

HTML5 and the Open Web Platform

Stuttgart

28 May 2013

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The Open Web Platform

CODE ONCE, REACH PEOPLE EVERYWHERE.



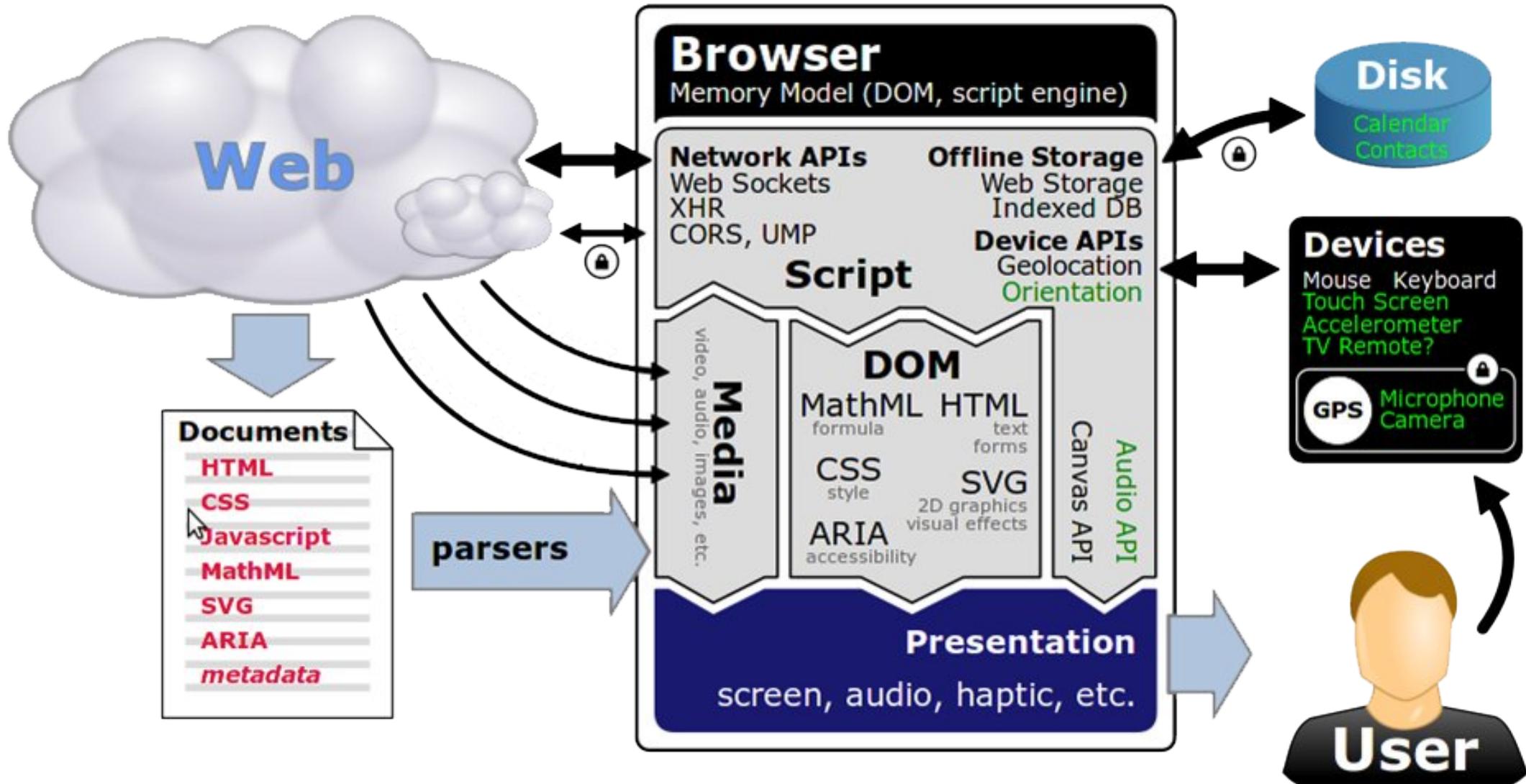
What is the W3C?

- International community where Members, a full-time staff and the public collaborate to develop Web standards
- Led by Web inventor Tim Berners-Lee and CEO Jeff Jaffe
- Hosted by MIT, ERCIM, Keio and Beihang
- Community Groups open to all at no fee
- Business Groups get more staff support
- Technical Working Groups
 - Develop specs into W3C Recommendations
 - Participants from W3C Members and invited experts
 - W3C Patent process for royalty free specifications

Who's involved

- W3C has 377 Members as of 11 May 2013
- To name just a few
 - ACCESS, Adobe, Akamai, Apple, Baidu, BBC, Blackberry (RIM), BT, Canon, Deutsche Telekom, eBay, Facebook, France Telecom, Fujitsu, Google, Hitachi, HP, Huawei, IBM, Intel, LG, Microsoft, Mozilla, NASA, NEC, NTT DoCoMo, Nuance, Opera Software, Oracle, Panasonic, Samsung, Siemens, Sony, Telefonica, Tencent, Vodafone, Yandex, ...
- Full list at
 - <http://www.w3.org/Consortium/Member/List>

The Open Web Platform



Open Web Platform

- Communicate with HTTP, Web Sockets, XML and JSON
- Markup with HTML5
- Style sheets with CSS
- Rich graphics
 - JPEG, PNG, GIF
 - Canvas and SVG
 - Audio and Video
- Scripting with JavaScript
 - Expanding range of APIs
- Designed for the World's languages
- Accessibility with support for assistive technology

Hosted and Packaged Apps

- Hosted Web apps can be directly loaded from a website
- Packaged Web apps can be locally installed on a device and run without the need for access to a web server
 - Zipped file containing all the necessary resources
 - Manifest file with app meta-data
 - Old work on XML based manifests (Web Widgets)
 - New work on JSON based manifests
 - <http://w3c.github.io/manifest/>
 - Pointer to app's cache manifest
 - List of required features and permissions needed to run correctly
- Runtime and security model for web apps
 - Privileged apps must be signed by installation origin's private key

HTML5 Markup

- Extensive range of features
- Structural, e.g. article, section, aside, details
- Headings, paragraphs, lists and tables
- Hypertext links and inline emphasis
- Support for the World's languages
- Wide range of built-in UI controls for scripting interactive applications

Interactive Forms

- Wide range of controls, including
 - Single and multi-line text input
 - Buttons, checkboxes and radio buttons
 - Single and multi-select lists and menus
- HTML5 adds better support for mobile devices
 - Date, time and range controls
 - Additional field types for email addresses, telephone numbers and web addresses (URIs)
 - Lists of predefined entries for free text fields

Video and Audio

- Direct support for audio and video
 - Replaces need for plugins, e.g. Flash
 - Easy control from web page scripts
 - Apply CSS transforms and Canvas to Video
 - Rich control over audio pipeline
- Stream audio and video from your microphone and camera to the network or to another browser
- New work on encrypted media extension
 - Enables content providers to implement DRM
 - But note that W3C is not standardizing DRM

Rich Graphics

- Images with JPEG, PNG and GIF
- Scripted graphics with HTML Canvas
 - 2D and experimentally, 3D (WebGL)
- Declarative graphics with SVG
 - Rich markup for vector graphics
 - Declarative and scripted animations
- Mathematical expressions with embedded MathML

Styling with CSS

- Margins, padding, positioning and more
- Foreground and background colours, textures and gradients
- Rectangular and curved borders and shadows
- Transformations, transitions and animations
- Text layout: left to right, right to left, mixed and vertical
- Downloadable fonts with Web Open Font Format
- New – richer layout with flexible boxes and grids

Dynamic Scripting

- JavaScript language
- Event handlers
- Document object model
- Network access: HTTP, server-sent events, Web Sockets, and soon raw sockets (sysapps)
- Background tasks with Web Workers
- Security and cryptography
- Local storage and offline support

Rich access to device capabilities

- Mouse, touch and key press events
- Location, motion, proximity and orientation
- Microphone, camera and ambient light
- Address book and calendar data
- Battery status and vibration
- Notifications
- Network information
- Others, e.g. NFC and secure elements

Implementing HMI in HTML5

- Design your own user interaction controls
 - Track position of finger on touch screen
 - Update graphical representation to match
 - Enable web runtime to optimize rendering
 - `requestAnimationFrame()`
 - Embellish with audio and vibration effects
- Take advantage of hardware graphics acceleration
 - CSS transforms, CSS transitions, CSS animation
- Example
 - <http://www.w3.org/2013/04/dial/>

What's next for HTML and CSS

- HTML

- Encrypted Media Extensions for content protection
- Media source extensions
- Srcset attribute for responsive design
- More at <http://www.w3.org/html/wg/wiki/ExtensionSpecifications>

- Cascading Style Sheets

- Multi-columns, Flexible boxes and grid based layout
- Compositing, blending, transitions, animations, variables, expressions, richer backgrounds and borders
- More at <http://www.w3.org/Style/CSS/current-work#roadmap>

Other related work

- Rich set of application APIs
 - Geolocation for location aware applications
 - Network information (wifi or mobile)
 - Ability to process and synthesize audio streams directly in script.
 - Web cryptography, access to secure elements, NFC
 - And many more ...
- Work on speech APIs
 - Both local and remote speech processing
- Multiscreen support
 - Automotive head unit, smart phone, head up display
- New work on testing, performance, and payment APIs

Closing the Gap

- HTML5 is playing catch up with native platforms
 - Extending the range of APIs
 - Better means to instrument performance
 - Identifying areas for further work
 - Beneficial competition amongst browser vendors
 - Promulgating best practices
- Lots of work in progress ...

System Applications

- Web browsers protect users from the Wild Web
 - Apps run in their own isolated security sandbox
 - Need to ask user before granting restricted access
- W3C working on enabling richer access for trusted apps
 - Needed to compete with flexibility of native app SDKs
- Where is this being used?
 - Firefox OS, Tizen, PhoneGap, Chrome OS, Webinos
- Packaged vs Hosted applications
 - Packaged apps can be installed onto the device
 - New work on using JSON for app manifests
- See <http://www.w3.org/2012/sysapps/>

How ready are corporate sites?

- UK companies not ready for mobile internet
 - Two-thirds of companies in the FTSE 100 have websites that are difficult to use on smartphones, a study shows.
 - Robert Cookson, Financial Times, 2 January 2013
 - <http://on.ft.com/Zp4UZI>
 - “FTSE 100 companies are not mobile-ready and are wasting millions of pounds on internet advertising by sending visitors to websites that do not work as users expect them to,” said Jonathan Bass of Incentivated
 - Domino’s Pizza, one of the pioneers of online fast-food sales in the UK, reported in September that purchases from mobile phones were growing at almost 50 per cent a year and accounted for nearly a fifth of its online sales.
- Even fewer have thought about tablets, smart TVs and so forth
- Some provide native mobile apps, but these are not a panacea!

Responsive Design

- Enabling web sites and applications to adapt to the device
 - Design layout and UI to work effectively on each device
 - Avoid sending images with inappropriate resolutions
 - Try to use same web page URI for all devices
 - Simpler for users, but requires responsive design
 - General principles available in
 - W3C Mobile Web Best Practices 1.0
 - <http://www.w3.org/TR/mobile-bp/>
 - Online training courses from W3C
- Better tools needed!
 - Some ideas on exploiting model-based techniques
 - <http://www.w3.org/2013/Talks/quill-slides-www2013.pdf>

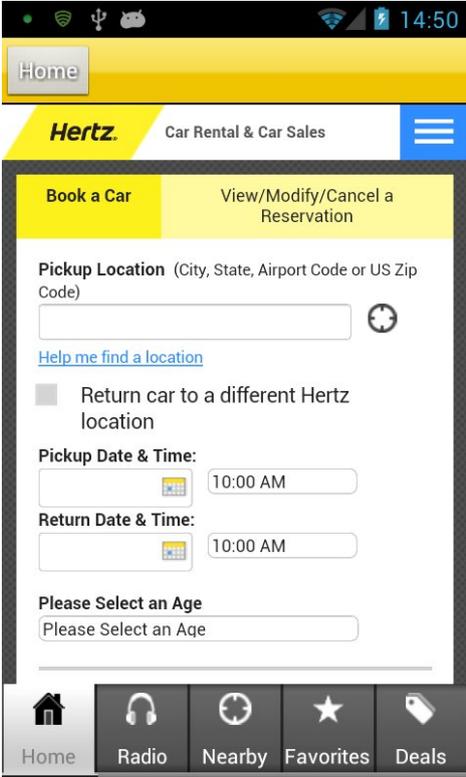
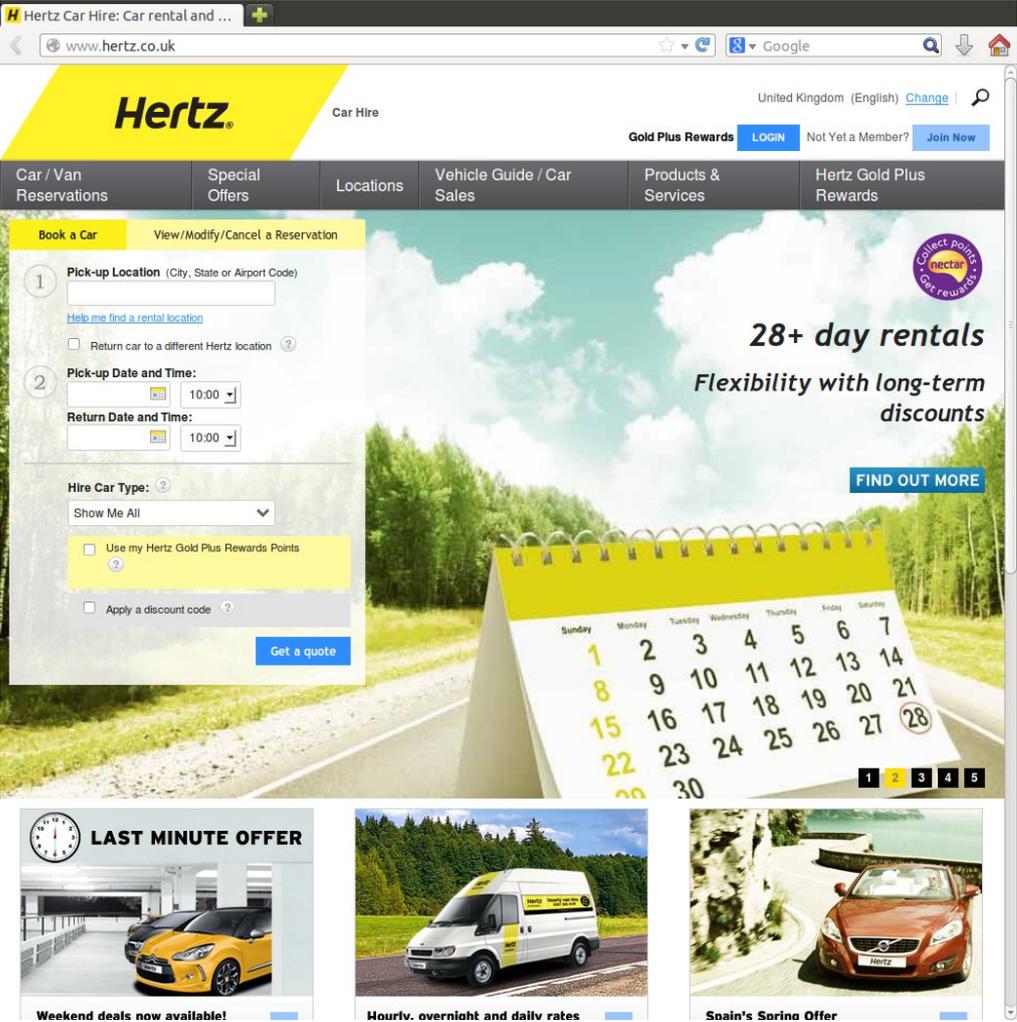
What device?

- Server-side detection of device type
 - Based upon information in HTTP requests
- Client-side detection
 - In Markup, e.g.
 - HTML5 link element for matching style sheet to the device
 - Image srcset attribute
 - In style sheets with @media and srcset
 - In Scripts, e.g.
 - Based on user-agent (risky)
 - Better to use capability specific tests
 - Often embedded in libraries, e.g. jQueryMobile
- Using a mix of techniques for flexibility, e.g.
 - Service-side adaptation of content
 - Client-side adaptation of style

What kinds of adaptation?

- Adjust scope to match context of use
 - Focus on specific task for mobile and automotive
 - Smaller screen, and users are more task oriented
 - On Desktop you have greater freedom and can address a broader range of purposes
- Use images with resolution appropriate to device
 - Speed downloads, increase battery life, avoid blurred images
- Mouse/trackpad vs touch screens
 - For touch need large easy to use controls

Desktop vs Phone



Captured from mobile App



Advantages of the Open Web Platform

- HTML5 and the Open Web Platform as the obvious choice when you want to reach out to many devices
 - Non-proprietary open standards, that can be implemented free of royalties
 - Huge pool of developers
 - Reduced learning curve, and lower costs!
 - Avoid overheads associated with native app stores
- New – HTML for system applications
 - Trusted apps with rich connection to the device
 - <http://www.w3.org/2012/sysapps/>

Some W3C Working Groups

- HTML
- CSS
- Web Apps
- Web Performance
- Web Notifications
- Web Events
- Audio
- Pointer Events
- Multimodal Interaction
- Internationalization
- Browser Testing and Tools
- Web Testing Interest Group
- Web Application Security
- Web Cryptography
- Device APIs
- Geolocation
- Web Real Time Communications
- System Applications
- NFC
- Voice Browsers

Back up slides on automotive

The Open Web Platform

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W3C Web & Automotive Workshop



[WEB AND AUTOMOTIVE]
**Shift into High Gear
on the Web**

W3C WORKSHOP
14-15 NOVEMBER 2012, ROME, ITALY
HOSTED BY INTEL



- <http://www.w3.org/2012/08/web-and-automotive/>

Web & Automotive Workshop



- Co-chaired by Adam Abramski, Intel Open Source Technology Center, and Dave Raggett, W3C
- 36 papers submitted, 67 participants, 21 presentations over 2 days
- See [workshop summary report](#)

Workshop Participants

- ACCESS, AKQA, Alpine Electronics, Audi, Black Duck, BMW, Bosch, CSC, Delft Uni Technology, Ericsson, eSolutions, DFKI, Harman Automotive, Hitachi, Honda R&D, Hyundai Motor, Igalia, Intel, jambit, KDDI, LG Electronics, Magneti Marelli, GENIVI, Mitsubishi, NTT DoCoMo, PayPal, QNX, Renault, RIM, SciSpike, SMK, Strategy Analytics, Toyota, VALCON, Visteon, Vodafone, Volkswagen and W3C

Web & Automotive Workshop

- Key topics for discussion
 - Putting safety first
 - Relationship between car and mobile phone
 - Creating markets for automotive applications
 - Improving quality and reducing costs through Web technologies
 - Unique opportunities for the automotive user experience
- Main outcome of workshop – launch of Business Group

Automotive and Web Platform Business Group

<http://www.w3.org/community/autowebplatform/>

- Feed needs of automotive industry into work on the Open Web Platform
 - For standardization by existing or new Working Groups
- Help automotive industry to understand how to engage effectively in W3C standards work
- Initial focus on application API for exposing appropriate vehicle data
 - **Deliverables:** specification, test suite and other reports
 - Plan to publish first API draft specification by end of 2013
- If successful, further work is expected on topics such as
 - Mitigating driver distraction and improving safety

Who is involved?

- Chairs: Adam Abramski (Intel), Andy Gryc (RIM)
- Current participants as of 26 May 2013
 - ACCESS, Aptina, Auto.sohu.com, BSQUARE, Car Culture*, Continental*, ETRI, Fiat*, Ford*, Fraunhofer, GENIVI Alliance, Infomedia Intel, Israel Internet Association, Japan Automobile Research Institute, JEITA, KBM Systems*, KDDI, LG Electronics, Mobile Web Forum, MobiWize, Neusoft, Nokia, Obigo, OpenCar, OpenStream, Opera Software, Pandora Media, parkopedia.com, Porsche, RIM, Sharp, Strategy Analytics*, SYM Software, Tomo-Digi, Verisign, Visteon Software Technologies, Vodafone, and Volkswagen
 - * denotes companies represented by people who have made individual CLA commitments
- To join, see:
 - <http://www.w3.org/community/autowebplatform/participants>
 - [W3C Community Contributor License Agreement \(CLA\)](#)
 - Free for W3C Member organizations
 - Fee for others depending on organization size
 - [More details](#)

Progress

- Submissions of API specifications
 - GENIVI/LGE
 - QNX
 - Tizen
 - Webinos – EU project involving BMW
- Review of other relevant W3C work
- First teleconferences in late March
- First face to face in Barcelona, April 22
- Second face to face in Tokyo, May 29-30

Any other questions?

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Join W3C to help drive the Web to its full potential – <http://www.w3.org/>