



The Nature of the Web

The Nature of the Web



code · html · http ·
standards · evolution ·
role of client · role of
servers · learning
resources

Agenda

Code

The Internet

The Web

Useful References

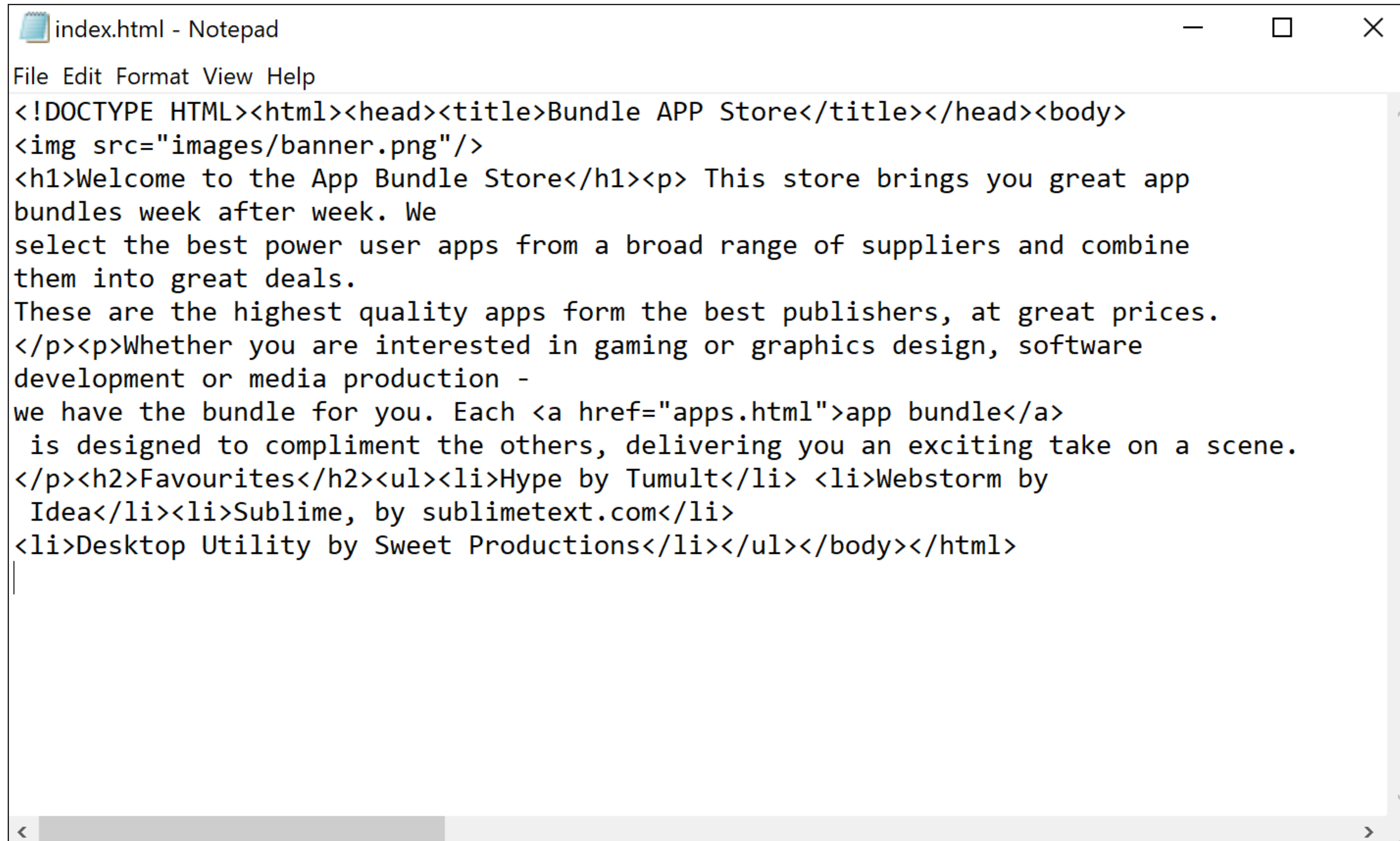
CODE is King (or Queen)

- The language of the Web:
 - Hypertext Markup Language - HTML
 - Cascading Style Sheets - CSS
- Build over successive labs a simple web sites from scratch.
- Focus on the structure and meaning of:

CODE - *html, css*



The Code in a Conventional Editor

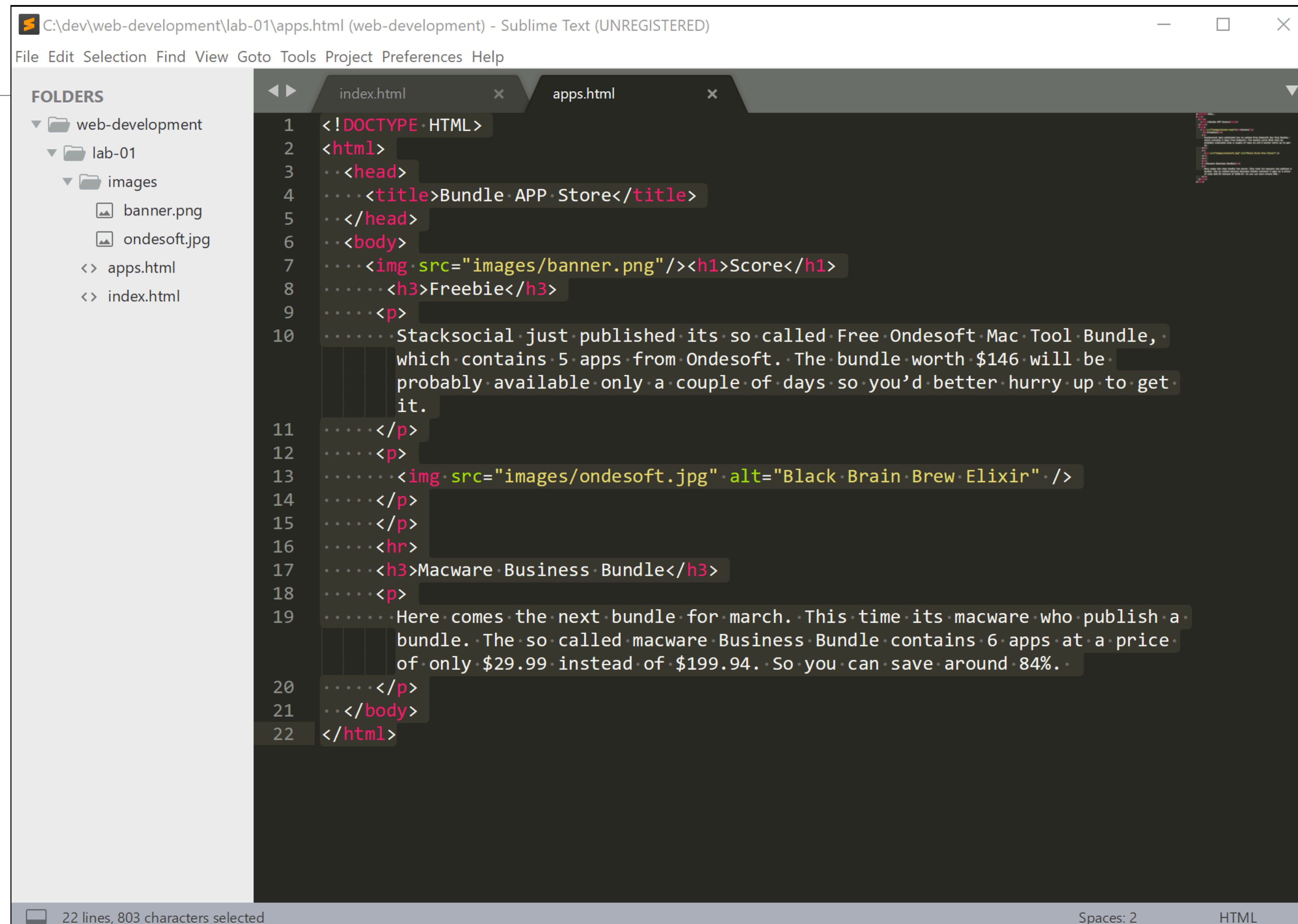


```
index.html - Notepad
File Edit Format View Help
<!DOCTYPE HTML><html><head><title>Bundle APP Store</title></head><body>

<h1>Welcome to the App Bundle Store</h1><p> This store brings you great app
bundles week after week. We
select the best power user apps from a broad range of suppliers and combine
them into great deals.
These are the highest quality apps form the best publishers, at great prices.
</p><p>Whether you are interested in gaming or graphics design, software
development or media production -
we have the bundle for you. Each <a href="apps.html">app bundle</a>
  is designed to compliment the others, delivering you an exciting take on a scene.
</p><h2>Favourites</h2><ul><li>Hype by Tumult</li> <li>Webstorm by
  Idea</li><li>Sublime, by sublimetext.com</li>
<li>Desktop Utility by Sweet Productions</li></ul></body></html>
```

- The actual document text - but poorly structured (indented)

The Code in a Programmers Editor



The screenshot shows a Sublime Text editor window titled "C:\dev\web-development\lab-01\apps.html (web-development) - Sublime Text (UNREGISTERED)". The editor displays the content of "apps.html" with syntax highlighting and indentation. The code is as follows:

```
1 <!DOCTYPE HTML >
2 <html>
3   <head>
4     <title>Bundle APP Store</title>
5   </head>
6   <body>
7     <h1>Score</h1>
8     <h3>Freebie</h3>
9     <p>
10      Stacksocial just published its so called Free Ondesoft Mac Tool Bundle,
11      which contains 5 apps from Ondesoft. The bundle worth $146 will be
12      probably available only a couple of days so you'd better hurry up to get
13      it.
14    </p>
15    <p>
16      
17    </p>
18    <p>
19      <hr>
20      <h3>Macware Business Bundle</h3>
21      <p>
22      Here comes the next bundle for march. This time its macware who publish a
23      bundle. The so called macware Business Bundle contains 6 apps at a price
24      of only $29.99 instead of $199.94. So you can save around 84%.
25    </p>
26  </body>
27 </html>
```

The editor interface includes a "FOLDERS" sidebar on the left showing the project structure: "web-development" > "lab-01" > "images" (containing "banner.png" and "ondesoft.jpg") and "apps.html" and "index.html". The status bar at the bottom indicates "22 lines, 803 characters selected", "Spaces: 2", and "HTML".

- Same document - pleasingly indented and syntax highlighted

Agenda

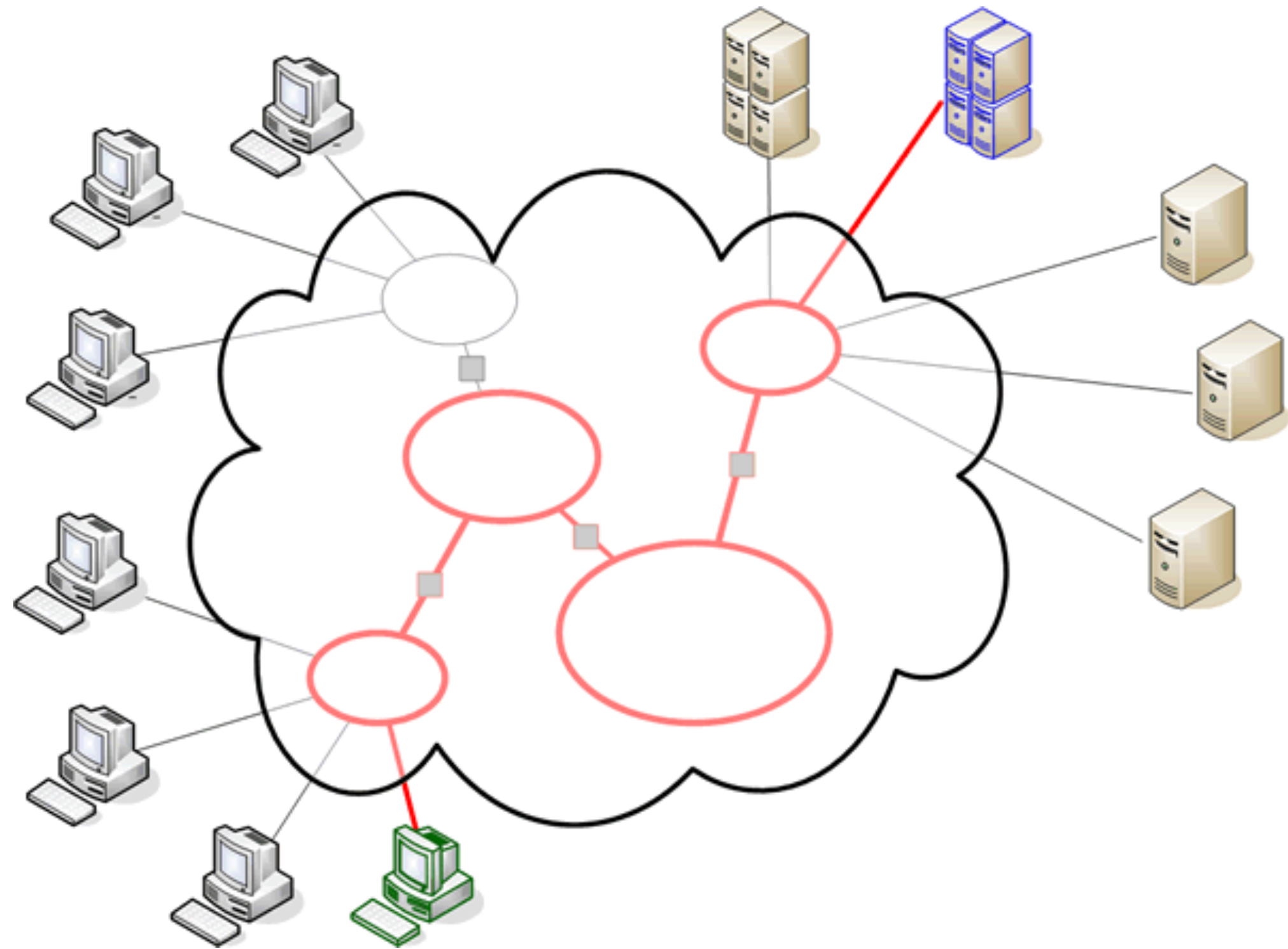
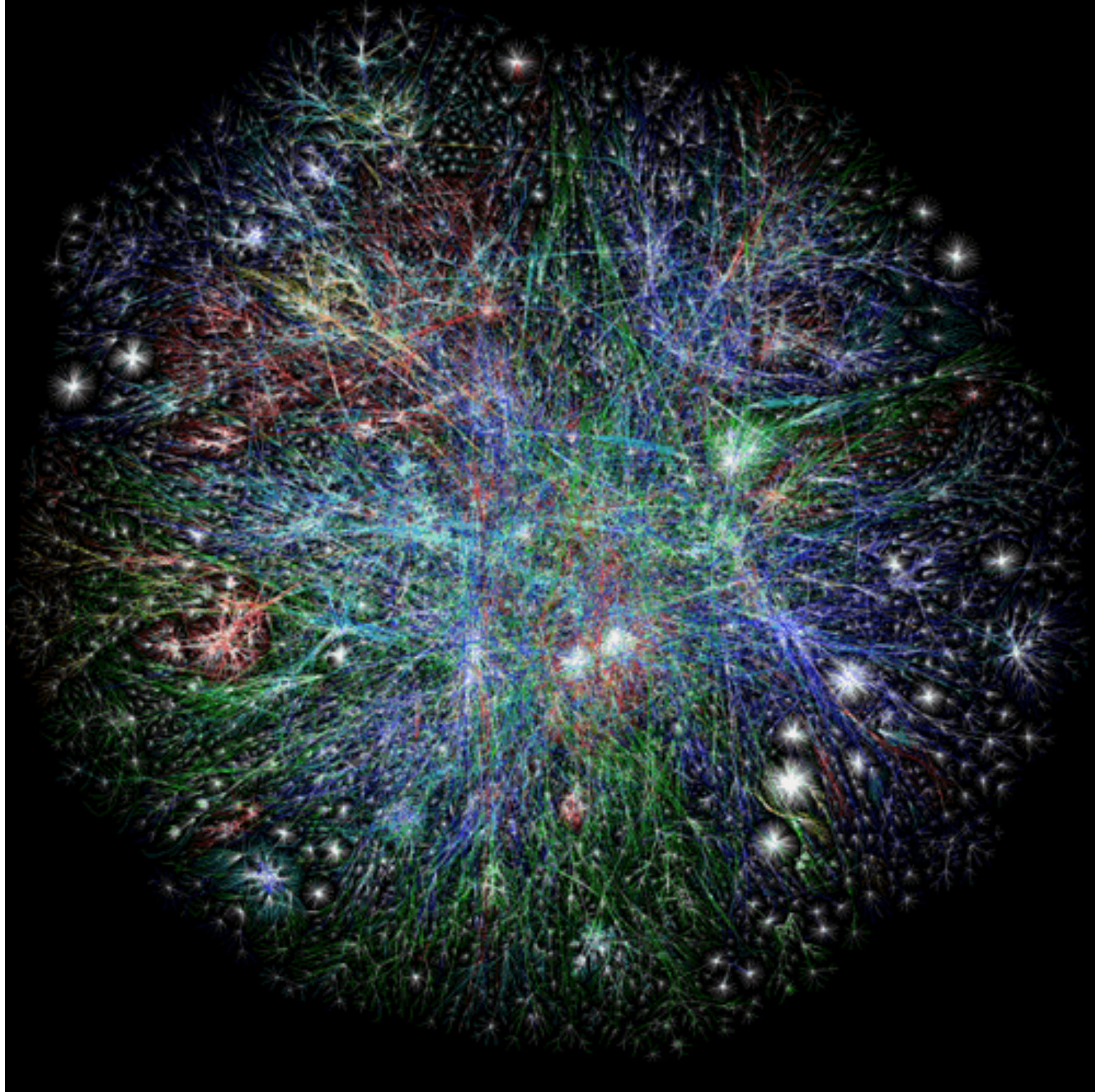
Code

The Internet

The Web

Useful References

The Internet



The Internet

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



4,123,117,736
Internet Users in the world



1,948,088,972
Total number of Websites



183,036,958,463
Emails sent [today](#)



4,582,315,180
Google searches [today](#)



4,341,467
Blog posts written [today](#)



531,335,674
Tweets sent [today](#)



4,912,550,278
Videos viewed [today](#)
on YouTube



56,787,108
Photos uploaded [today](#)
on Instagram

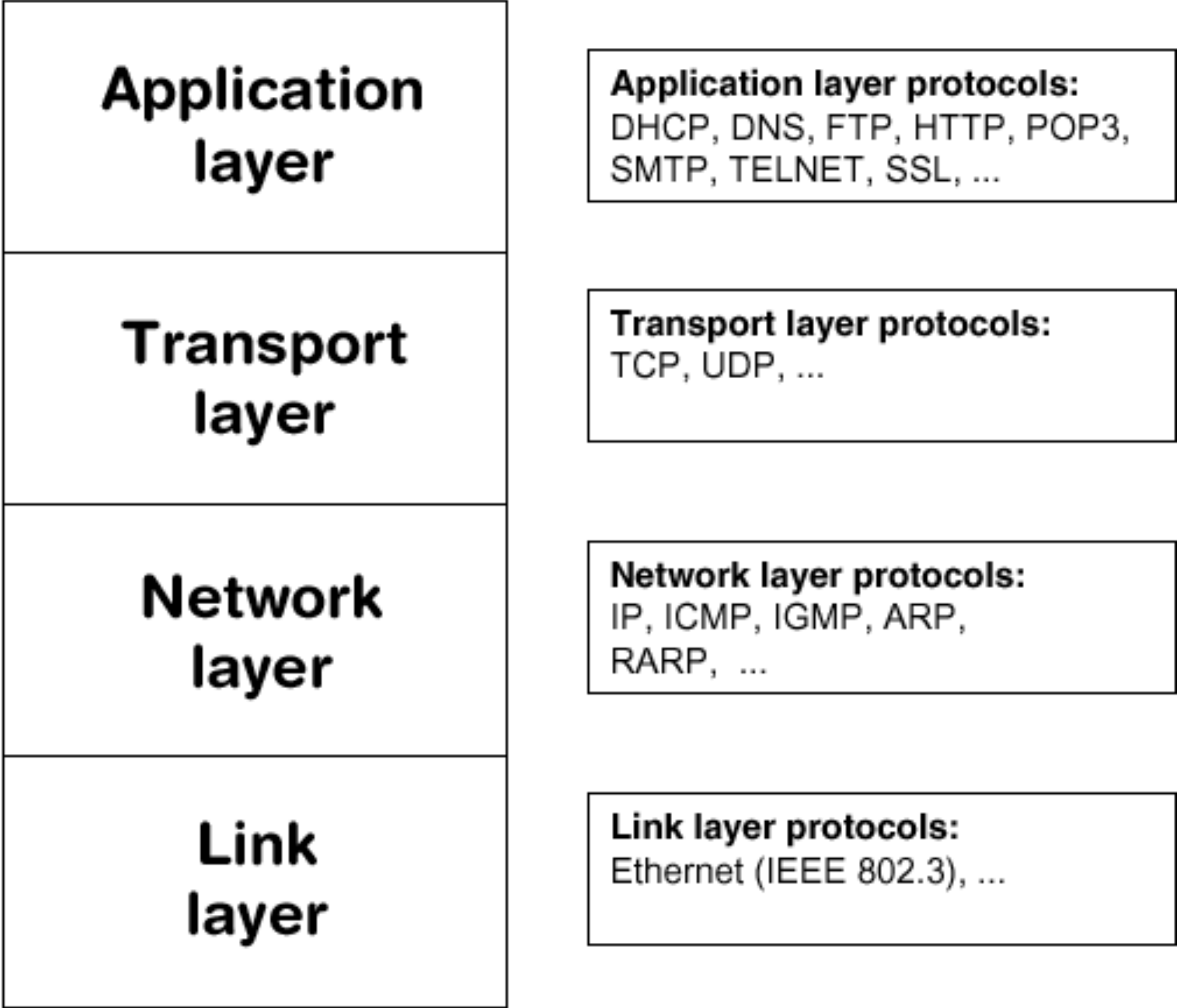


94,139,117
Tumblr posts [today](#)

Underlying nature of the Internet - Protocols & Standards

“The irony is that in all its various guises -- commerce, research, and surfing -- the Web is already so much a part of our lives that familiarity has clouded our perception of the Web itself.”

[Tim Berners-Lee](#) in [Weaving the Web](#)



You are here!
← HTTP

Internet Technologies

Agenda

Code

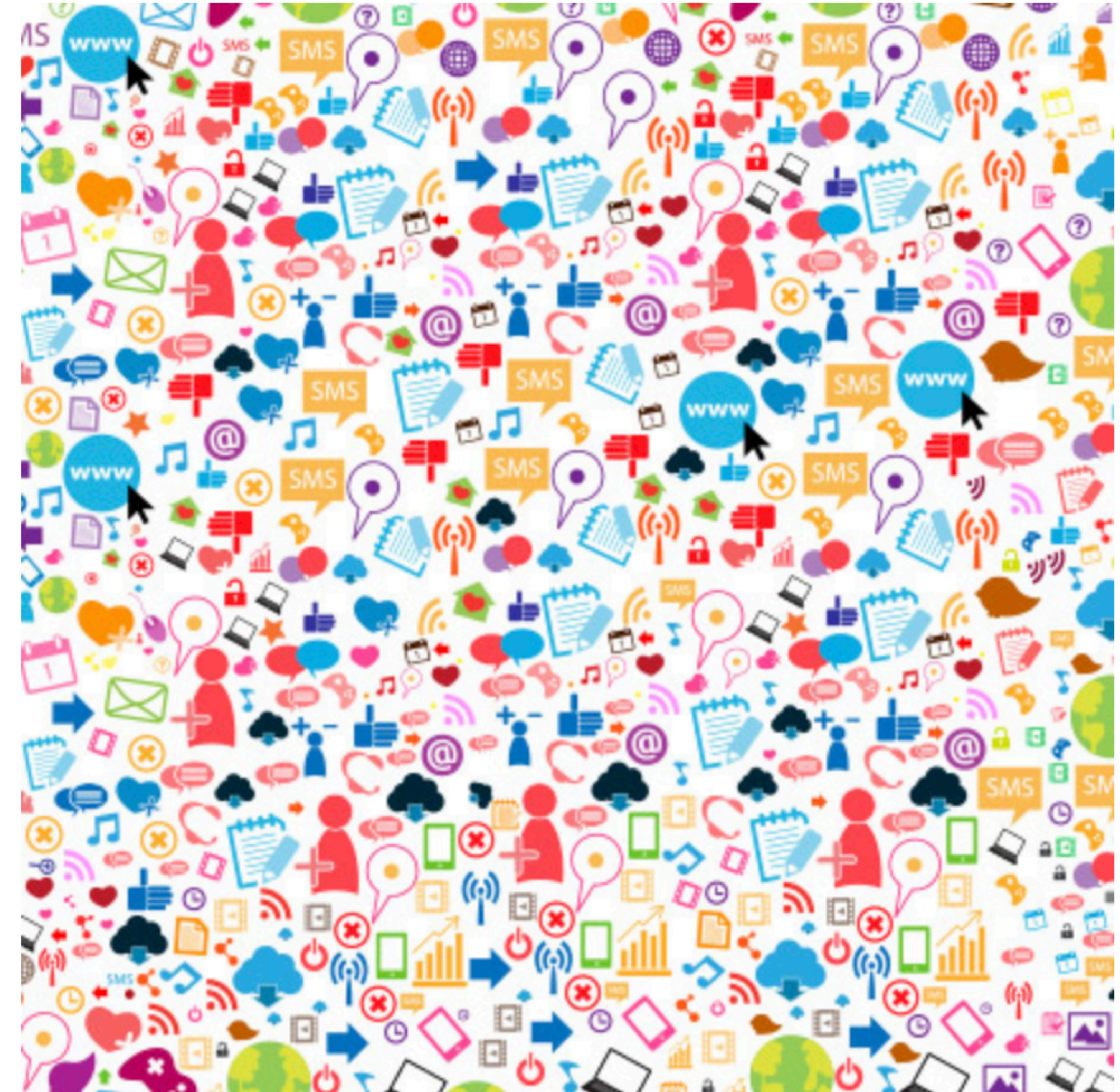
The Internet

The Web

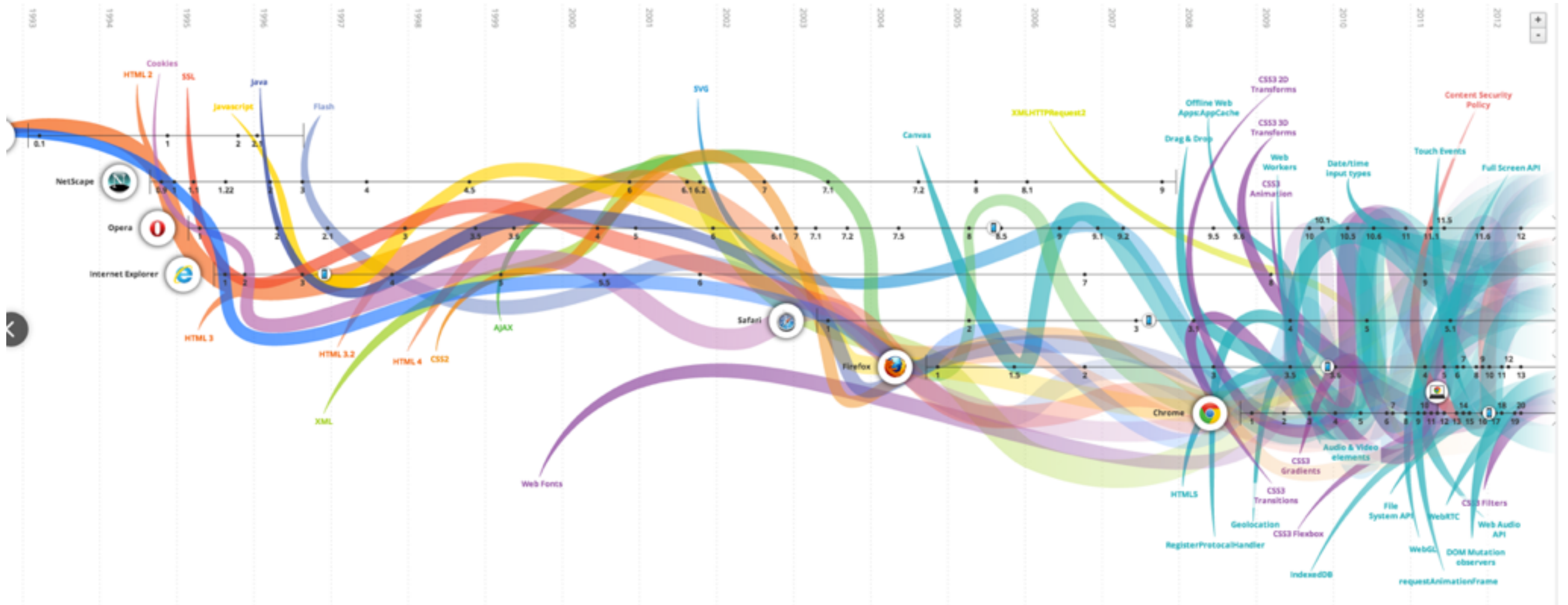
Useful References

World Wide Web

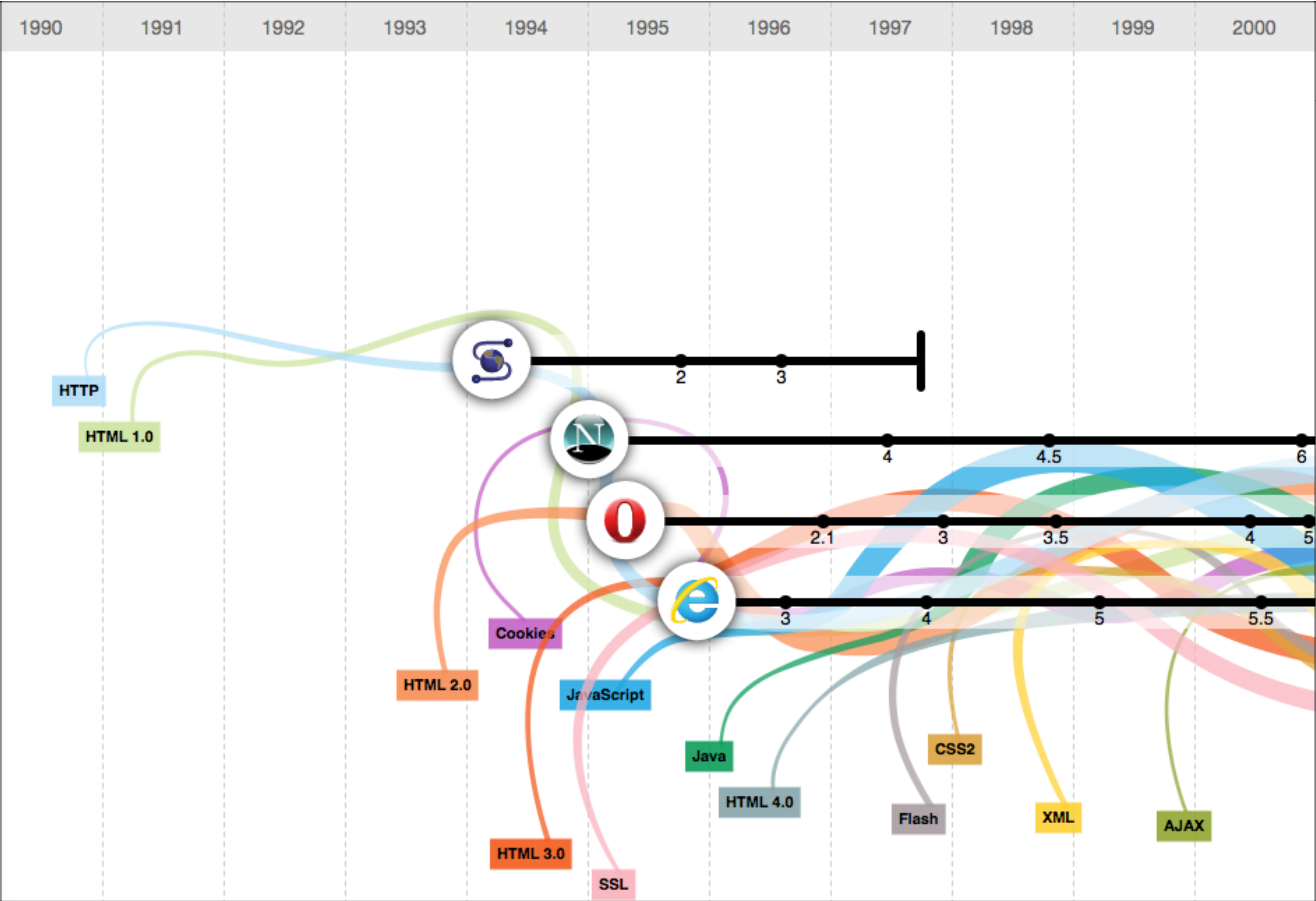
- The world wide web is a huge globally distributed collection of information and data that can be accessed via the internet with the help of of http: Hypertext Transfer Protocol
- WWW has made the Internet the most important communication medium of our days.
- Thanks to the simple to use graphical interface – The Web Browser – the WWW provides everyone with simple access to information



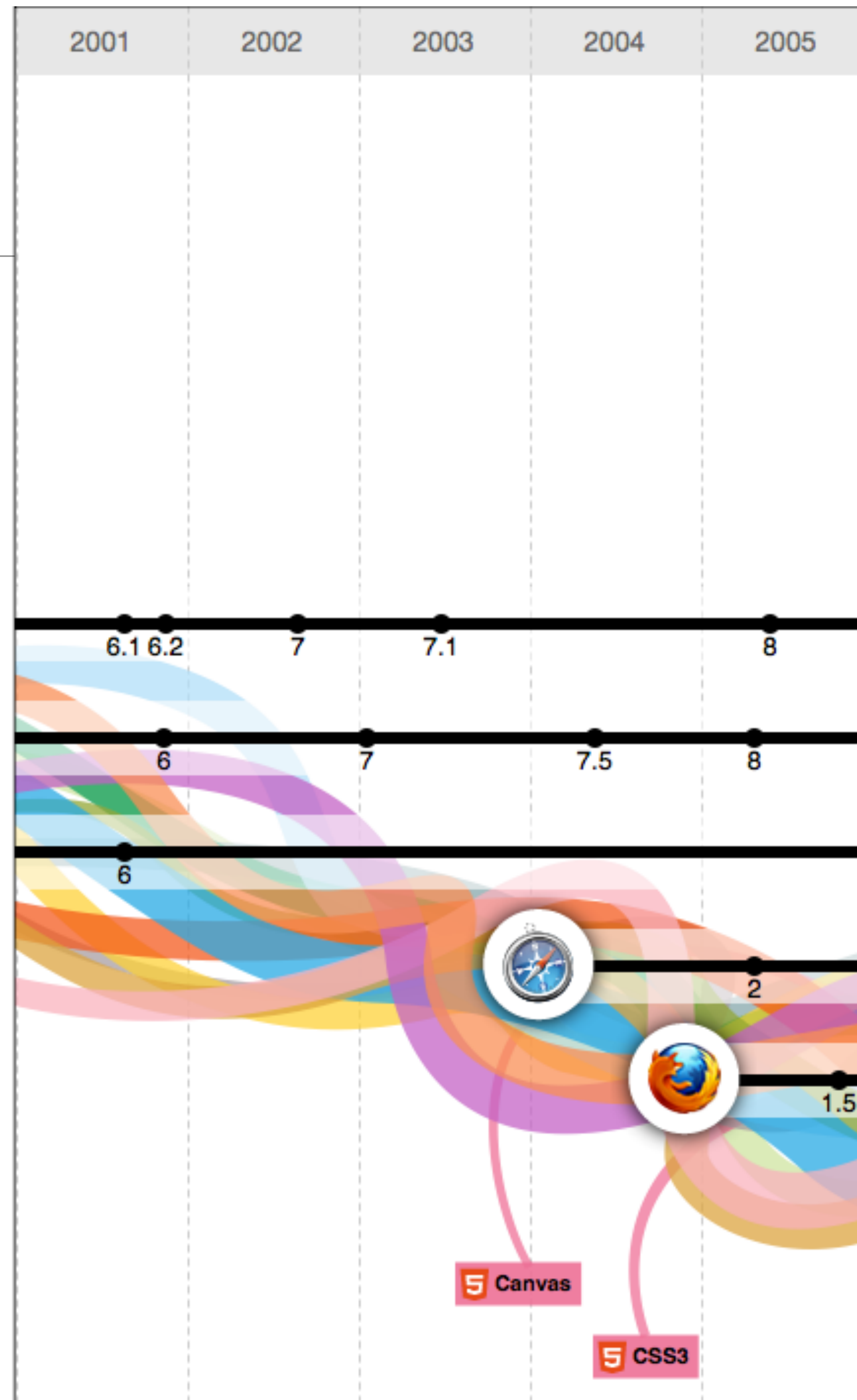
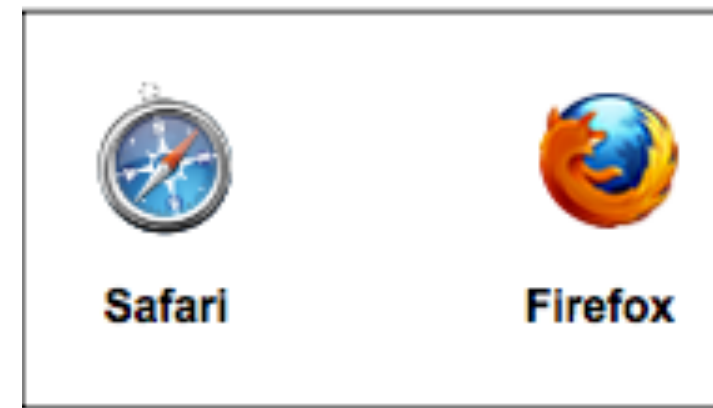
Evolution of the Web - 1990-2012



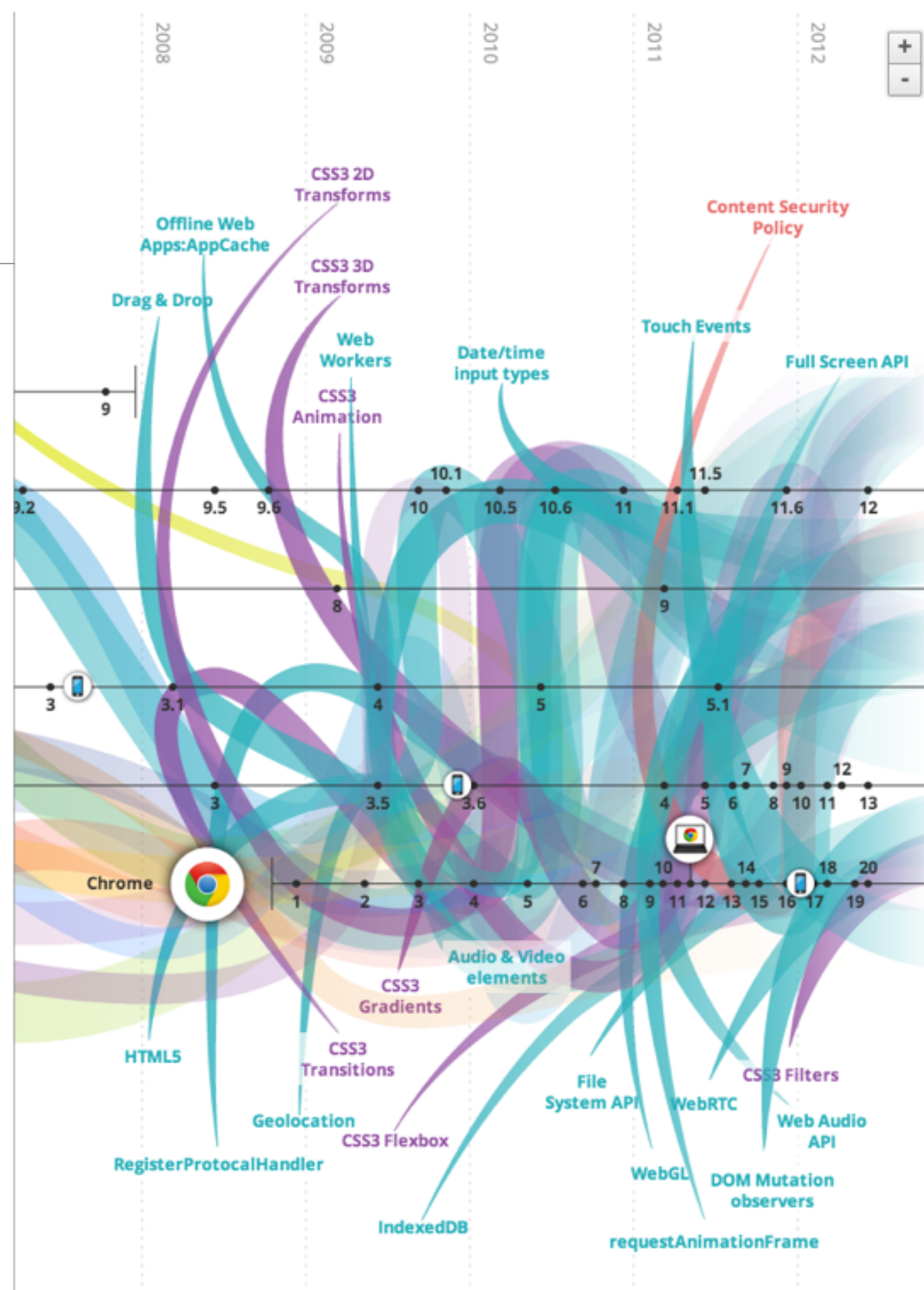
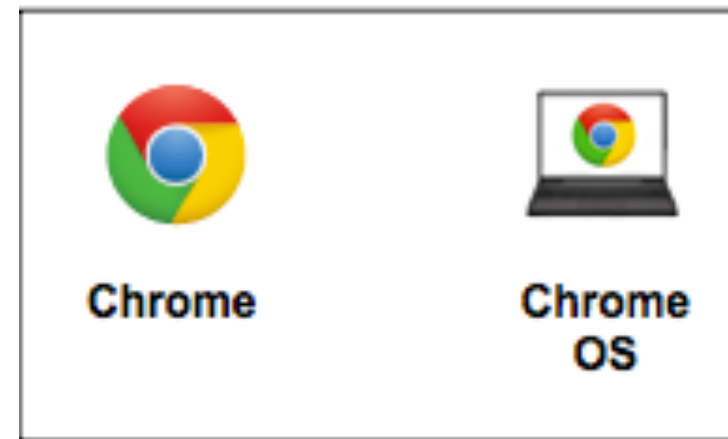
Evolution of the Web - 1990-2000



2001-2005

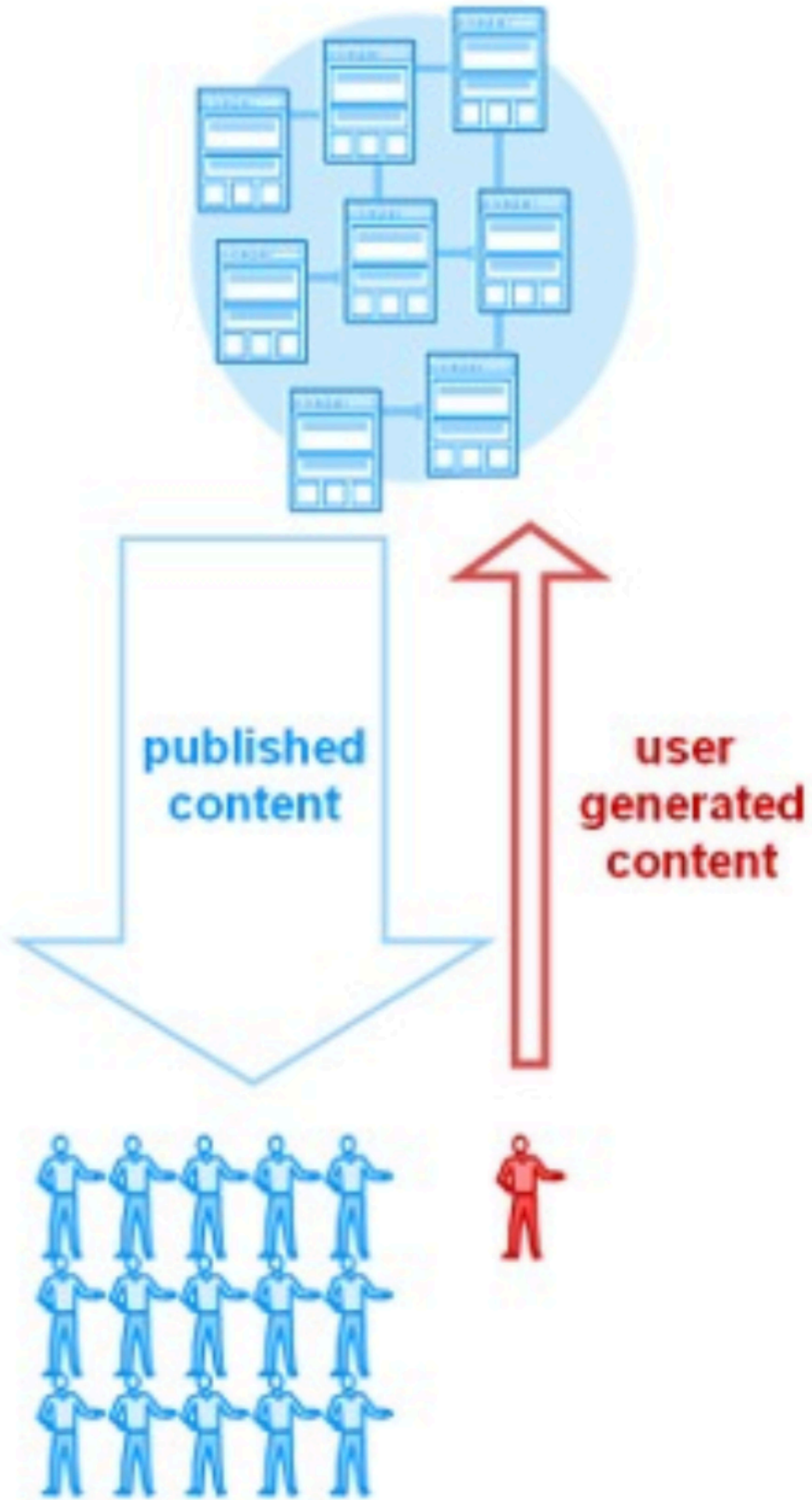


2006-2012



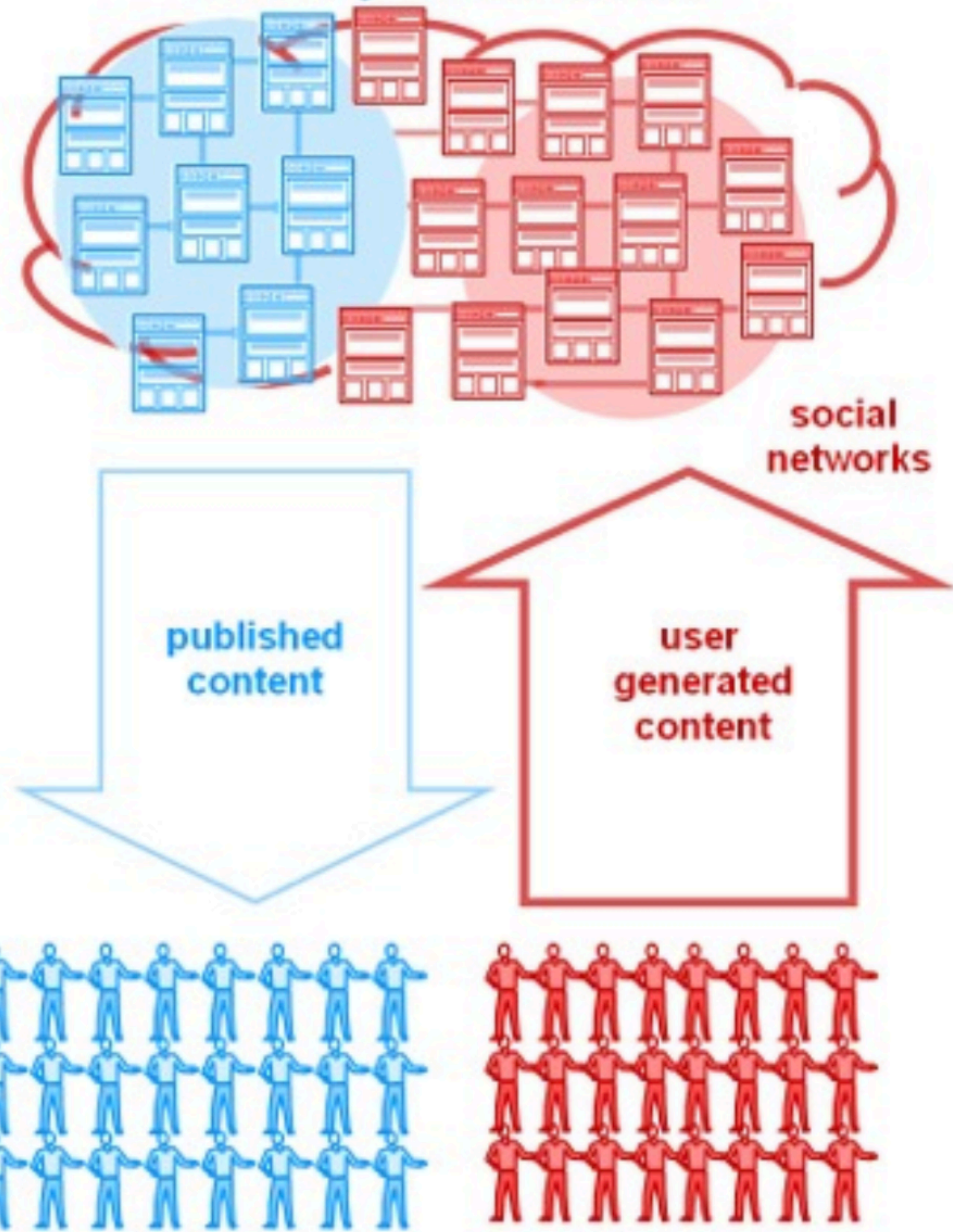
Web 1.0

'the mostly read-only Web'

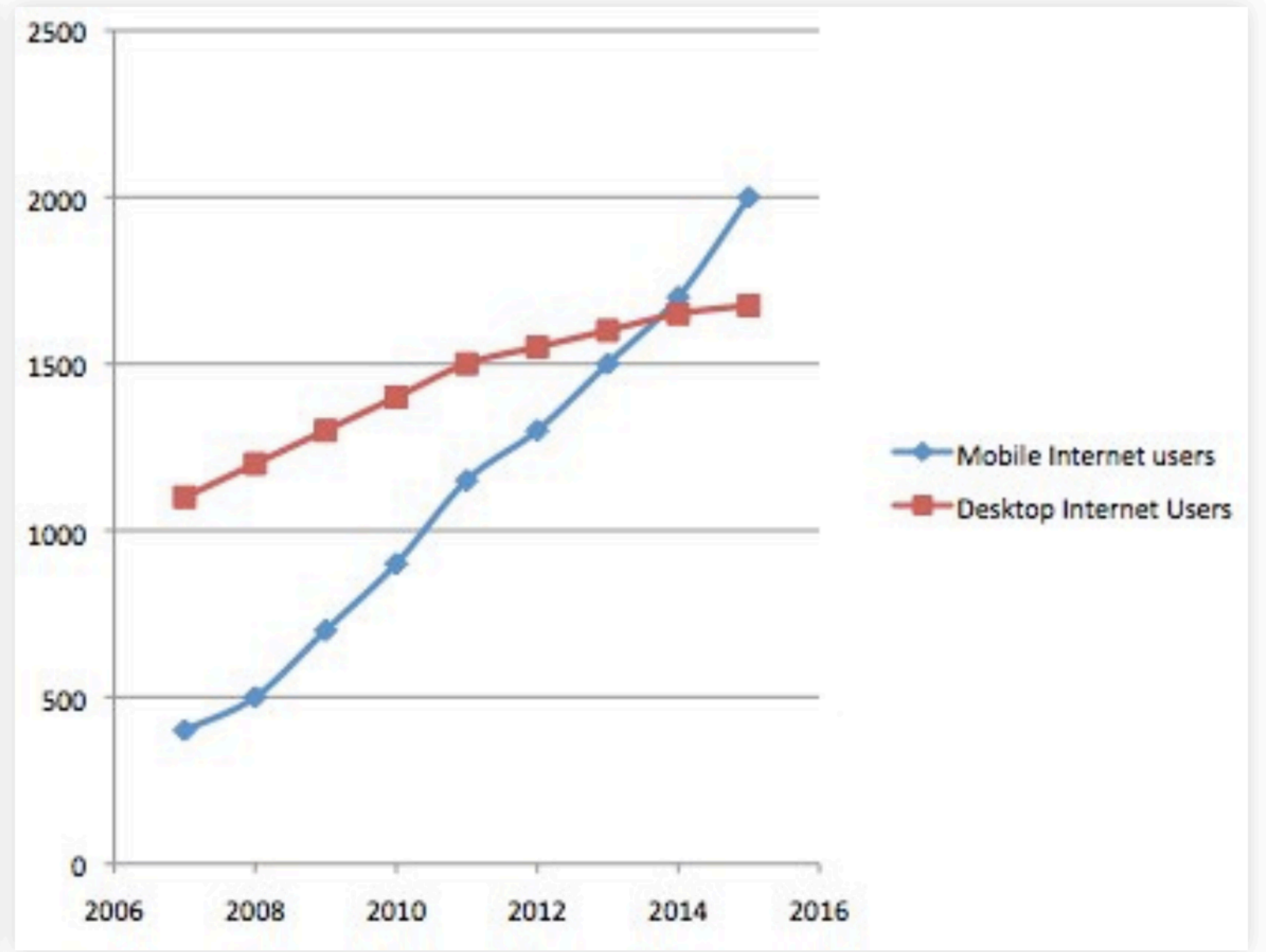


Web 2.0

'the widely read-write Web'

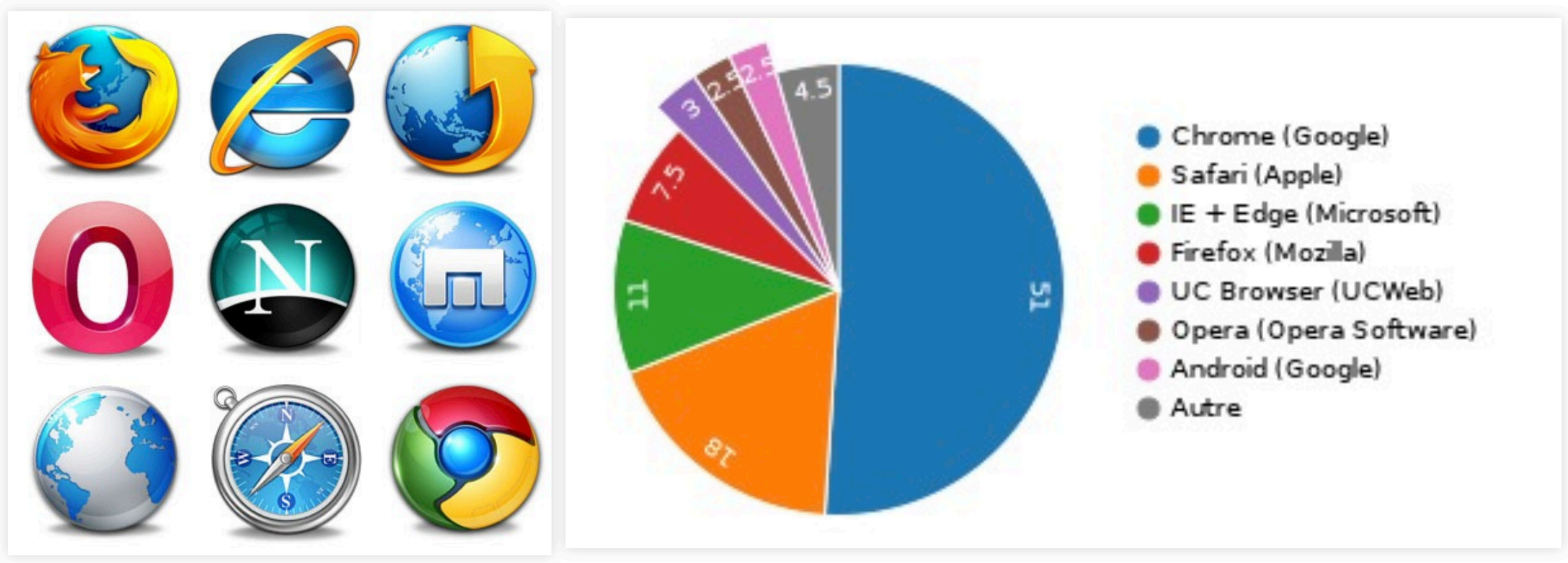


The Mobile Revolution

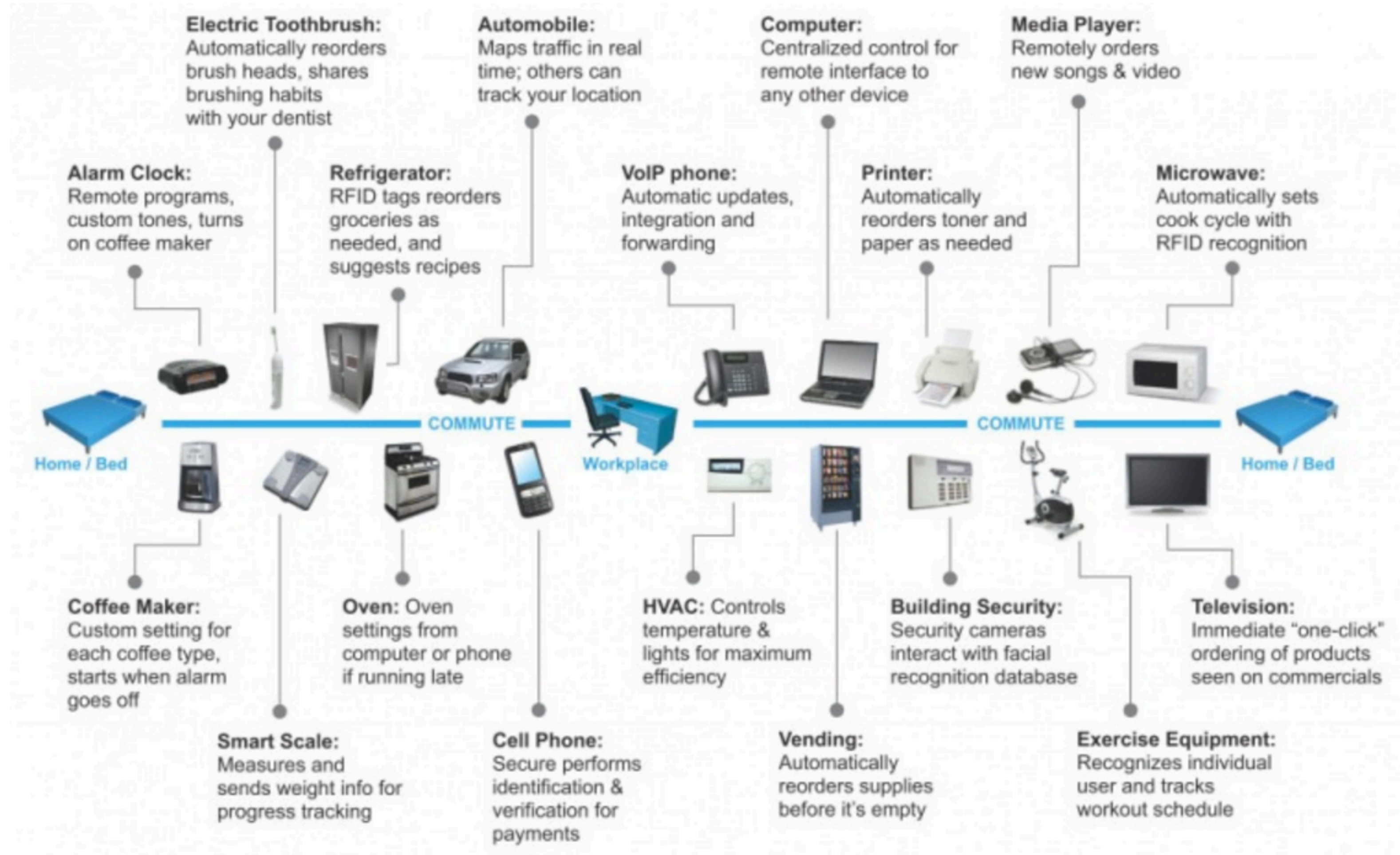


- Mobile usage of the web exceeds desktop usage

Web Browser Wars

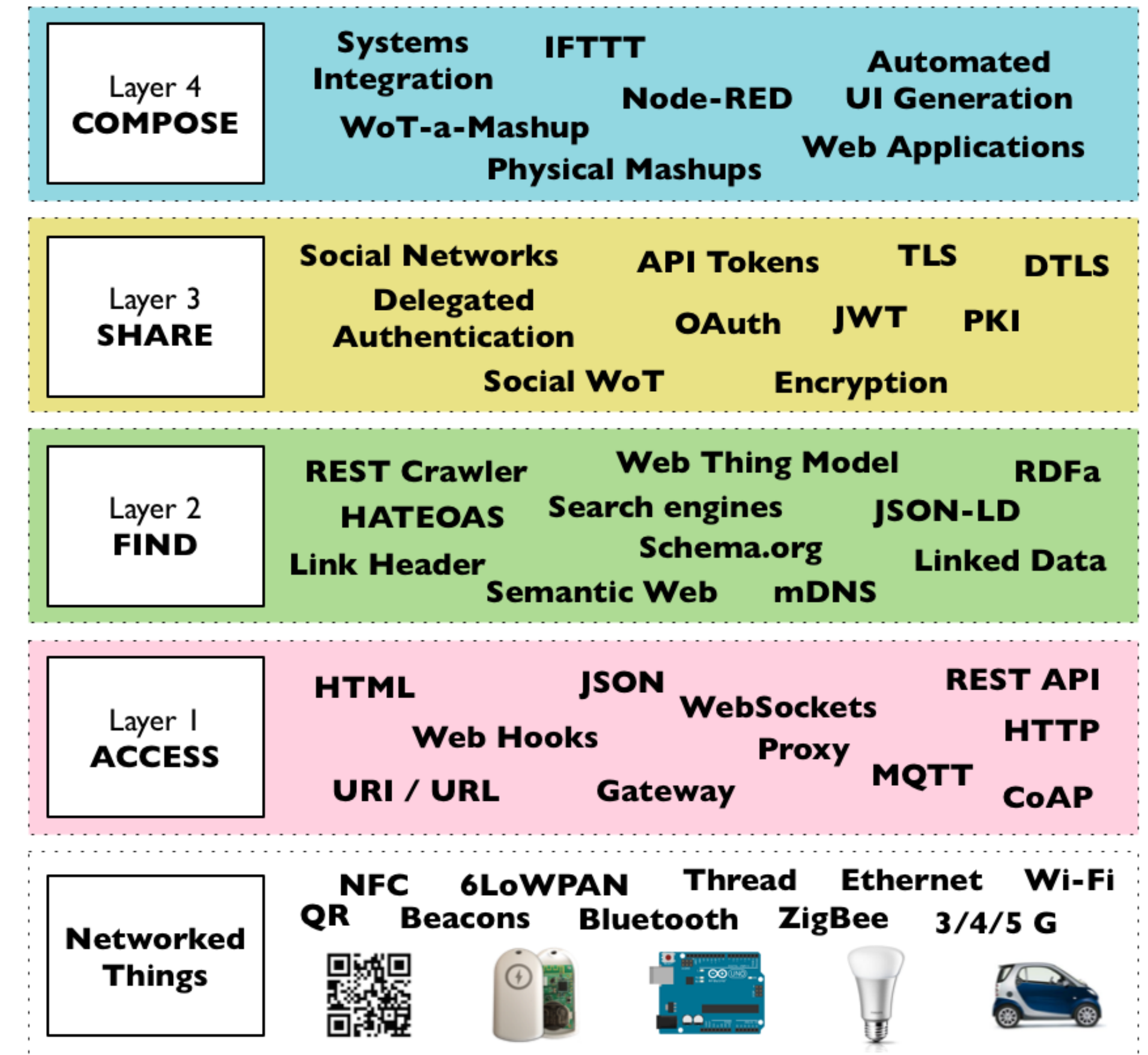


Devices: Things!



The Web

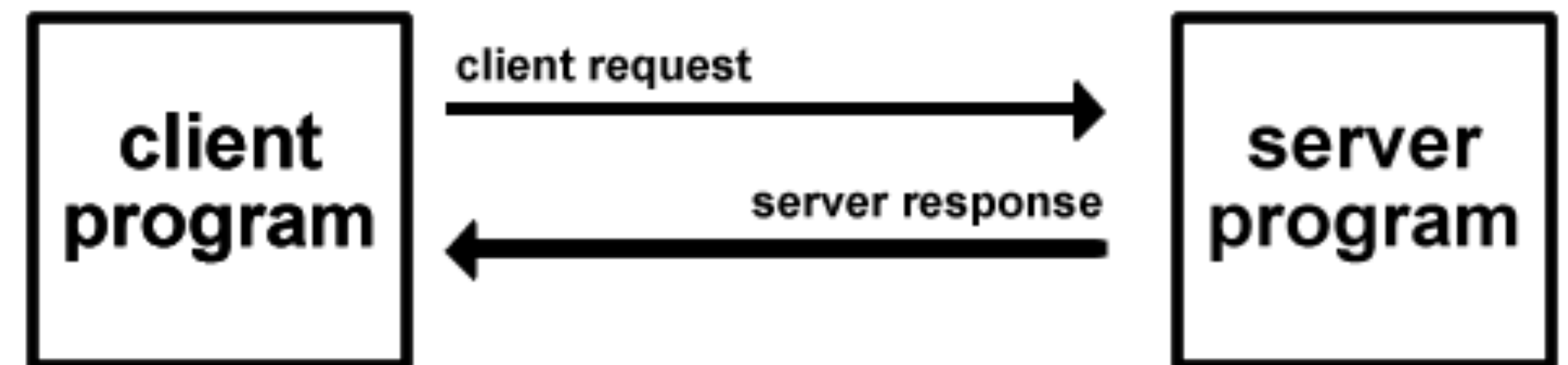
- Protocols & Standards
 - Protocol : agreed vocabulary to enable two programs to communicate
 - Standard: an agreed definition of the structure and meaning of a document
- Web Protocol
 - Hyper Text Transfer Protocol - HTTP
- Web Standard
 - Hyper Text Markup Language – HTML
 - Cascading Style Sheets - CSS
- Web Servers and Web Browsers use HTTP to exchange HTML documents



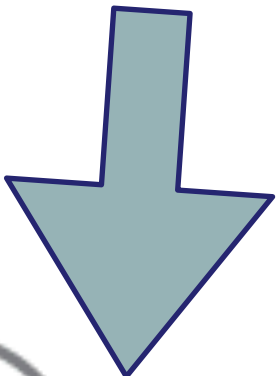
Source: Building the Web of Things: book.webofthings.io
Creative Commons Attribution 4.0

Clients and Servers

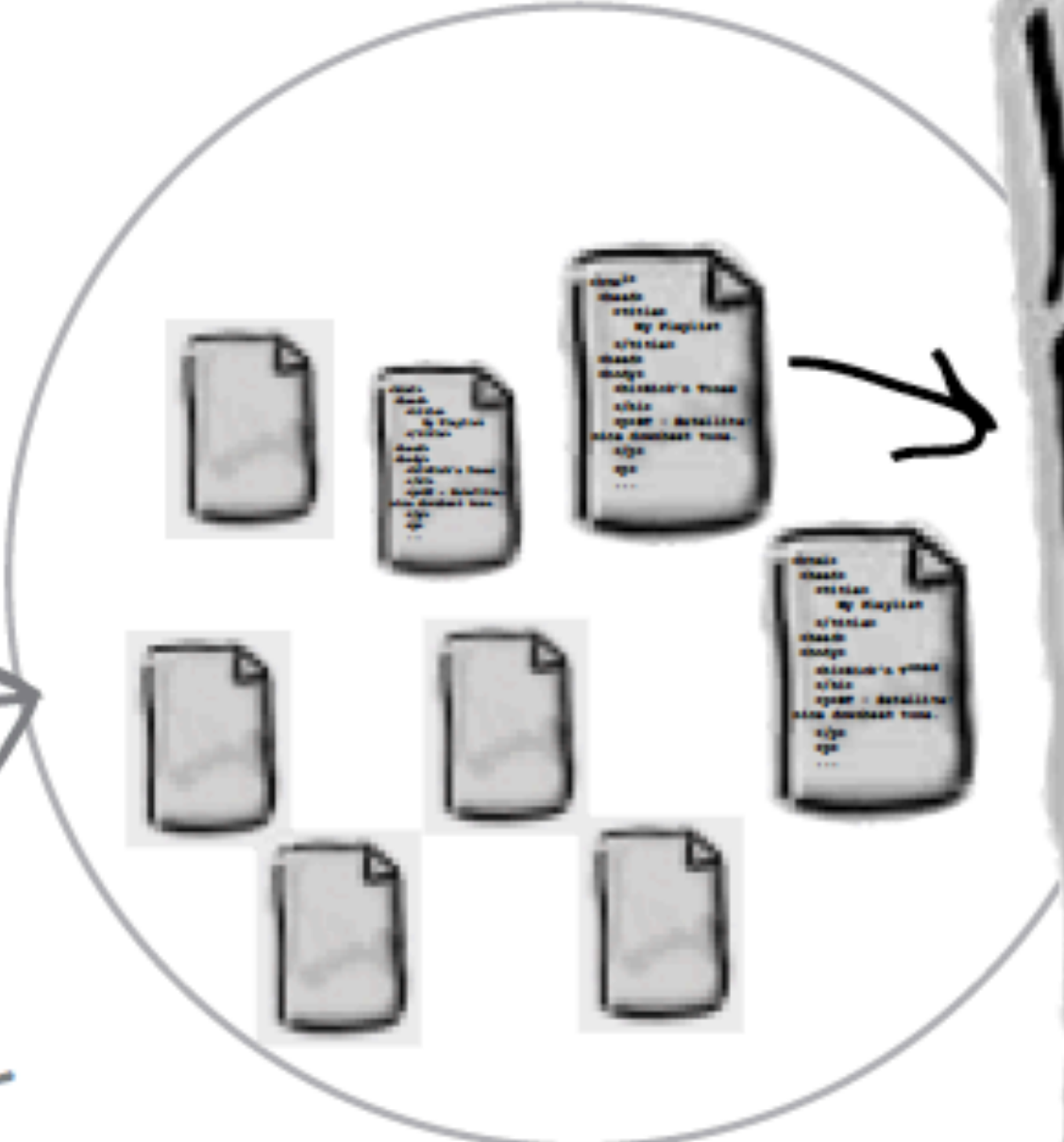
- Client/Server Computing:
 - The interaction between two programs when they communicate across a network.
 - A program at one site sends a request to a program at another site and awaits a response.
 - The requesting program is called a client; the program satisfying the request is called the server.



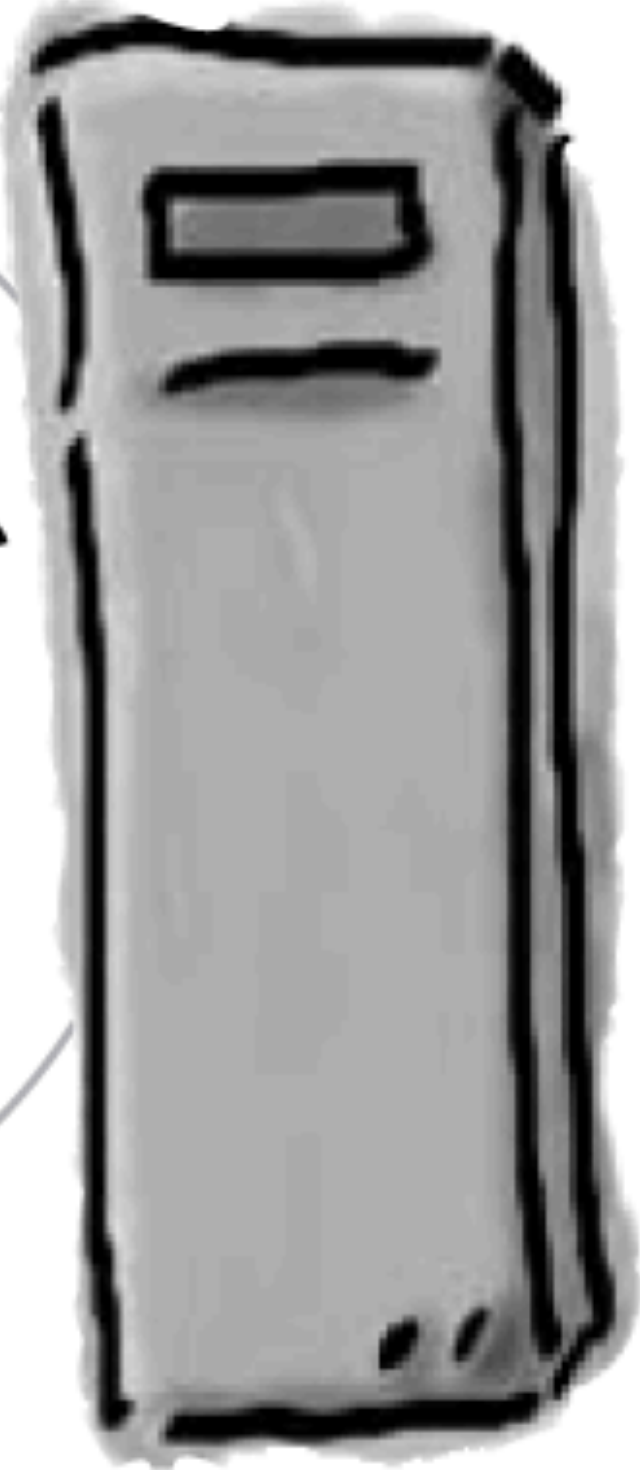
Role of Server



The server's just a computer connected to the Internet waiting for requests from browsers.



Each server stores HTML files, pictures, sounds and other file types.



Web Server

Browsers make requests for HTML pages or other resources, like images.

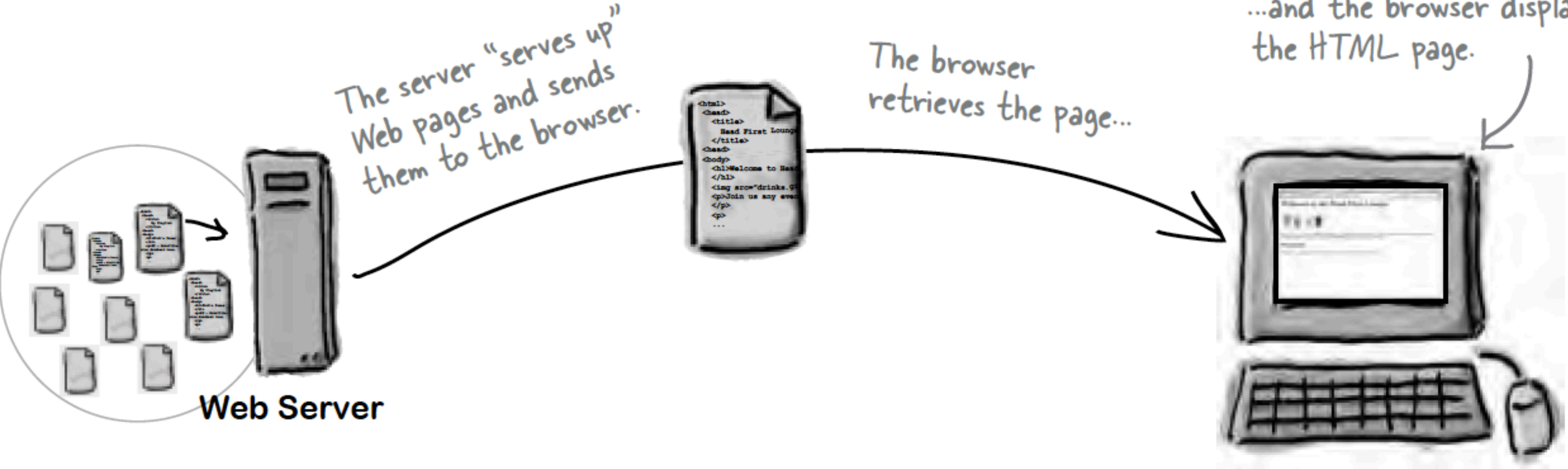
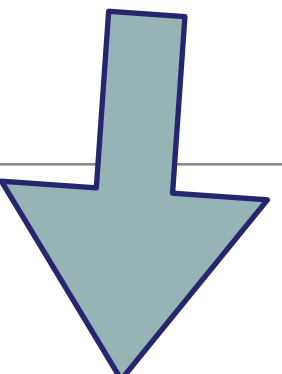
"I need the HTML file 'lounge.html!'"



"Found it, here ya go"

...and if the server can locate the resource, it sends it to the browser.

Role of Client



Hyper Text Markup Language

- HTML tells your browser about the structure of your document:
 - where the headings are,
 - where the paragraphs are,
 - what text needs emphasis, etc
 - what text needs to be linked
 - what images to be displayed
- Given this information, browsers have built-in default rules for how to display each of these elements.
- This information is conveyed using “Tags”, this denotes the intention of the author regarding the structure and display of the document.

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>Bundle APP Store</title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    
    <h1>Welcome to the App Bundle Store</h1>
    <p>
      This store brings you great app bundles week after week. We select the best power user apps from a broad range of suppliers and combine them into great deals. These are the highest quality apps from the best publishers, at great prices.
    </p>
    <p>
      Whether you are interested in gaming or graphics design, software development or media production - we have the bundle for you. Each <a href="apps.html">app bundle</a> is designed to compliment the others, delivering you an exciting take on a scene.
    </p>
    <h2>Favourites</h2>
    <ul>
      <li>Hype by Tumult</li>
      <li>Webstorm by Idea</li>
      <li>Sublime, by sublimetext.com</li>
      <li>Desktop Utility by Sweet Productions</li>
    </ul>
  </body>
</html>
```



Welcome to the App Bundle Store

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Favourites

- Hype by Tumult
- Webstorm by Idea
- Sublime, by sublimetext.com
- Desktop Utility by Sweet Productions

HTML

- An HTML document is called a 'page'
- The starting page of a site is called the 'homepage'
- Markup language should only be used for the description of the document structure and not to describe the document presentation
- Every HTML document consists of two parts:
 - Document 'header': contains information about the document.
 - Document 'body': contains the content of the document.

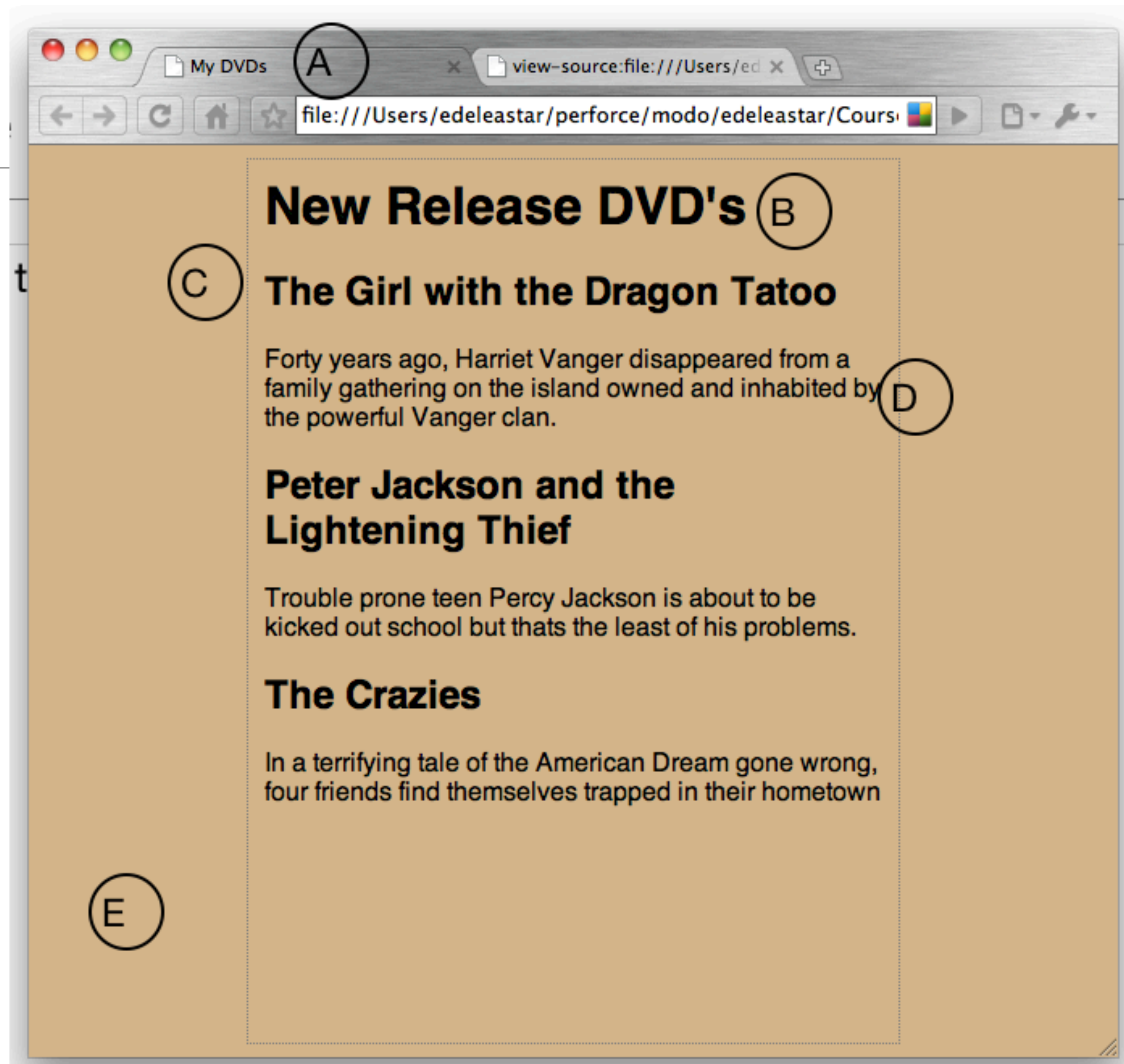
```
<!DOCTYPE HTML>
<html>
  <head>
    <title>Bundle APP Store</title>
  </head>
  <body>
    
    <h1>Welcome to the App Bundle Store</h1>
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      <li>Webstorm by Idea</li>
      <li>Sublime, by sublimetext.com</li>
      <li>Desktop Utility by Sweet Productions</li>
    </ul>
  </body>
</html>
```

HTML Tags (more correctly called Elements)

Starter Tags

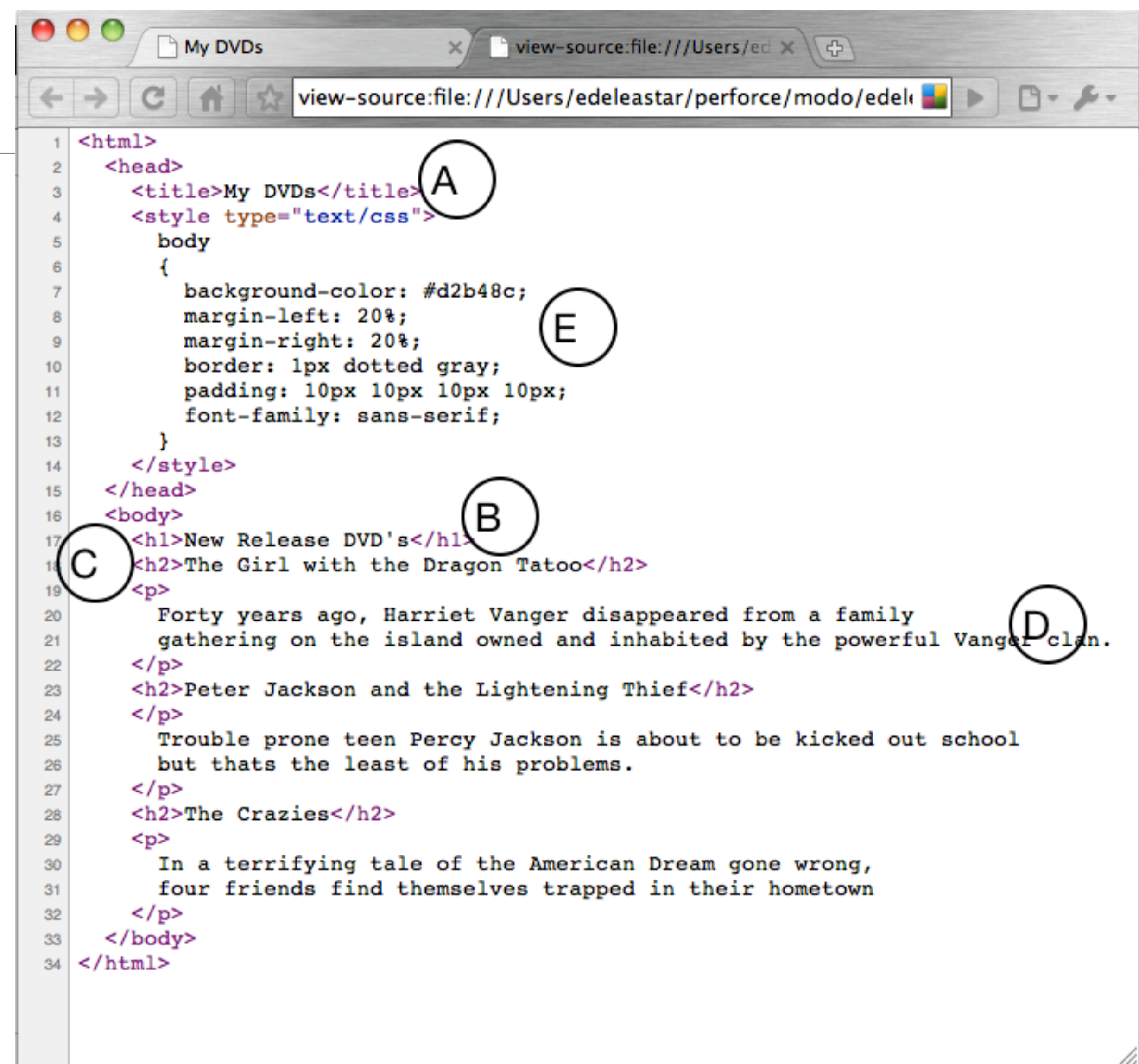
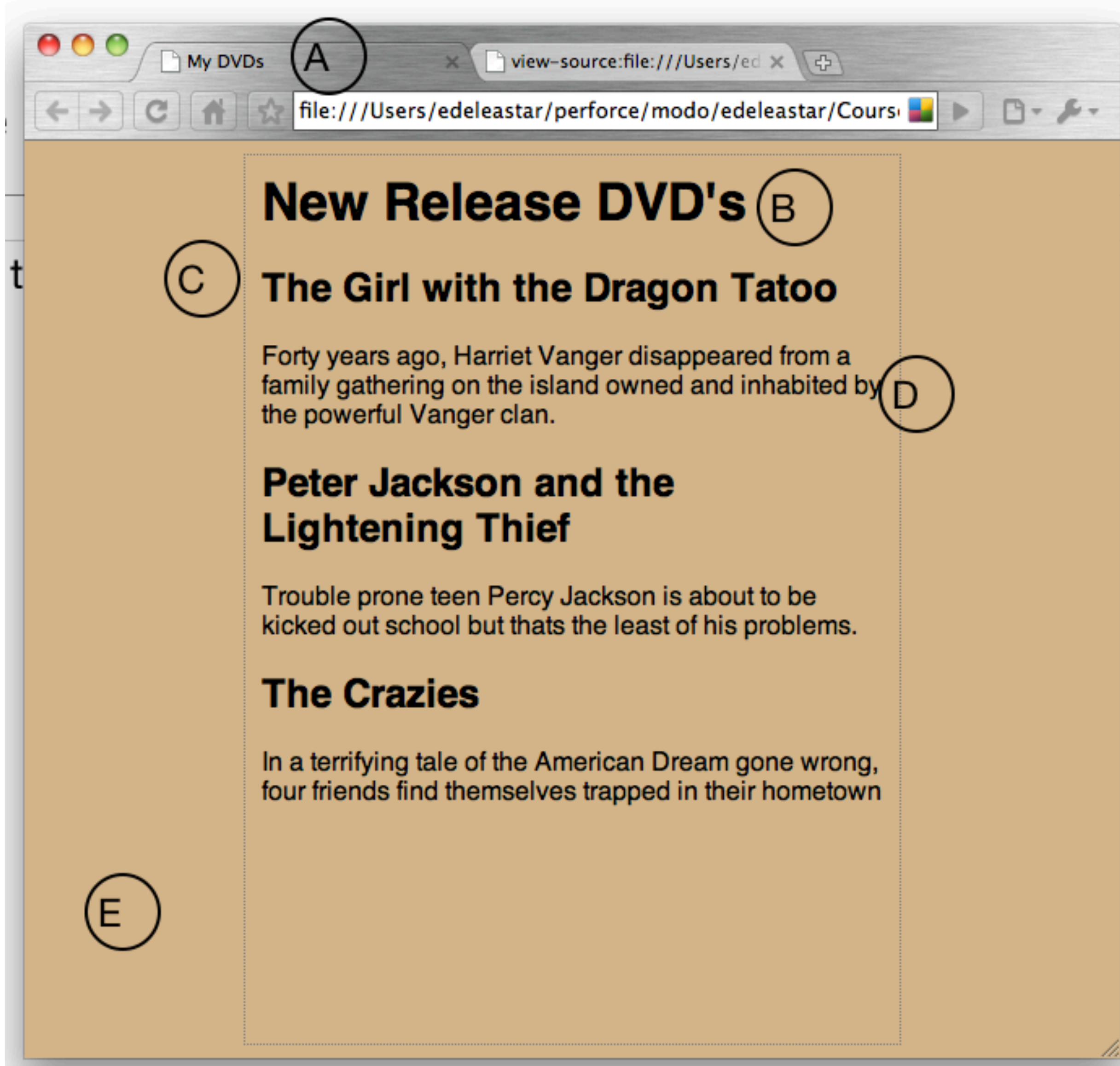
```
<html>  
<head>  
<title>  
<body>  
<h1>  
<h2>  
<em>  
<a>  
<img>  
<style>
```

- Grouped by purpose:
 - Structural
 - <html>, <head>, <title>, <body>
 - Text
 - Heading
 - <h1>, <h2>
 - Text
 - <p>,
 - Hypertext
 - <a>
 - Image
 -
 - Style
 - <style>



```
1 <html>
2   <head>
3     <title>My DVDs</title> A
4     <style type="text/css">
5       body
6       {
7         background-color: #d2b48c;
8         margin-left: 20%;
9         margin-right: 20%; E
10        border: 1px dotted gray;
11        padding: 10px 10px 10px 10px;
12        font-family: sans-serif;
13      }
14    </style>
15  </head>
16  <body>
17    <h1>New Release DVD's</h1> B
18    <h2>The Girl with the Dragon Tatoo</h2>
19    <p>
20      Forty years ago, Harriet Vanger disappeared from a family
21      gathering on the island owned and inhabited by the powerful Vanger clan. D
22    </p>
23    <h2>Peter Jackson and the Lightening Thief</h2>
24    <p>
25      Trouble prone teen Percy Jackson is about to be kicked out school
26      but thats the least of his problems.
27    </p>
28    <h2>The Crazies</h2>
29    <p>
30      In a terrifying tale of the American Dream gone wrong,
31      four friends find themselves trapped in their hometown
32    </p>
33  </body>
34 </html>
```

Every word in <> is a *Html Element*





HTML 5 NEW TAG

TAG NOT SUPPORTED IN HTML 5

<!--...-->	Define a comment
<!DOCTYPE>	Defines the document type
<a>	Defines a hyperlink href, hreflang, media, ping, rel, target, type
<abbr>	Defines an abbreviation
<acronym>	Used to define an embedded acronyms
<address>	Defines an address element
<applet>	Used to define an embedded applet
<area>	Defines an area inside an image map alt, coords, href, hreflang, media, ping, rel, shape, target, type
<article>	Defines an article cite, pubdate
<aside>	Defines content aside from the page content
<audio>	Defines sound content autobuffer, autoplay, controls, src
	Defines bold text
<base>	Defines a base URL for all the links in a page href, target
<basefont>	Used to define a default font-color, font-size, or font-family for all the document
<bdo>	Defines the direction of text display dir
<big>	Used to make text bigger
<blockquote>	Defines a long quotation cite
<body>	Defines the body element

	Inserts a single line break
<button>	Defines a push button autofocus, disabled, form, formaction, formenctype, formmethod, formnovalidate, formtarget, name, type, value
<canvas>	Defines graphics height, width
<caption>	Defines a table caption
<center>	Used to center align text and content
<cite>	Defines a citation
<code>	Defines computer code text autobuffer, autoplay, controls, src
<col>	Defines attributes for table columns
<colgroup>	Defines groups of table columns span
<command>	Defines a command button checked, disabled, icon, label, radiogroup, type

<datalist>	Defines a dropdown list
<dd>	Defines a definition description
	Defines deleted text cite, datetime
<details>	Defines details of an element open
<dialog>	Defines a dialog (conversation)
<dfn>	Defines a definition term
<dir>	Used to define a directory list
<div>	Defines a section in a document
<dl>	Defines a definition list
<dt>	Defines a definition term
	Defines emphasized text
<embed>	Defines external interactive content or plugin height, src, type, width
<fieldset>	Defines a fieldset disabled, form, name
<figure>	Defines a group of media content, and their caption
	Used to define font face, font size, and font color of text
<footer>	Defines a footer for a section or page
<form>	Defines a form accept-charset, action, autocomplete, enctype, method, name, novalidate, target
<frame>	Used to define one particular window (frame) within a frameset
<frameset>	Used to define a frameset, which organized multiple windows (frames)
<h1> to <h6>	Defines header 1 to header 6
<head>	Defines information about the document
<header>	Defines a header for a section or page
<hgroup>	Defines information about a section in a document
<hr>	Defines a horizontal rule
<html>	Defines an html document manifest, xulns
<i>	Defines italic text
<iframe>	Defines an inline sub window height, name, sandbox, seamless, src, width
	Defines an image alt, src, height, ismap, usemap, width
<input>	Defines an input field accept, alt, autocomplete, autofocus, checked, disabled, form, formaction, formenctype, formmethod, formnovalidate, formtarget, height, list, max, maxlength, min, multiple, name, pattern, placeholder, readonly, required, size, src, step, type, value, width

<ins>	Defines inserted text cite, datetime
<keygen>	Defines a generated key in a form autofocus, challenge, disabled, form, keytype, name
<kbd>	Defines keyboard text
<label>	Defines an inline sub window for, form
<legend>	Defines a title in a fieldset
	Defines a list item value
<link>	Defines a resource reference href, hreflang, media, rel, sizes, type
<map>	Defines an image map name
<mark>	Defines marked text
<menu>	Defines a menu list label, type
<meta>	Defines meta information charset, content, http-equiv, name
<meter>	Defines measurement within a predefined range high, low, max, min, optimum, value
<nav>	Defines navigation links
<noframes>	Used to display text for browsers that do not handle frames
<noscript>	Defines a noscript section
<object>	Defines an embedded object data, form, height, name, type, usemap, width
	Defines an ordered list reversed, start
<optgroup>	Defines an option group label, disabled
<option>	Defines an option in a drop-down list disabled, label, selected, value
<output>	Defines some types of output for, form, name
<p>	Defines a paragraph
<param>	Defines a parameter for an object name, value
<pre>	Defines preformatted text
<progress>	Defines progress of a task of any kind max, value
<q>	Defines a short quotation cite
<rp>	Used in ruby annotations to define what to show browsers that do not support the ruby element
<rt>	Defines explanation to ruby annotations
<ruby>	Defines ruby annotations
<s>, <strike>	Used to define strikethrough text.

<samp>	Defines sample computer code
<script>	Defines a definition list async, type charset defer, src
<section>	Defines a section cite
<select>	Defines a selectable list autofocus, disabled, form, multiple, name, size
<small>	Defines small text
<source>	Defines media resources media, src, type
	Defines a section in a document
	Defines strong text
<style>	Defines a style definition type, media, scoped
<sub>, <sup>	Defines sub/super-scripted text
<table>	Defines a table summary
<tbody>	Defines a table body summary
<td>	Defines a table cell colspan, headers, rowspan
<textarea>	Defines a text area autofocus, cols, disabled, form, maxlength, name, placeholder, readonly, required, rows, wrap
<tfoot>, <thead>	Defines a table footer / head
<th>	Defines a table header colspan, headers, rowspan, scope
<time>	Defines a date/tim datetime
<title>	Defines the document title
<tr>	Defines a table row datetime
<tt>	Used to define teletype text
<u>	Used to define underlined text
	Defines an unordered list
<var>	Defines a variable
<video>	Defines a video autobuffer, autoplay, controls, height, loop, src, width

HTML5 TAG CHEAT SHEET

Created by WebsiteSetup.org

Periodic table of HTML elements

html															output
base	h1-h6							strong	area	param	caption	th	input	progress	
head	hgroup							sub	audio	source	col	thead	keygen	select	
style	nav	figcaption	p	bdi	data	mark	ruby	sup	map	canvas	colgroup	tr	label	details	
title	section	figure	pre	bdo	dfn	q	s	time	track	noscript	table	button	legend	dialog	
address	dd	hr	ul	br	em	rp	samp	u	video	script	tbody	datalist	meter	menu	
article	div	li	abbr	cite	i	rt	small	var	embed	del	td	fieldset	optgroup	menuitem	
footer	dl	main	b	code	kbd	rtc	span	wbr	object	ins	tfoot	form	option	summary	
header	dt	ol													

- content
- element
- shadow
- template

■ base
 ■ metadata
 ■ sectioning
 ■ text-content
 ■ text-semantic
 ■ media
■ embedded
■ script
■ edits
■ table
■ forms
■ interactive
■ web-components

Major Categories of Elements

- html • Base
- base • Metadata
- address • Sectioning
- dd • Text Content
- abbr • Text Semantics
- audio • Media
- embed • Embedded
- script • Script
- del • Edits
- table • Table
- form • Forms
- dialog • Interactive
- template • Web Components

Agenda

Code

The Internet

The Web

Useful References

Useful Web Resource: MDN Web Docs

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics



Technologies ▾

References & Guides ▾

Feedback ▾



Sign in



HTML basics

Languages

Edit



Jump to: [So what is HTML, really?](#) [Images](#) [Marking up text](#) [Links](#) [Conclusion](#) [In this module](#)

Learn web development >
Getting started with the Web >
HTML basics

← Previous

↑ Overview: Getting started with the web

Next →

Related Topics

Complete beginners start here!

▶ [Getting started with the Web](#)

HTML — Structuring the Web

- ▶ [Introduction to HTML](#)
- ▶ [Multimedia and embedding](#)
- ▶ [HTML tables](#)
- ▶ [HTML forms](#)

CSS — Styling the Web

- ▶ [Introduction to CSS](#)
- ▶ [Styling text](#)
- ▶ [Styling boxes](#)
- ▶ [CSS layout](#)

JavaScript — Dynamic client-side scripting

- ▶ [JavaScript first steps](#)
- ▶ [JavaScript building blocks](#)
- ▶ [Introducing JavaScript objects](#)

HTML (Hypertext Markup Language) is the code that is used to structure a web page and its content. For example, content could be structured within a set of paragraphs, a list of bulleted points, or using images and data tables. As the title suggests, this article will give you a basic understanding of HTML and its functions.

So what is HTML, really?

HTML is not a programming language; it is a *markup language* that defines the structure of your content. HTML consists of a series of elements, which you use to enclose, or wrap, different parts of the content to make it appear a certain way, or act a certain way. The enclosing tags can make a word or image hyperlink to somewhere else, can italicize words, and can make font bigger or smaller, and so on. For example, take the following line of content:

```
1 | My cat is very grumpy
```



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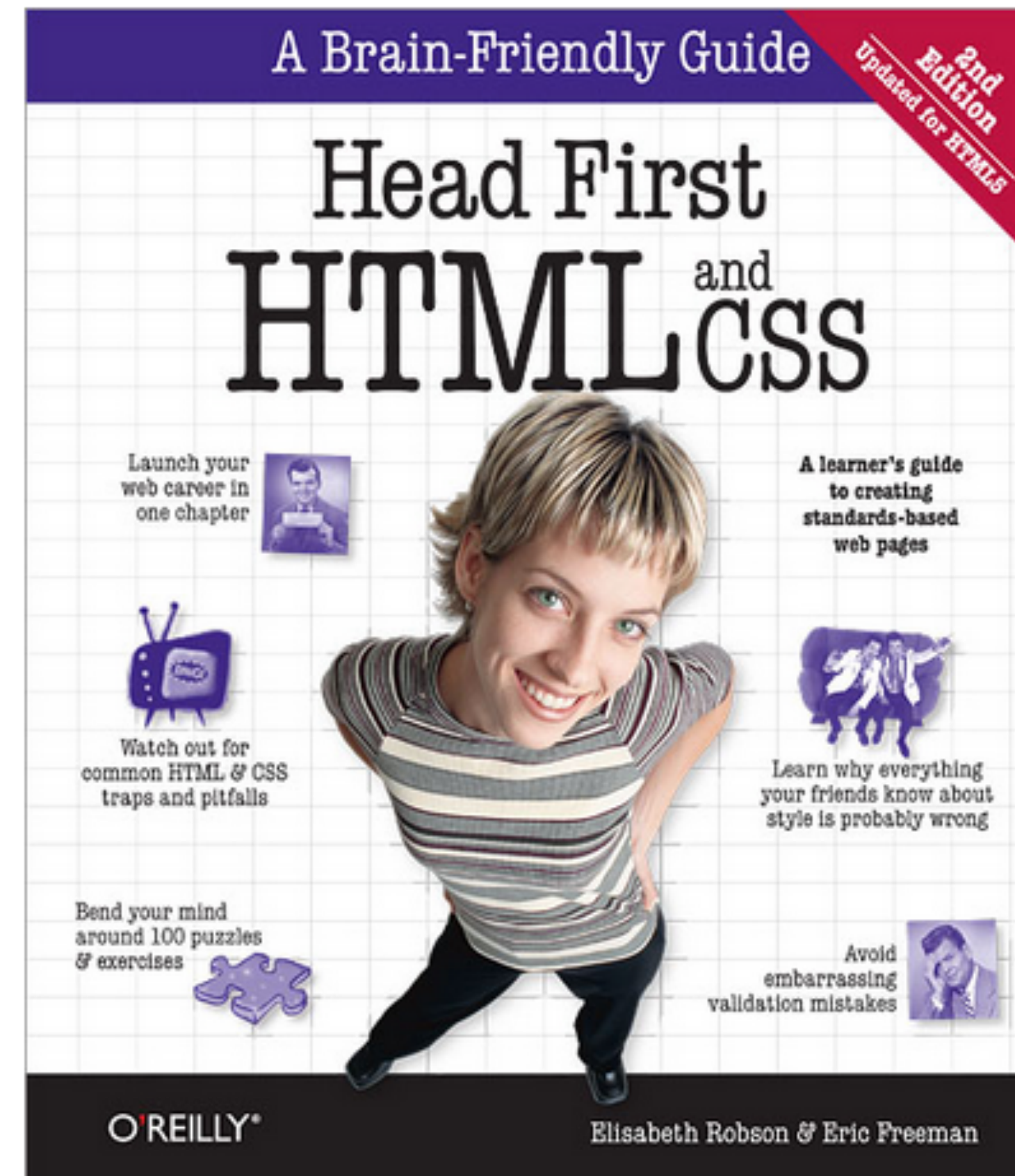
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Useful Text

- Head First HTML and CSS, 2nd Edition. By Freeman, Elisabeth and Eric Freeman. 2012. [Head First HTML with CSS & XHTML](#). O'Reilly & Associates. 658 p. ISBN 978-0-596-15990-0
- £17 on amazon (new)





Head First Programming

By David Griffiths, Paul Barry
November 2009
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By Al Anderson, Ryan Benedetti
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New Year, Lots of New Books (and an iPhone app)!

Are you sitting down? Hopefully you are, because we've got a lot to discuss here. Since the last time we posted, we've released four more new books, and an iPhone app to boot. Speaking of iPhone apps, let's start with one of the more recent books we just published...

Head First iPhone Development

In true Head First fashion, you'll be building an app right out of the gate in the first chapter of *Head First iPhone Development*. Obviously, if you want to build iPhone apps, you want to sell them in the app store, so the book is geared towards getting you creating apps quickly, and also focuses on designing top-notch apps and how to navigate the app submission process. Back in November, co-author Dan Pilone taught a great workshop, *Build, Compile, and Run Your iPhone App in 2 days*, which covered a lot of the material in the book, namely, getting a developer who knows how to code in an Object Oriented environment coding on a Mac in Objective-C. And Tracey Pilone (co-pilot of the most prolific Head First writing couple since Kathy and Bert!) also recently posted over on the O'Reilly Community blog about *her experience as a Head First author*, which is a great read for any aspiring Head First authors. (You can follow them both on Twitter as @danpilone and @traceypilone.)

Head First Programming

Completely new to programming? Based on experience with Head First's successful books on programming languages, design patterns, and technologies, learners have long been clamoring for a general Head First introduction to programming for the absolute beginner. In November, Paul Barry and Head First veteran David Griffiths teamed up to finally fill that need with *Head First Programming*. Of course, this being Head First, you can forget "Hello, World!" and pages upon pages of dull, dry, boring text you'll never apply to real-world problems. By the time you've worked through the first few chapters of this book, you'll have written a numeric guessing game and interfaced with Twitter's API. And by the end of the book, you'll have a completely functional and attractive graphical desktop application! Though the authors use the dynamic and versatile Python language to apply and reinforce the general programming concepts illustrated in concrete examples and exercises, you'll be able to apply this knowledge to whatever language or software project you need or want to learn.

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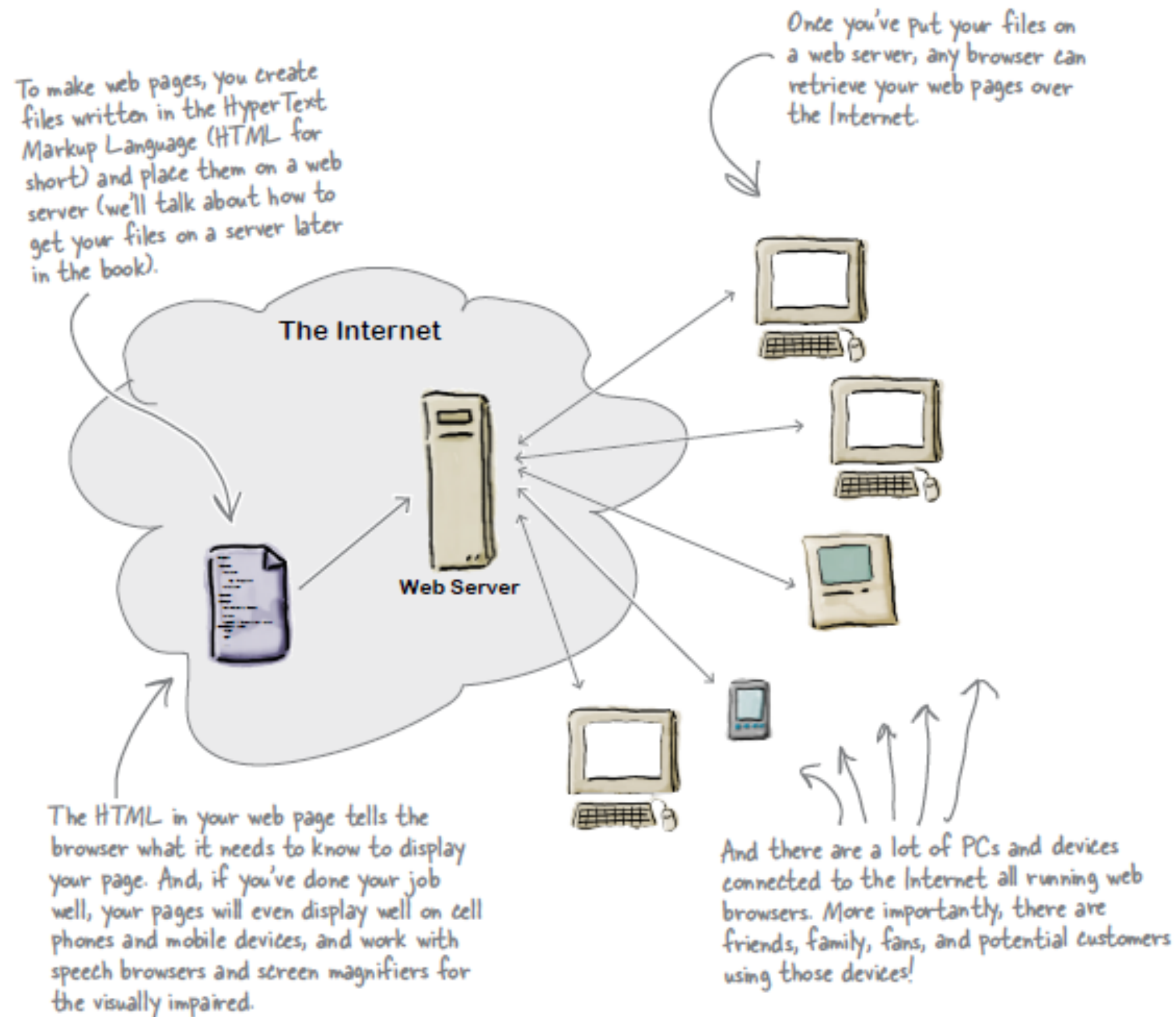
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The Web

Video killed the radio star

Want to get an idea out there? Sell something? Just need a creative outlet? Turn to the Web—we don't need to tell you it has become the universal form of communication. Even better, it's a form of communication **YOU** can participate in.

But if you really want to use the Web effectively, you've got to know a few things about **HTML**—not to mention, a few things about how the Web works too. Let's take a look from 30,000 feet:



A flavour of
the book...

What you write (the HTML)

So, you know HTML is the key to getting a browser to display your pages, but what exactly does HTML look like? And what does it do?

Let's have a look at a little HTML...imagine you're going to create a web page to advertise the *Head First Lounge*, a local hangout with some good tunes, refreshing elixirs, and wireless access. Here's what you'd write in HTML:

```
<html>
  <head>
    <title>Head First Lounge</title> A
  </head>
  <body>
    <h1>Welcome to the Head First Lounge</h1> B
     C
    <p>
D Join us any evening for refreshing elixirs,
      conversation and maybe a game or
      two of Dance Dance Revolution. E
      Wireless access is always provided;
      BYOWS (Bring your own web server).
    </p>
    <h2>Directions</h2> F
    <p>
G You'll find us right in the center of
      downtown Webville. Come join us!
    </p>
  </body>
</html>
```



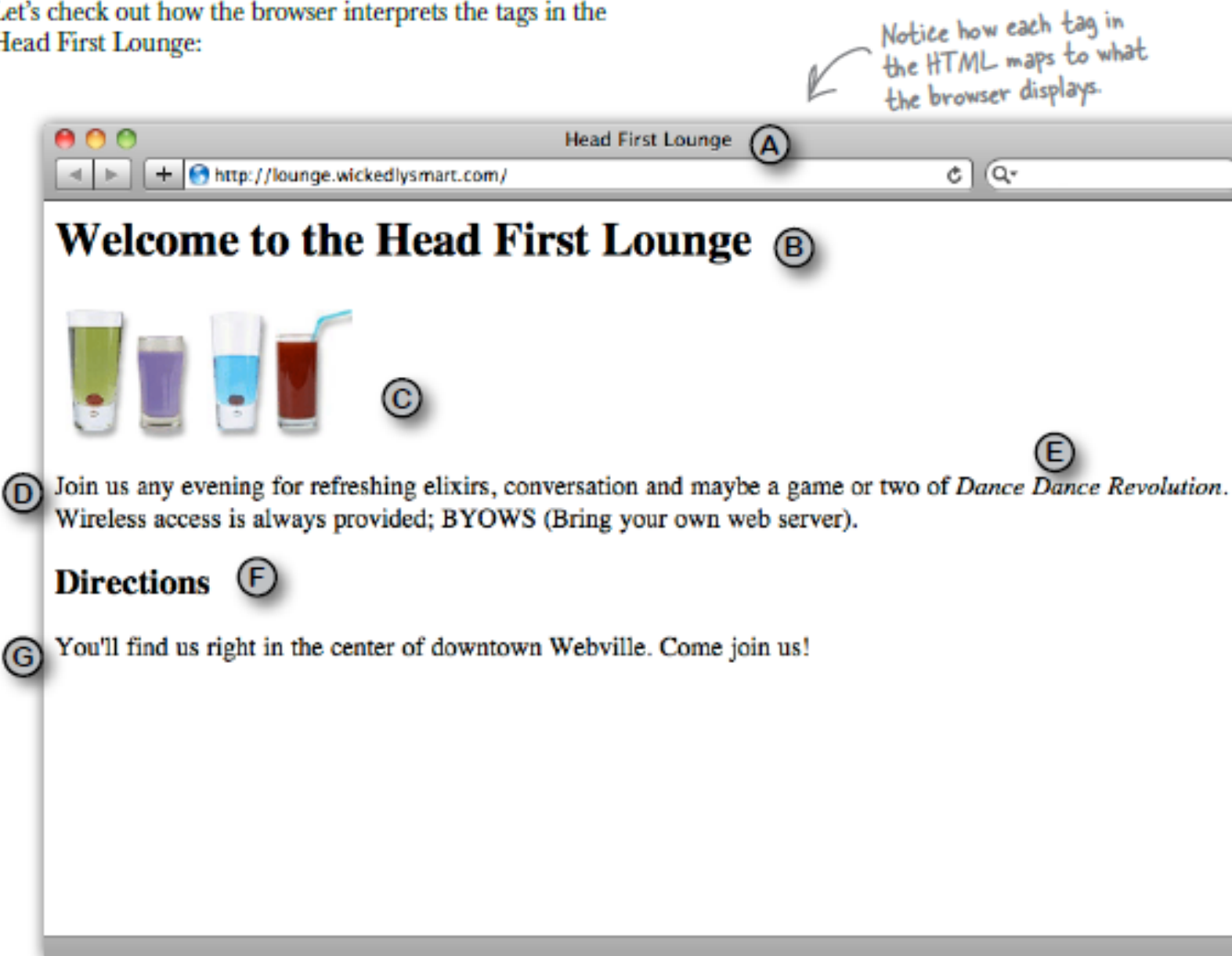
We don't expect you to know HTML yet.

At this point you should just be getting a feel for what HTML looks like; we're going to cover everything in detail in a bit. For now, study the HTML and see how it gets represented in the browser on the next page. Be sure to pay careful attention to each letter annotation and how and where it is displayed in the browser.

What the browser creates

When the browser reads your HTML, it interprets all the *tags* that surround your text. Tags are just words or characters in angle brackets, like `<head>`, `<p>`, `<h1>`, and so on. The tags tell the browser about the *structure and meaning* of your text. So rather than just giving the browser a bunch of text, with HTML you can use tags to tell the browser what text is in a heading, what text is a paragraph, what text needs to be emphasized, or even where images need to be placed.

Let's check out how the browser interprets the tags in the Head First Lounge:



A flavour of
the book...