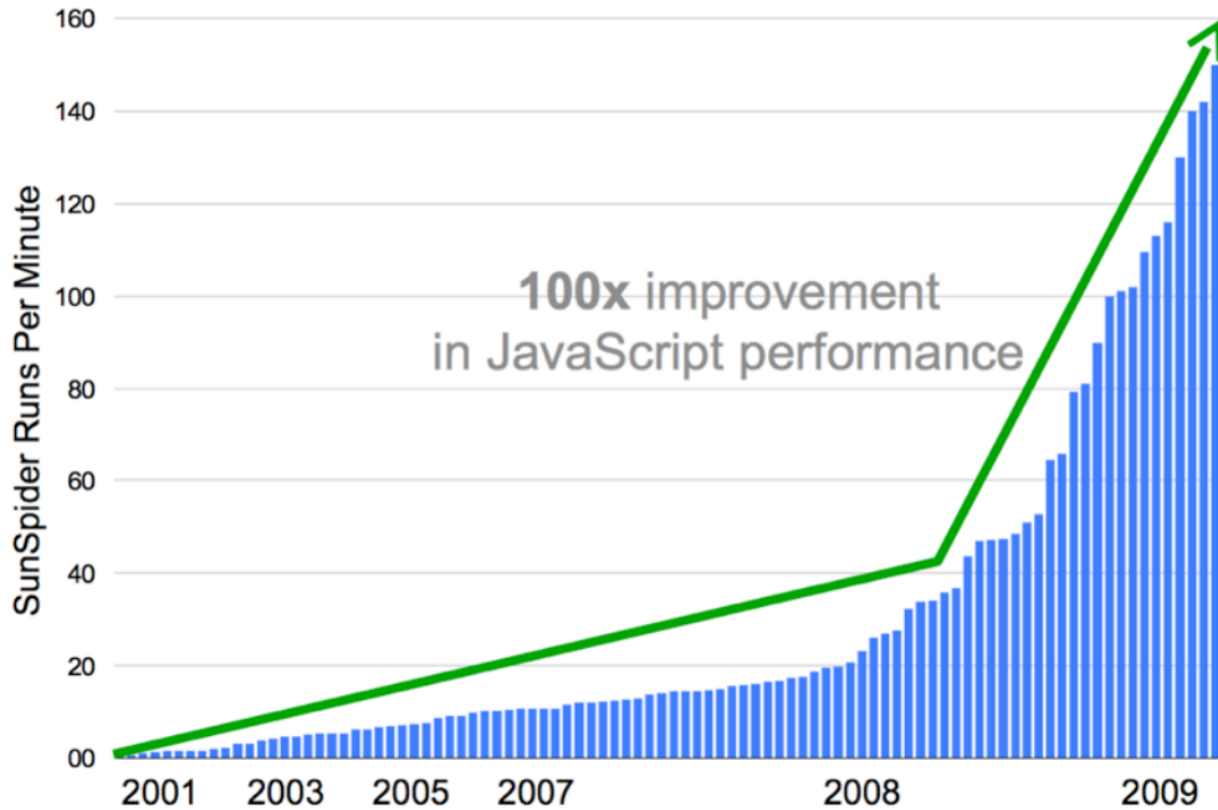
*“Web apps are now able to go offline, and they can have richer graphics thanks to **HTML5**”.*

“It’s getting similar to app frameworks”.

Fast Web Innovation

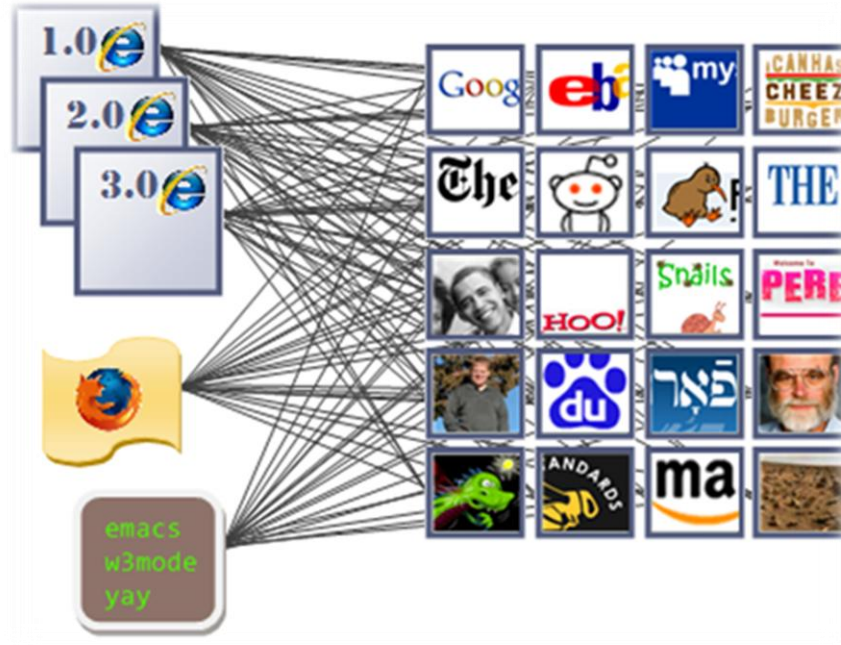


The Web is also getting faster



Source: Brad Neuberg

Over the past year, web pages have become...

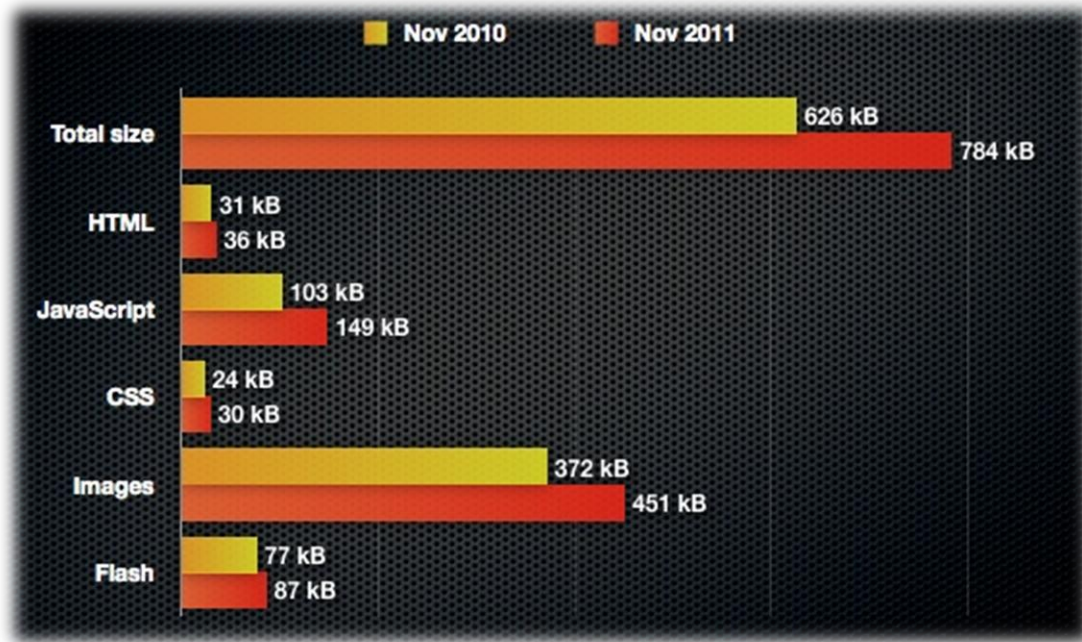


626 kB → 784 kB

Average 25%

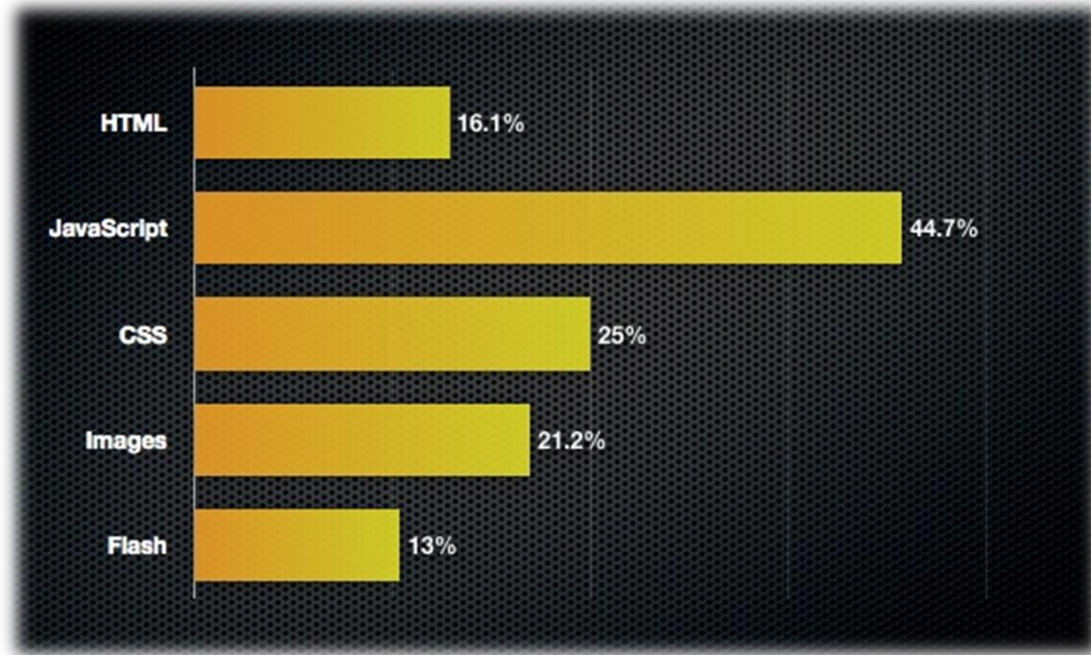
bigger in size

Average web page size, Nov 2010 vs. Nov 2011



Data source: The HTTP Archive, based on the top 1k sites

Size increase per content type (Nov 2010 – Nov 2011)



Data source: The HTTP Archive, based on the top 1k sites

Why has JavaScript usage seemingly exploded ?



Javascript

HTML



Google



Microsoft





What is HTML5 ?

Structure and Semantic



APIs

`<header>`

`<nav>`

`<section id="content">`

`<article>`

`<article>`

`<article>`

`<footer>`



HTML5



Semantic

Offline & Storage

Device Access

Connectivity

Multimedia

3D,
Graphics,
Effects

Performance
& integration

CSS3
Styling

HTML5 features

- Web Form
 - new features allow for better input control and validation.
 - new input type(email, url, number, range, date pickers, search, color, etc)
- Web worker
 - Allows Web application authors to spawn background workers running scripts in parallel to their main page.
 - Thread-like operation with message-passing as the coordination mechanism.
- Web socket
 - Enables Web pages to use the WebSocket protocol for two-way communication with a remote host.

HTML5 features

- Multimedia
 - Canvas
 - canvas element uses JavaScript to draw graphics on a web page
 - draws graphs from any data source, such as a table
 - Video& Audio
 - Most video/audio are played through a plug-in such like flash. Not all browsers have the same plug-ins.
 - Standard way to include video/audio, with html element.
 - SVG
 - SVG is XML Based 2D Vector graphic language

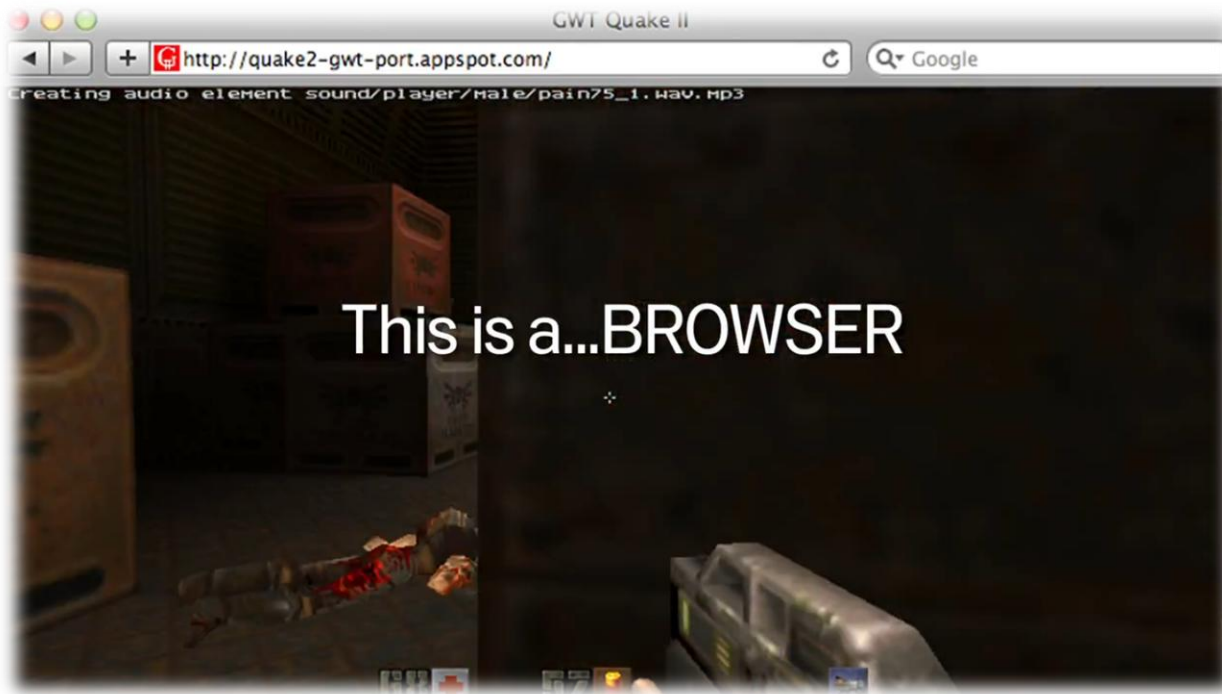
HTML5 key features

Full-Powered Web Application



- Web Form
- Canvas / SVG
- Video / Audio
- Geolocation
- Web SQL Database
- Local storage
- Web Socket
- Web Workers

Quake 2 GWT Port



Source : <http://code.google.com/p/quake2-gwt-port/>

Why

**Why HTML5
for automobiles ?**

Cars

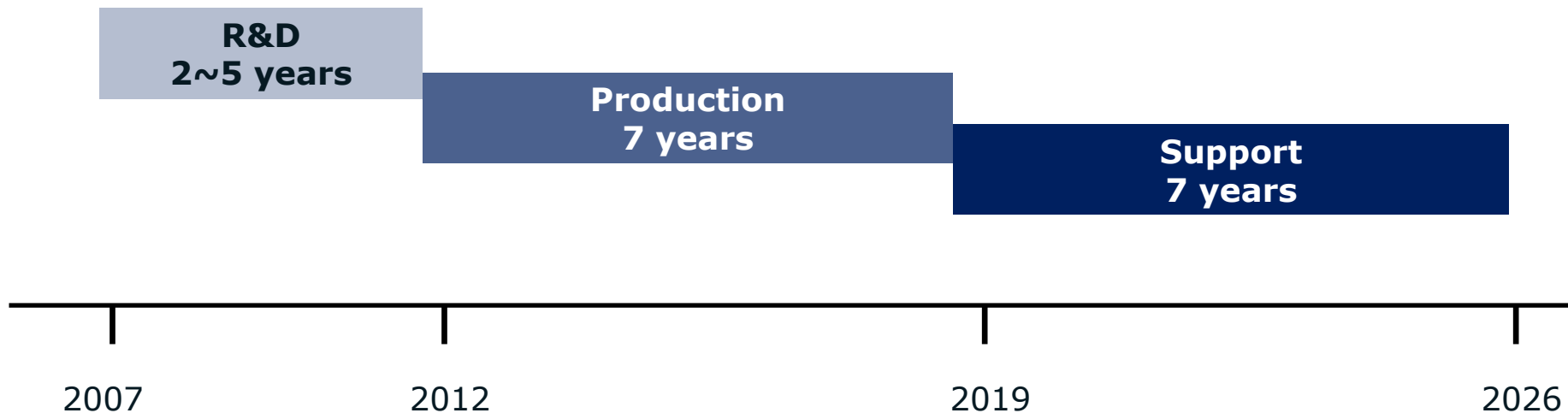
Very fast !



Vehicle Deployment Cycle

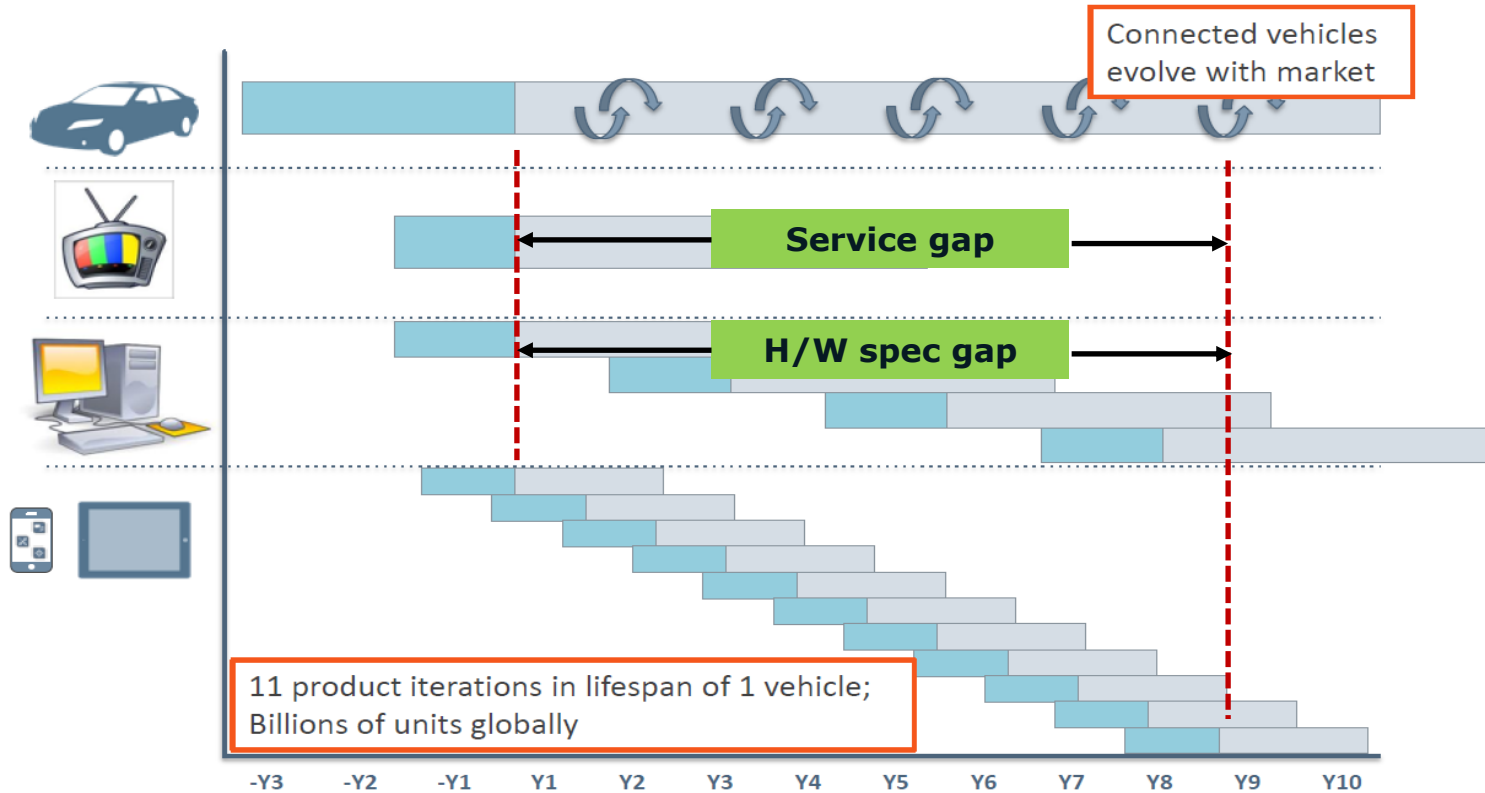
Not so fast !

Vehicle Lifecycle



Content & Apps for Automotive USA 2011, BMW

Compared to other industries....



Automotive Limitations

- CPU limitation : 600Mhz~1GHz
 - Load balance : Average 35%, Max 50% performance sharing
- Network, Internal BUS : 3G Network
 - 3G Network but Real Net bandwidth is only 720 kbps



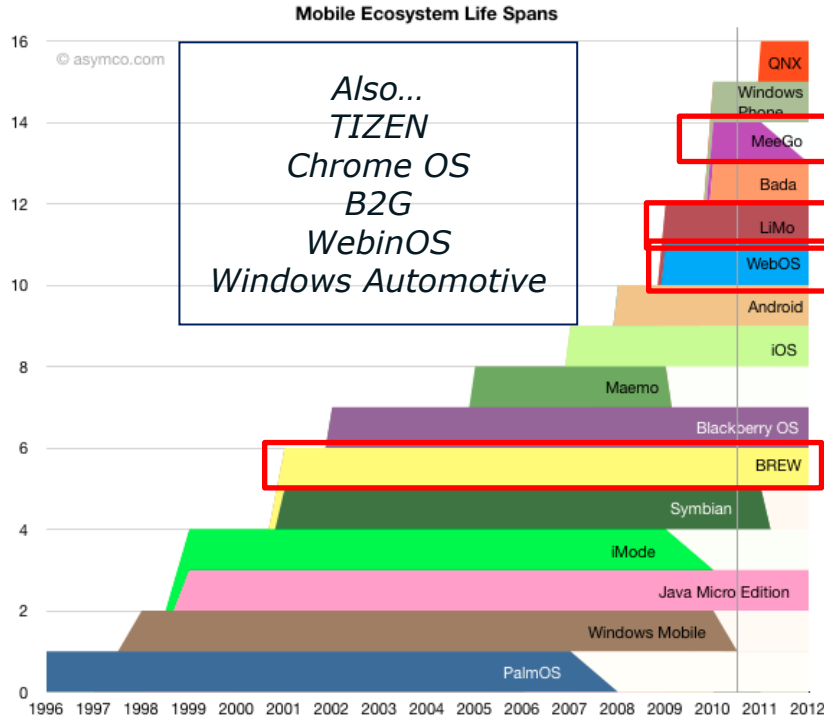
Clear limitations & restrictions exist in automobiles.... also there's safety regulations/features



You can't directly port & use mobile based OS, services and applications

Embedded OS life span

Unpredictable...



Java

C, C++

Objective C

The perfect IVI Apps Platform ?

The perfect IVI Apps Platform ?

Hardware Platform

- Cross-platform portability across multiple hardware platforms
- Can use built-in hardware platform security features
- HW Platform is in volume production with competitive price

The perfect IVI Apps Platform ?

OS-Middleware Platform

- Cross-platform portability across multiple OS platforms
- Can use built-in OS platform security features
- OS platform is well known with experienced programmers

The perfect IVI Apps Platform ?

Apps Platform

- Good for multiple application segments including IVI apps
- Apps platform is well known with experienced programmers
- Apps platform has large number of users

The perfect IVI Apps Platform ?

Software Tools : Development

- Easy to use and easy to learn
- Creates efficient software code
- Works across multiple software platforms

The perfect IVI Apps Platform ?

Apps Platform Targets

- Developed IVI apps can be leveraged across multiple product categories : Smartphones, tablets and/or others

The perfect IVI Apps Platform ?

	IVI Apps Platform Features
Hardware Platform YES	<ul style="list-style-type: none"> ➤ Cross-platform portability across multiple hardware platforms ➤ Can use built-in hardware platform security features ➤ HW Platform is in volume production with competitive price
OS-Middleware Platform YES	<ul style="list-style-type: none"> ➤ Cross-platform portability across multiple OS platforms ➤ Can use built-in OS platform security features ➤ OS platform is well known with experienced programmers
Apps Platform YES	<ul style="list-style-type: none"> ➤ Good for multiple application segments including IVI apps ➤ Apps platform is well known with experienced programmers ➤ Apps platform has large number of users
Software Tools : Development Soon	<ul style="list-style-type: none"> ➤ Easy to use and easy to learn ➤ Creates efficient software code ➤ Works across multiple software platforms
Apps Platform Targets YES	<ul style="list-style-type: none"> ➤ Developed IVI apps can be leveraged across multiple product categories : Smartphones, tablets and/or others

- **Can HTML5 be an IVI apps platform ? YES**
- **Will HTML5 meet some or many of the above requirements ?**



is practical answer



Growing Internet devices

Growing Web content

N-Screen strategy

Variety of Platform

High Cost



HTML5 Web Technology

Web App Ecosystem

Demo – HTML5 powered app for automobiles

OBIGO controller app is ported on Tizen phone. This controller app sends control signals via HTTP interfaces. The cluster app in tablet receives signals and activates its functionalities.

Signals in controller application :

- Play music
- Change cluster themes
- Send notifications
- Show 'driving analysis results'
- Show 'device API test result'
- Move focus

Demo – HTML5 powered app for automobiles

Functionalities/contents in cluster application :

- Play music files in cloud
- Change themes : Classical theme & Dynamic theme
- News feeds
- User notifications : Over-speeding, Weather information, Incoming voice call

Remote Control Application
(Tizen Phone)



← HTTP I/F →

HTML5-Based Digital Cluster
(Android Tablet)



Demo – HTML5 powered app for automobiles

- Remote diagnostics on smart phones (Device API, Driving Results)
- Select the menu and use a variety of application (News, Music, Navigation, Phone, etc.,)
- Themes on a digital cluster are changeable (Classic, Sports, Simple Mode)
- Provide an emergency notice while driving (Over speed, VDC, Phone Call, etc..)



Demo – HTML5 powered app for automobiles

OBIGO HTML5 UI for IVI + HTTP Connectivity.mp4

Other solutions ?



- Compatibility limited to Android devices
- Android not yet automotive grade

- Responsiveness lacking today
- Solves phone to car problem, nothing else



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