Web 2.0 Meets the Handset
or Mobile Embraces the Web (finally!)

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World Wide Web Consortium
http://www.w3.org/
# What Can We Learn from History?

**(part 1)**

<table>
<thead>
<tr>
<th>Internet 1994</th>
<th>Mobile Data Services 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too slow</td>
<td>Too slow</td>
</tr>
<tr>
<td>“Walled gardens”</td>
<td>“Walled gardens”</td>
</tr>
<tr>
<td>Lack of interoperability</td>
<td>Lack of interoperability</td>
</tr>
<tr>
<td>Open Web changed the world</td>
<td><img src="image-url" alt="Image" /></td>
</tr>
</tbody>
</table>

*2005: W3C starts the Mobile Web Initiative*
What Can We Learn from History? (part 2)

<table>
<thead>
<tr>
<th>Internet 1994</th>
<th>Mobile Data Services 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of content</td>
<td>Tons of content and growing</td>
</tr>
<tr>
<td>No industry / business model</td>
<td>Both emerging rapidly</td>
</tr>
<tr>
<td>Web 1.0: Documents</td>
<td>Web 2.0 and Web 3.0</td>
</tr>
<tr>
<td>Smaller user base</td>
<td>Mobile = 2x current Web users</td>
</tr>
<tr>
<td>Web = novelty</td>
<td>Web is a staple of life (for many)</td>
</tr>
</tbody>
</table>

2008: Is the US mobile industry finally ready to embrace the open Web model?
World Wide Web Consortium: Leading the Web’s Expansion…

.. from a Web of linked documents, to One Web:

- of Creators and Consumers (2.0)
- of Linked Data and Services (3.0)
- on Everything
- for Everyone
One Web ...

... providing the same information and services to users, regardless of the device they are using.
Web 2.0

- What is it?
  - Everyone is a creator, as well as a consumer
  - Dynamic interaction

- Web 2.0 @ W3C = Rich Web Clients Activity

- Updating existing W3C standards & javascript
  - HTML5 + graphics, styling, etc.

- Standardizing new technologies
  - AJAX technologies and other javascript stuff
  - Widgets, security, etc.
Web 3.0*

- Web 1.0 = Linked Documents
- Web 3.0 = Linked Data (Semantic Web)
  - Web becomes a global, relational database
  - Potential to break down walled gardens of many Web 2.0 applications

*New York Times, InternetNews
Web on Everything: Make Web access on all devices seamless, reliable, cost-effective

- Mobile Web Best Practices 1.0
- Device Description
- Ubiquitous Web Applications
Supporters of Mobility and Ubiquity Standardization @ W3C

Additional, Key Participants: Alcatel-Lucent, AOL, AT&T, BT, Citigroup, El Mundo, FOSI, Google, Hutchinson 3, IBM, Intel, Microsoft, OMA, Openwave, Samsung, Siemens, SK Telecom, Sun, T-Onlin, Telefonica, many others.
MWI Next Generation: New push about to start …

- mobileOK, certification, testing, etc.
- Mobile Web 2.0 applications
- Best practices for content adaptation
- Location-based services (including security)
- Mobile Web in developing countries
- Integration of voice and multimodality
- Mobile video
Web for Everyone

- Commerce
- Healthcare
- Education
- eGovernment
- Communication

- Mobile Web Initiative
- Accessibility
- Internationalization
- Developing Countries
Challenges for the Web Everywhere

For:
- Consumers
- Enterprises
- Technologists
- Advertisers
- Society

In areas including:
- Identity, privacy, trust
- Pricing and revenue models
- Ubiquitous interoperability
- Consistent, high quality user experiences
- … on variety of devices
- Etc.
- Etc.
For more information

http://www.w3.org/

Mobile Web Initiative
http://www.w3.org/Mobile/

W3C Membership:
http://www.w3.org/Consortium/membership
Questions
For
Today
Big Question (all)

What does the mobile industry have to do to bring Web 2.0 to consumers in meaningful new ways?

(devices, privacy, pricing, applications, access...)
Question #1

What will be the role of operators in mobile advertising two years from now? What are the key factors for increasing or losing their seat at the table? (e.g., based on current/potential value of data)
Question #2

Consumers vote with their feet, thumbs and wallets when it comes to user experience -- what are the next three capabilities consumers will want and the mobile industry should be planning for?

(content, communication [txt, im], device)
Question #3

What opportunities and hazards come with mobile social networking?
Question #4

Mobile advertising reality check: what's just hype, and what does mobile marketing industry need to do to prove its value?
● Extra slides follow
More than 1 Billion Served

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>933,448,292</td>
<td>14.2 %</td>
<td>43,995,700</td>
<td>4.7 %</td>
<td>3.5 %</td>
<td>874.6 %</td>
</tr>
<tr>
<td>Asia</td>
<td>3,712,527,624</td>
<td>56.5 %</td>
<td>459,476,825</td>
<td>12.4 %</td>
<td>36.9 %</td>
<td>302.0 %</td>
</tr>
<tr>
<td>Europe</td>
<td>809,624,686</td>
<td>12.3 %</td>
<td>337,878,613</td>
<td>41.7 %</td>
<td>27.2 %</td>
<td>221.5 %</td>
</tr>
<tr>
<td>Middle East</td>
<td>193,452,727</td>
<td>2.9 %</td>
<td>33,510,500</td>
<td>17.3 %</td>
<td>2.7 %</td>
<td>920.2 %</td>
</tr>
<tr>
<td>North America</td>
<td>334,538,018</td>
<td>5.1 %</td>
<td>234,788,864</td>
<td>70.2 %</td>
<td>18.9 %</td>
<td>117.2 %</td>
</tr>
<tr>
<td>Latin America/Caribbean</td>
<td>556,606,627</td>
<td>8.5 %</td>
<td>115,759,709</td>
<td>20.8 %</td>
<td>9.3 %</td>
<td>540.7 %</td>
</tr>
<tr>
<td>Oceania / Australia</td>
<td>34,468,443</td>
<td>0.5 %</td>
<td>19,039,390</td>
<td>55.2 %</td>
<td>1.5 %</td>
<td>149.9 %</td>
</tr>
<tr>
<td>WORLD TOTAL</td>
<td>6,574,666,417</td>
<td>100.0 %</td>
<td>1,244,449,601</td>
<td>18.9 %</td>
<td>100.0 %</td>
<td>244.7 %</td>
</tr>
</tbody>
</table>

In 1995, there were ~16,000,000 Internet users, or 0.4% of global population

Internet Growth Driven by Open Web

Number of Web Sites (domain names and content)

<table>
<thead>
<tr>
<th>DATE</th>
<th>SITES</th>
<th>DATE</th>
<th>SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/90</td>
<td>1</td>
<td>12/93</td>
<td>623</td>
</tr>
<tr>
<td>12/91</td>
<td>10</td>
<td>06/94</td>
<td>2,738</td>
</tr>
<tr>
<td>12/92</td>
<td>50</td>
<td>12/94</td>
<td>10,022</td>
</tr>
<tr>
<td>06/93</td>
<td>130</td>
<td>06/95</td>
<td>23,500</td>
</tr>
<tr>
<td>09/93</td>
<td>204</td>
<td>01/96</td>
<td>100,000</td>
</tr>
<tr>
<td>10/93</td>
<td>228</td>
<td>06/96</td>
<td>252,000</td>
</tr>
</tbody>
</table>

Internet Users in early 2007 ~ 1+ billion

Sources:  
http://www.zakon.org/robert/internet/timeline/  
http://www.internetworldstats.com/stats.htm
Mobile Growth and Potential

What Led to the Web’s Success?

- Simple architecture - HTTP, URI, HTML
- Networked - value grows with data, services, users
- Extensible - from Web of documents to ..
- Tolerant - works with imperfect mark-up, data, links, SW
- Universal - regardless of HW, OS, SW, language, ability
- Free / cheap - browsers, information, services
- Simple (and fun) for users - text, graphics, links
- Powerful - for people (and machines)
- *Open standards ...*
Challenges for Mobile Web

- 2 billion people own mobile phones with Web browsers
  - 300-400 million are actively used
- 2-3 million new mobile phones sold / day
  - Most new phones will continue to include simple Web browsers
- Potential for bringing the Web to more people is huge

Graphic: Nokia
## W3C Standards Address Mobility Challenges

<table>
<thead>
<tr>
<th>User Requirements</th>
<th>W3C Solutions</th>
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<tr>
<td>User-friendly content</td>
<td>Mobile Web Best Practices</td>
</tr>
<tr>
<td>“One Web”</td>
<td>Device Description</td>
</tr>
<tr>
<td>Effective adaptation</td>
<td>Ubiquitous Web</td>
</tr>
<tr>
<td>Labeling, protection</td>
<td>Protocol for Web Description</td>
</tr>
<tr>
<td>Description, discovery, trust</td>
<td>mobileOK</td>
</tr>
<tr>
<td>Voice, stylus, keys</td>
<td>VoiceXML, Multimodal</td>
</tr>
<tr>
<td>Universality</td>
<td>WAI, I18N, Developing World</td>
</tr>
<tr>
<td>Security</td>
<td>Browser Security, Privacy</td>
</tr>
<tr>
<td>Interoperability</td>
<td>Web standards: XHTML, CSS, Graphics, Forms, AJAX, Widgets, Ubiquitous Web, etc.</td>
</tr>
</tbody>
</table>
Ubiquitous Web Applications

- Enabling Web applications to interact across wide diversity of devices:
  - Computers, equipment, media, appliances, mobile devices, physical sensors, effectors, consumer electronics

- Deliverables … standards for:
  - Device independent authoring
  - Delivery contexts
  - Remote eventing, device coordination
  - Location service support

Working Group homepage
Internationalization

- Can you view content easily no matter where you are in the world?
- How can we make mobile devices travel more easily around the world?
Web 2.0 Convergence on Handsets

- Using the Web on phones can be frustrating, costly, and limiting.

- Fixing this requires:
  - Seamless interoperability
  - Ease of use
  - Safety…and…
  - Simple guidelines on the use of existing standards
Mobility is global...
…and the Web is mobile.
Making the Web work across devices,
...how, when, and where you want,
...with new rich media experiences,
New technologies, new revenue models

$259.1 BILLION U.S. ONLINE RETAIL SALES

1. Travel $84.6B
2. Apparel, Accessories, Footwear $22.3B
3. Computers, Hardware, and Software $20.8B
4. Automotive and Auto Parts $18.8B
5. Home Furnishings $13.9B

Moving Online
U.S. online advertising revenue

$4 billion

Sources: PricewaterhouseCoopers; Interactive Advertising Bureau