

“Web 2.0”

A look behind the curtain

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60 Beautiful Examples Of Night Photography

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Thesis

“Praxisbuch Web 2.0”

- extended 2nd Edition, appeared in November 2008
- „Eine umfassende und praxisorientierte Darstellung der Designtrends und Programmiertechniken des Web 2.0.“



Agenda

- 1. What is „Web 2.0“?
- 2. Building blocks
 - The Wisdom of Crowds
 - Folksonomies and Tagging
 - The Architecture of Participation
 - Attention economy
 - Open Source Movement
 - Improved Web infrastructure
- 3. How is the Web different today?
 - Rich Internet Applications (RIAs)
 - AJAX
 - Shift from Desktop to Web
 - Social Software and Social Media
 - Personalization
 - Remixable Web
 - Contextual and Semantic Web
 - Mobile Web
- 4. Problems and issues

1. What is „Web 2.0“

...and why you should never use this term again.

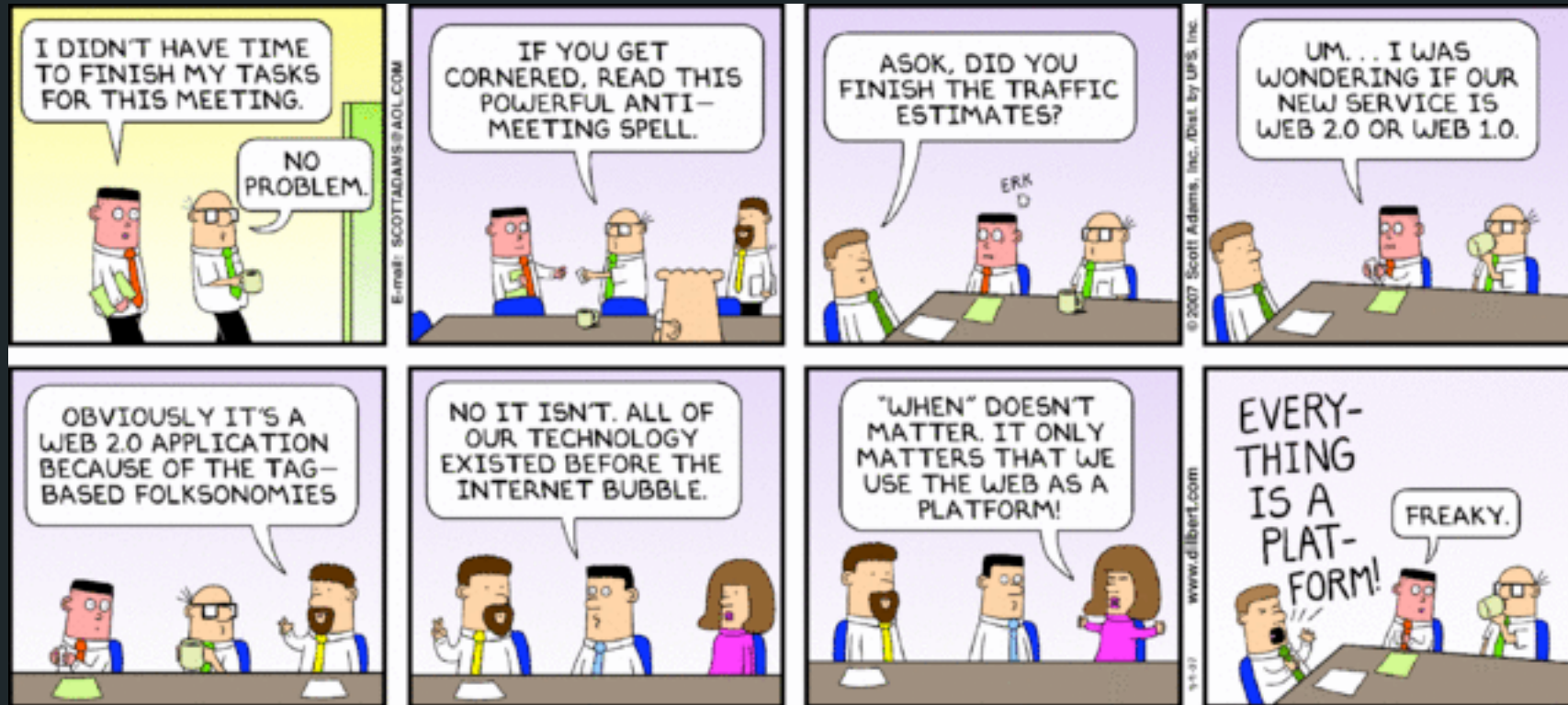


Image credit: <http://www.dilbert.com/strips/comic/2007-09-09/>

What is „Web 2.0“?

- The Evolution of the Web
 - The birth and epidemic growth
 - E-Commerce comes to the Web (94 – 98)
 - Age of “lazy innovation” (99 – 2000)
 - Dot-com-bubble bursts (2000 – 2001)
 - Renaissance of the Web (2002 – 2004)
 - “Web 2.0” (2004 – ?)
 - “Web 2.0” as the message for the public and economy: “The Web is being revolutionized”
 - “Transition from old, outdated paradigms to new, exciting possibilities”

What is „Web 2.0“?

- A **term** for the “renewed” Web
 - Coined by O’Reilly and Dougherty (2004)
 - Stands for the new “features” of the Web that haven’t been available earlier
 - Second generation of Web-communities, services and applications
 - **Renewal** instead of reinvention:
the next step in the Evolution of the Web



What is „Web 2.0“?

- Not a technology!
 - New Web-applications are based upon old technologies (CSS, (X)HTML, JavaScript, PHP...)
 - More “comfortable” web-development due to new established standards and tools
 - Web 2.0²⁰⁰⁴ Web 2.0²⁰⁰⁹

2. Building blocks

well-known concepts
applied in a new context

The Wisdom of Crowds

- Crowd intelligence¹
 - not every crowd is wise (stock market)...
 - but: collective decisions are often better than individual ones
 - Idea:
divide a task among a large, diverse, independent and decentralized crowd and aggregate their intelligence.

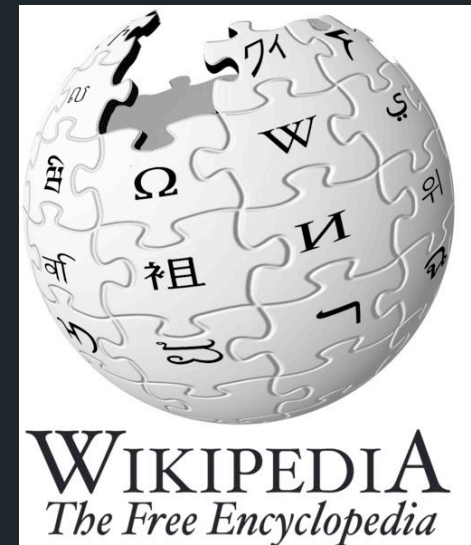


Image credit: Genevieve Netz

¹ James Surowiecki, 2004, *The Crowd: A Study of the Popular Mind* (by Gustave Le Bon, 1896), 15
V. Friedman

The Wisdom of Crowds

- What if...
 - provide users with simple tools to **produce content and put it online**,
 - give them an incentive to use these tools,
 - offer them a shared environment
- Result: ~Wikipedia
 - knowledge delivered by millions of volunteers
 - not always reliable, but free, open and often sufficient
 - the sum of millions of tiniest edits produces a huge **network effect**



The Wisdom of Crowds

- Network effect
 - “the effect that one user of a good or service has on the value of that product to other people”
 - participation increases the value for the network and benefits all members
 - positive network effects results in a **bandwagon effect**
 - Success of modern Web-apps is based mostly upon these two effects!

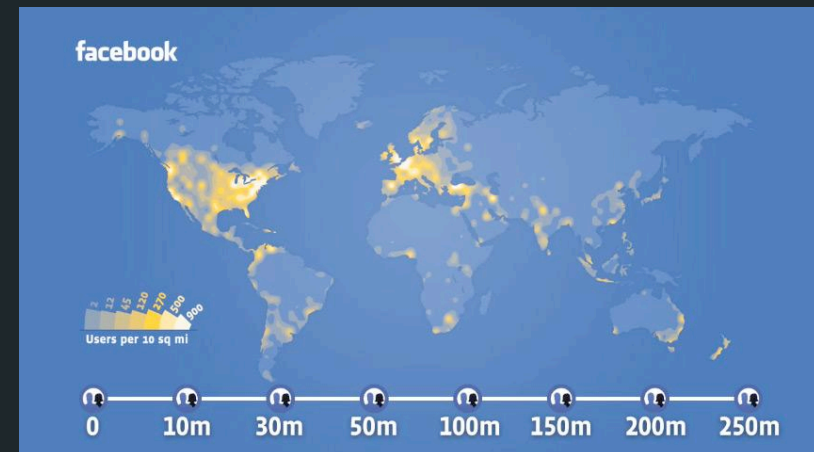
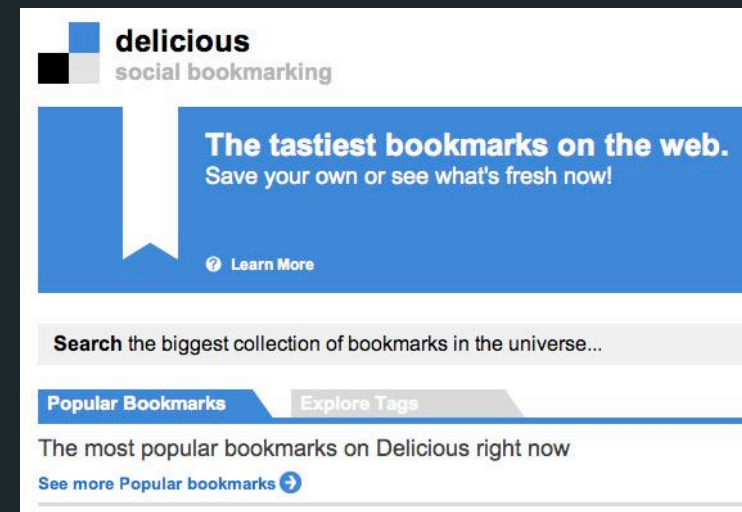


Image credit: Facebook

The Wisdom of Crowds

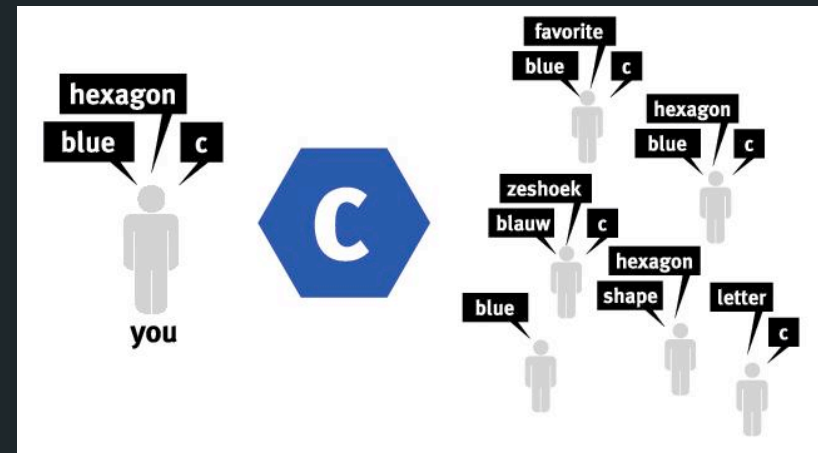
- What if...
 - provide users with simple tools to **describe existing content**,
 - give them an incentive to use these tools,
 - offer them a shared environment



- Result: ~Delicious
 - bookmarks shared by hundreds of thousands of users
 - But how to **capture the semantics of the content** in a simple and compact way?

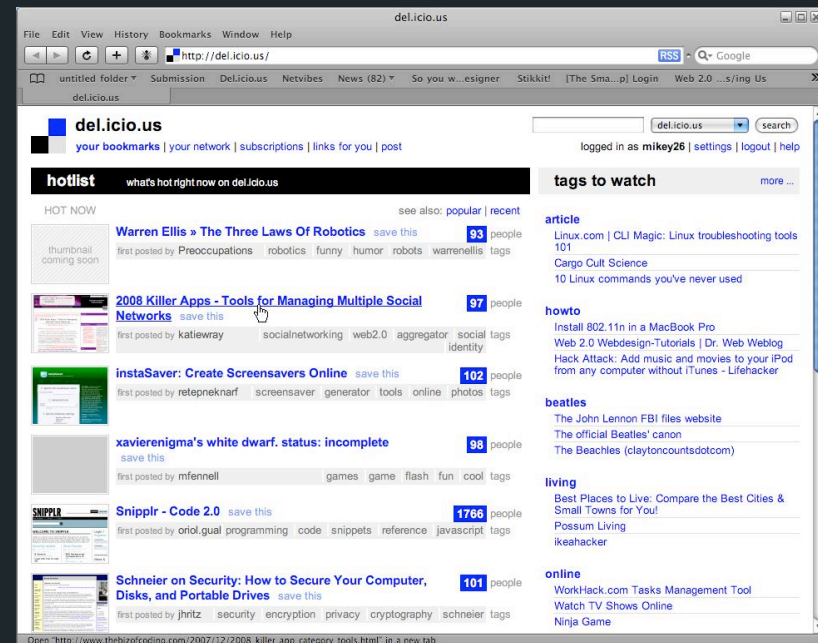
Folksonomies

- Capturing semantics
 - Using keywords (tags) to annotate the content
 - **Folksonomy** (folk + taxonomy) is “the knowledge representation of any data created and organized by non-expert users”².
 - Problem: tags ambiguity



Folksonomies

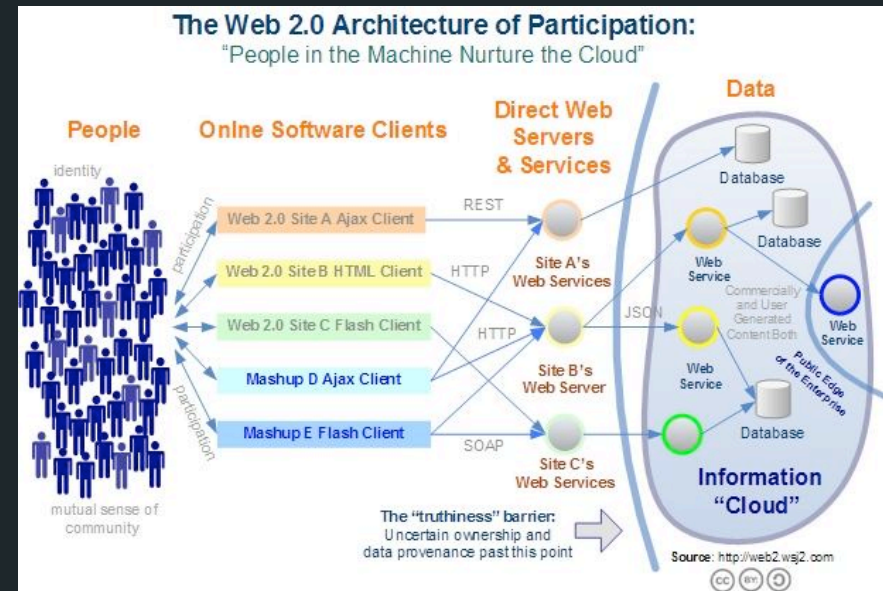
- Tags bring order to the Web
 - tagged content is easier to classify, search and rank
 - tags are **digital desire lines** — “the foot-worn paths that appear in a landscape over time”³
 - “A smart landscape designer will let wanderers create paths through use, and then pave the emerging walkways, ensuring optimal utility.”



The Architecture of Participation

User-driven web-sites

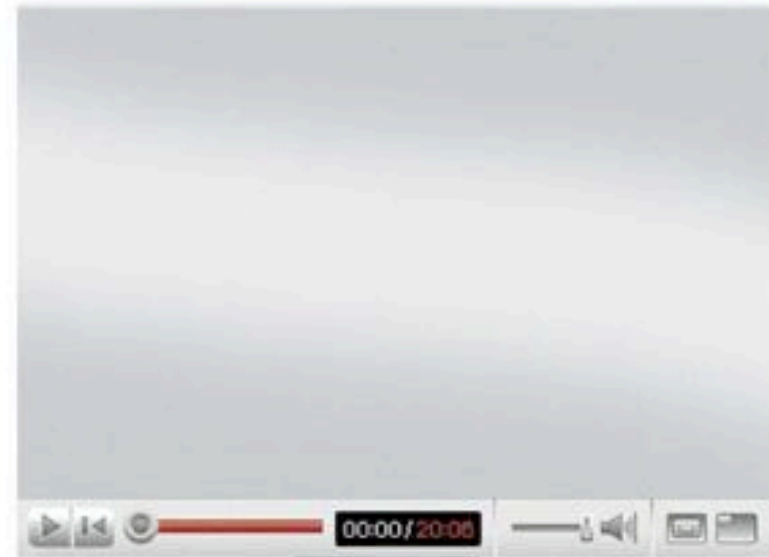
- success of an app depends on **users' engagement**
- Web-sites are driven by users:
 - provide a framework, or skeleton that users flesh out
 - mediators that connect nodes in the network (users), bundle available resources and make them publicly available.
- Free access, quick start, simple interface and attractive benefits motivate active participation



The Web 2.0 Architecture of Participation

TIME

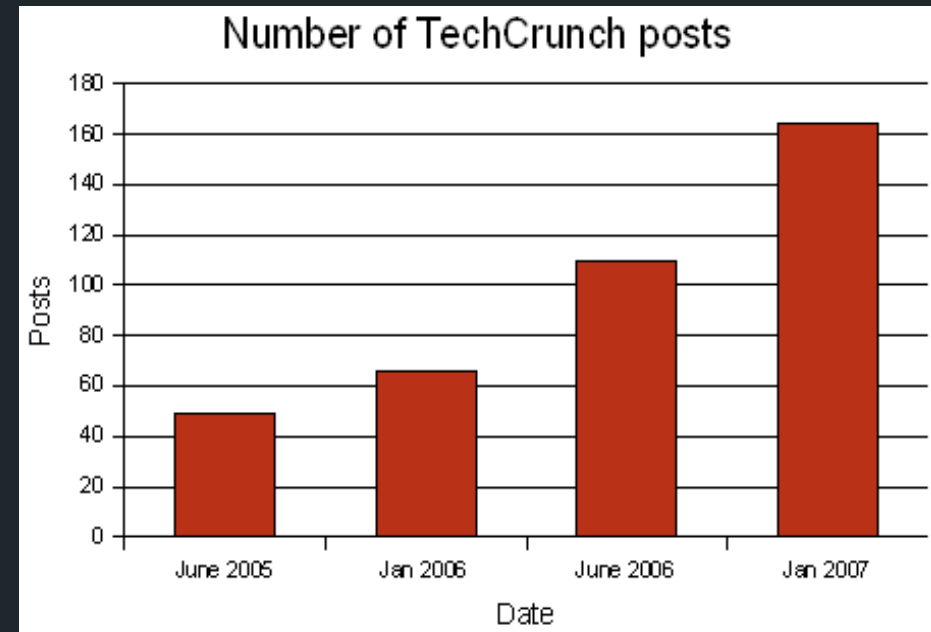
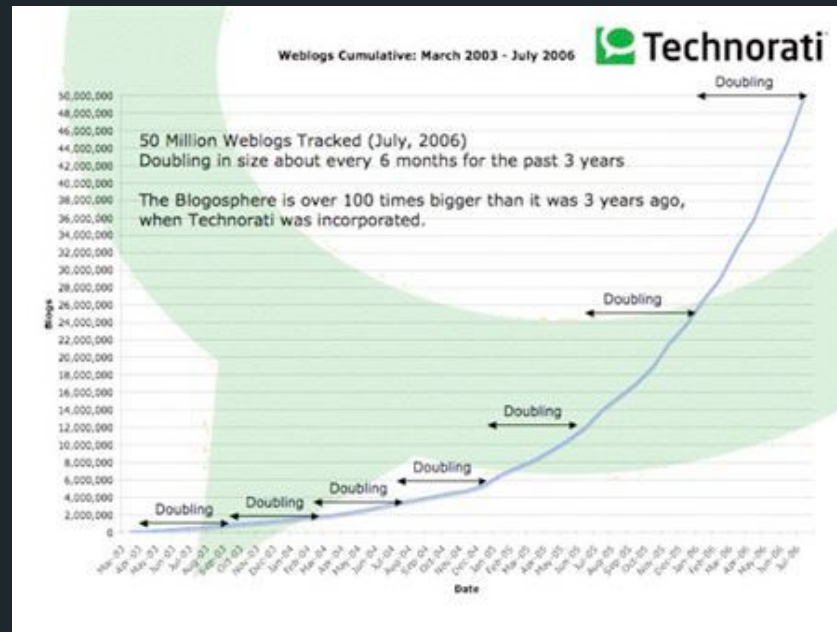
PERSON OF THE YEAR



You.

Yes, you. You control the Information Age.
Welcome to your world.

Attention economy



- The amount of blogs doubles in size every 6 months

- The number of posts per (popular) blog increases steadily

Attention economy

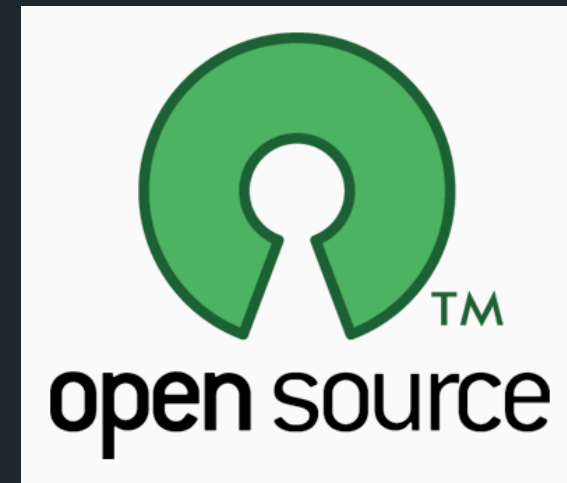
- Law of Information⁵
 - Information consumes the attention of its recipients
 - Wealth of information creates
 - poverty of attention
 - need to **allocate the attention efficiently**
 - customers agree to exchange their attention for relevant content
 - This leads to the need for relevant, adaptive and personalized content



Customers exchange their attention to ads on a site for its relevant content

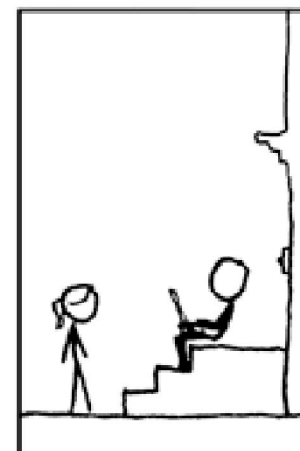
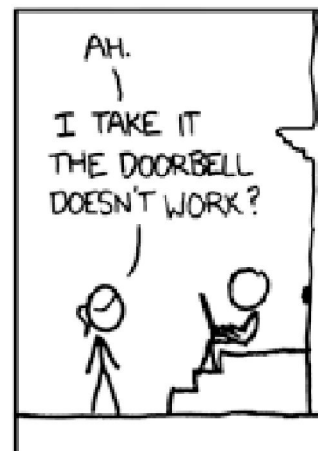
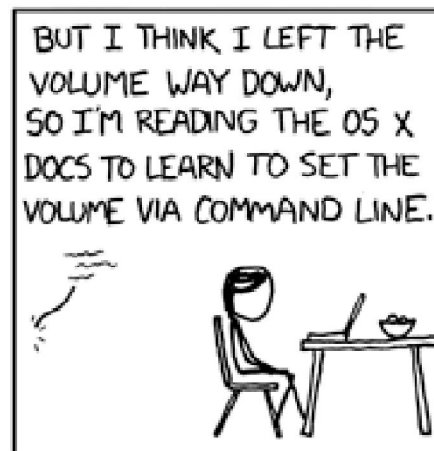
Open Source Movement

- **Decisive ingredient** of Web 2.0
 - Golden age of open source
 - major components of Web-infrastructure (Linux, Apache, MySQL, Perl, PHP, RoR)
 - IDEs and development-tools
 - Web-publishing systems (WordPress, Drupal, TextPattern etc.)
 - Very strong design and development communities



Improved Web-infrastructure

- **Decisive ingredient** of Web 2.0
 - Broadband Internet access (50-70%)
 - Cheaper and better Internet access
 - Higher Internet usage penetration (24%)
 - Good: 74.4% North America, 49.3% Europe
 - Bad: 29.9% South America, 23.3% Middle East
 - Better Web Standards support in browsers (Firefox, Safari, Chrome, IE 8+)
 - Ubiquitous Internet connectivity (mobile devices)

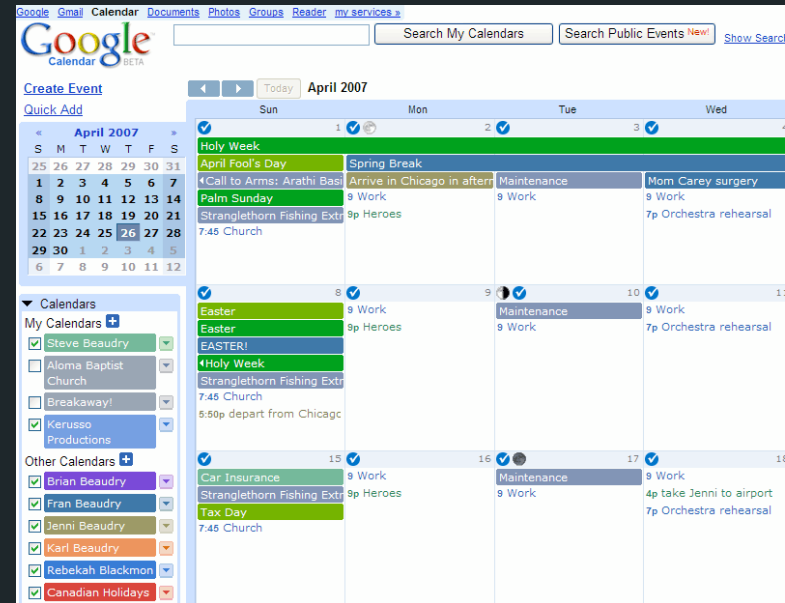


3. How is the Web different today?

new paradigms for users
and developers

Shift from Desktop to Web

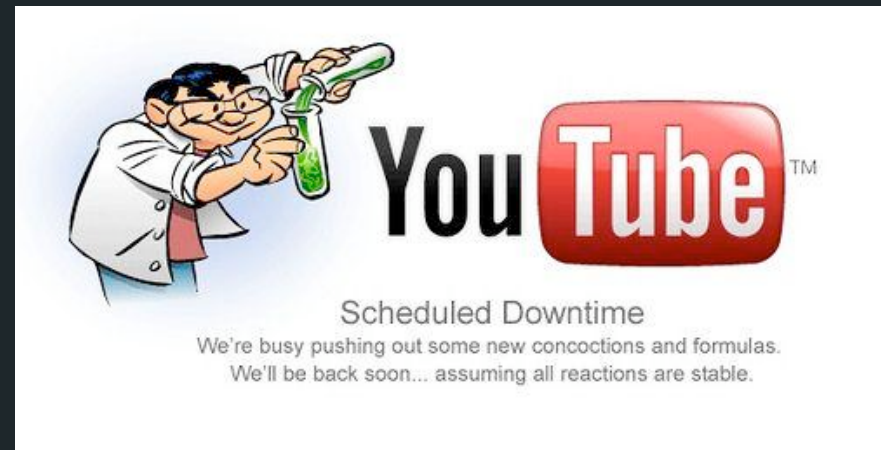
- Applications migrate to Web
 - Combine rich, intuitive desktop UIs with native advantages of the Web
 - cross-system
 - portability
 - ubiquity
 - no installation / auto-updates
 - easier sharing, sync and collaboration
 - text processing, image editing, project management tools, presentations, notes...



Google Calendar

Shift from Desktop to Web

- Perpetual Beta
 - Web-apps evolve organically due to **permanent beta-testing**
 - dozens of various releases and updates per week
 - immediate feedback
 - users are more engaged and decide what features the app should have (“co-developers”)

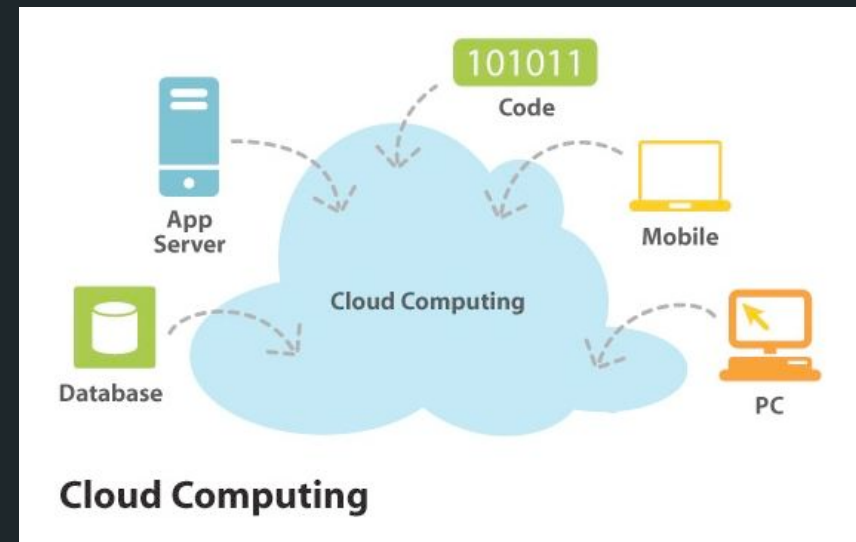


Stay tuned: YouTube adds new features

Shift from Desktop to Web

- Cloud computing

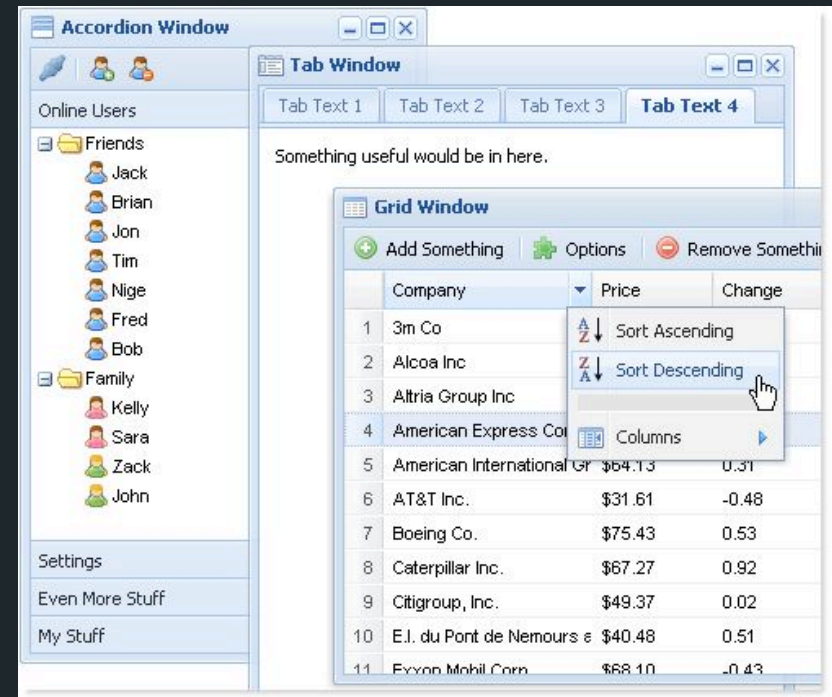
- Scalable and virtualized resources are provided as an online-service (monthly fee)
- instead of running your apps on your servers in your office, they run on a shared data center
- hardware, servers, databases, software, storage are in the cloud
- Hint: it's time for a new operating system!



Cloud computing

Rich Internet Applications (RIAs)

- Sophisticated Web-apps
 - new techniques in use (AJAX, Adobe Air, Silverlight/Flash)
 - highly responsive and intuitive
 - offline usage possible (Google Gears, Curl)
 - Soon: Web-sites will run outside the browser (Mozilla Prism)



A responsive, desktop-alike web-app

The World's Music Library

Millions of songs from all over the world, instantly available through Grooveshark.



Find and listen to any song.

Search

What's Grooveshark?

Grooveshark is the easiest way to discover, share, and listen to music online. Hear only the music you love, forget the rest.



Happiness

Find any song in the world and listen to it instantly.



Discovery

Get introduced to new music and new friends.



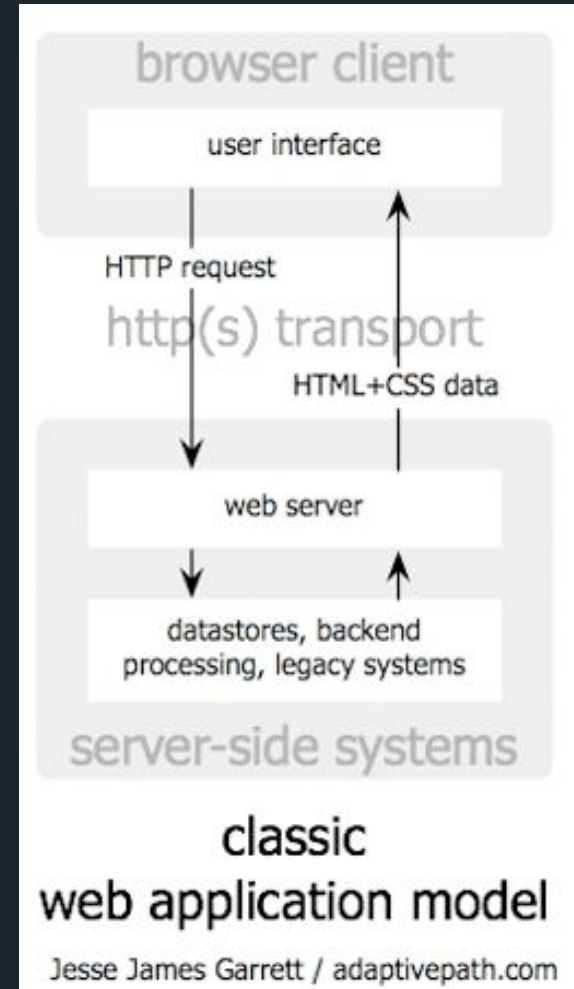
The fastest and simplest way to get the songs you want on your webpage.



Find out what our friends are saying about Grooveshark:

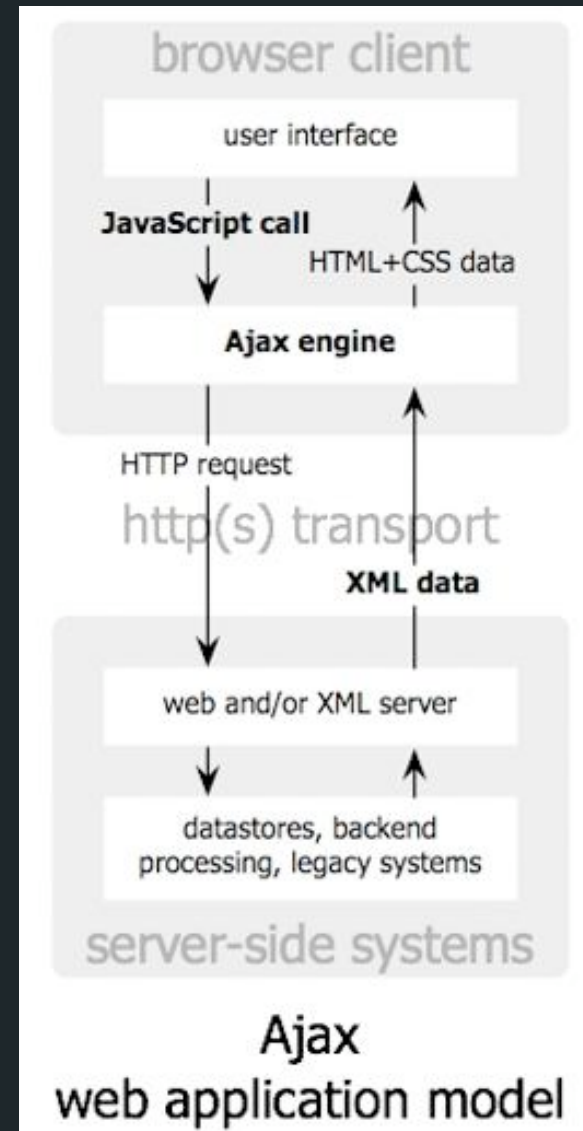
Rich Internet Applications (RIAs)

- Classic (synchronous) model:
 - User fills in a form in a browser
 - User submits the data
 - Browser sends HTTP-request to the server
 - The server processes the request
 - The server transports HTML+CSS data to the users' browser
 - The browser shows a new page
 - **No permanent connection** between client and server
- Simple to implement, but neither interactive nor responsive: **user needs to wait** all the time!



Rich Internet Applications (RIAs)

- AJAX-model (asynchronous):
 - User fills in a form field in a browser
 - A JavaScript calls the Ajax engine that sends HTTP-requests to a server-script
 - The server processes the requests
 - Server transports data to Ajax engine
 - Ajax engine modifies some parts of the page
 - Modified content is displayed to the user
 - The user proceeds with the input
 - **Permanent connection** between client and server via the Ajax engine



Social software

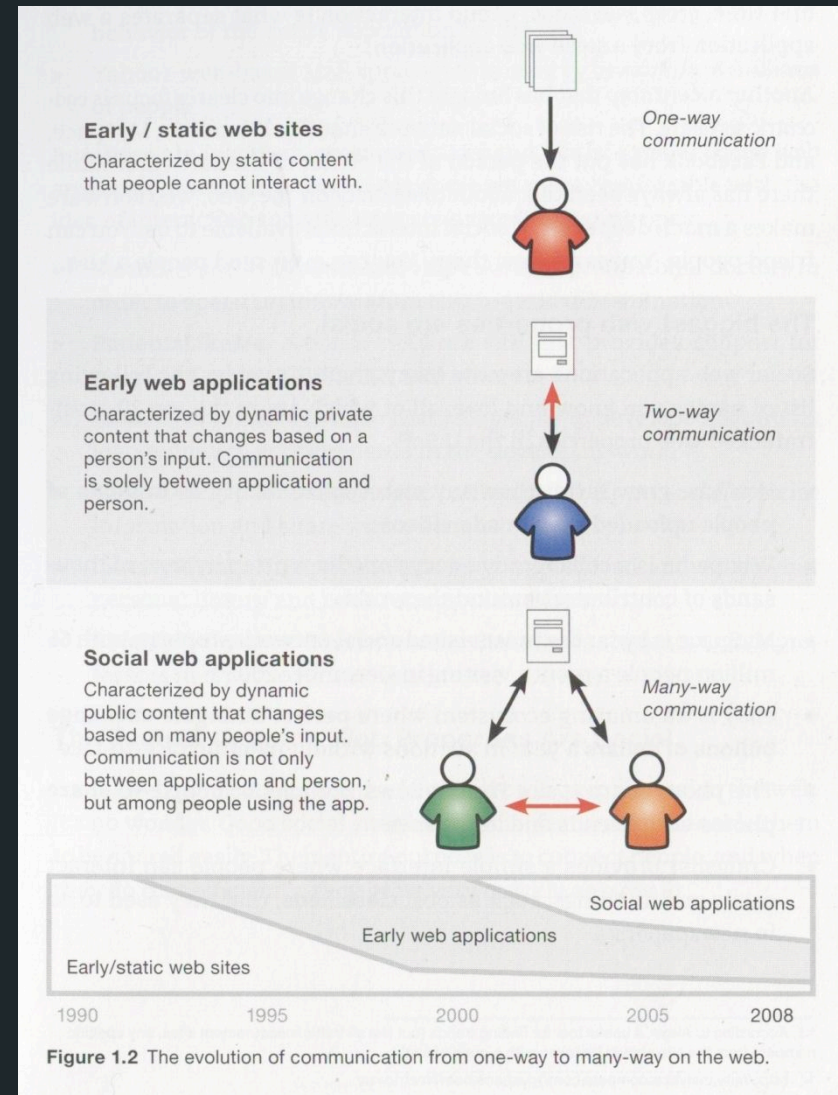
- Social apps: a forced move
 - the reliance on social connections is caused by abundance of data
 - The **paradox of choice**³ urges
 - the need for opinions we can **trust**
 - the need for authentic, **unbiased information** and conversations
 - **Amazon effect**⁴: users trust strangers they'll never meet
 - software that enables and supports social interaction is necessary!

The screenshot shows the Amazon.com interface for a book. At the top, there's a navigation bar with the Amazon logo, a search bar containing 'Books', and links for 'Shop All Departments', 'Advanced Search', 'Browse Subjects', and 'Hot New Releases'. Below the navigation bar, the page title is 'Customer Reviews' for the book 'The Paradox of Choice: Why More Is Less'. The review statistics show 107 reviews with an average rating of 4.5 stars. A 'Create your own review' button is visible. The most helpful favorable review is highlighted, showing a 5-star rating and the text: 'An engaging, lively, thoughtful book! This is an eye-opening book -- it brings the clarity and insight into decision-making that The Tipping Point did for trends. I have seen Barry Schwartz interviewed on TV and listened to a radio interview regarding this book. These interviews focused a lot on decision-making in things like shopping, and how having more choices actually makes shopping harder and makes...'. A 'Vs.' icon is on the right side of the review box. At the bottom of the review box, there are links to 'Read the full review' and 'See more 5 star, 4 star reviews'.

Customer Reviews on Amazon

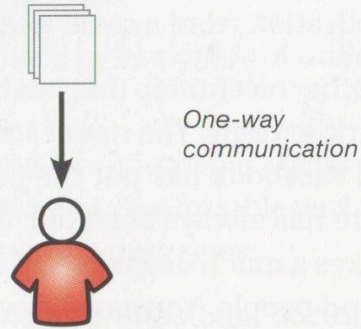
Social software

- Rise of social apps
 - users tend to maintain their current attention streams online
 - social apps help users manage their attention in the attention economy
 - The Social Web introduces a new dimension of communication, the “Many-Way-Conversation”



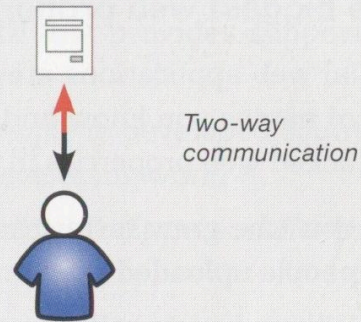
Early / static web sites

Characterized by static content that people cannot interact with.



Early web applications

Characterized by dynamic private content that changes based on a person's input. Communication is solely between application and person.



Social web applications

Characterized by dynamic public content that changes based on many people's input. Communication is not only between application and person, but among people using the app.

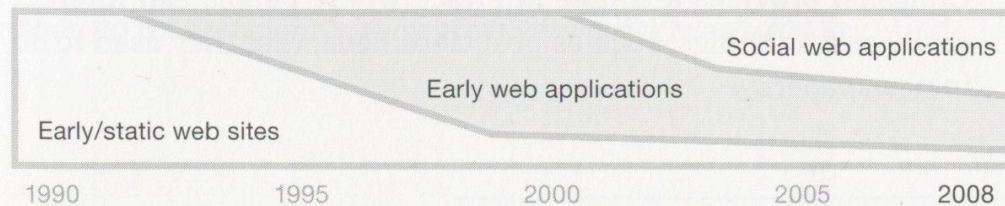
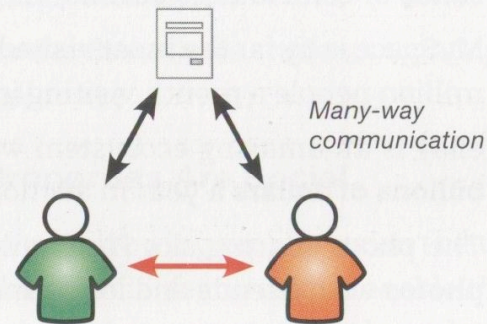


Figure 1.2 The evolution of communication from one-way to many-way on the web.

Social Media

- We are the Web

- User-generated content dominates in the Web
- More immediate and “live” than conventional media
- A very powerful medium for building connections
- Word of mouth-advertising is much more effective than traditional ads
- **data explosion** through numerous weblogs, wikis, podcasts, screencasts, vidcasts, lifestreaming apps (Twitter), RSS...



Twitter provides the micro-dimension of social interactions

Personalization

- User-centered web-services

- Adaptive information filtering systems that can learn from user's

- search and browsing history

- social behavior

- Bookmarks (Delicious)

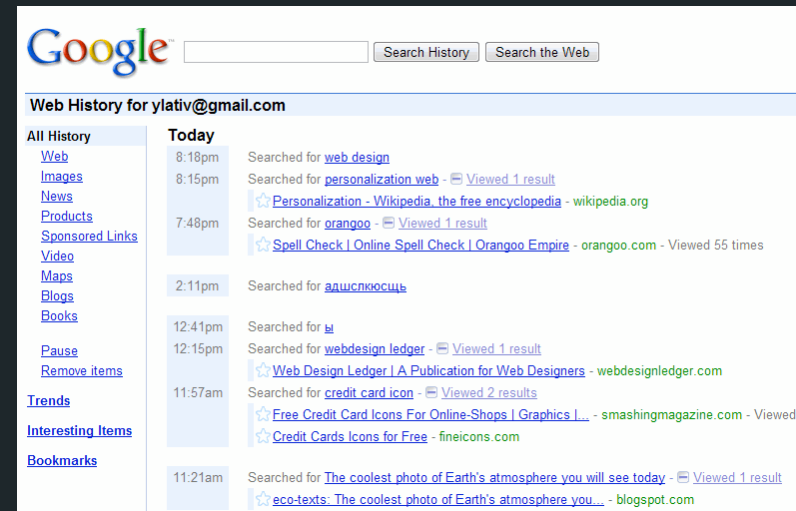
- Shopping transactions (Amazon)

- Social interactions (Facebook, Twitter, Gmail)

- Personal preferences (Last.FM)...

- Initialization stage is difficult

- Goal: personalized content, ads, alerts, search engines...



Personalized Google Search

All Topics

Recommendations (302) All (16424)

[« Back to All Recommendations](#)



rivieracadman

Remove from Recommendations

Remove Friend

in the last 30 days
rivieracadman had
518 Diggs

in the last 30 days
you had
95 Diggs

the two of you
had in common
63 Diggs
[show matches](#)

13% Compatibility Score



5 Recommendations via rivieracadman:

9
diggs

Recommendation via rivieracadman (13%)

[>> Abstract Summer Floral Vector](#)

w-enter.com — >> Abstract Summer Floral Vector [More...](#) (Design)

[digg it](#)

0 Comments Share Bury wphoto submitted **16 hr 50 min ago**



54
diggs

Recommendation via rivieracadman (13%) and mehson (9%)

[Graphic Design Portfolio Building Tools for Your Website](#)

logobids.com — A short list of free or low cost portfolio building tools that you can add to your website for maximum effect. [More...](#)

(Design)

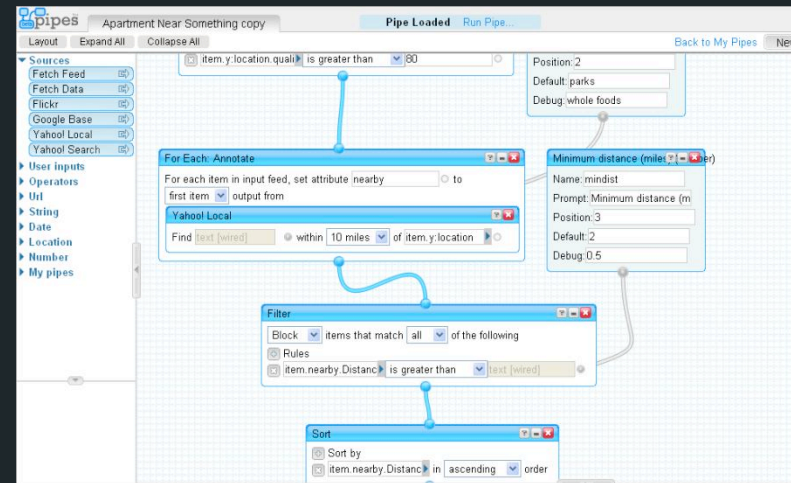
[digg it](#)

1 Comment Share Bury thinkingserious submitted **19 hr 21 min ago**

The content recommendation system on Digg is based upon user's history
www.digg.com

“Remixable” Web

- No app is an island
 - All popular apps offer simple, well-documented and **open APIs**
 - developers can use APIs to combine data from multiple sources and “mix” services in a new app
 - emergence of **hybrid apps** that use data streams in creative ways (mashups)
 - many automated mashup-editors are available (e.g. Yahoo Pipes, Dapplo, MS PopFly)



Yahoo Pipes allows developers to mix various services and data streams

“Remixable” Web

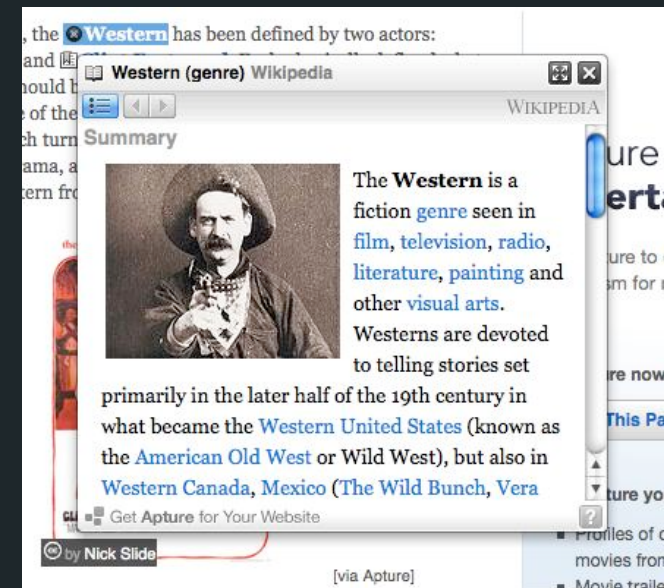
- Simple, open API is a must
 - Allows developers to **create popular apps** on top of the app
 - O’Reilly: “the most successful web services are those that have been easiest to take in new directions unimagined by their creators”⁵



Google Maps has a simple open API

Semantic and Contextual Web

- Semantic extension of the Web
 - machine-understandable semantic markup of Web-pages
 - requires extensive data formatting for new pages
 - requires extracting semantics from older pages (or rewriting them)
 - automated tools are on the way



"Artificial" semantic extension of a page using a JS-widget

Semantic and Contextual Web

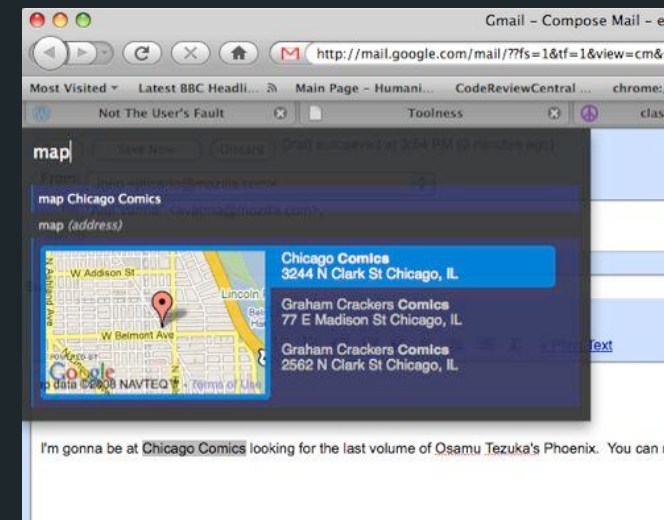
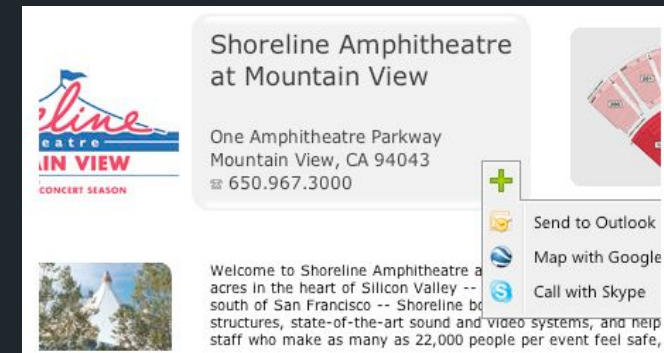
The screenshot shows the Upcoming.org website interface. At the top, there is a red navigation bar with the 'upcoming' logo and links for 'Home', 'Events', 'Places', 'Friends', 'Groups', 'Popular', and 'Add New Event'. A search bar is located in the top right, with 'San Francisco Bay Area' entered. Below the navigation bar, there are links for 'My Events', 'My Scrapbook', and 'My Friends' Events'. The main content area displays 'Today's Top Events' for the San Francisco Bay Area. The first event is 'Buzz Andersen's 4th Annual WWDC Party' with 178 goings, starting at 8:00pm at 111 Minna Gallery. Other events include 'The Unofficial Apple Weblog Meetup', '2nd Annual WebKit Open Source Party', 'SMC presents: Social Media Workshop (Silicon Valley)', and 'SF Photo Walk 2007'. A calendar for June 2007 is visible on the right, showing the 11th as the current date. A sidebar on the right contains a 'Notice anything different?' message and a 'Show me events:' section with options for 'This weekend', 'This week', 'This month', and 'Everything!'.

Upcoming.org uses Microformats

- **Microformats**
 - Standards that **reuse existing tags** to provide semantics to Web-pages (calendar, maps, events, people...)
 - Firefox 3.5+ and Internet Explorer 9 should have native support of Microformats

Semantic and Contextual Web

- It's all about context, baby!
 - Until now, most sites weren't software, but a bunch of flat HTML-pages
 - **Context** = page's content + user's behaviour
 - Requires semantics, personalization, remixing
 - **Mozilla Ubiquity** is a semi-automatic tool that delivers context to the browser (command line)



Ubiquity in action

4. Problems and issues

why Web 2.0 is not as
perfect as you might think

Problems and Issues

- Privacy
- Loss of quality
- Network neutrality
- Data transparency
- Security and spam
- Abundance of data
- Lack of semantic markup
- “Kitchen-Organization-Problem”⁷
- Stolen account = stolen identity?

Internet Basic Service High Speed
\$29⁹⁹
over 60 websites

Internet Video Includes all these and more, over 60 websites, including popular on-line email and instant messaging services

Advanced Internet Service High Speed
\$39⁹⁹
over 200 websites

Includes more search engine options, over 200 websites in all!

Blogger Internet Service High Speed
\$49⁹⁹
over 2000 websites!

Be a publisher! Blog! Over 2000 website included in this package so you can see it all!

Full internet access available on request. Prices subject to change at any time. (Full Access does not include access to illegal materials)

This is why network neutrality is important.

Summary

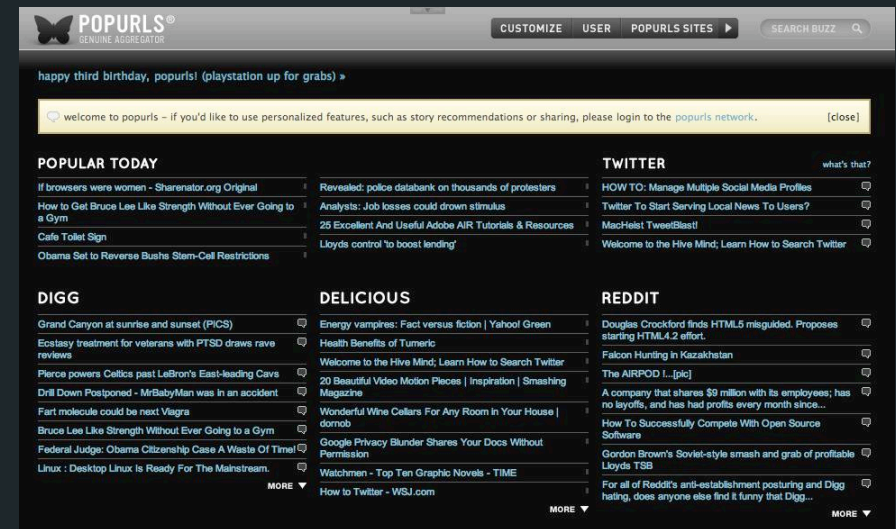
- „Web 2.0“ is
 - Next step in the evolution of the Web, based upon revised techniques, old technologies and established concepts, now applied to the Web
- Important concepts
 - The Wisdom of Crowds
 - Folksonomies and Tagging
 - The Architecture of Participation
 - Open Source Movement
 - The Perpetual Beta
 - "Remixable" Web
 - Shift from Desktop to Web
 - Rich Internet Applications
 - Contextual and Semantic Web
 - Social Software
 - Web as Conversation
 - Attention economy
 - Personalization
 - Mobile Web

Thank you
for your attention!

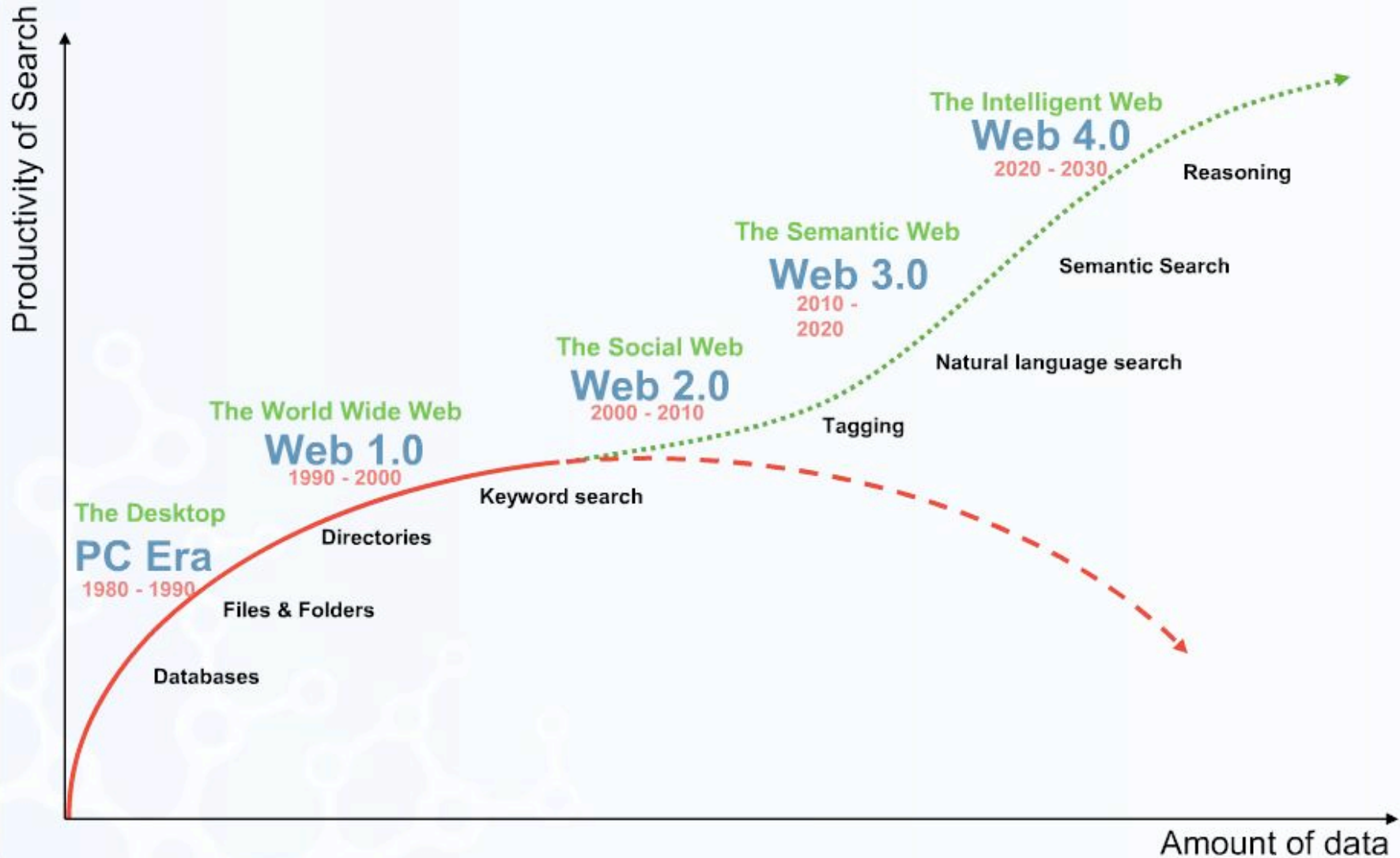


Social Filtering and Evolution of Search

- Organic social filtering
 - poor quality content has no chance in shared environments
 - sharing knowledge increases “social capital” (reputation)
 - tags-based “social” search should be better than traditional keyword-search (Google)
 - social search engines are on their way (hint: Yahoo)
- Issue
 - manipulation possible?



Beyond the Limits of Keyword Search



Mobile Web

- The next Big Thing...
 - Mobile Web has become usable with
 - new mobile devices
 - new mobile Internet-connectivity
 - rich, location-aware mobile Web-apps are on their way (e.g. Apple's Apps Store)
 - Step toward **ubiquitous connectivity**: being online – all the time.



iPhone

Mobile Web

- ...but still in baby steps

- hardly usable in practice⁶
 - small screens
 - awkward input
 - download delays
 - most sites are not mobile-ready



iPhone

- Mobile web design is just starting off

- Obvious advantages

- mobile banking & e-commerce
- mobile entertainment
- mobile information delivery
- mobile location-aware ads / spam