

The evolution of the Web to Web 2.0

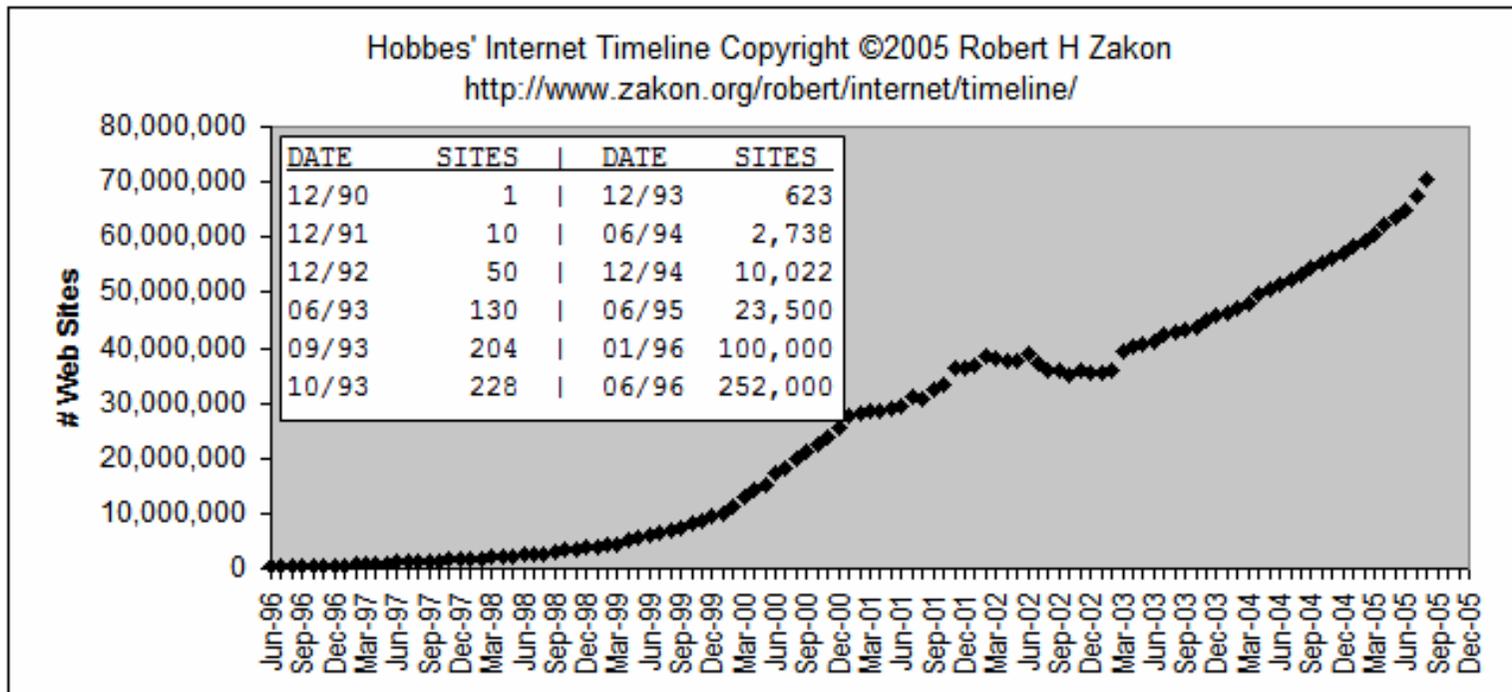
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What makes the Web work ?

- Technology – standardised
- Business models
- User demand
- Legal Issues

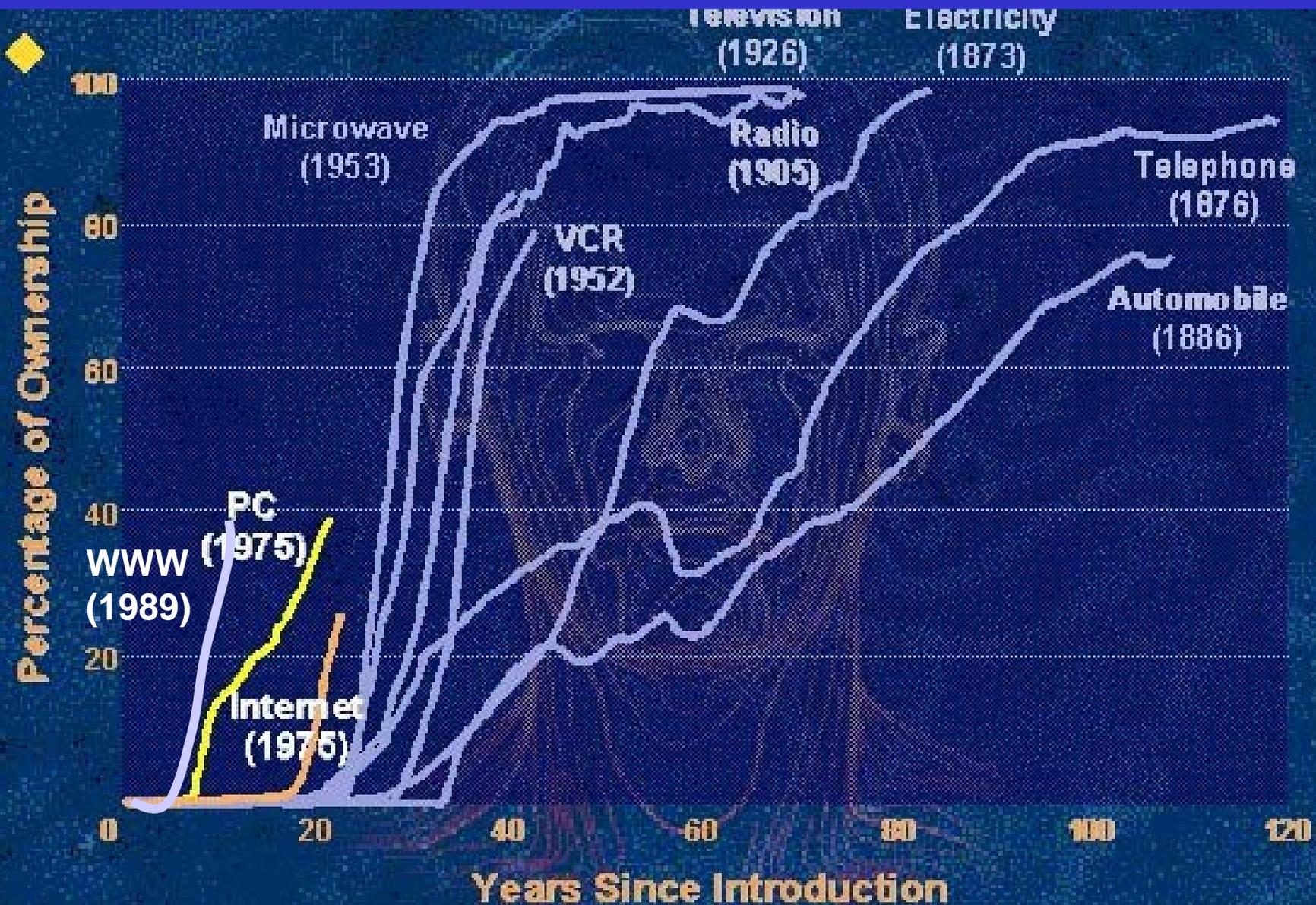
User Demand: Adoption of Web technology was very quick, and keeps growing

Number of Web Servers (Dec 1990 - Dec 2005)



Source: <http://www.zakon.org/robert/internet/timeline/>

Business models had to evolve more quickly than ever before



What lead to the Web's success ?

- Simple architecture - HTML, URI, HTTP
- Networked - value grows with data, services, users
- Extensible - from Web of documents to ...
- Tolerant - works with imperfect mark-up, data, links, SW
- Universal - independent 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 ...

Web Usage & Technologies are evolving

From a Web of Documents ...
Toward *One Web* ...
... of Data and Services
... on Everything
... for Everyone



'06 - Mobile devices outnumber desktop computers by a factor of two



User Demand: The Web for everyone is growing throughout the world

One billion people around the globe now have access to the Internet

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2006 Est.)	Population % of World	Internet Usage, Latest Data	% Population (Penetration)	Usage % of World	Usage Growth 2000-2005
Africa	915,210,928	14.1 %	23,649,000	2.6 %	2.3 %	423.9 %
Asia	3,667,774,066	56.4 %	380,400,713	10.4 %	36.5 %	232.8 %
Europe	807,289,020	12.4 %	294,101,844	36.4 %	28.2 %	179.8 %
Middle East	190,084,161	2.9 %	18,203,500	9.6 %	1.7 %	454.2 %
North America	331,473,276	5.1 %	227,470,713	68.6 %	21.8 %	110.4 %
Latin America/Caribbean	553,908,632	8.5 %	79,962,809	14.7 %	7.8 %	350.5 %
Oceania / Australia	33,956,977	0.5 %	17,872,707	52.6 %	1.7 %	134.6 %
WORLD TOTAL	6,499,697,060	100.0 %	1,043,104,886	16.0 %	100.0 %	189.0 %

NOTES: (1) Internet Usage and World Population Statistics were updated for June 30, 2006. (2) CLICK on each world region for detailed regional information. (3) Demographic (Population) numbers are based on data contained in the [world-gazetteer](#) website. (4) Internet usage information comes from data published by [Nielsen//NetRatings](#), by the [International Telecommunications Union](#), by local NICs, and other other reliable sources. (5) For definitions, disclaimer, and navigation help, see the [Site Surfing Guide](#). (6) Information from this site may be cited, giving due credit and establishing an active link back to [www.internetworldstats.com](#). ©Copyright 2006, Miniwatts Marketing Group. All rights reserved.

Source: <http://www.internetworldstats.com/stats.htm>

W3C & open Web Standards

- W3C is a consortium which recommends technologies
- Founded 1994 to unify the Web
- Director, web founder, Sir Tim Berners-Lee
- 60 staff worldwide
- 400+ members worldwide
- Members: User companies (e.g. BBC, Boeing), software developers, telcos, large & SME
- UK government bodies were members but have dropped out once national regulations were established
- Standards are developed in working groups of member experts – 5 to 50 people
- 3 years to pass through a strict process model
- Mechanisms in place to:
 - Ensure consistency
 - Avoid duplication
 - Avoid manipulation by large organisations

W3C recommendations

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>FNG</i>	<i>HTML 3.2</i>	<i>XML 1.0</i>	<i>CSS 1</i>	<i>XHTML 1.0</i>	<i>MathML 2.0</i>	<i>XML Signature</i>	<i>DOM 2 HTML</i>	<i>CC/PP</i>	<i>SMIL 2.0 (2nd ed.)</i>	<i>XForms 1.0 (2nd)</i>
<i>PICS Labels</i>	<i>HTML 4.0</i>	<i>MathML 1.0</i>	<i>Namespaces</i>	<i>ATAG 1.0</i>	<i>Canonical XML</i>	<i>P3P 1.0</i>	<i>SVG 1.1</i>	<i>DOM 3 Validation</i>	<i>RRSHB</i>	<i>WS Addressing Core</i>
<i>PICS Rating</i>	<i>PICSRules</i>	<i>HTML 4.0</i>	<i>WebCGM</i>	<i>XML 1.0</i>	<i>XHTML Media</i>	<i>XML Canonicalization</i>	<i>SVG Mobile</i>	<i>Infoset (2nd)</i>	<i>SOAP MTOM</i>	<i>Addressing SOAP Bind</i>
<i>CSS 1</i>		<i>CSS 2</i>	<i>RDF (Old Version)</i>	<i>DOM 2 Core</i>	<i>Schema Primer</i>	<i>XHTML 1.0</i>	<i>XPTR Element</i>	<i>Namespaces 1.1</i>	<i>XOP</i>	<i>Namespaces (2nd.)</i>
		<i>PICS DSig</i>	<i>WCAG 1.0</i>	<i>DOM 2 Events</i>	<i>Schema Struct.</i>	<i>XPath Filter</i>	<i>XPTR Framework</i>	<i>XML 1.0 (3rd)</i>	<i>Char Model</i>	<i>Namespaces 1.1 (2nd.)</i>
		<i>SMIL 1.0</i>	<i>Style Sheets PI</i>	<i>DOM 2 Style</i>	<i>Schema Types</i>	<i>Decrypt Transform</i>	<i>XPTR Xmlns</i>	<i>XML 1.1</i>	<i>XKMS</i>	<i>XML 1.0 (4th)</i>
		<i>DOM 1</i>	<i>MathML 1.0.1</i>	<i>DOM 2 Traversal</i>	<i>Ruby</i>	<i>XML Encryption</i>	<i>SOAP Adjuncts</i>	<i>OWL Guide</i>	<i>XKMS Bindings</i>	<i>XML 1.1 (2nd.)</i>
			<i>XPath 1.0</i>	<i>DOM 2 Views</i>	<i>XHTML 1.1</i>	<i>UAAG 1.0</i>	<i>SOAP Framework</i>	<i>OWL Overview</i>	<i>QA Framework</i>	<i>XHTML-Print</i>
			<i>XSLT 1.0</i>	<i>XHTML Basic</i>	<i>XLink 1.0</i>		<i>SOAP Primer</i>	<i>OWL Reference</i>	<i>xml:id</i>	<i>XInclude (2nd)</i>
			<i>HTML 4.01</i>		<i>XML Base</i>		<i>SOAP Tests</i>	<i>OWL Semantics</i>	<i>SMIL 2.1</i>	
					<i>SMIL 2.0</i>		<i>XForms 1.0</i>	<i>OWL Tests</i>		
					<i>SMIL Animation</i>		<i>XML Events</i>	<i>OWL Use Cases</i>		
					<i>SVG 1.0</i>		<i>MathML 2.0</i>	<i>RDF Concepts</i>		
					<i>XSL 1.0</i>		<i>FNG (2nd)</i>	<i>RDF Primer</i>		
					<i>Infoset</i>			<i>RDF Schema</i>		
					<i>WebCGM</i>			<i>RDF Semantics</i>		
								<i>RDF Test Cases</i>		
								<i>RDF/XML</i>		
								<i>Speech Recognition</i>		
								<i>VoiceXML 2.0</i>		
								<i>DOM 3 Core</i>		
								<i>DOM 3 L & S</i>		
								<i>Speech Synthesis</i>		
								<i>Schema Primer (2nd)</i>		
								<i>Schema Struct. (2nd)</i>		
								<i>Schema Types (2nd)</i>		
								<i>WebSroh</i>		
								<i>XInclude</i>		

W3C Web Architecture



Business Models – from documents to data & services

- **Software Technology – Web 1.0**
 - Browser/ ISP
 - Editor
 - Server, content management
- **Media/Content Ownership/Sales**
 - Sell books, CD's, electrical goods
 - Sell news, images, video, porn
 - Sell genealogical data
- **Access Management – Web 2.0**
 - Control the search mechanisms
 - Users provide the valuable data

Web 1.0 to Web 2.0

Web 1.0

DoubleClick -->
Ofoto -->
Akamai -->
mp3.com -->
Britannica Online
personal websites
Evite -->
domain name speculation
page views -->
screen scraping
Publishing -->
content management systems
directories (taxonomy)
Stickiness -->

Web 2.0

Google AdSense
Flickr
BitTorrent
Napster
-->Wikipedia
-->blogging
upcoming.org and EVDB
-->search engine optimization
cost per click
--> web services
participation
-->wikis
-->tagging ("folksonomy")
syndication

Web 2.0 Example: Mass Judgement

- Amazon
 - Sell books
 - List what others like you have done
- eBay
 - auction anything
 - list reputation

Member Profile: [vintage-home-and-garden](#) (928 ☆)

Feedback Score: 928
Positive Feedback: 99.6%

Members who left a positive: 932
Members who left a negative: 4
All positive feedback received: 1100

[Learn about](#) what these numbers mean.

Recent Ratings:

	Past Month	Past 6 Months	Past 12 Months
positive	28	211	434
neutral	0	0	1
negative	0	1	1

Bid Retractions (Past 6 months): 0

Member Location:

- [ID Hi](#)
- [Items](#)
- [Visit](#)
- [Add f](#)
- [View](#)
- [Learr](#)
- [View](#)

Meet the seller

Seller: [vintage-home-and-garden](#) (928 ☆)

Feedback: 99.6% Positive

Member: since Jul-25-98 in United States

- [Read feedback comments](#)
- [Ask seller a question](#)
- [Add to Favorite Sellers](#)
- View seller's other items: [Store](#) | [List](#)
- Visit seller's Store:
 [vintage home and garden boutique](#)

Buy safely

1. Check the seller's reputation
Score: 928 | 99.6% Positive
[Read feedback comments](#)
2. Check how you're protected

Feedback Received [From Buyers](#) [From Sellers](#) [Left for Others](#)

1106 feedback received by vintage-home-and-garden (0 ratings mutually withdrawn)

Comment: handled everything perfectly . they are the best.

From: Buyer [rosie1771](#) (34 ☆)

This item is covered **up to \$2000**
[See eligibility](#)

Mass judgement is more than relevance marketing

- Dunnhumby makes £30 million pa selling Tesco Clubcard data to more than 200 consumer goods companies.

<http://www.dunnhumby.com/>

Personalised Clubcard



Customers
don't get stolen...

...they walk.

Relevance makes you more attractive - drawing customers towards you and away from the competition

Is reputation like credit rating ?

- eBay and similar systems publish reputation judgements about companies and individuals.
- Credit rating agencies publish judgements about companies and individual credit ratings.
- Reputation management systems are like credit rating systems.
- Should reputation rating be regulated as credit rating is ?
- Are the users liable for their judgements ?

A Web 2.0 example: Flickr

The screenshot shows the Flickr website interface for a user named 'Giorno TrustCoM!'. At the top, there is a navigation menu with links for Home, You, Organize, Contacts, Groups, and Explore. A search bar is located to the right of the menu, with the text 'Search everyone's photos' and a 'Search' button. The user's profile name 'Giorno TrustCoM!' is displayed below the navigation. A red 'IMPORTANT SECURITY NOTICE' banner is visible, followed by a yellow box with links for 'Choose your Flickr web address!', 'Create yourself a buddy icon!', and 'Did you know you can email images to Flickr?'. Below this is a pink box titled 'Printing? Can it be true?' with text about free prints and a link to 'Click here to set yourself up for printing.'. A grey box titled 'Flickr News' contains a news item dated '24 Jan 07' about interface tweaks and a link to 'read more news'. To the right of these boxes are two photo galleries. The first gallery is titled '» Upload Photos' and '» Your Photos', showing four photo thumbnails. The second gallery is titled '» Photos from your Contacts' and shows four photo thumbnails with captions: 'From Lutz Schubert', 'From Lutz Schubert', 'From Christian...', and 'From Christian...'. A 'DISMISS X' button is located in the top right corner of the security notice banner.

- Flickr is a way to store, sort, search and share your photos online. Labelled by users.
- Free, **100 MB** monthly upload limit (5MB per photo), views limited to the **200 most recent images**
- \$24.95, 1 year, **unlimited** storage etc...

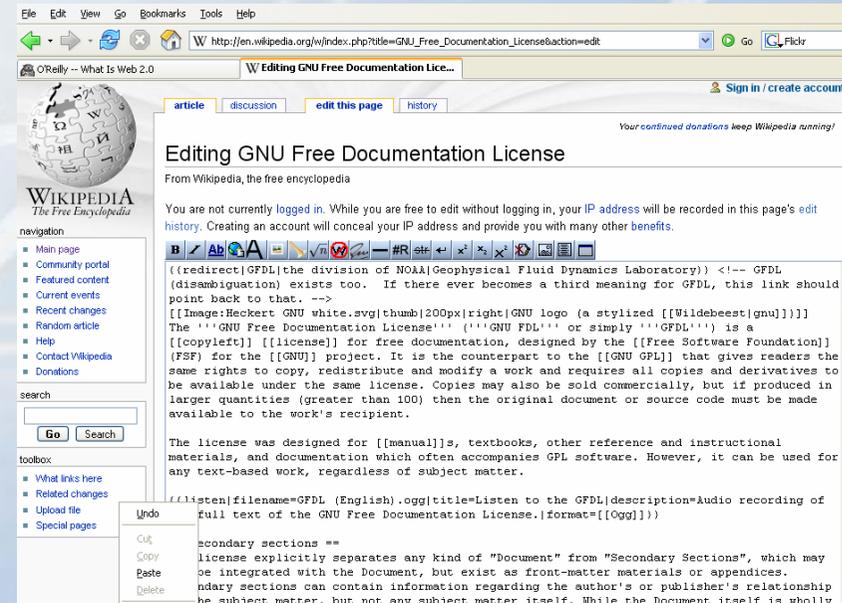
Flickr – Terms of Service 1 / 2

- the Service is provided "AS-IS" and that Yahoo! assumes no responsibility for the timeliness, deletion, mis-delivery or failure to store any user communications or personalization settings.
- If you provide any information that is ... inaccurate, ... Yahoo! has the right to suspend or terminate your account
- You acknowledge, consent and agree that Yahoo! may access, preserve and disclose your account information and Content if required to do so
- you, and not Yahoo!, are entirely responsible for all Content that you upload
- Under no circumstances will Yahoo! be liable in any way for any Content
- with respect to Content ... you grant Yahoo! the following worldwide, royalty-free and non-exclusive license ...to use, distribute, reproduce, modify, adapt, publicly perform and publicly display such Content on the Service solely for the purpose for which such Content was submitted or made available.

Flickr – Terms of Service 2 / 2

- You agree to indemnify and hold Yahoo! .. harmless from any claim .. made by any third party due to or arising out of Content you submit
- You agree to not use the Service to: ... intentionally or unintentionally violate any applicable local, state, national or international law
- jurisdiction of the courts located within the county of Santa Clara, California.
- Flickr is for personal use only. If you sell products, services or yourself through your photostream, we will terminate your account.
- Any other commercial use of Flickr, Flickr technologies (including APIs, Flickrmail, etc), or Flickr accounts must be approved by Flickr.

Web 2.0 example: Wikipedia



- Wikipedia, the free encyclopaedia that anyone can edit.
- 1,608,189 articles in English
- 182 "active" language editions (those with more than 100 articles)

Wikipedia copyright



- Wikipedia's articles are released under a license that permits anyone to build upon them.
- **GNU Free Documentation License (GNU FDL** or simply **GFDL**) is a copyleft license for free documentation, designed by the Free Software Foundation (FSF).
- “You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute.”

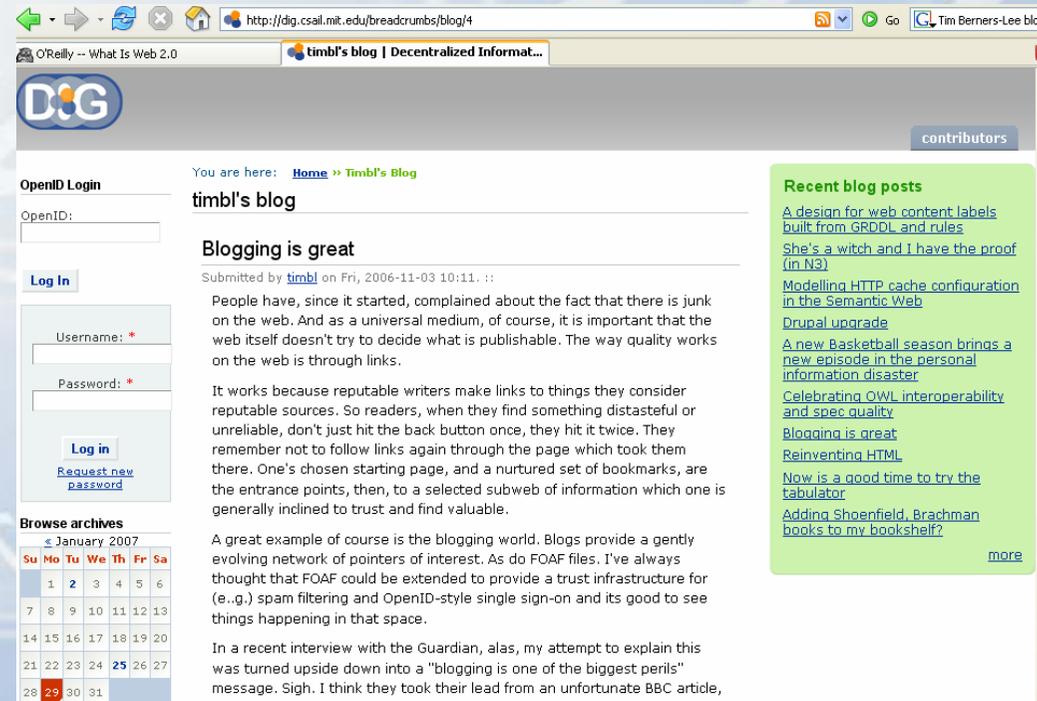
Wikipedia Reliability

- Can users trust the accuracy of information on the web ?
- “You tend to find that articles are taken over by moonbats.”
 - Eric Raymond, FT Magazine, Nov 11 2006
- The first Wikipedia editor Larry Sanger has set up Citizendium for scholars to filter Wikipedia

Blogs

- A **blog** is a user-generated website where entries are made in journal style and displayed in a reverse chronological order.

- Nov 2006 - nearly 60 million blogs

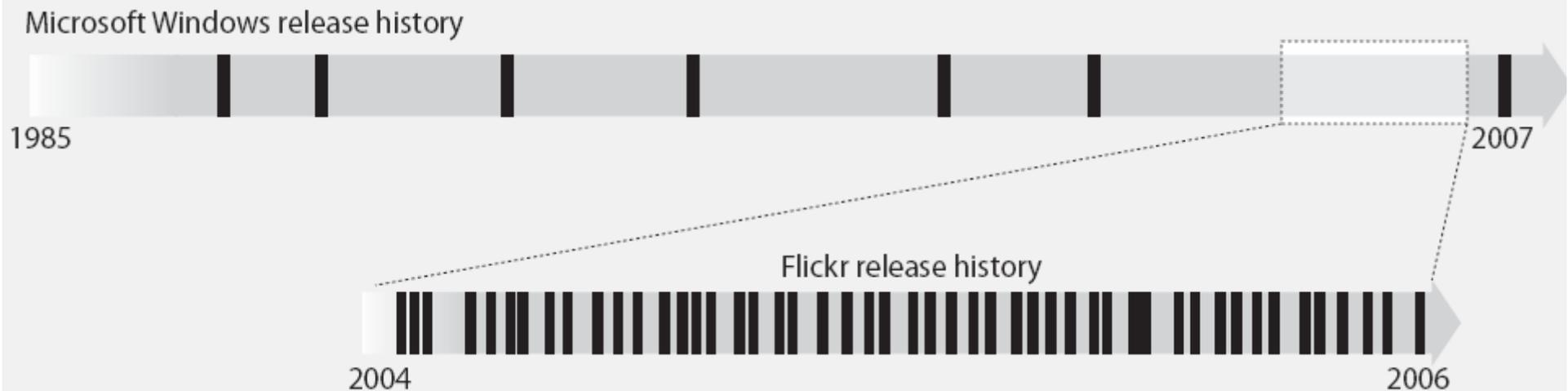


Blog search engines, e.g. Technorati
– <http://www.technorati.com/>

Web 2.0 Technologies

- content management systems
- Focus on content and editing rather than layout
- A return to the simplicity of the first web technology.
- There are about:
 - 50 wiki software
 - 20 blog software
 - 15 commercial blog sites

Web 2.0 Changing Software Management



- In the Web 2.0 era, users think in terms of services not packaged software
- They expect these services to just be there and to improve over time.
- No versions, no installations, no upgrades needed.
- The traditional design–develop–test–ship–install cycle of packaged software is ending.
- Software has become a service—a service that is always on, always improving
- Users become co–developers – software is designed to gather user feedback
- It is Web Development 2.0.

W3C position on Web 2.0

- Web 2.0 makes use of many W3C Recommendations and the AB feels it is important for current work to support both that community and the innovations that will likely follow.

W3C Advisory Board, Nov 2006

UK Regulation and Legislation



- The government support the work undertaken by the W3C on making the Web accessible to people with disabilities.
- Tony Blair, 2002



W3Cs role in International Regulation

- Developing the Internet today is about developing consensus, not radical engineering
- ICANN “an overabundance of interests concerned with commercial use of the Internet”
 - The ACM Internet Governance Committee, 2002
- “internationalizing Internet domain names without endangering the stability and security of the Internet remained one of the biggest challenges.”
- “increasing access remains one of the great challenges facing the Internet community. The nature of digital divide was seen as being multifaceted and a focal point for public policy responses.”
 - Internet Governance Forum Secretariat Nov 2006
- <http://www.intgovforum.org/>

Tim Berners-Lee on Net Neutrality

- Net neutrality is this:
 - If I pay to connect to the Net with a certain quality of service, and you pay to connect with that or greater quality of service, then we can communicate at that level.
- Its up to the ISPs to make sure they interoperate so that that happens.
- Net Neutrality is NOT asking for the internet for free.
- Net Neutrality is NOT saying that one shouldn't pay more money for high quality of service. We always have, and we always will.
- It is of the utmost importance that, if I connect to the Internet, and you connect to the Internet, that we can then run any Internet application we want, without discrimination as to who we are or what we are doing.

After Web 2.0 – Semantic Web, Web 3.0 & the Grid

*"The Semantic Web is an
... extension of the current web in which
... information is given well-defined
meaning,
... better enabling computers and
people to work in cooperation."*

The Semantic Web

Tim Berners-Lee, James Hendler and Ora Lassila

Scientific American, May 2001

- Questions ?

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