4 Communities, the Web and Multimedia

Literature:

T. Berners-Lee: Weaving the Web. Texere 2000

T. O'Reilly: What is Web 2.0: Design Patterns and Business Models
for the Next Generation of Software.
Communications & Strategies, No. 1, p. 17, 2007.
(http://oreilly.com/web2/archive/what-is-web-20.html – 2005)

T. O'Reilly, J. Battelle: Web Squared: Web 2.0 Five Years On
(www.web2summit.com/websquared – 2009)

The Key Idea of the Web

- T. Berners-Lee: "Information Management: A Proposal".
  CERN March 1989

  "CERN is a model in miniature of the rest of the world in a few years time."

- Disussions on Mosaic browser, 1993:
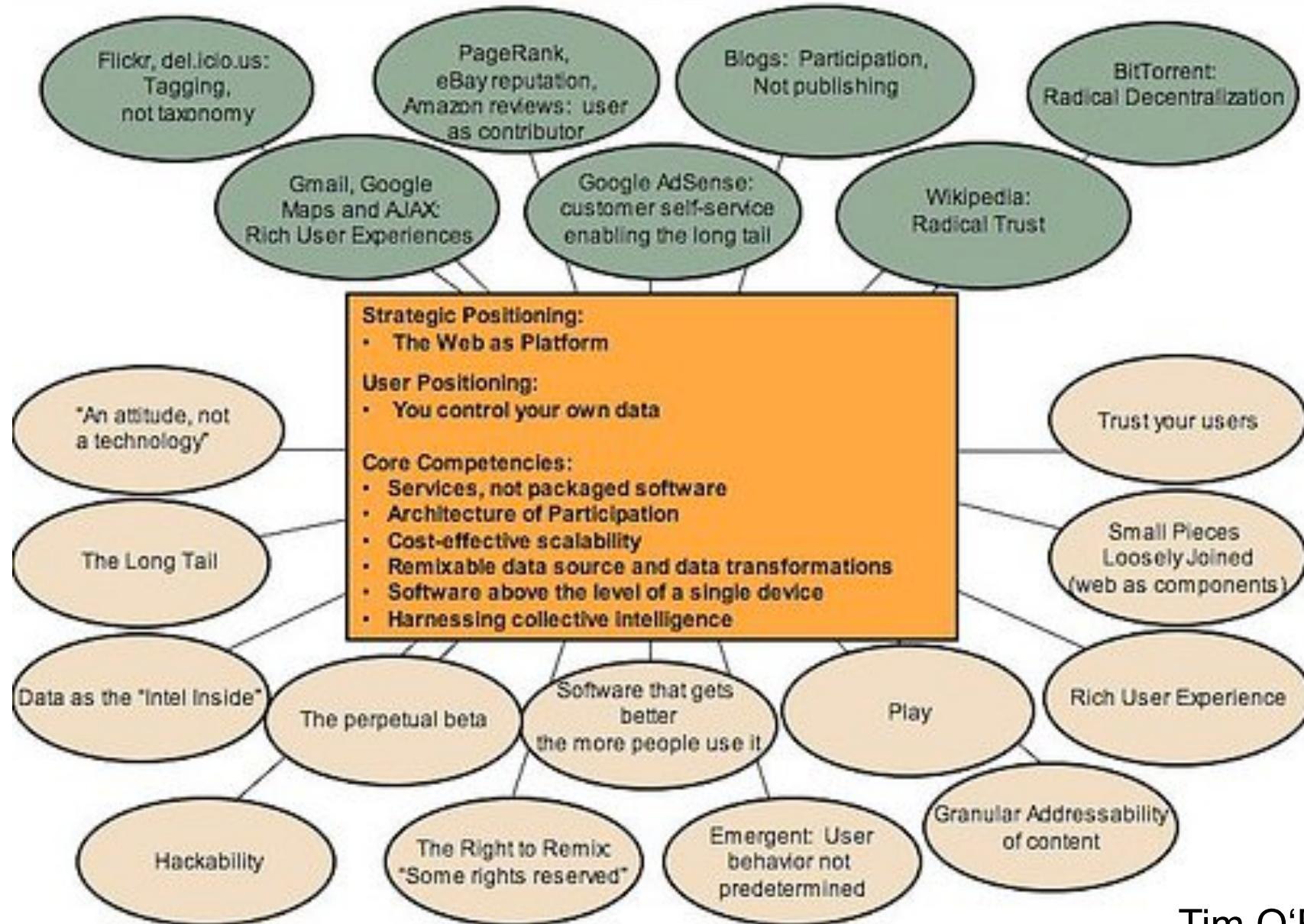
  "I ... made my now-standard case for making the Mosaic browser an editor, too. Marc [Andreessen] and Eric [Bina] explained that they had looked at that option and concluded that it was just impossible."

  (Weaving the Web p. 77)

- Tim Berners-Lee on the future of the Web:

  "My hope and faith that we are headed somewhere stem in part from the repeatedly proven observation that people seem to be naturally built to interact with others as part of a greater system."

  (Weaving the Web p. 223)

Generations of the Web

- Web 0.5
  - 1988-1995
  - Only predecessors of WWW exist
- Web 1.0
  - 1996
  - Static HTML pages, few publishers - many readers
- Web 1.5
  - 1996-2001
  - Dynamic Web pages, E-Commerce
- Web 2.0
  - 2005?
  - Collaboration, communities
  - Openness, standardization, liberty

Tim O'Reilly

What is the Meaning of „Web 2.0" ?

- O'Reilly Conferences 2004/2005/2006
  - Tim O'Reilly, Dale Dougherty
  - Similar conference titles exist, e.g.: „Where 2.0" (geospatial web)
- Basic question for the conference:
  - Which ideas have survived the burst of the dot-com bubble?
  - Creating the next wave out of the remains of the last
- „Web 2.0" has become a „buzzword"
  - Extremely rapidly...
  - There is no agreed definition
- The conference lives on
  - Web 2.0 Summit (http://www.web2summit.com)

Two Aspects of Web 2.0

- Social Aspect
  - Collaboration
  - User-Generated Content

- Technical Aspect
  - Huge bandwidth, therefore graphics, audio, pictures, videos…
  - Web browser as a universal platform for application software

Comparison by Examples

Web 1.0

– DoubleClick

– Ofoto

– Akamai

– mp3.com

– Britannica Online

– Personal homepage

– Personal bookmarks

– Content mgmt

– Taxonomy

Web 2.0

– Google AdSense

– Flickr

– BitTorrent

– Napster

– Wikipedia

– Blogging

– Del.icio.us

– Wikis

– Folksonomy

Web 2.0 Principles

- Web 2.0 is about harnessing collective intelligence!

- Reach out to the entire Web, to the edges and not just the center, to the long tail and not just the head.

- The service automatically gets better the more people use it.

- Network effects from user contributions are the key to market domination in the Web 2.0 era.

- Web 2.0 companies build value as a side-effect of the ordinary use of their application.

- The race is on to own certain classes of core data (e.g. location, identity, calendaring, product identifiers)

- Consequences for software development:
  - Software will cease to perform unless it is maintained on a daily basis
  - Users must be treated as co-developers
  - Lightweight programming models and loose coupling are needed
 - Design for remixability

Web 2.0 Five Years On: Web Squared

- Smartphones and other recent/upcoming developments:
  - Collective intelligence no longer being driven solely by humans but, increasingly, by sensors.
  - Talking to the Web becomes a reality (Google Mobile App on iPhone)
  - Information shadows, Internet of Things: Web meets World
  - Automatic geo-tagging of pictures by GPS built into cameras
  - Face recognition built into photo archiving software
  - Object recognition via smartphone camera
  - Infinite Images (Adobe MAX 2008, Shai Avidan, see http://www.youtube.com/watch?v=QxNx2OyeCHA)
- A key competency of the Web 2.0 era is discovering implied metadata, and then building a database to capture that metadata and/or foster an ecosystem around it.
- Systematic identities/primary keys are being replaced by clever recognition mechanisms (cf. CDDB/Gracenote signature of CD)

Real Time Media

- Current main example: Twitter
  - Search, analytics and social networks built around real-time communication
  - Triggering of innovations:
    - » Example: Shorthand URLs
- ***Everything in the world is now real time.***
  - Technically, it is no problem notifying the manufacturer *immediately* if a certain type of shoe is not selling at a certain shop.
  - "Houdini" system used by Obana campaigners

4   Communities, the Web and Multimedia

4.1   Evolution of the Web

4.2   Social Networks and Social Media

4.3   Web Content Aggregation and Integration

4.4   Virtual Worlds in the Web

Literature:
        Eigner/Leitner/Nausner/Schneider: Online-Communities, Weblogs
                und die soziale Rückeroberung des Netzes,
                Nausner & Nausner 2003
        C. Stöcker: Die Zeit der Kopfjäger,
                Spiegel-online.de, 1. August 2006

Social Networks, First Generation

StayFriends™
Schulfreunde wiederfinden

Hier sind Ihre Schulfreunde

Hauptmenü | Anmeldung | Log in

- College traditions:
  - Class listings, alumni listings, freshman listings
  - Personal profiles
  - Keeping in touch (classmate reunions)
- 1995: Classmates.com
  - German version: stayfriends.de
- Many similar platforms
  - E.g. facebook.com

Leistungen	Basis	Gold
Klassenfoto einstellen und Mitschüler markieren	✓	✓
Aktives Auffinden selbst festlegen	✓	✓
Klassentreffen melden	✓	✓
Alle Klassentreffeninformationen einsehen		✓
Mit dem Organisator des Klassentreffens in Kontakt treten		✓
Mailingliste für Klassentreffen verwalten		✓
»Eigene Seite« anlegen und Profil erstellen	✓	✓
Fotos auf »Eigene Seite« hochladen	✓	✓
»Eigene Seite« von anderen komplett einsehen		✓
Fotos ansehen		✓
Nachrichten hinterlegen	✓	✓
Nachrichten lesen und beantworten		✓
Kontaktliste anlegen	✓	✓
Ein Poesiealbum führen	✓	✓
Jedes Poesiealbum lesen		✓

Social Networks, Second Generation

- From documentation of existing relationships to creation of new relationships
- General platform for self presentation
  - Easy way to personal homepage
- Examples:
  - MySpace.com
  - Friendster.com
  - StudiVZ.de
  - Xing.com (OpenBC)
- Establishment of "friend" link by mutual agreement
- Tracing of social network
  - 2nd degree contacts
  - Former colleagues

Einzigartige Suchfunktionen

- Finden Sie neue Vertriebskanäle, Mitarbeiter und Jobs
- Finden Sie schnell die richtigen Entscheidungsträger
- Erreichen Sie Ansprechpartner tausender Unternehmen

Xing.com

Holtzbrinck zahlt Millionenpreis für StudiVZ
03. Jan 2007 17:52, ergänzt 18:54

Der Verlagskonzern Holtzbrinck hat das Internetportal StudiVZ vollständig übernommen. Mehr als 50 Millionen Euro zahlte das Unternehmen für die Kontaktbörse.

StudiVZ-Website
Foto: StudiVZ

Quelle: netzeitung.de

Example: facebook.com (1)

facebook **Startseite** **Profil** **Freunde** **Postfach**

Neuigkeiten

Seiten

Statusmeldungen

Neuigkeiten Live-Meldungen anzeigen

Was machst du gerade?

- History:
  - Mark Zuckerberg and friends, Harvard, October 2003:
    - » Facemash: Comparing student photos
  - Mark Zuckerberg, February 2004:
    "The Facebook" for Harvard students
  - Stepwise expansion to other universities,
    colleges and high schools
  - Sept, 2006: Open to everybody of age 13 and up
- Popularity:
  - Leading social networking site
    (2009, according to *comScore*)
  - 500 million active users (July 2010)
  - Has overtaken MySpace.com
    in popularity by April 2008
  - Alexa.com traffic rank:
    - » Sept. 2006: Traffic rank 60
    - » Nov. 2010: Traffic rank 2
      (rank 2 in Germany,
      rank 1 in 6 countries)
  - Still high user growth (getting slower)

Country	Percent of Site Traffic
United States	26.3%
India	6.5%
Germany	4.3%
France	4.0%
United Kingdom	3.9%
Italy	3.8%
Mexico	2.9%
Indonesia	2.7%
Spain	2.4%
Canada	2.4%

alexa.com

Facel
in Millio

Total active users[N 1] (in millions)

Date ▲	Users ⋈	Days later ⋈	Monthly growth[N 2] ⋈
August 26, 2008	100[36]	1,665	178.38%
April 8, 2009	200[37]	225	13.33%
September 15, 2009	300[38]	150	10%
February 5, 2010	400[39]	143	6.99%
July 21, 2010	500[6]	166	4.52%
—	600	118 (ongoing)	—

Wikipedia

Example: facebook.com (2)

- Features:
  - Wall, Photos, Pokes, Status, Newsfeed, Notes (blogging), Gifts, Marketplace, Events, Video, ...
    - » More than 30 billion pieces of content shared each month
- Facebook Platform:
  - May 2007: Software development platform (PHP5, JavaScript, ActionScript, ...)
  - Nov. 2007: 7,000 applications
    Nov. 2010: 550,000 active applications
- Financial side:
  - 2007: Microsoft buys 1.6% share for $240 million
  - September 2009: First time positive cash flow
  - Value estimate 2010: $41 billion

Facebook Value Tops EBay, Becomes No. 3 U.S. Web Company

By Brian Womack - Nov 15, 2010 6:01 AM GMT+0100

http://www.facebook.com/press/info.php?statistics
http://www.bloomberg.com/news/2010-11-15/

Multimedia and Social Networks

- Obvious parts of homepage:
  - Personal photograph
  - Private pictures
  - Background music
- Copyright for all uploaded content owned by the user
  - User-generated (multimedia) content
- Legal trading of public domain music and videos
  - MySpace Music

Social Media

- Media consisting of user-generated (multimedia) content
- Classics: Flickr.com (photo), YouTube.com (video)
- Tagging
  - By originator
  - By others
  - Folksonomy
  - Tag clouds
- Comments
  - Discussion
  - Feedback
- Ratings
- Automation
  - Most recent, most popular

Tag cloud from Flick'r

All time most popular tags

amsterdam animal animals april architecture art australia baby barcelona beach berlin bird birthday black blackandwhite blue boston bridge building bw california cameraphone camping canada car cat cats chicago china christmas church city clouds color colorado concert day dc dog dogs england europe family festival fireworks florida flower flowers food france friends fun garden geotagged germany girl graduation graffiti green hawaii holiday home honeymoon house india ireland italy japan july june kids lake landscape light london losangeles macro march may me mexico moblog mountains museum music nature new newyork newyorkcity newzealand night nyc ocean orange oregon paris park party people phone photo pink portrait red reflection river roadtrip rock rome sanfrancisco school scotland sea seattle sign sky snow spain spring street summer sun sunset taiwan texas thailand tokyo toronto travel tree trees trip uk unfound urban usa vacation vancouver washington water wedding white winter yellow zoo

Giving, Exchanging, Buying

- Elementary way of exchanging goods
  - Reciprocal needs
- Buying:
  - Exchange is eased by money
- Media products may be different!
  - Artist has a need for being recognized, getting feedback
  - Consumer has a need for being entertained, informed
  - Reciprocal needs exist
- Amateur content producers
  - Do not in the first place expect revenue
  - "Giving" instead of exchanging
  - See Open Source software
- Global medium is more than its parts
  - Automatic creation of new valuable content by aggregation, filtering
  - "Wisdom of the crowd"

Social Bookmarks

- Organizing Web content:
  - Hierarchical directories, taxonomy:
    - » Gopher, Yahoo
  - Personal bookmarks
    - » Retrieval problem, metadata
  - Sharing platform for links to information in the Web
  - Classics: Del.icio.us, digg.com, spurl.net, furl.net (with archive)
- Tagging:
  - Adds a semantic dimension to Web search
- Browser extensions for keeping personal bookmarks on server
- Digg effect:
  - Small web sites becoming quickly popular – overload situations
- Overview paper (found via del.icio.us...):
  - http://www.dlib.org/dlib/april05/hammond/04hammond.html

Weblog, Blog

- Definition: A collection of chronologically (backwards) ordered, regularly added contributions to an umbrella topic.
  (adapted from Ebner/Baumann/Krcmar)
  - Traditionally: Contributions comment on one specific hyperlink

- Technical view:
  - Simple content management system

- History:
  - First online diary by Simon Gisler 1994 (according to Wikipedia)
  - John Barger 1997: Term "Weblog"; Term "Blog" since 1999 (Peter Merholz)
  - Huge popularity since 2002

- Platforms: e.g. wordpress.org, blogger.com
  - Links point to individual contribution and are permanent ("permalinks")

- Variants by media type:
  - Vlog, linklog, photoblog,moblog

- Problematic issues:
  - Borderline between advertisement, propaganda, free speech
  - Law violations, offensive statements

Reading and Writing

- Traditional cultural techniques: writing and reading
  - Mostly separated activities
- Blogging:
  - Writing as a continuation of reading
  - High motivation to start writing, by external trigger (commented link)
  - Often very short texts
  - Reading as a continuation of writing (e.g. reading comments)
  - Continuous process of sign production
- A new cultural technique?
  - Reading-writing-reading-writing-…

From Eigner et al p. 122
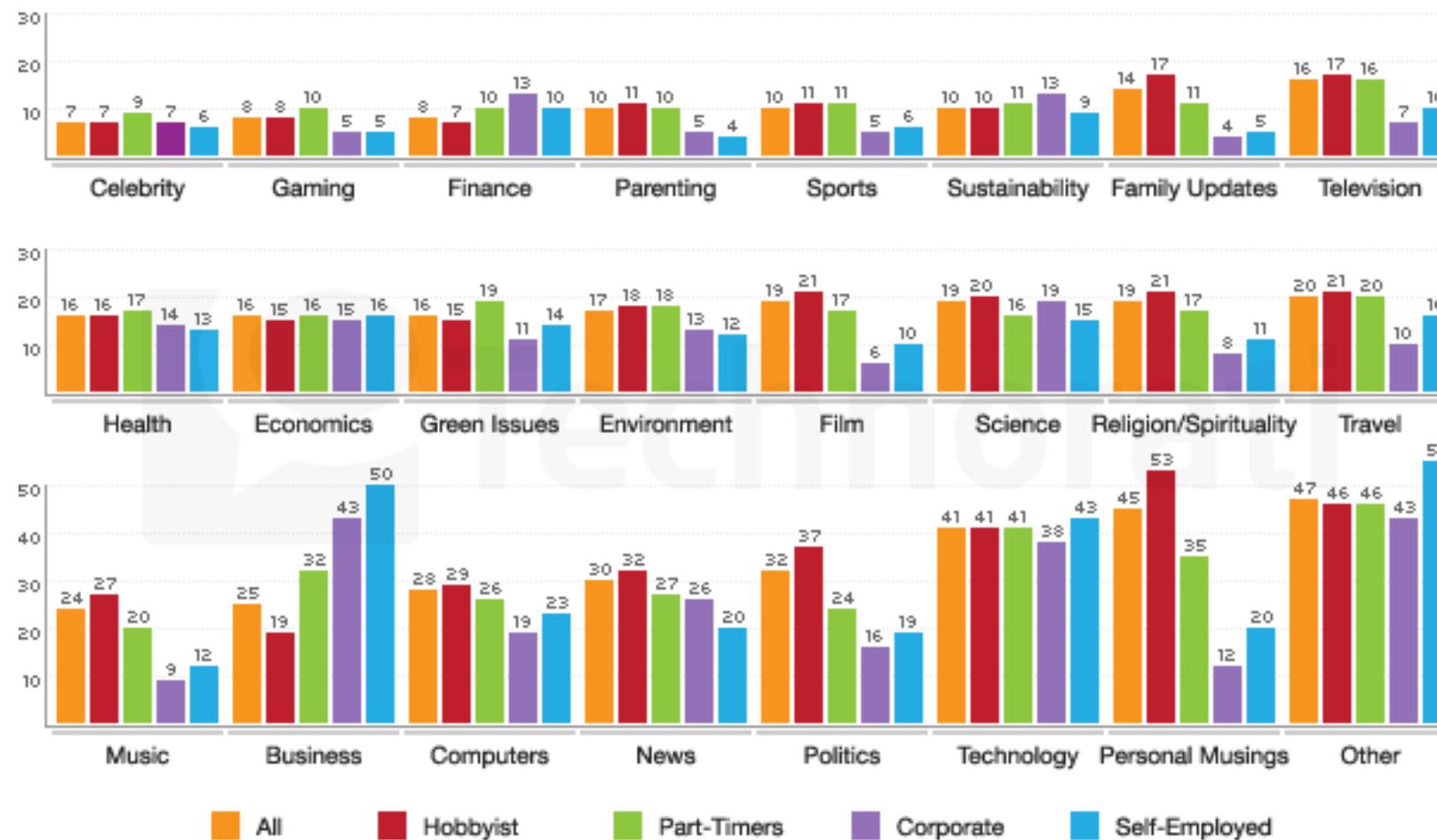
Blog as an "Oscillation Medium"

- Traditional web sites (including online versions of traditional media):
  - Closed content
  - Links mostly internal to web site
  - Plus a few "related links"
- Bookmark collections:
  - Completely open content
  - Only reference to outer location
- Oscillation media:
  - Both closed and open
  - Blog comments on a link and contains external links
  - Reader is "oscillating" between open and closed reading
    - » Shall I follow the link?
    - » Shall I read on?
  - Hypertextuality as a media creation force

From Eigner et al p. 119

Diversity of Blog Topics

What topics do you blog about?

Technorati.com State of the Blogosphere 2010

Blog Search

- Blog search engine
  - Combining information from many blogs
  - Including tagging, rating etc.
  - Examples: Technorati.com, blogsearch.google.com
  - Being expanded towards multimedia
    - » Counting links from blogs to music albums, videos, movies etc.

Microblogging

Anarchaia — Experimental, impressionistic sub-paragraph tumblin' (think obstsalat)

April 2005: Term "tumblelog"

- Tumblelog:
  - Relatively unstructured "stream of consciousness"
  - Small bits of information and media
- Simplified blogging platforms
  - Tumblr (2006)
  - Twitter (2006/7)
- Microblog:
  - Brief updates (text or small media units), published on the Web
  - Submitted through various means, also from mobile devices
- Microblogs built into social Web platforms
  - "Status Update" on Facebook

Tumblr: Microblogging Done Right. — cnet

CEO Spotlight: Tumbling is a fast form of blogging, and it's catching on. — Forbes

tumblr.com

Podcasting

- "History":
    - Discussed since 2000, massive use since 2003
    - iPod & Broadcasting
    - Word of the year of the New Oxford American Dictionary 2005
- Media file distributed by subscription (paid or unpaid)
    - Playback on computers or mobile devices
    - Mainly audio, partly video information, may be any file technically
    - Automation of download by "feeds" (RSS or Atom)
- Often *User-Generated Content (UGC)*:
    - Amateur podcasts
    - Production of audio podcasts has minimal hardware/software requirements

Corporate Blogs and Podcasting

- Companies use blogs and podcasts for:
    - General information on company
    - Brand formation, general public relations
    - Topic blogs
    - Campaign blogs
    - Knowledge distribution and customer service
    - Internal information channels (intranet blogs)
        - » Executive blog, team blog
- Problematic issues (for the company):
    - Negative image campaigns (e.g. attac)
    - Confidential or problematic issues discussed openly in internal blogs (e.g. cases of mobbing)
    - Danger of emotional escalations

Peter Wolff: Die Macht der Blogs, Datakontext 2006

Context-Sensitive Advertisement

- Important source of revenue in Web 2.0 sites
  - Advertisement precisely targeted at customer
- Market leader: Google AdSense
  - Ad server operated by Google
  - Websites register with Google
    - » Advertisement placed based on analysis of content of page to be shown (Javascript)
    - » Generate revenue per click or per thousand impressions
  - Selection among relevant ads and order of ads by real-time auction
    - » Ads creating highest revenue are shown
    - » Using bid price of advertised and quality score of the ad (e.g. Click-Through-Rate)
    - » Paid price may be lower than the bid (minimal price to keep position on the list)
  - Advertisers arrange fixed budgets in advance
- See: http://www.google.com/adwords/displaynetwork/control-your-costs/pricing.html

Lead User Innovation Process with Online Communities

- Traditional Lead User Innovation Process:
  - Workshops with selected users
  - Bring together product developers and end users
  - Discuss ideas for new products and product improvements
  - Create new ideas through creativity techniques
- Closed Online Communities:
  - Lead user community organized through web-based platform
  - Specific software tools in addition to community-platform functions
- Example:
  - TMG München projects with Baluff and Webasto
  - Ideas for automotive products created and tested with large group of Chinese participants

Innovation Community: innocentive

4 Communities, the Web and Multimedia

Literature:
    R. Yee: Pro Web 2.0 Mashups, Remixing Data and Web Services,
    Apress 2008

Content Aggregation, Indexing, Curation

- Content aggregation:
  - Combination of content on specific topics from various sources
  - Essential steps:
    Finding content (indexing), filtering content, publishing combined content

- Indexing:
  - May address different types of source (web, blogs, local sources)

- Filtering:
  - Automatic filtering
  - Careful manual selection of content: *Curation*
  - Community-based automatic filtering (voting, tagging, counts)

- Publishing
  - User-configurable content (personal news)
  - Syndication to other online media
  - Basis for non-online media (e.g. print media)

http://emediavitals.com/article/1005/how-publishers-curate-world-content

Content Indexing + Automatic Filtering: Examples

hpana.com

News Curation Tools and Services: Examples

loud3r.com

daylife.com

Video Curation and Aggregation: Example

video.nymag.com

Print Media from Curated Online Content

Dr. Pierce's Modern Cure
by Evan Ratliff

More selections from Issue Zero

In May 2010, we conducted a two-day media experiment. 8,000 people signed up, 1,500 submissions came in, 35 editors selected 70 pieces to fill a 60-page magazine.

People liked it. We broke our distributor's sales records, received positive reviews in The New York Times, PBS, and the Village Voice, and won a Knight-Batten Award for Innovation in Journalism. Here, we present selected work from the print edition of Issue Zero.

48hrmag.com

Content Sources
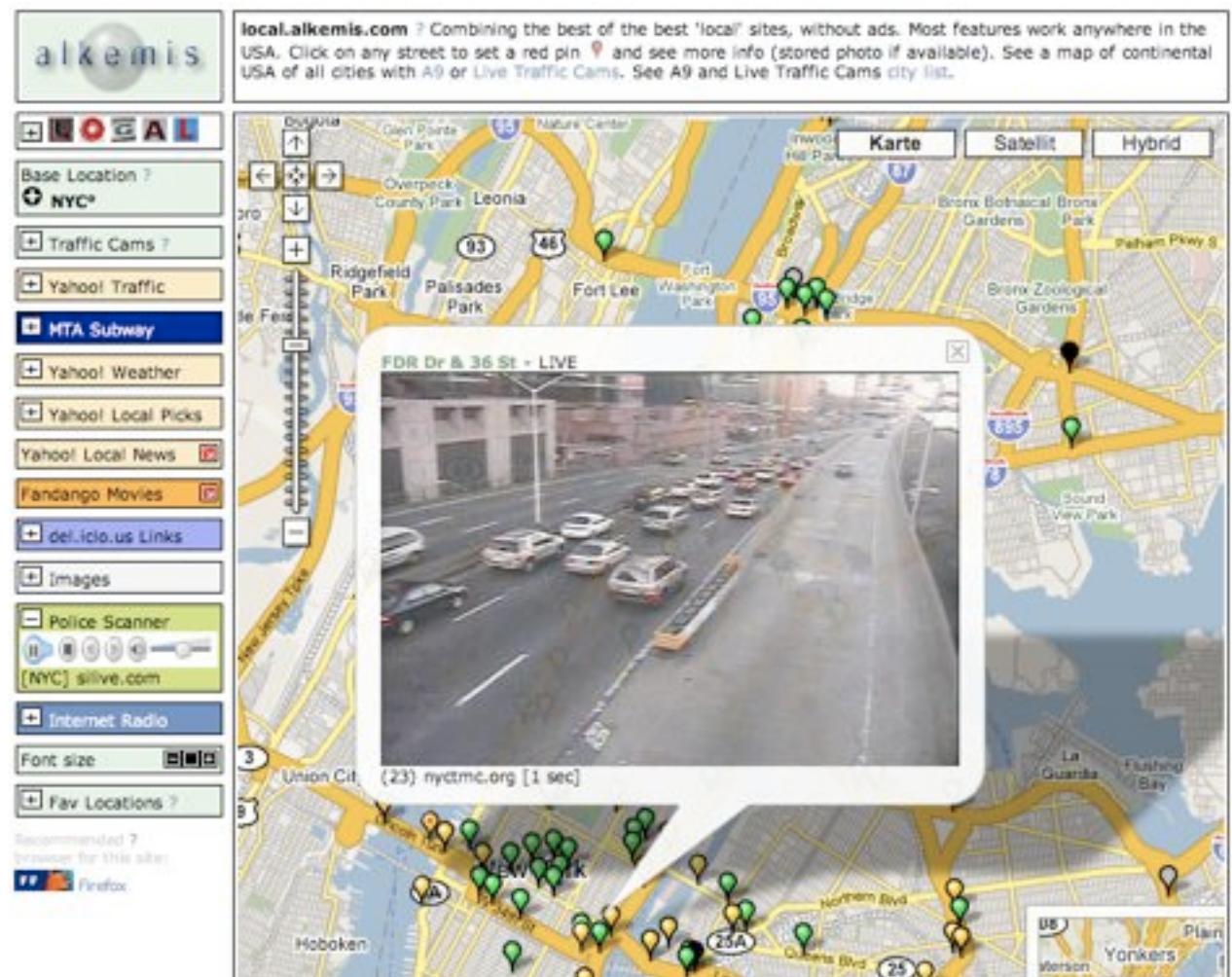
- Data feeds (XML files)
  - RSS (Really simple syndication)
    - » Channels and items
  - Atom, Atom Syndication Format (ASF)
    - » Successor for RSS
    - » IETF Standard
  - Proprietary file formats
- Database access
  - Often databases specific for application domain (e.g. in a company)
- Public Web Services
  - Access to information provided by large Web sites
  - E.g. Amazon, Google Maps
  - See later for details

Mashup

- Application integrating diverse Web content seamlessly
- Presentation screen and layout:
  - May be based on existing Web site
  - May be created specifically
- General architectural principle:
  - Web sites provide program access (API) over the Internet (Web Services)
  - Several Web Services are contacted and results are evaluated
- Basic alternatives:
  - Client-side mashup
  - Server-side mashup (more frequent)
- Various technologies for transmission/invocation:
  - REST
  - SOAP
  - XML-RPC

Example: Alkemis Local

- local.alkemis.com

- NYC live traffic cams

- Yahoo Traffic News

- Flickr images

- Del.icio.us links

- A9 Blockview photos

- APIs:
  - Amazon A9 OpenSearch
  - del.icio.us
  - Flickr
  - Google Maps
  - Yahoo Traffic

- See programmableweb.com

Web Service APIs

- Example: Flickr API

- Existing methods are grouped in packages

- For each method, allowed parameters are defined

- Often a registration key is required which has to be obtained from Web service provider

people

- flickr.people.findByEmail
- flickr.people.findByUsername
- flickr.people.getInfo
- flickr.people.getPublicGroups
- flickr.people.getPublicPhotos
- flickr.people.getUploadStatus

photos

- flickr.photos.addTags
- flickr.photos.delete
- flickr.photos.getAllContexts
- flickr.photos.getContactsPhotos
- flickr.photos.getContactsPublicPhotos
- flickr.photos.getContext
- flickr.photos.getCounts
- flickr.photos.getExif
- flickr.photos.getFavorites
- flickr.photos.getInfo
- flickr.photos.getNotInSet
- flickr.photos.getPerms
- flickr.photos.getRecent
- flickr.photos.getSizes
- flickr.photos.getUntagged
- flickr.photos.getWithGeoData
- flickr.photos.getWithoutGeoData
- flickr.photos.recentlyUpdated
- flickr.photos.removeTag
- flickr.photos.search
- flickr.photos.setContentType
- flickr.photos.setDates
- flickr.photos.setMeta
- flickr.photos.setPerms

(excerpt)

flickr.photos.getInfo

Get information about a photo. The calling user must have permission to view the photo.

Authentication

This method does not require authentication.

Arguments

api_key (Required)
Your API application key. See here for more details.
photo_id (Required)
The id of the photo to get information for.
secret (Optional)
The secret for the photo. If the correct secret is passed then permissions checking is skipped. This enables the 'sharing' of individual photos by passing around the id and secret.

REST (Representational State Transfer)

- REST is one of many possible methods to call a Web Service API

- History:
  - Roy Fielding 2000, Ph.D. thesis
    - » Analyzes and generalizes architecture of the Web

- Main features which made the Web architecture successful:
  - Identification of resources (in most cases by URIs)
  - Manipulation of resources through these representations
  - Stateless operation of server (regarding application state)
  - Hypermedia as base engine

- Applying REST to Web Services:
  - All resources on the server are identified by URI strings
    - » API method plus parameters coded in URI
  - Client uses only standard HTTP methods, mainly GET
  - Response contains clear metadata about the used language and an information body containing hyperlinks (to further resources)

- Atom feeds also provide a REST-based API

Example: REST Request/XML Response

- Request:

```
http://api.flickr.com/services/rest/
?method=flickr.photos.search&api_key=8c...93
&tags=puppy&per_page=3
```

- Response:

```
<?xml version="1.0" encoding="utf-8" ?>
<rsp stat="ok">
<photos page="1" pages="276125" perpage="3"
total="828375">
    <photo id="41150XXXX20" owner="41905YYY@N03"
        secret="13a...1c" server="2638" farm="3"
        title="MY PHOTO TITLE!" ispublic="1"
        isfriend="0" isfamily="0" />
    <photo id="4116JJJ47" owner="225GGG@N08"
        ... />
    <photo id="4176GGG653" owner="45HHHH06@N00"
        ... />
</photos>
</rsp>
```

SOAP and XML-RPC

- Remote procedure call (RPC):
  - Technology to execute a procedure (method) with certain parameter values on a different (remote) computer
  - Various technologies exist (e.g. CORBA, DCOM) outside the Web area

- Web Service Invocation:
  - Invoking a Web Service using Web standards

- SOAP (earlier acronym: Simple Object Access Protocol)
  - XML-based syntax for messaging between applications
  - Independent of transport protocol
  - Web Services are a special application of SOAP
  - W3C standard

- XML-RPC:
  - Similar to SOAP (somehow its predecessor)
  - Transport protocol is HTTP
  - Simpler but limited in functionality

SOAP Example

- From Flickr.com:

```
<s:Envelope
    xmlns:s=http://www.w3.org/2003/05/soap-envelope
    xmlns:xsi=http://www.w3.org/1999/XMLSchema-instance
    xmlns:xsd="http://www.w3.org/1999/XMLSchema">
    <s:Body>
        <x:FlickrRequest xmlns:x="urn:flickr">
            <method>flickr.test.echo</method>
            <name>value</name>
        </x:FlickrRequest>
    </s:Body>
</s:Envelope>
```

- SOAP makes use of XML namespaces
- Relatively high organizational overhead
- Compare equivalent REST request format
  ```
  http://api.flickr.com/services/rest/
  ?method=flickr.test.echo&name=value
  ```

XML-RPC Example

- From Flickr.com:

```
<methodCall>
  <methodName>flickr.test.echo</methodName>
  <params>
    <param>
      <value>
        <struct>
          <member>
            <name>name</name>
            <value><string>value</string></value>
          </member>
        </struct>
      </value>
    </param>
  </params>
</methodCall>
```

- Simple structure, deep nesting, also large overhead

Conceptual Difference REST vs. SOAP/XML-RPC

- Tradeoff between
  - diversity of method names and
  - complexity of parameter structure
- Simple classical example
  - Special method name: fib
    - » Call: fib(13)
    - » SOAP style
  - Universal method name: exec
    - » Call: exec(fib, 13)
    - » REST style (GET is universal method name)
- Programs as data structures
  - Universal interpreter (compare Turing machine)
  - Basic idea of all current computer technology

API Toolkits
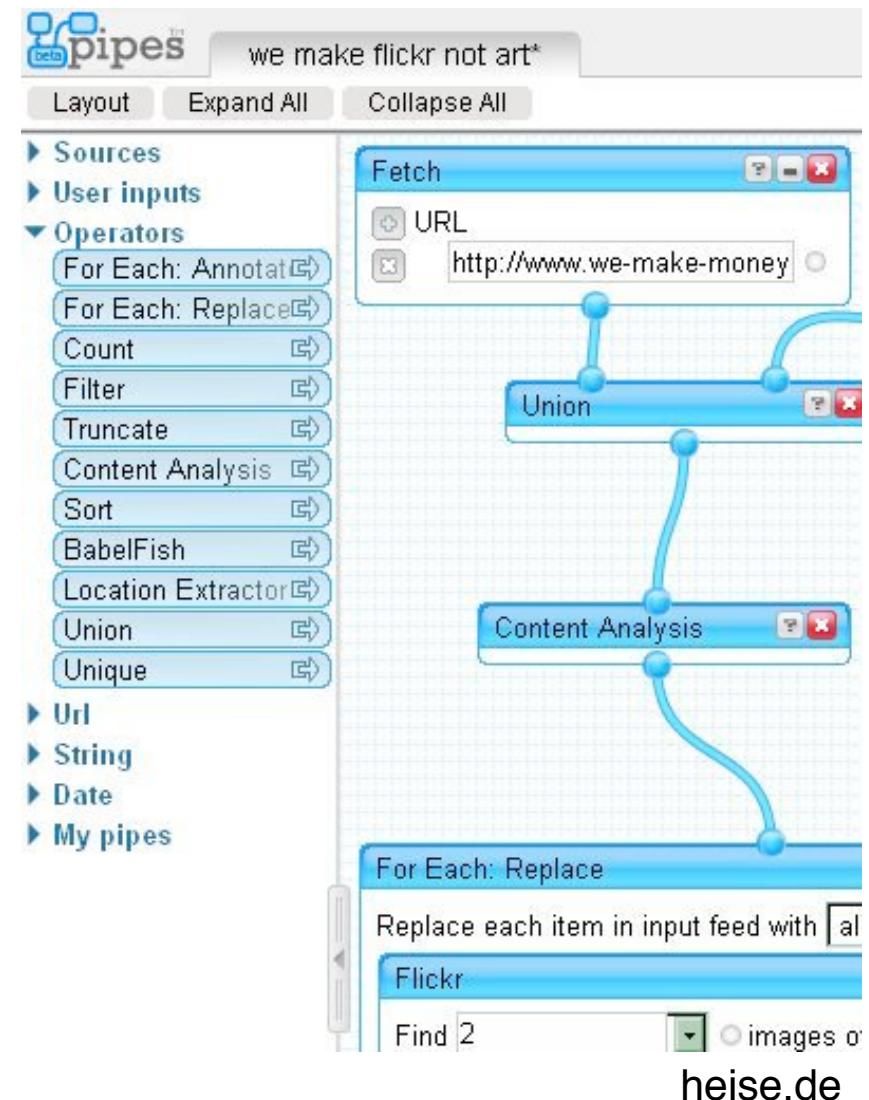
- Requests are constructed and responses are evaluated in scripts

  - Mostly server-side scripts, e.g. PHP

  - Constructing a request in PHP:
    `$content = file_get_content($url);`

  - Evaluating the response:
    XML parsing is standard part of PHP since version 5

- Simplifying development for specific API:
  API toolkits

  - Example: phpflickr.com

  - "Wrapper" around API functions and invocation

  - Direct PHP call to required functionality

  - Response processed and data array returned

    » Example functions:
    `people_findByUsername(), getPhotos()`

ActionScript
- flickr api (docs)
- Flashr
- Flickr API Interfaces REST
- as3 flickr lib

C
- Flickcurl

Cold Fusion
- CFlickr

Common Lisp
- Clickr

cUrl
- Curlr

Delphi
- dFlickr

Java
- flickrj
- jickr

.NET
- Flickr.NET

Objective-C
- ObjectiveFlickr

Perl
- Flickr::API 0.03
- Flickr::Upload 1.06

PHP
- PEAR::Flickr_API
- phpFlickr

PHP5
- Phlickr

Python
- Beej's Python Flickr API
- flickr.py

Selected(!) API toolkits
for Flickr

Yahoo Pipes

- Example of a tool (Web application itself) for *data mashup* development:
  - Interactive feed aggregator and manipulator
- Graphical environment to
  - Fetch data from source
  - Extract data
  - Apply filters
  - Apply simple programming tools

heise.de

pipes.yahoo.com

Screenscraping

- Technically the following is possible (*"Screenscraping"*):
  - Send HTTP request from server script to a Web site
    (even if it does not offer a Web Service API)
  - Analyse the returned HTML code
  - Proceed depending on the result
- The script simulates a human person using a Web browser
  - "Web Robot"
  - Frequently used by search engines
- Most Web site providers do not agree with automated access
  - Dangerous in particular in the area of authentication
  - Recommendation:
    Check Terms of Use carefully, or better refrain from Screenscraping

4   Communities, the Web and Multimedia
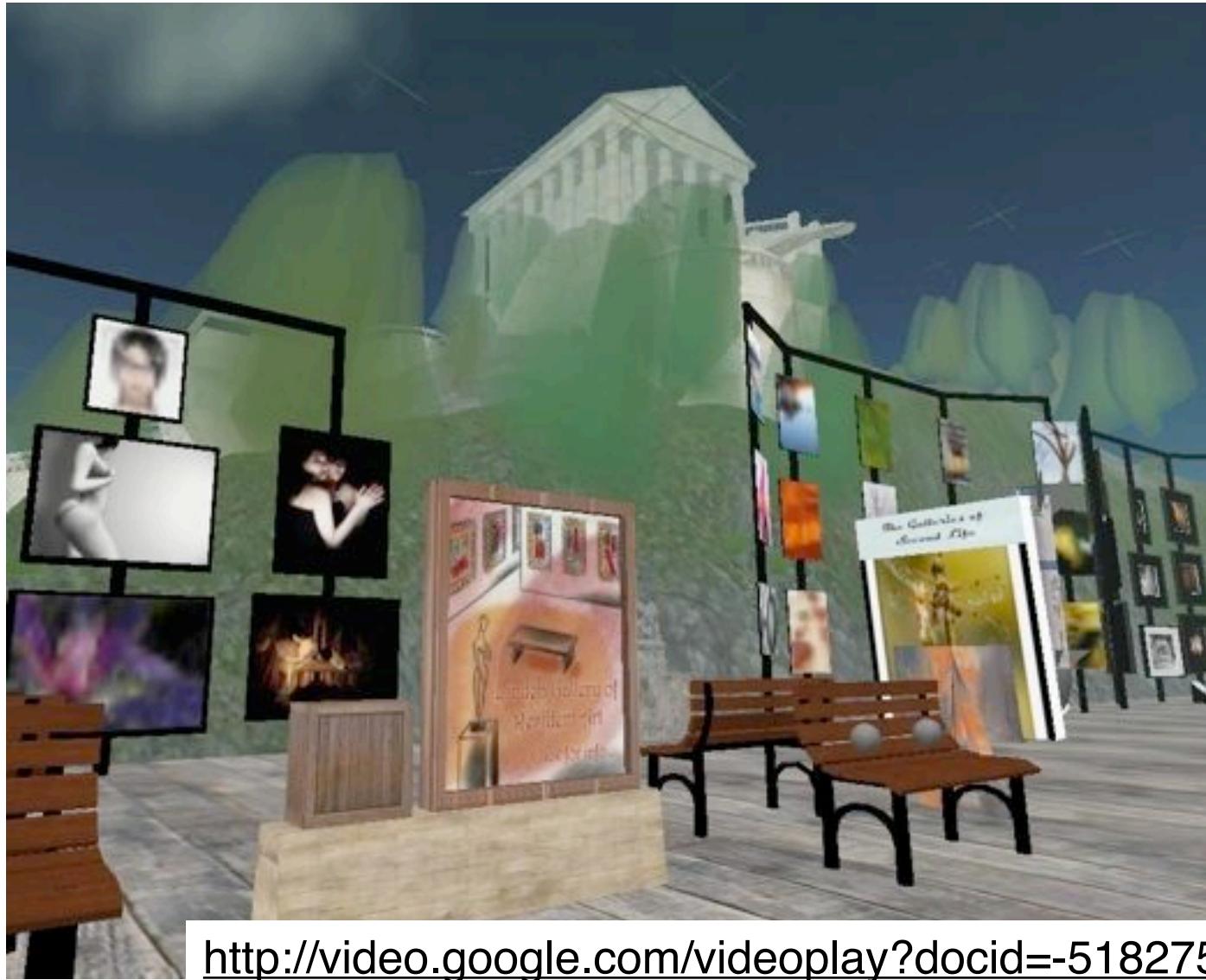
Virtual Worlds

- Online communities and online games are merging
  - Example World of Warcraft
- Non-Game online communities with virtual world
  - Old idea, see
    - » Gibson: Neuromancer
    - » Stephenson: Snow Crash
  - Was tried several times, but this time a bit more successful...
- Secondlife.com
  - Created and run by Linden Labs
  - Sixteen million accounts (2009), twenty thousand concurrent users
  - Full virtual environment, avatars, extensive creative tools
- Many simpler virtual worlds
  - E.g. www.habbo.de
    - » Virtual hotel for kids

Example: Habbo.de

Second Life

Linden
Gallery
Of Resident Art

http://video.google.com/videoplay?docid=-5182759758975402950

Second Life and Business

- Large companies are/were using Second Life
  - For meetings, conferences, customer care
  - As sales channel

☆ AP Photo by IBM Corp. - 1 month ago

In this screen grab provided by IBM Corp., one of their virtual islands which will open to the public next week is shown.