HTML5 and the web of tomorrow

Know IT
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Contents

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- CSS3
  - What's new?
- HTML5
  - What's new?
- Complementary technologies
  - Examples

file:///C:/Documents%20and%20Settings/olleo/Skrivbord/G-processes/w3c/demos/%C3%ADndex.html

What's the future?

- Web 1.0 – HTML & HTTP

  - Access to contents; ...

- Web 2.0 – Ajax

  - Create content; interactivity; ...

- Web X.0 {X > 2} – Web platform

  - Devices; …
  - Web of Data
  - Web of Interaction
  - Web of Applications

Web platform – main drivers

- Economic: infrastructure investment; cost-effective creation/construction; ...

- Reach: usable everywhere; ...

- Stable: works today and tomorrow; ...

and ...

- New platforms: mobile; embedded; …

- Expectations: user experience; technology up-take

- Competition: technology control; proprietary, ...

The Next Open Web Platform

- HTML 5
- CSS 2.1
- CSS 3 Selectors
- CSS 3 Media Queries
- CSS 3 Text
- CSS 3 Backgrounds and Borders
- CSS 3 Colors
- CSS 3 2D Transformations
- CSS 3 3D Transformations
- CSS 3 Transitions
- CSS 3 Animations
- CSS 3 Multi-Columns
- CSS Namespaces
- SVG 1.1
- WAI-ARIA 1.0
- MathML 2.0
- ECMAScript 5
- 2D Context
- WebGL
- Web Storage

- Indexed Database
- Web Workers
- Web Sockets Protocol/API
- Geolocation
- Server-Sent Events
- Element Traversal
- DOM Level 3 Events
- Media Fragments
- XMLHttpRequest
- Selectors API
- CSSOM View Module
- File API
- RDFa
- Microdata
- WOFF
- HTTP 1.1 part 1 to part 7
- TLS 1.2 (updated)
- IRI (updated)
- ...

Web Platform and the HTML5 space

- HTML5 in the narrow sense
  - The specification titled "HTML5" – *HTML* & *XHTML* !
- HTML5 in the wider sense – "Open Web Platform"
  - The HTML5 language as framework
  - CSS2/CSS3, SVG, MathML
  - Additional specialised technologies
    - Storage, threads, fonts, geolocation, ...
- Perspectives from different roles:
  - User
  - Author
  - Implementor
  - Specifier

"A Word from our Sponsor"

World Wide Web Consortium (W3C)

- W3C (World Wide Web Consortium)
  - The web standards organization Consortium

- Consortium 350 member organisations

- Founded 1994

- Creating web standards ("W3C Recommendations")
  - HTML, CSS, SVG, RDF, PNG, MathML, XML, WCAG, EXI…
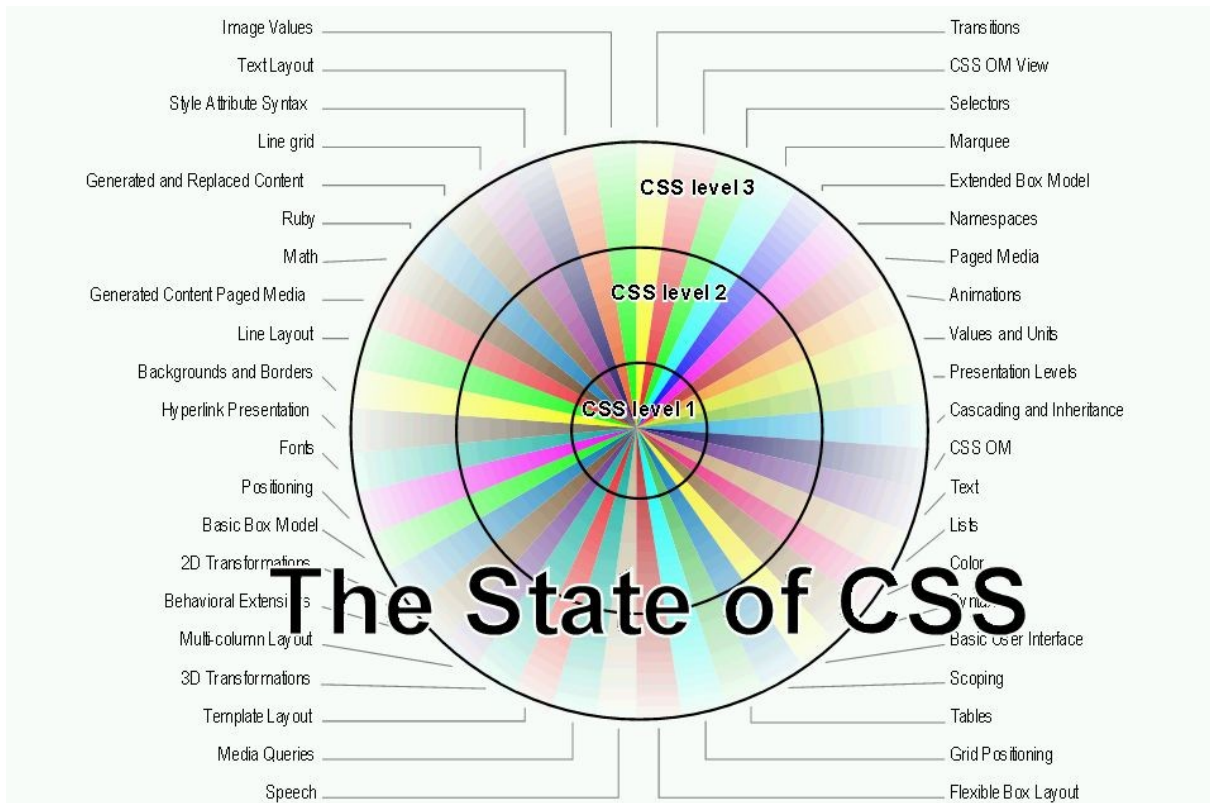
Open standardisation process

- Requirements driven and needs driven
  - Use cases, business needs, …
- Proposals exposed to the world
- Comments and feedbacks incorporated
- HTML Working Group handles work on HTML5
  - … in collaboration with WHATWG
  - Done as collaboration between IT companies
- Consensus in working group
  - Stakeholders are driving it
- Drivers: market; use; and technology

Challenges to standardisation

- Compatibility between standards
  - Combining web technologies
    - Combining standards
  - HTML + CSS; HTML + MathML; XHTML + Xquery; …
- Compatibility across generations of a standard
  - Keep old stuff? How to shape new stuff?
  - HTML 3 => HTML 4 => HTML 4.01 => HTML 5

- HTML5 defined to:
  - integrate other standards
  - be "backwards compatible" & tolerant

CSS / CSS3

CSS – the big picture

Image Values — Transitions
Text Layout — CSS OM View
Style Attribute Syntax — Selectors
Line grid — Marquee
Generated and Replaced Content — Extended Box Model
Ruby — Namespaces
Math — Paged Media
Generated Content Paged Media — Animations
Line Layout — Values and Units
Backgrounds and Borders — Presentation Levels
Hyperlink Presentation — Cascading and Inheritance
Fonts — CSS OM
Positioning — Text
Basic Box Model — Lists
2D Transformations — Color
Behavioral Extensions —
Multi-column Layout — Basic User Interface
3D Transformations — Scoping
Template Layout — Tables
Media Queries — Grid Positioning
Speech — Flexible Box Layout

CSS level 3

CSS level 2

CSS level 1

The State of CSS

CSS state: Stable & proven

Stable & proven

- CSS level 1
- Selectors
- ...

CSS state: Stable & implementing

Stable & being implemented – examples

- CSS level 2
- CSS Namespaces
- CSS Backgrounds and Borders
- CSS Multicolumn Layout
- Paged Media
- Color
- Media Queries
- Mobile Profile

CSS state: Almost stable

Almost stable – examples

- Template Layout
- 2D Transformations
- Transitions
- ...

CSS state: Not stable

Not stable

- Tables, Lists, Positioning, Generated & Replaced Content, Image Values, 3D Transformations, Fonts, Text Layout…

… apart from the properties that already in level 2

CSS 3 Selectors

- :first-child, :last-child, :nth-child(3), :nth-child(odd)

Date	Description	Depositption	Transfer	Withdrawal	Balance
10/08/2004	Restaurant	Expenses:Foods		38.14	440.67
10/10/2004	Market	Expenses:Groceries		123.14	317.53
10/11/2004	Gas	Expenses:Car		40.00	277.53
10/12/2004	Payroll	Income:Salary	2,000.00		2277.53
10/12/2004	Home depot	Expenses:House Supplies		41.14	2236.39
10/14/2004	Dentist	Expenses:Medical		166.20	2070.19
10/15/2004	Electricity	Expenses:Utilities		27.88	2042.31
10/16/2004	Filene's Basement	Expenses:Grooming		31.93	2010.38

CSS3 Borders
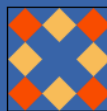
We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

(Preamble of the United States of America Constitution)

CSS Media Queries

```
<link rel="stylesheet" type="text/css" href="base.css" />
<style type="text/css" media="screen and (min-width: 481px)">
  @import url("advanced.css");
</style>
<link rel="stylesheet" type="text/css" href="base.css"
      media="handheld, only screen and (max-device-width:
480px)" />
```

CSS Examples

Simple illustrations

- *Background, borders … visual decorations*

- *Media queries … adapting to screen*

- *Transitions/hover ... dynamic behavior*

HTML5

HTML 5: Quick history

- 2004:
  - Opera, Mozilla, and Apple creates the WHAT WG
- 2007:
  - W3C restarts the HTML Working Group
- 2008:
  - January First Public Working Draft
- 2010:
  - Apple, Google, Mozilla, Microsoft, and Opera (and others) are implementing, or are committed to, HTML 5
  - Working Drafts: March, June, October
- 2011
  - Working Drafts: January

HTML5 – approach

- Principle: correct HTML4 pages remain correct

- Goal: many incorrect pages still work, too

- New elements

- New attributes

Total Market Share

- 25.08% - Microsoft Internet Explorer 8.0
- 17.80% - Microsoft Internet Explorer 6.0
- 12.40% - Microsoft Internet Explorer 7.0
- 12.35% - Firefox 3.6
- 7.84% - Firefox 3.5
- 3.19% - Microsoft Internet Explorer 8.0 - (
- 20.46% - Other

HTML 5: HTML or XML?

- Two serializations

  - HTML serialization (`text/html`)
  - XML serialization (`application/xhtml+xml`)

- Incorporates SVG and MathML

- Incorporates DOM Core and DOM HTML

New high-level structure elements

- <section>, <article>

- <aside> – replaces <div class=sidebar>

- <hgroup> – allows to create subtitles

- <header> – frontmatter of a book/article

- <footer> – colophon

- <nav> – table of contents, breadcrumbs, etc.

- <figure>, <figcaption>

New phrase-level elements

- <math> – with MathML inside

- <svg> – with SVG inside

- <audio>, <video>, <embed> – replaces <object>, <img>, <applet>

- <mark> – an alternative for <em>

- <time> – date or time, for µformats

- <ruby>, <rp>, <rt> – ruby for CJK

New elements for "DHTML"

- <progress> – of a process, e.g. "60%"

- <meter> – measurement along a scale, e.g., "***"

- <canvas> – blank rectangle, for script to draw on

- <menu>, <command> – menu/toolbar

- <output> – to be filled with text by script

- <menu> already existed, as more or less an alias for

New form elements

- <details>, <summary> – collapsible dialog

- <datalist> – combobox

- <keygen> – generates public/private key pair

- <input type=tel> – telephone number

- … type=search – as text, but may look different

- … type=url, email, datetime, date, month, week, time, datetime-local, number, color

- … type=range – analog number input

New attributes (1/2)

- <input autofocus>

- <input placeholder="…"> – hint shown inside an empty input

- <input form=ID> – allows to put element outside form

- <input required>

- <input min= max= step= pattern= > – constraints

- <ol reversed> – count down

New attributes (2/2)

- <iframe seamless> – render with intrinsic height instead of 150px

- <contenteditable > – a bit like textarea

- <data-* > – guaranteed non-standard attributes

- <role= aria* > – restore accessibility of incorrectly used elements

- <input spellcheck> – indicate that spellchecking is not useful

Canvas

- 2D drawing space

- Scripted manipulation

- Dynamic contents
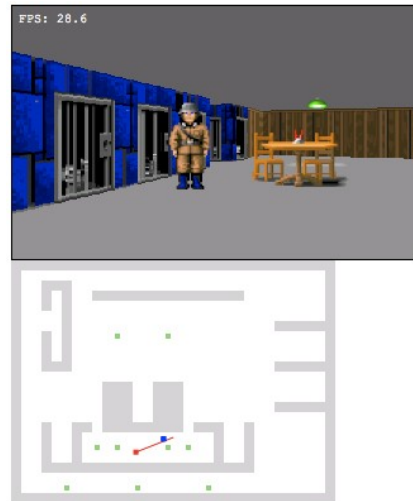
Demo examples: html5

HTML 5.0 <video>

- <video src='myMovie' id='myVideoElement' />

- .....

Demo html5/video.html

Reasonable Requirements for a Video codec

- Known not to require per-unit or per-distributor licensing

- Compatible with the open source development model

- Of sufficient quality as to be usable

- Not an additional submarine patent risk for large companies

- Compatible with W3C Royalty-Free policy

- .....

None of the codecs fit the requirements for HTML 5?

Codecs and formats

Format Container: .avi, .mp4, .mov, .ogg, .flv. .mkv, etc.

Video codec:	**Audio codec**:	**Captioning, Video description**:	**Metadata**:
H.264, VP8, Theora, Dirac 2.1, H.263, etc.	AAC, WMA, Vorbis, PCM, etc.	SAMI, SMIL, Hi-Caption, CMML, DFXP, 3GPP TS 26.245, MPSub, etc.	MPEG-7, CableLabs, TV-ANytime, EBU, XMP, etc.

Codec implementations

## HTML5 VIDEO CODECS

	MAC				WIN								
	CHROME	FIREFOX	OPERA	SAFARI	CHROME	FIREFOX		OPERA	SAFARI	IE			
	5	3.6	10.6	5	4	5	6	3.6	4.02	10.6	5	6	7	8	9
Video: ogg	✔	✔	✔	✘	✘	✔	✔	✔	✔	✔	✘	✘	✘	✘	✘	68%
Video: H.264	✔	✘	✘	✔	✔	✔	✔	✘	✘	✘	✔	✘	✘	✘	✔	34%
Video: WebM	✘	✘	✔	✘	✘	✘	✔	✘	✔	✔	✘	✘	✘	✘	✘	13%

Technologies in HTML5 space

Fonts: WOFF File Format

- Web Open Font Format

- Already available

- Adaptation of existing font packaging

- Opens up new design / branding opportunities

(Preamble of the United States of America Constitution)
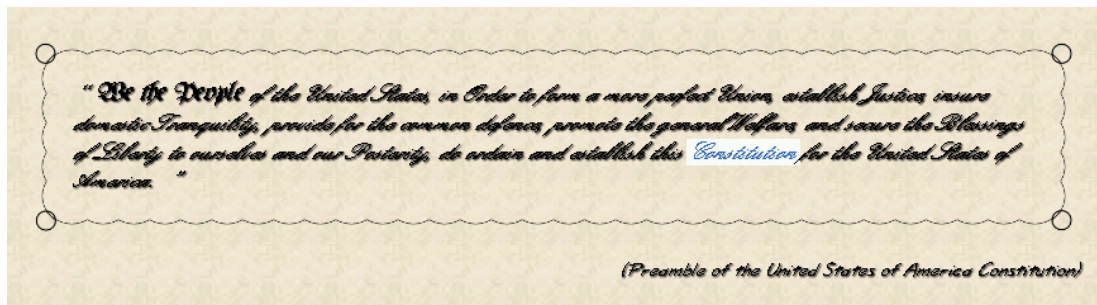
… and many others

- Geolocation … use geographical position (mobile!)

- Web applications … small things on your desktop
  - Newsfeeds, ticker tapes, weather, timetables, ...

- Offline web applications … working when not online

- Web workers … threads for independent processing

- Web sockets … bi-directional, full-duplex communications

- Device APIs … calendar, contacts, camera, files, sensors, ...

What does it all mean?

Summary

- Improved open web platform

- HTML5 as a framework
  - Integrating other web technologies

- Simplified web content development
  - Better match to 80% of needs

- Simplified web application development
  - Standardised technologies

- Improved portability
  - Standards conforming implementations

Thank you for your attention!

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