

# Web 2010 (+)

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January 2009



World Wide Web Foundation  
HUMANITY CONNECTED

This talk:

<http://www.w3.org/2009/Talks/0206-bratt-Web2010/0206-Web21010-bratt.pdf>

# Outline

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- **Birth & Growth**

- Web 1.0 / Web 2.0
- World Wide Web Consortium

- **Emerging Technology**

- Web of Linked Data (3.0)
- Web on Everything

- **Connecting & Empowering People**

- Web for Everyone
- World Wide Web Foundation

# Web 1.0: Web of Documents

# 1980s+: Internet service providers offered controlled information access



- Valuable attempt to make the Internet useful to people, but...
- Proprietary solutions
- Lack of Interoperability
- Users stuck in the “walled garden”

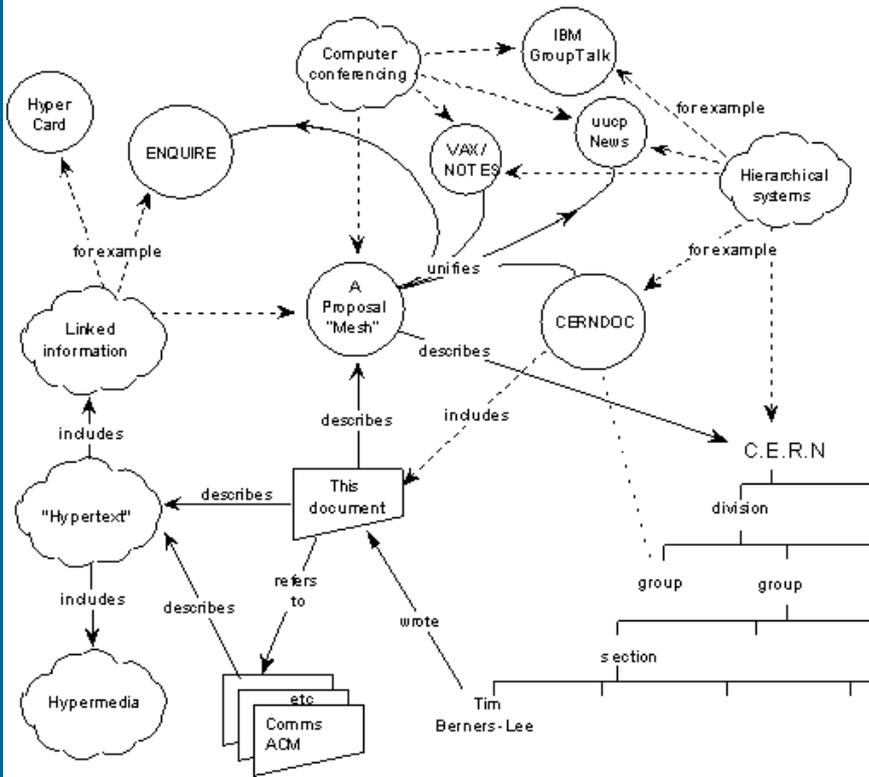


Prodigy  
Communications, L.P.

# 1989: The Web is born. Killer app for the Internet. (eventually) Broke down the walls.

## “Information Management: A Proposal”

By Tim Berners-Lee, March 1989



HTML, URI  
HTTP

<http://www.w3.org/History/1989/proposal.html>

# 1993: Mosaic Web Browser

## 1994: Yahoo! directory



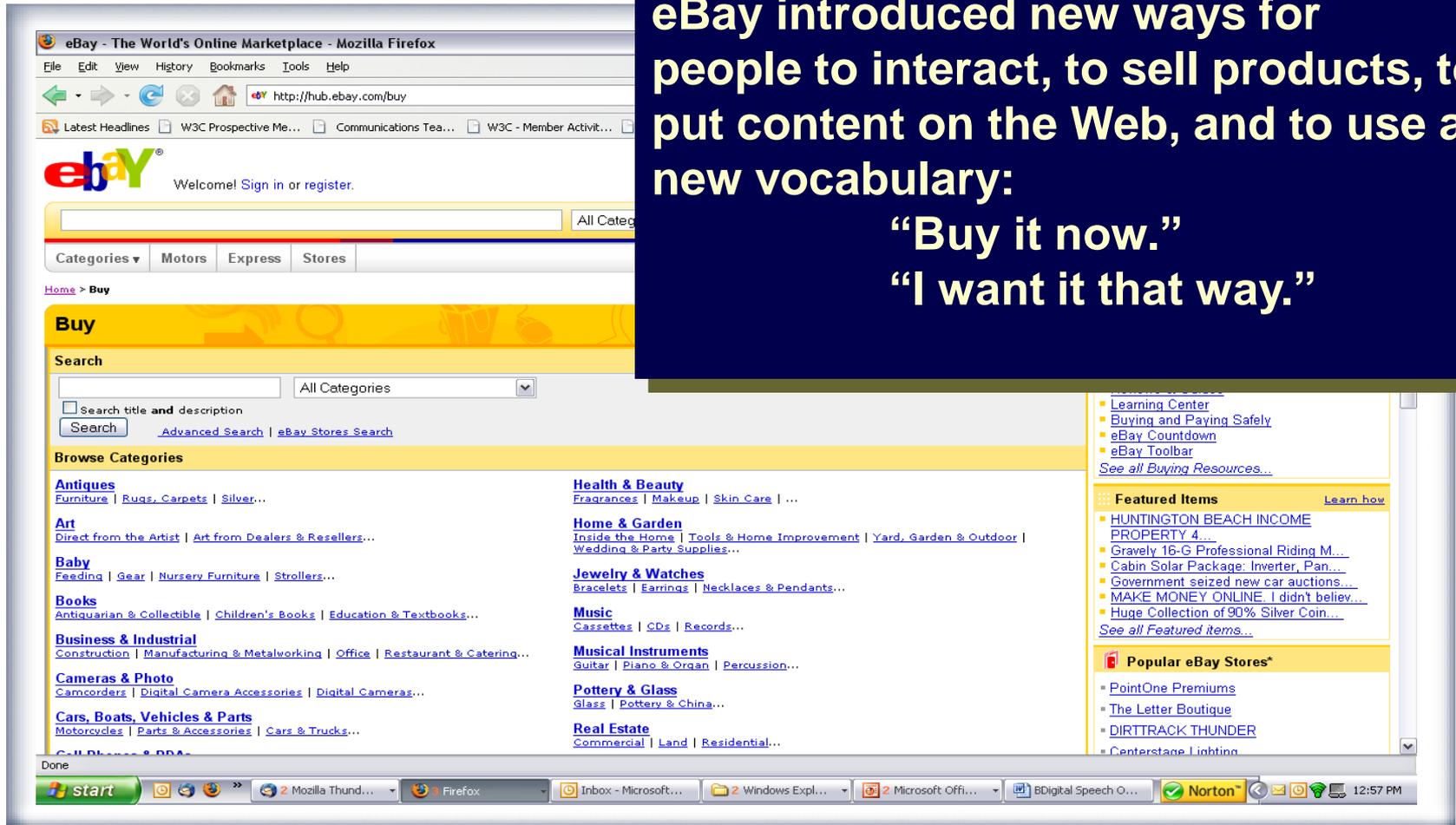
Popular,  
graphical  
user agent  
and early  
search  
capability  
for  
“surfing”  
the Web

# 1995: eBay Shopping: C2C, B2C, B2B

eBay introduced new ways for people to interact, to sell products, to put content on the Web, and to use a new vocabulary:

“Buy it now.”

“I want it that way.”



# 1998: Google Search and advertising

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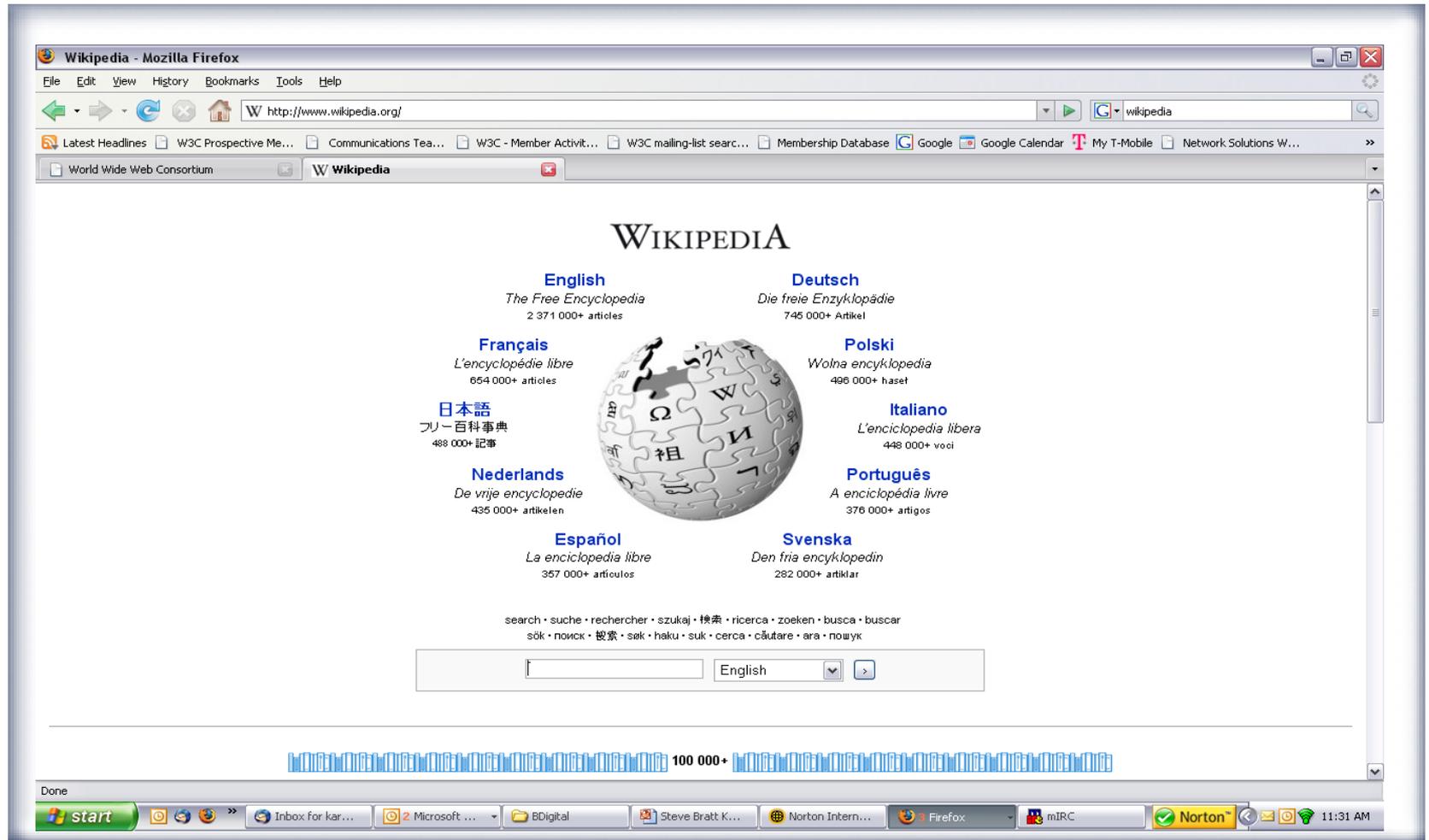


Google's innovations with algorithms led to...

- Better Web Search
- New ways of doing business
- New advertising revenue models
- New markets

# Web 2.0: Web of Creators and Consumers

# 2001: Wikipedia: Now: Active Web 2.0 community 75K contributors, 700M visitors/yr



## 2005: Sharing peer-produced video

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- Uses the Web as a global collaborative medium through sharing of video clips
- April 2008
  - ~80 million videos
  - ~4 million user channels

# Social networking

## A chaque continent ses préférences

LES SITES DE RÉSEAUX SOCIAUX LES PLUS FRÉQUENTÉS...

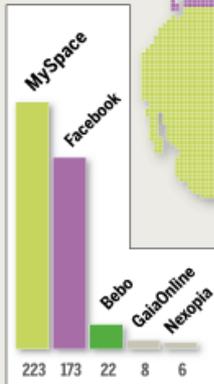
... PAR PAYS	Nom du site	MySpace	Facebook	Bebo	Cyworld	Skyblog	Hi5	Friendster	Orkut	Live Journal
Nationalité de l'entreprise :	Etats-Unis	Etats-Unis	Etats-Unis	Corée du Sud	France	Etats-Unis	Etats-Unis	Etats-Unis	Etats-Unis	Russie

... PAR CONTINENT

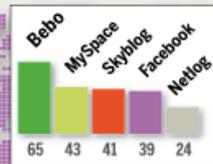
En millions d'heures par mois  
(août 2007)

### AMÉRIQUE DU NORD

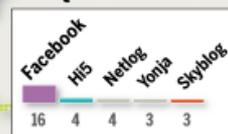
Un quart des inscrits dans le monde.



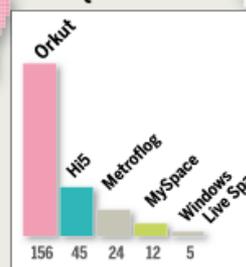
### EUROPE



### AFRIQUE - PROCHE-ORIENT

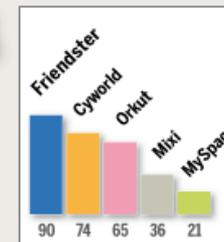


### AMÉRIQUE LATINE



### ASIE - PACIFIQUE

Un tiers des inscrits dans le monde.

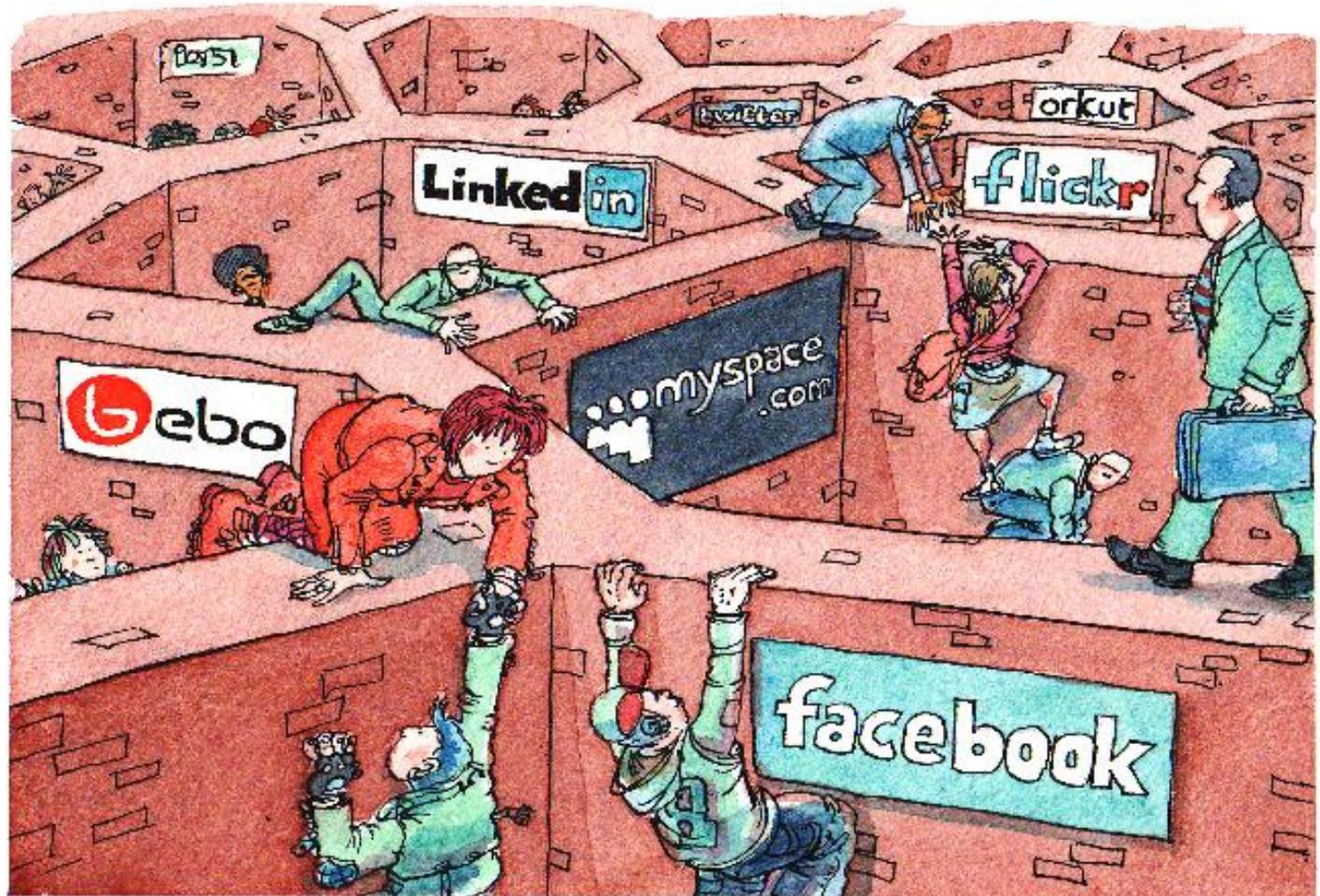


## Le Monde

Infographie Le Monde

Sources : ValleyMag août 2007, Datamonitor

# A return to “walled gardens”?



# Growth of the Web (So Far) and Why?

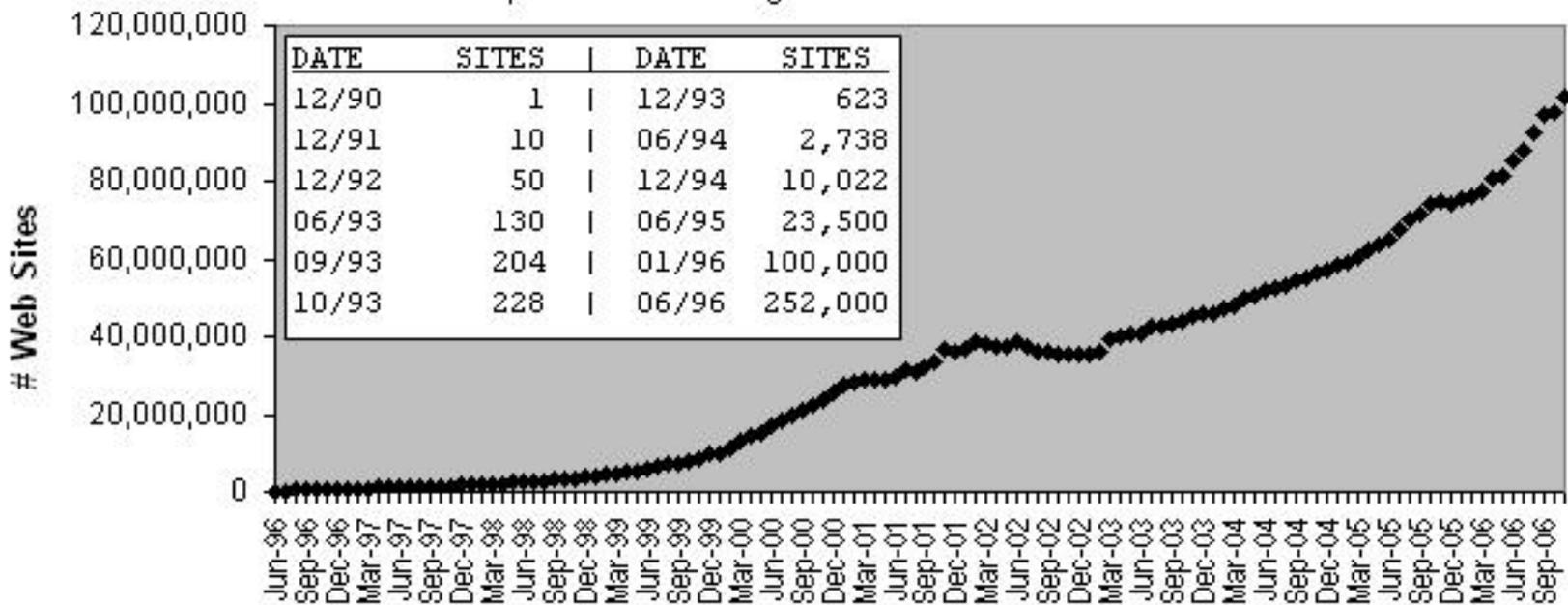
# 1.5 billion served (by language)

<b>Top Ten Languages Used in the Web</b> ( Number of Internet Users by Language )					
TOP TEN LANGUAGES IN THE INTERNET	% of all Internet Users	Internet Users by Language	Internet Penetration by Language	Language Growth in Internet ( 2000 - 2008 )	2008 Estimated World Population for the Language
<a href="#">English</a>	29.4 %	430,802,172	21.1 %	203.5 %	2,039,114,892
<a href="#">Chinese</a>	18.9 %	276,216,713	20.2 %	755.1 %	1,365,053,177
<a href="#">Spanish</a>	8.5 %	124,714,378	27.6 %	405.3 %	451,910,690
<a href="#">Japanese</a>	6.4 %	94,000,000	73.8 %	99.7 %	127,288,419
<a href="#">French</a>	4.7 %	68,152,447	16.6 %	458.7 %	410,498,144
<a href="#">German</a>	4.2 %	61,213,160	63.5 %	121.0 %	96,402,649
<a href="#">Arabic</a>	4.1 %	59,853,630	16.8 %	2,063.7 %	357,271,398
<a href="#">Portuguese</a>	4.0 %	58,180,960	24.3 %	668.0 %	239,646,701
<a href="#">Korean</a>	2.4 %	34,820,000	47.9 %	82.9 %	72,711,933
<a href="#">Italian</a>	2.4 %	34,708,144	59.7 %	162.9 %	58,175,843
<b>TOP 10 LANGUAGES</b>	<b>84.9 %</b>	<b>1,242,661,604</b>	<b>23.8 %</b>	<b>278.3 %</b>	<b>5,218,073,846</b>
Rest of the Languages	<b>15.1 %</b>	<b>220,970,757</b>	<b>15.2 %</b>	<b>580.4 %</b>	<b>1,458,046,442</b>
<b>WORLD TOTAL</b>	<b>100.0 %</b>	<b>1,463,632,361</b>	<b>21.9 %</b>	<b>305.5 %</b>	<b>6,676,120,288</b>

(\*) NOTES: (1) Internet Top Ten Languages Usage Stats were updated for June 30, 2008. (2) Internet Penetration is the ratio between the sum of Internet users speaking a language and the total population estimate that speaks that specific language. (3) The most recent Internet usage information comes from data published by Nielsen//NetRatings, International Telecommunications Union, Computer Industry Almanac, and other reliable sources. (4) World population information comes from the U.S. Census Bureau . (5) For definitions and navigation help in several languages, see the [Site Surfing Guide](#). (6) Stats may be cited, stating the source and establishing an active link back to [Internet World Stats](#). Copyright © 2008, Miniwatts Marketing Group. All rights reserved worldwide.

# Over 100 million serving

Hobbes' Internet Timeline Copyright ©2006 Robert H Zakon  
<http://www.zakon.org/robert/internet/timeline/>



Users:Servers ratio=> 1996 ~ 150:1. 2000 ~ 50:1. 2006 ~ 10:1

## Number of public Web pages

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1990: 1

1998: 26 million (~26,000,000)

2008: >1 trillion (~1,000,000,000,000)

*... more than the number of  
neurons in the human brain*

# What led to the Web's success

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- Simple architecture, extensible, tolerant, platform independent, free/cheap, simple (and fun), powerful
- **Network interoperability**
  - value grows proportional to  $n^2$  (Metcalfe's Law)
  - ( $n$  = Web sites, services, data, users, devices)
- ***Open standards***
  - Critical to increasing interoperability
  - Critical to increasing “n”

# The World Wide Web Consortium

# Sets the Standards that Make the Web Work

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- Founded in 1994 by Tim Berners-Lee
  - inventor of the Web (current W3C Director)
- Fair and effective process
- Royalty-free patent policy
- Global focus
- One Web, based on free & open standards



# Vision for the future of the Web



Expanding from a  
Web of linked  
documents,

- of creators & consumers

to **One Web:**

- of Linked Data
- on Everything
- for Everyone

## **What do you mean, “One Web”?**

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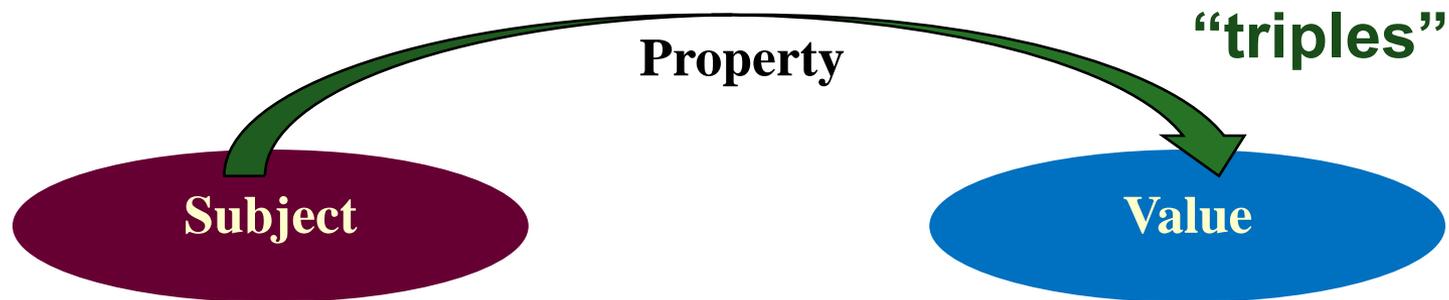
**... the same information is available to all users, regardless of who they are, where they are, what systems they use, or how they are connected.**

# One Web of Linked Data (Web 3.0\*)

\* [New York Times](#), [InternetNews](#)

# A semantic Web that links data

- Web 1.0 = Web of **Linked Documents**
- Semantic Web = Web of **Linked Data**



Steve → hasEmailAddress → [steve@w3.org](mailto:steve@w3.org)

- Web becomes a global, relational database
- W3C Semantic Web technologies enable linking, describing, searching, processing, creativity, etc.



# With DBpedia and 2 geo-fact datasets, most interesting queries can be made

The image displays a collage of web browser screenshots. The central focus is a DBpedia page for Berlin, Germany, which includes the following information:

- Coordinates:** 52°31'00"N, 13°25'00"E, CET/CEST (UTC+3/+2)
- Administration:** Germany, DE3, 12 boroughs, Governing Mayor Klaus Wowereit (SPD), Governing parties SPD / Left, Members in Bundesrat 4 (of 69)
- Basic statistics:** 892 km<sup>2</sup> (344 sq mi) area, 3,424,764 (2009) population, 3,840 /km<sup>2</sup> (9,945 /sq mi) density, 3,700,000 urban population, 5,000,000 metro population.
- Other information:** GDP/Nominal € 81.7 billion (2007), Postal codes 10001-14199, Area codes 030, Licence plate code B, ISO region DE-BE, Website berlin.de / 3D Berlin.

Surrounding the DBpedia page are screenshots from Euro-stat and World Factbook, and a map of Berlin with yellow lines connecting various districts. The map shows a network of connections between different parts of the city, likely representing the geo-fact datasets mentioned in the text.

# More linkable data – including interfaces to existing databases

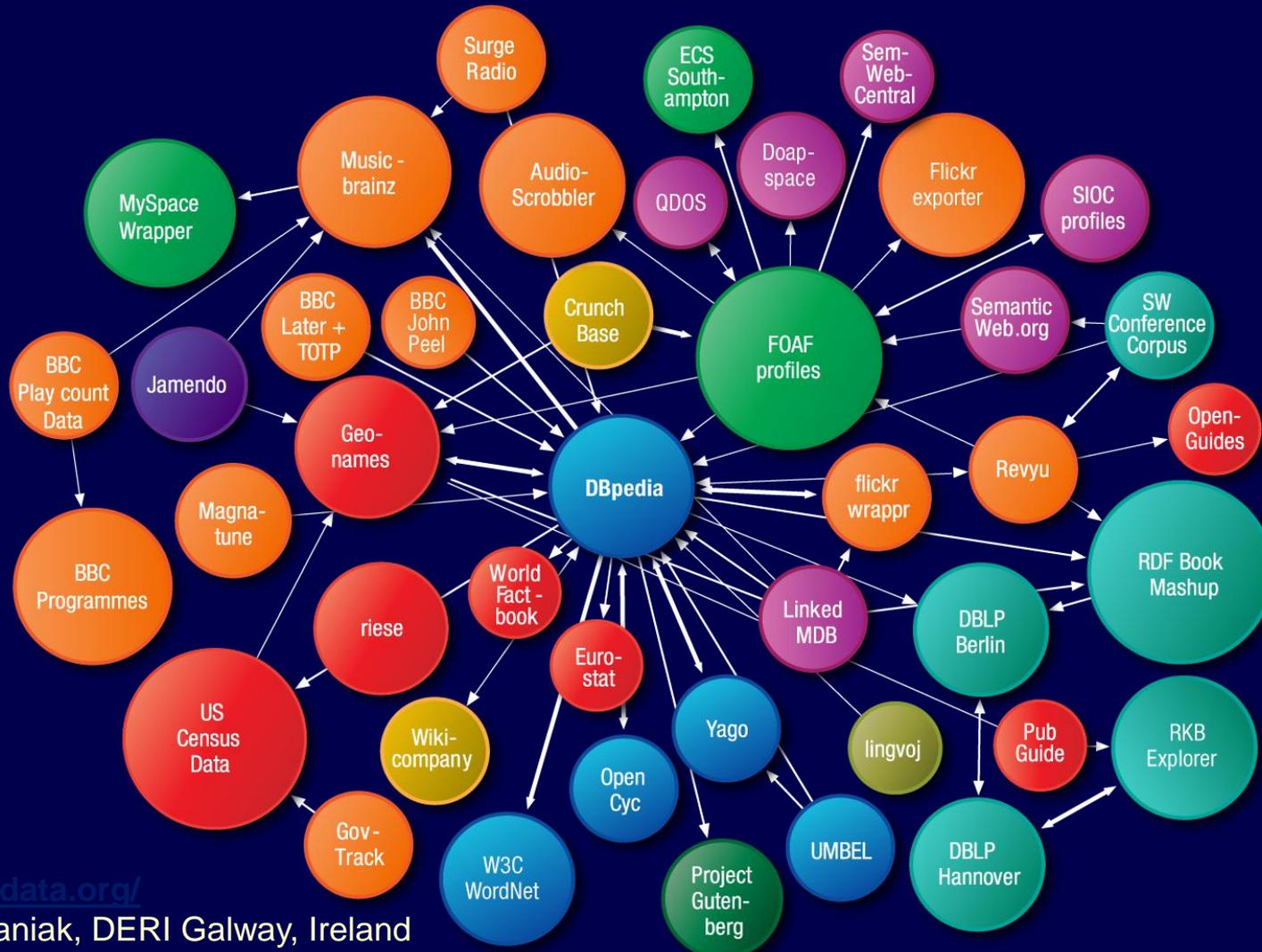
The diagram illustrates a network of linkable data sources centered around DBpedia. The nodes and their connections are as follows:

- Music-brainz** is connected to **BBC John Peel** and **Jamendo**.
- BBC John Peel** is connected to **Jamendo**.
- Jamendo** is connected to **Geonames**.
- Geonames** is connected to **DBpedia**.
- DBpedia** is the central hub, connected to **World Factbook**, **Euro-stat**, **Gov-Track**, **W3C WordNet**, **Project Gutenberg**, **DBLP Berlin**, **DBLP Hannover**, **RKB Explorer**, **RDF Book Mashup**, **Open-Guides**, **Revyu**, **FOAF profiles**, **SIOC profiles**, **Flickr exporter**, **Doap-space**, **QDOS**, **ECS South-ampton**, and **Sem-Web-Central**.
- World Factbook** is connected to **Euro-stat**.
- Euro-stat** is connected to **Gov-Track**.
- Gov-Track** is connected to **W3C WordNet**.
- W3C WordNet** is connected to **Project Gutenberg**.
- Project Gutenberg** is connected to **DBLP Berlin** and **DBLP Hannover**.
- DBLP Berlin** is connected to **DBLP Hannover**.
- DBLP Hannover** is connected to **RKB Explorer**.
- RKB Explorer** is connected to **RDF Book Mashup**.
- RDF Book Mashup** is connected to **Open-Guides**.
- Open-Guides** is connected to **Revyu**.
- Revyu** is connected to **FOAF profiles**.
- FOAF profiles** is connected to **SIOC profiles**.
- SIOC profiles** is connected to **Flickr exporter**.
- Flickr exporter** is connected to **Doap-space**.
- Doap-space** is connected to **QDOS**.
- QDOS** is connected to **ECS South-ampton**.
- ECS South-ampton** is connected to **Sem-Web-Central**.

The background features several screenshots of web pages, including:

- NNDB** (Notable Names Database) showing a list of names.
- Berlin** city information page with details on coordinates, time zone, and population.
- World Factbook** entry for Berlin.
- Euro-stat** data for Berlin.
- Gov-Track** page for Berlin.
- W3C WordNet** page.
- Project Gutenberg** page.
- DBLP Berlin** and **DBLP Hannover** pages.
- RKB Explorer** page.
- RDF Book Mashup** page.
- Open-Guides** page.
- Revyu** page.
- FOAF profiles** page.
- SIOC profiles** page.
- Flickr exporter** page.
- Doap-space** page.
- QDOS** page.
- ECS South-ampton** page.
- Sem-Web-Central** page.
- Pink Floyd** discography page.

# Oct 2008 sources in linking open data project - ~10 billion entries and growing



## Web 3.0 is gaining momentum

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- Energy: Oil and Gas
- Social networks (to one social Web)
- Health Care and Life Sciences
- Government
- Video
- Many places
  - Semantic Technologies Conference



## Put government data into Web 3.0

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- Movement to make non-confidential **government data available** to public, and in **machine-readable** formats
- Use of free, open, semantic **Web standards** will facilitate **search, integration, discovery, transparency**
- “Open data” is a focus of **W3C eGovernment Interest Group meeting**, 12-13 March 2009



# Temporal and spatial linking: Video data → 1<sup>st</sup> class, citizen of the Web

Click on sponsor's logo  
and link to special  
promotional opportunities.

Interview  
post-World Handball  
Championships  
Paris, January 2009

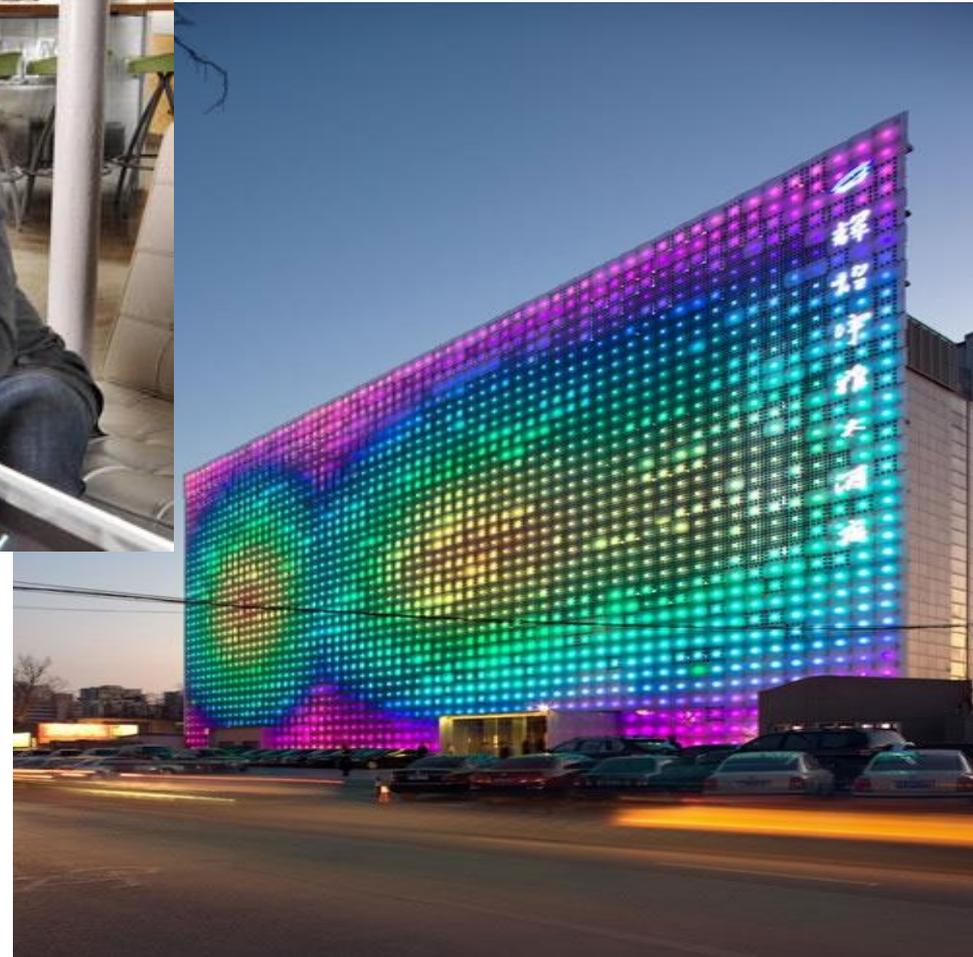


Annotate remarks and  
provide captions that can  
be linked to and searched.

Send link to first five seconds  
of video clip to a friend.

# One Web: On Everything

# One Web on every surface



# One Web on every device



# One Web that works seamlessly across and between all devices



# One Web, accessible via a range of interactions



**Tom Cruise in  
Minority Report  
Spielberg (2002)**

# Ubiquitous Web: Interoperable data across a wide range of devices

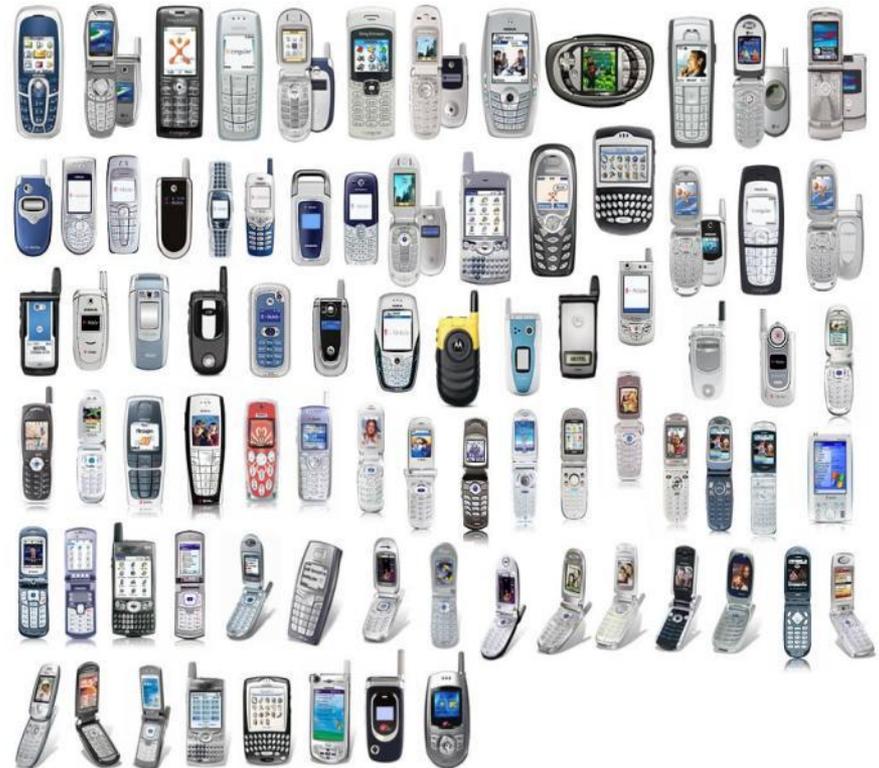


- It's cold outside, and you are returning from the airport.
- Driving home, you use the Web through your mobile phone or car display to:
  - Activate your home heating system
  - Turn off the security alarm
  - Start the oven
  - Open the garage door
- **Open solutions needed**

# Web on Everything at W3C

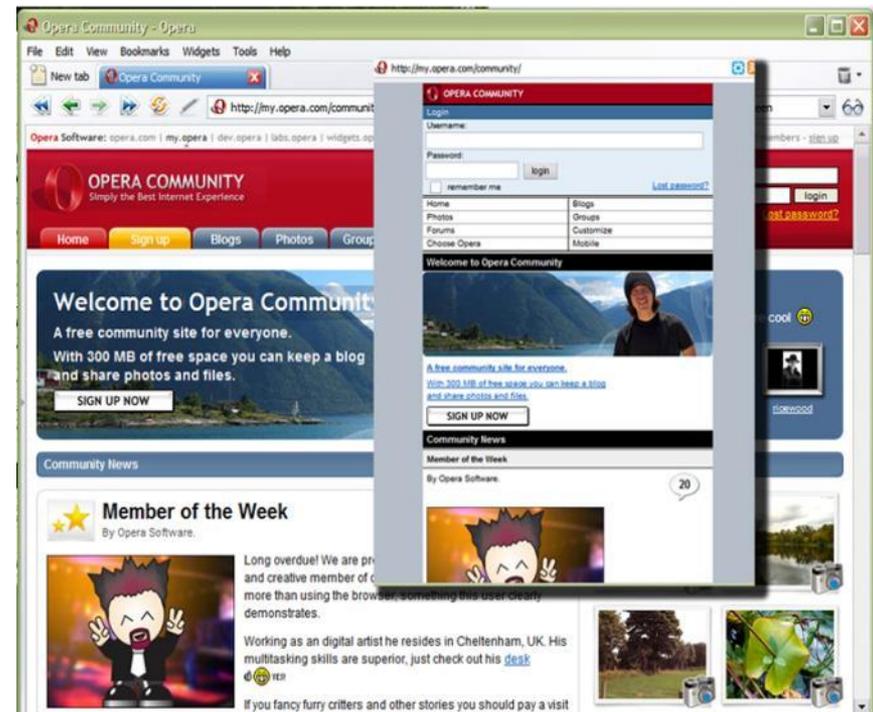
## Ubiquitous Web Activities

- Mobile Web Initiative
- Multimodal Interaction
- Ubiquitous Web Apps
- Voice Browser



## 10 ways to mobilize

-  **Design** for One Web
-  **Rely** on Web standards
-  **Stay away** from known hazards
-  **Be cautious** of device limitations
-  **Optimize** navigation
-  **Check** graphics & colors
-  **Keep** it small
-  **Use** the network sparingly
-  **Help & guide** user input
-  **Think** of users on the go



# Mobile Web: Next Generation

- Mobile Web 2.0 applications
- Mobile search, social networking, ads
- Location-based services
- Mobile video



# Mobile advertising

## Challenges

- Space, standards

## Wildly-varying growth projections

(AccuraCast)

- Global now:
    - \$1 to 2B ?
  - Global by 2112:
    - \$1B (Forrester)
- vs.
- \$21B for Google alone (Thomson)



**AdMob Live Map**

Ad Demand Meter



Page views per second across the AdMob network

Every day tens of millions of ads are delivered to mobile device users through the AdMob Marketplace. This sampling of live ad requests illustrates the volume and diversity of available inventory on the AdMob network.

- [Learn more about advertising on mobile sites.](#)
- [Learn about serving ads on your mobile site.](#)

**One Web:  
For Everyone,  
Connecting &  
Empowering All  
People**

*“The social **value of the Web** is that it enables human communication, commerce, and opportunities to share knowledge [and] to make these **benefits available to all people**, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability.”*



Sir Tim Berners-Lee, inventor of the World Wide Web  
*Worldwide Participation in the World Wide Web Consortium*

# How is the Web doing in terms of empowering people?

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Not using the Web: ~5,000,000,000

Living on \$1.25/day or less: ~1,400,000,000

Under-nourished: ~920,000,000

Illiterate: ~900,000,000

Many other barriers and threats:

- Lack of support for **languages** and **fonts**
- Lack of support for **people with disabilities**
- **Proprietary** solutions vs. open standards
- **Censorship, discriminatory access.**
- **Understanding of how the Web works**
- **Understanding of how the Web can best empowers people**

*(numbers from 2007/2008)*



# Announcing the creation of the World Wide Web Foundation

- \$5 million seed grant from John S. and James L. Knight Foundation
  - Press release
- Operational launch of the Web Foundation planned for 2009
- Plan to fund and coordinate ~\$2-15 million per year in leadership and projects across all things Web





# Mission of the World Wide Web Foundation

## Advancing the Web to connect humanity and empower people

<http://webfoundation.org/>

The screenshot shows the website's header with the logo and navigation menu. The main content area features a news article about the foundation's announcement, including a photo of the award ceremony and a link to watch the speech. Below the article are sections for 'LATEST NEWS' and 'THE WEB FOUNDATION EFFECT'.

**WORLD WIDE WEB FOUNDATION** HUMANITY CONNECTED

[HOME](#) [NEWS](#) [PROGRAMS](#) [DONATIONS](#) [FAQ](#) [ABOUT](#)

**TIM BERNERS-LEE ANNOUNCES WORLD WIDE WEB FOUNDATION**  
JOHN S. AND JAMES L. KNIGHT FOUNDATION MAKES \$5 MILLION SEED GRANT.  
[WATCH THE SPEECH AND AWARD →](#)

The World Wide Web Foundation seeks to advance One Web that is free and open, to expand the Web's capability and robustness, and to extend the Web's benefits to all people on the planet. The Web Foundation brings together business leaders, technology innovators, academia, government, NGOs, and experts in many fields to tackle challenges that, like the Web, are global in scale.

Learn more [about the Foundation](#) and how to become a [founding donor](#) during this planning phase.

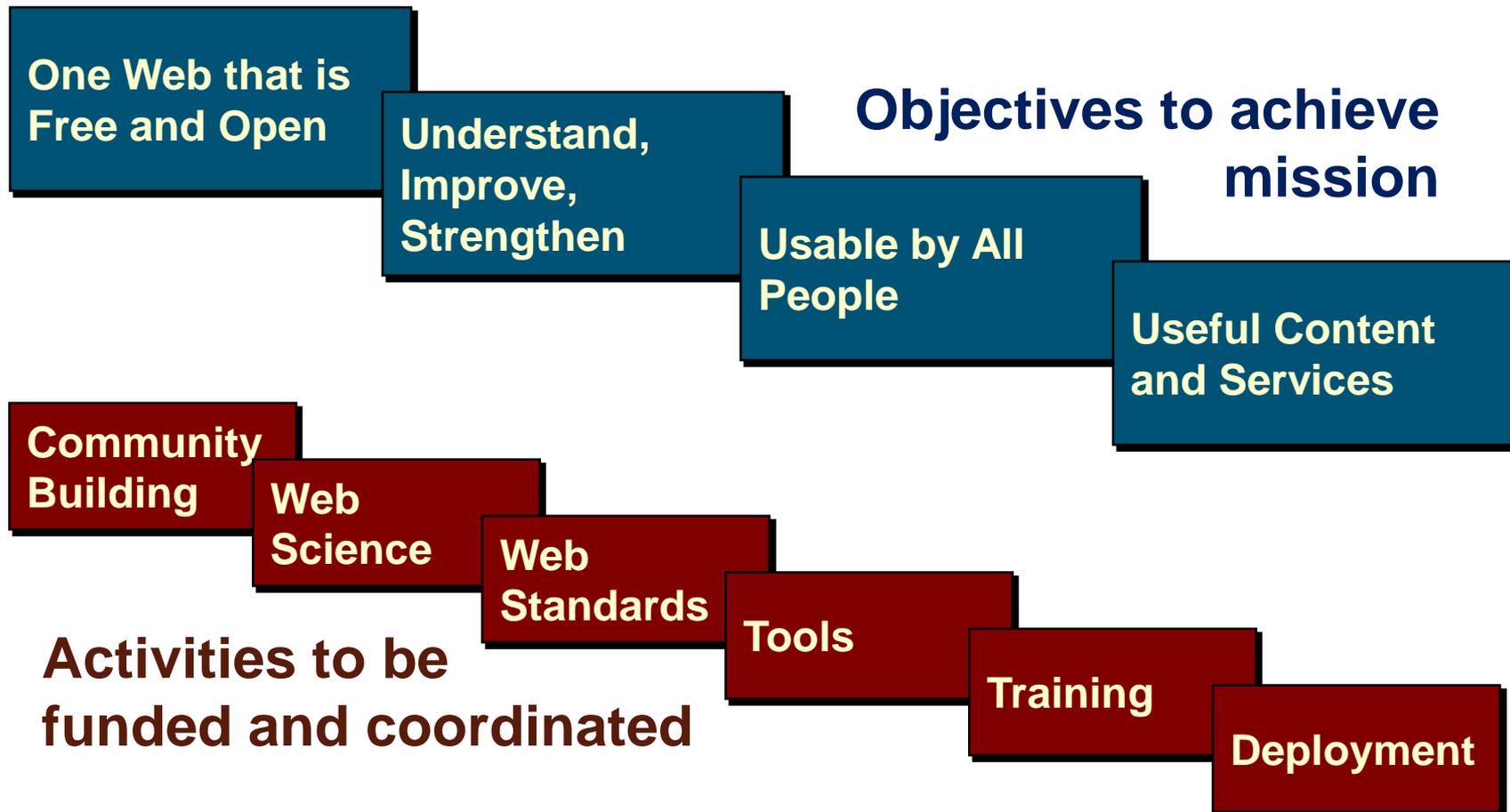


**LATEST NEWS**  
Sep 2008, 14 [Welcome to the World Wide Web Foundation](#)  
[More news...](#)

**THE WEB FOUNDATION EFFECT**  
One of the focuses of the World Wide Web foundation is to investigate, in its Web for Society program, how to lower the barriers of accessing the Web for people who are not able, today, to find accessible and usable... [Read on →](#)  
by Stéphane Boyera on September 18, 2008

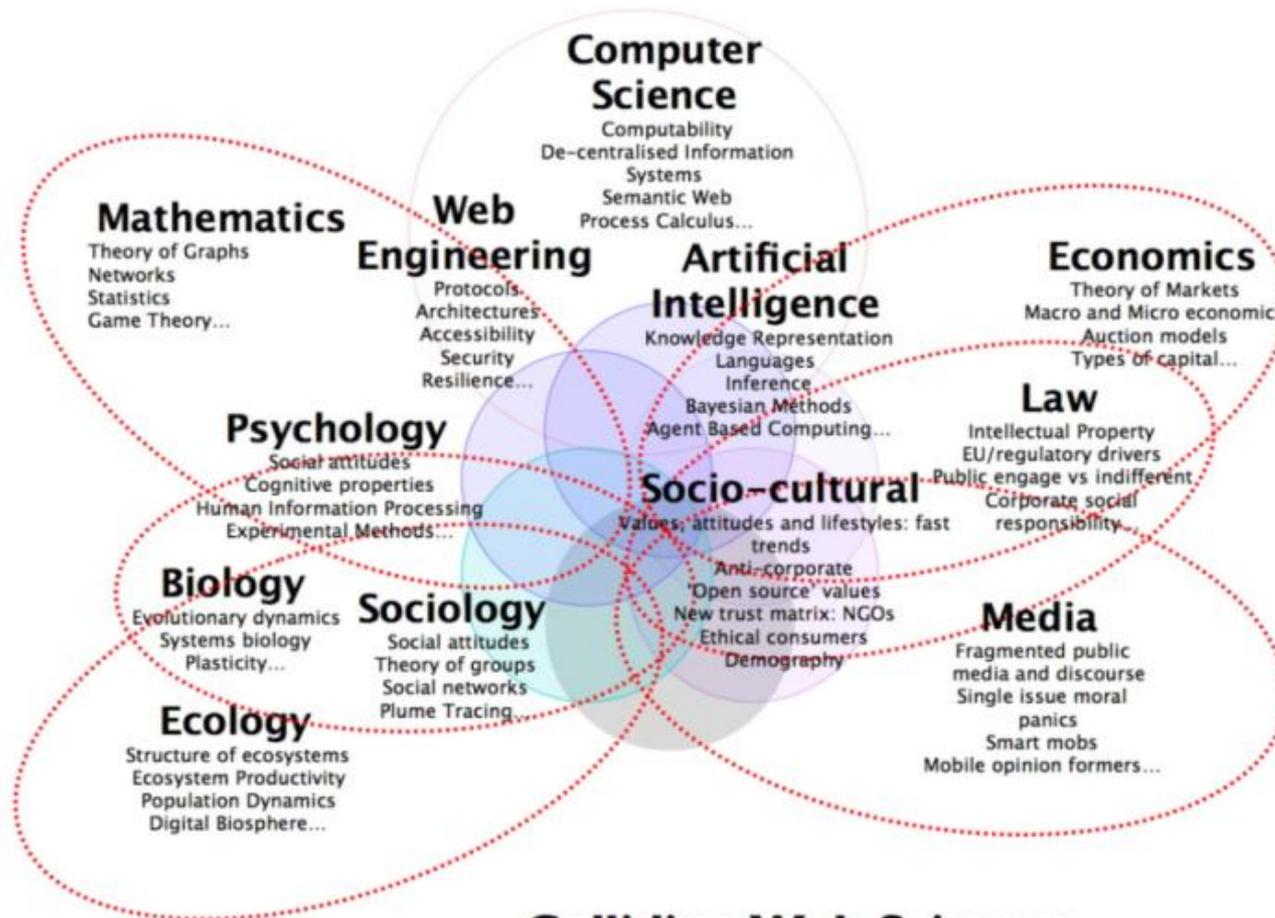


# Web Foundation: Objectives and activities to be funded





# Supporting Global Leadership in Web Science



**Colliding Web Sciences**



# Supporting Global Leadership in Web Standards



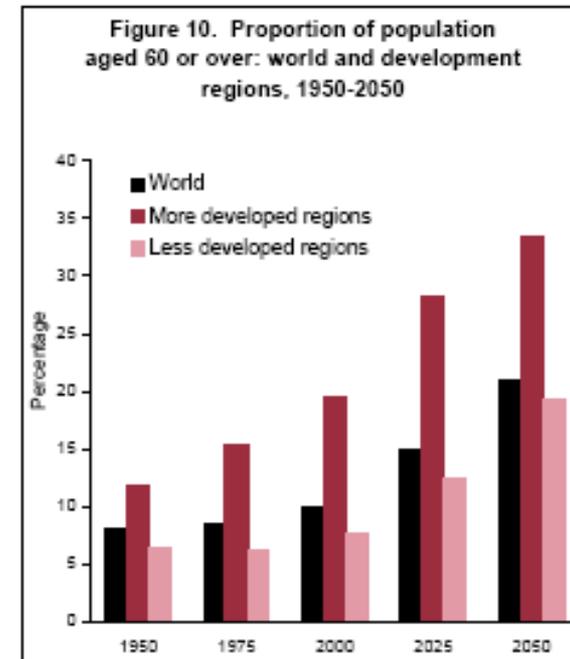
## Idioma de la interfaz

- العربي
- English
- Sueco
- Français
- Italiano
- 日本語
- Русский
- Español
- Svenska



# Access for people with disabilities and an aging population

- Millions with disabilities
- Aging population
- Increasingly required
- Carry-over benefits (business case)
- W3C Web Accessibility Initiative
  - New Web Content Accessibility Guidelines 2.0
  - Viviane Reding, Commissioner for Information Society and Media at the European Commission:  
*“ I welcome these new web accessibility guidelines. They are a key step forward to making the web a place for all, particularly for people with disabilities...”*

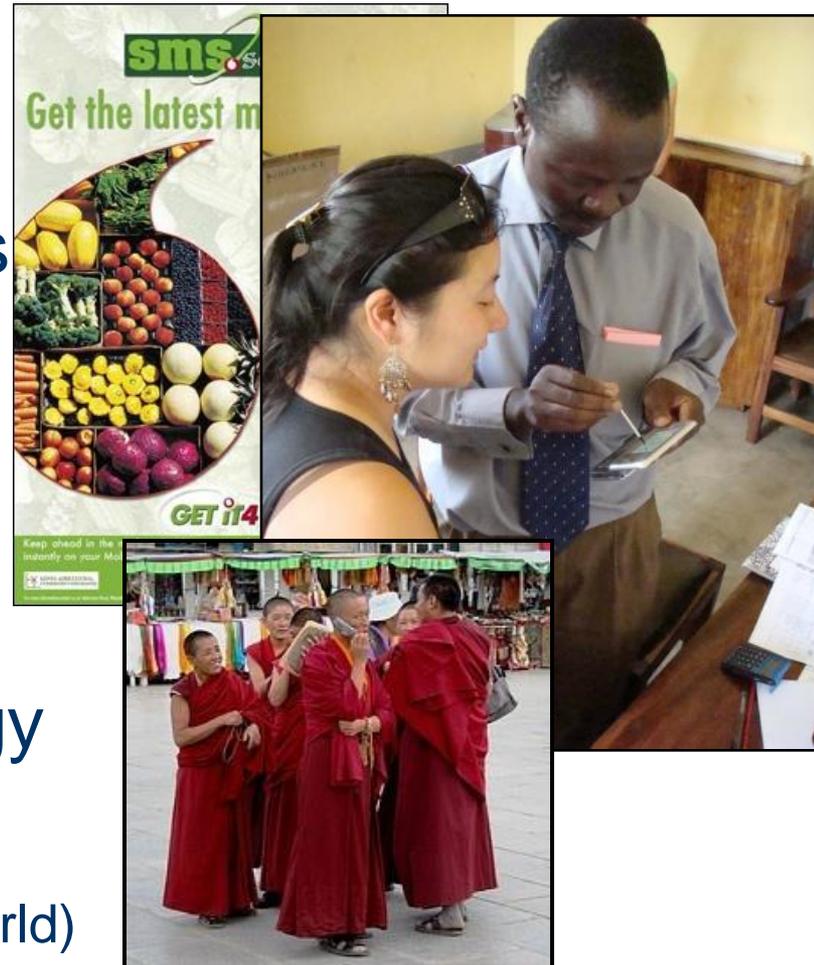


*More developed regions have relatively high proportions of older persons*



# First Targeted Program: Mobile Web for Development

- Empower those with the greatest need
- Focus on critical services
  - Health care/nutrition
  - Government services
  - Education
  - Commerce
- Leverage Web technology on mobile phones  
(close to 4 billion mobiles in the world)





# Broader Challenges

- Privacy & security
- Government & politics
- War & peace
- Natural & un-natural disasters
- Energy & climate change
- Healthcare & disease
- Prosperity & poverty



# Conclusion

# Web 2010 and beyond

- One Web, value growing as  $n^2$
  - Linking data
  - Linking diverse devices
  - Linking people
- 
- The Web is not just technology, but ...
  - **Humanity Connected by Technology**  
... and what that technology and those links  
can do to empower all people

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# Merci!



World Wide Web Foundation  
HUMANITY CONNECTED



<http://webfoundation.org/>

<http://w3.org/>

<http://webscience.org/>