

Web 2.0 Outlook

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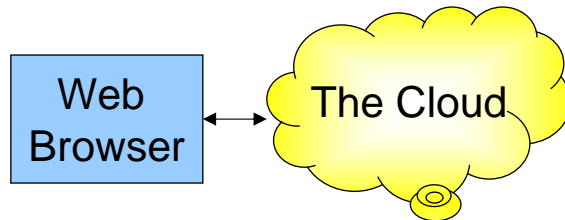
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What is Web 2.0?

- Web 2.0 is the business revolution in the computer industry caused by the move to the **internet as platform**



- The network is the computer

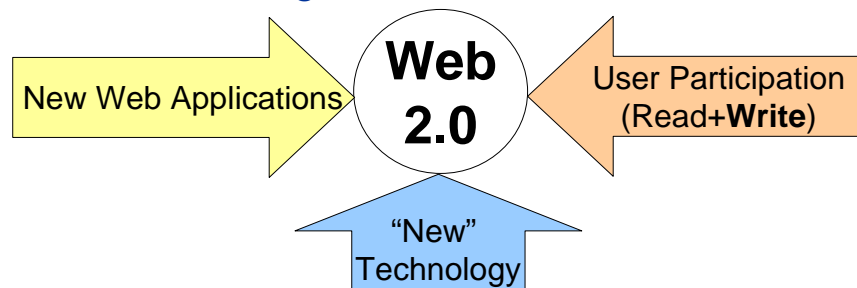
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What is Web 2.0?

- Web 2.0 is about the convergence of different industry trends without necessarily implying a new revision of the underlying Web technologies



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Web 1.0 vs. 2.0

1.0	2.0
Publishing	Participation
Content Management	Wikis
Akamai	BitTorrent
Homepage	Blog
Directories (Taxonomy)	Tagging (Folksonomy)
Britannica Online	Wikipedia
Screen Scraping	Web Services APIs
DoubleClick	AdSense
Dialup	Broadband
Netscape IPO	Google IPO

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Web 2.0 Concepts

- The Long Tail
- Collective Swarm Intelligence
- Network Effects from User Contribution
- Software as a Service

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The Long Tail for On-line Shopping

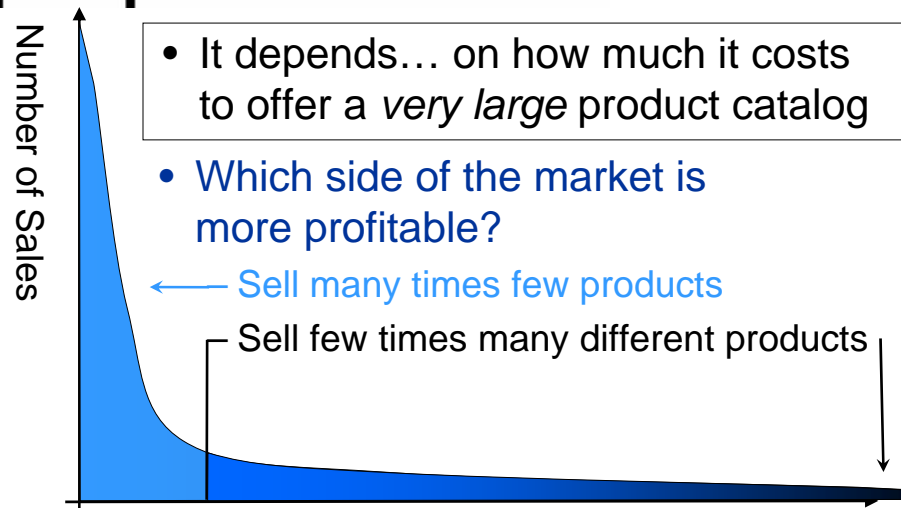
- Many of us see the same movies and read the same books because the bookstore can store only so many books and the movie theater can play only so many movies. There isn't enough space to give us exactly what we want. So we all agree on something we kind of want.
- But what happens when the digital age comes along, allowing the bookstore to store all the books in the world?
- Now, it doesn't sell 1,000 copies of 1 book that we all kind of want; it sells 1 copy of 1,000 books each of us really wants.

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The Long Tail



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Collective Swarm Intelligence

- A collective intelligence is achieved when a Web site reaches a critical mass of user participation, allowing the participants to act as a filter to pick what is valuable information.
- Deciding what counts as News
 - Reddit, Digg
- Choosing Book Reviews and Suggesting Related Books
 - Amazon
- Collaborative Bookmarking
 - del.icio.us
- Ranking Web Search Results
 - Google PageRank

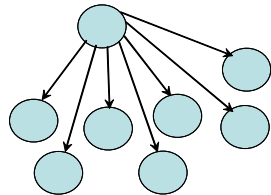
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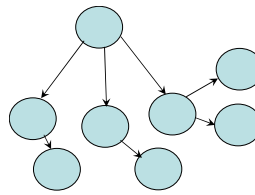
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Network Effects

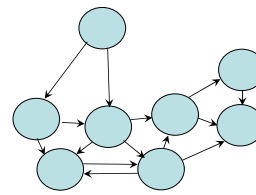
- The more nodes join a network, the more valuable it gets (Law of Metcalfe)
- The more nodes are connected the better the system works
- Example (Bandwidth Sharing):



Centralized



Tree
(Akamai)



Peer to Peer
(BitTorrent)

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Software As a Service

- The end of the software release cycle.
- Perpetual “Beta” (it’s never a finished product)
- On the Web, upgrades and new releases happen seamlessly, mostly without the user’s knowledge.
- *Advantages*: zero deployment, installation, upgrade costs, get immediate feedback from users about changes, shorten the bug fix cycle
- *Disadvantages*: what if the service is down? What if users prefer an “older” version? How to make users pay for upgrading the software?

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Thin vs. Rich Clients

Rich Clients

- Application runs on the client (may use the server for storage)
- Platforms Examples:
 - Windows, MacOS/X
 - Eclipse RCP/Java
- Software needs to be deployed on the client
- Zero latency
- Complete control of the hardware platform

Thin Clients

- Application runs on the server, client only performs user interface tasks
- Examples:
 - “Dumb Terminals”
 - Web-based Applications
- Zero deployment/upgrade costs
- Cannot (yet) work offline – very sensitive to temporary network failures

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Web 2.0 Technologies

- Rich Internet Applications
- Web Widgets
- REST/HTTP
- RSS Feeds
- AJAX

Observation:

None of these technologies are particularly new.

Web 2.0 is not about new technology, but new ways of using and combining existing Web 1.0 technologies.

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Web Widgets

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Web? Widgets Examples



- MacOS/X Dashboard widgets and Web widgets share the same implementation technologies

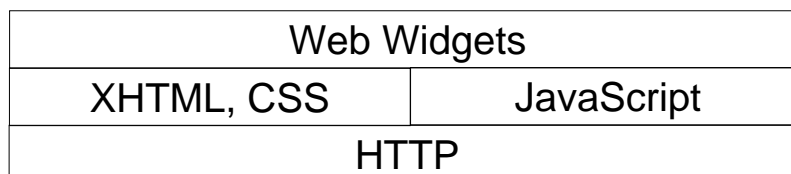
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Abstraction Levels

- Widgets hide the “complexity” of building Graphical User Interfaces by misusing what the Browser natively supports (XHTML, CSS, JavaScript).
- Widgets can be embedded as reusable GUI components into Web pages without any knowledge on how they work internally



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Web Widgets Examples

- **Client-side Widgets**
 - Implemented with only JavaScript, DOM, XHTML, to use them, simply include some JavaScript from your page. Widgets can be specified using XML or custom XHTML attributes
 - Example: Dojo Toolkit, iGoogle
- **Server-side Widgets**
 - A Widget engine on the Web server translates the pages written in a custom XML language by rendering the Widgets as browser-specific XHTML, CSS, JavaScript
 - Examples: JSP Tag Libraries, PHP symfony

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AJAX

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Asynch JavaScript and XML

- AJAX isn't a technology. It's really several technologies, each flourishing in its own right, coming together in powerful new ways.
- AJAX incorporates:
 - standards-based presentation using **XHTML** and **CSS**
 - dynamic display and interaction using the **DOM**
 - data interchange and manipulation using **XML** and XSLT
 - asynchronous data retrieval using **XMLHttpRequest**
 - and **JavaScript** binding everything together

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XMLHttpRequest (Synchronous GET)



```
function GET(url) {
    var xmlhttp = new XMLHttpRequest();

    xmlhttp.open("GET", url, false);

    xmlhttp.send(null);

    if (xmlhttp.status == 200)
        return xmlhttp.responseText;
    else
        //handle HTTP error
}
```

← Synchronous

- This example works synchronously, so it will block the user interface. In practice you do not know how long is a request going to take, so you should always use the asynchronous variant.

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XMLHttpRequest (Asynchronous GET)



```
function GET(url, callback) {
    var xmlhttp = new XMLHttpRequest();
    xmlhttp.open("GET", url, true);
    xmlhttp.onreadystatechange = function() {
        if (xmlhttp.readyState == 3) {
        };
        if (xmlhttp.readyState == 4) {
            callback(xmlhttp.responseText);
        }
    };
    xmlhttp.send(null);
}
```

readyState	
0	uninitialized
1	opened
2	sent
3	receiving
4	complete

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XMLHttpRequest (Asynchronous POST)



```
function POST(url, params, callback) {
    var xmlhttp = new XMLHttpRequest();
    xmlhttp.open("POST", url, true);
    xmlhttp.setRequestHeader("Content-Type",
        "application/x-www-form-urlencoded");
    xmlhttp.onreadystatechange = function() {
        if (xmlhttp.readyState == 4) {
            if (xmlhttp.status == 200) {
                callback(xmlhttp.responseXML);
            }
        }
    };
    xmlhttp.send(params);
}
```

Choose the POST HTTP method

Set the Content-Type for the Parameters

If response contains XML this property already has the DOM document

Send Parameters in the HTTP Request Body

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Send XML Data from PHP

```
<?php
header(' Content-Type: text/xml ');
echo ' <?xml version="1.0"
      encoding="UTF-8" standalone="yes"?> ' ;
?>
<xml >
  <tag>
<?php echo getResult($_GET[' param' ]) ?>
  </tag>
</xml >
```

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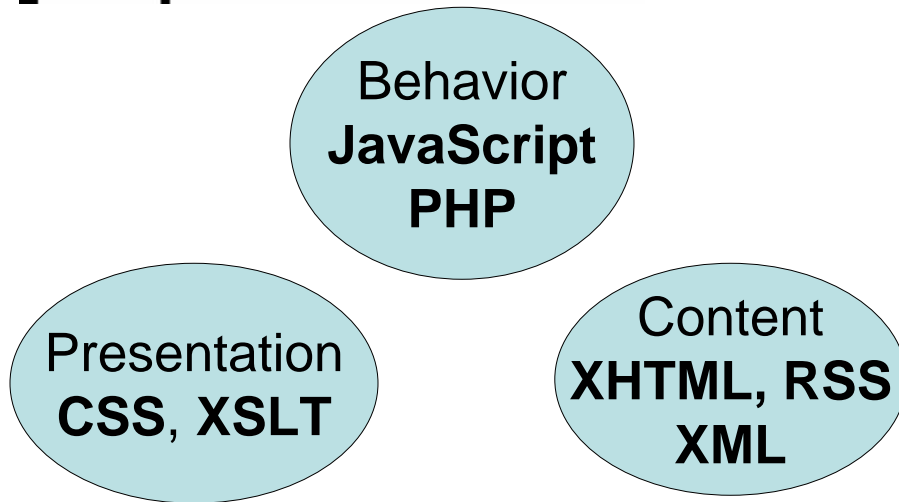
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Web Development Lab Summary

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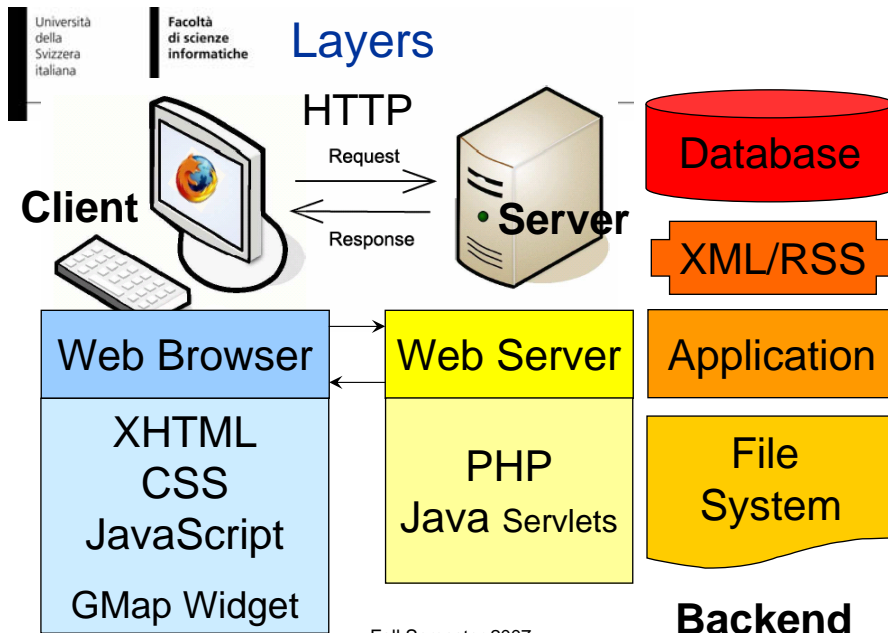
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