The Nature of the Web

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 — Edited

```
<!DOCTYPE HTML>
<html>
  <head> <title>Bundle APP Store</title>   <link type="text/css"
rel="stylesheet" href="style.css" media="screen" /> </head>
  <body> <img src="images/banner.png"/>
    <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 subimetext.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

```html
<html>
  <head>
    <title>Bundle APP Store</title>
  </head>
  <body>
    <img src="images/banner.png"/>
      <h3>Freebie</h3>
    <p>
      Stacksocial just published its so called Free Ondesoft Mac Tool Bundle, which contains
       5 apps from Ondesoft. The bundle worth $146 will be probably available only a couple
       of days so you'd better hurry up to get it.
    </p>

    <p>
      <img src="images/ondesoft.jpg" alt="Black Brain Brew Elixir" />
    </p>
    </p>
    <hr>
    <h3>Macware Business Bundle</h3>
    <p>
      Here comes the next bundle for march. This time its macware who publish a bundle. The
       so called macware Business Bundle contains 6 apps at a price of only $29.99 instead
       of $199.94. So you can save around 84%. There is n...
    </p>
  </body>
</html>
```

- Same document - pleasingly indented and syntax highlighted

Agenda

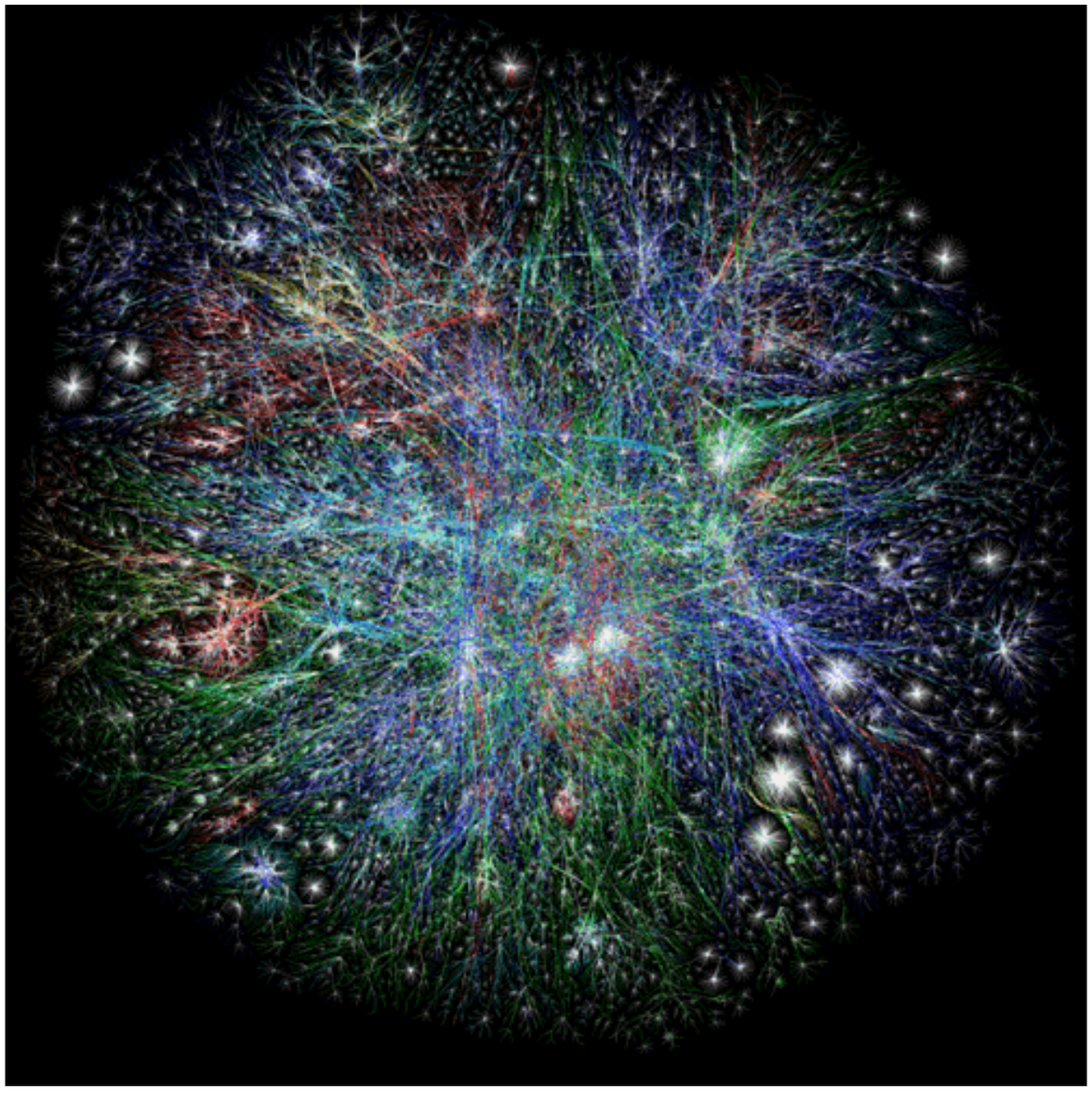
Code

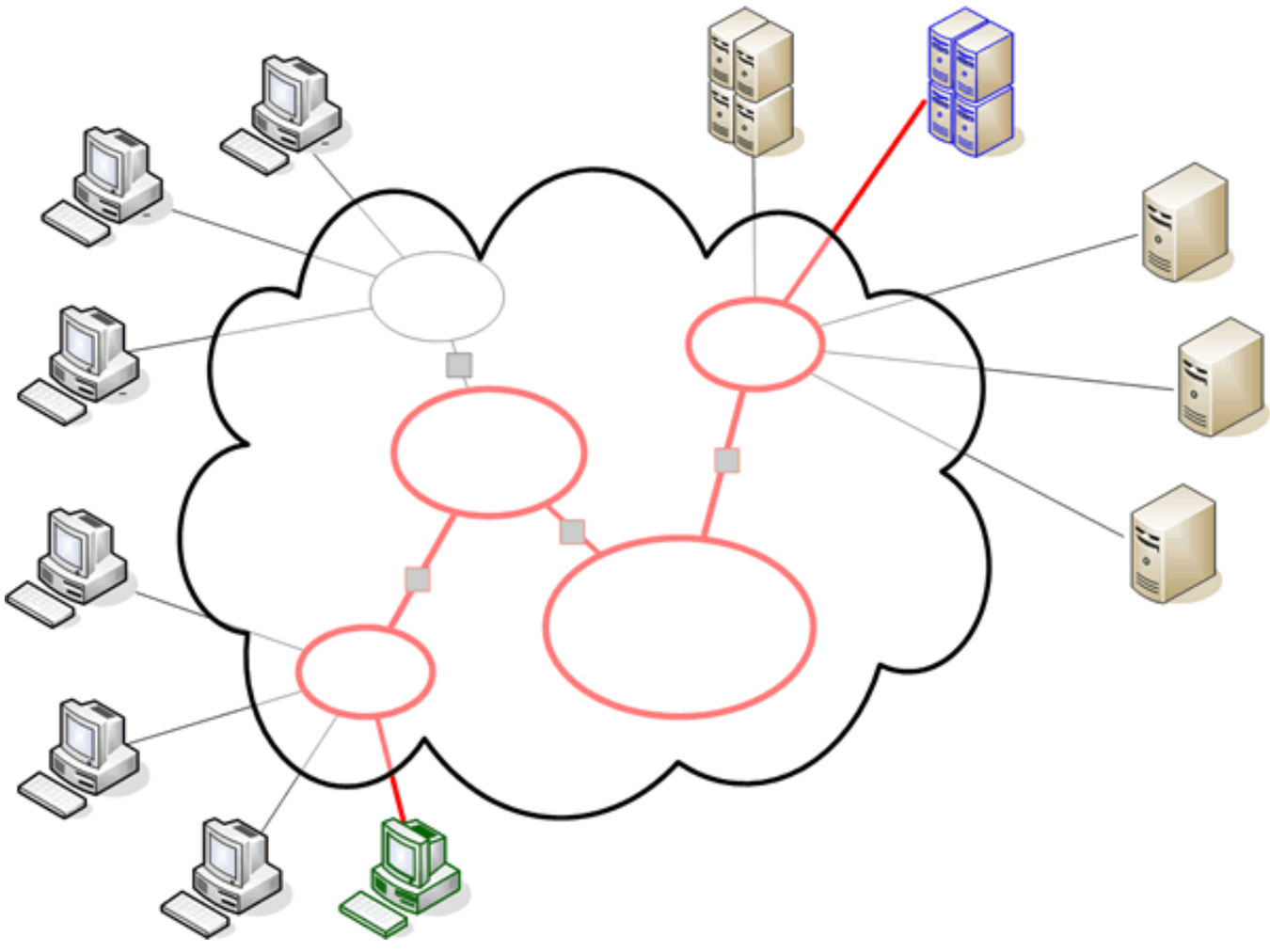
The Internet

The Web

Useful References

The Internet





The Internet

3,824,491,587

Internet Users in the world

1,318,890,294

Total number of Websites

126,340,373,404

Emails sent today

2,960,338,537

Google searches today

2,783,071

Blog posts written today

361,081,108

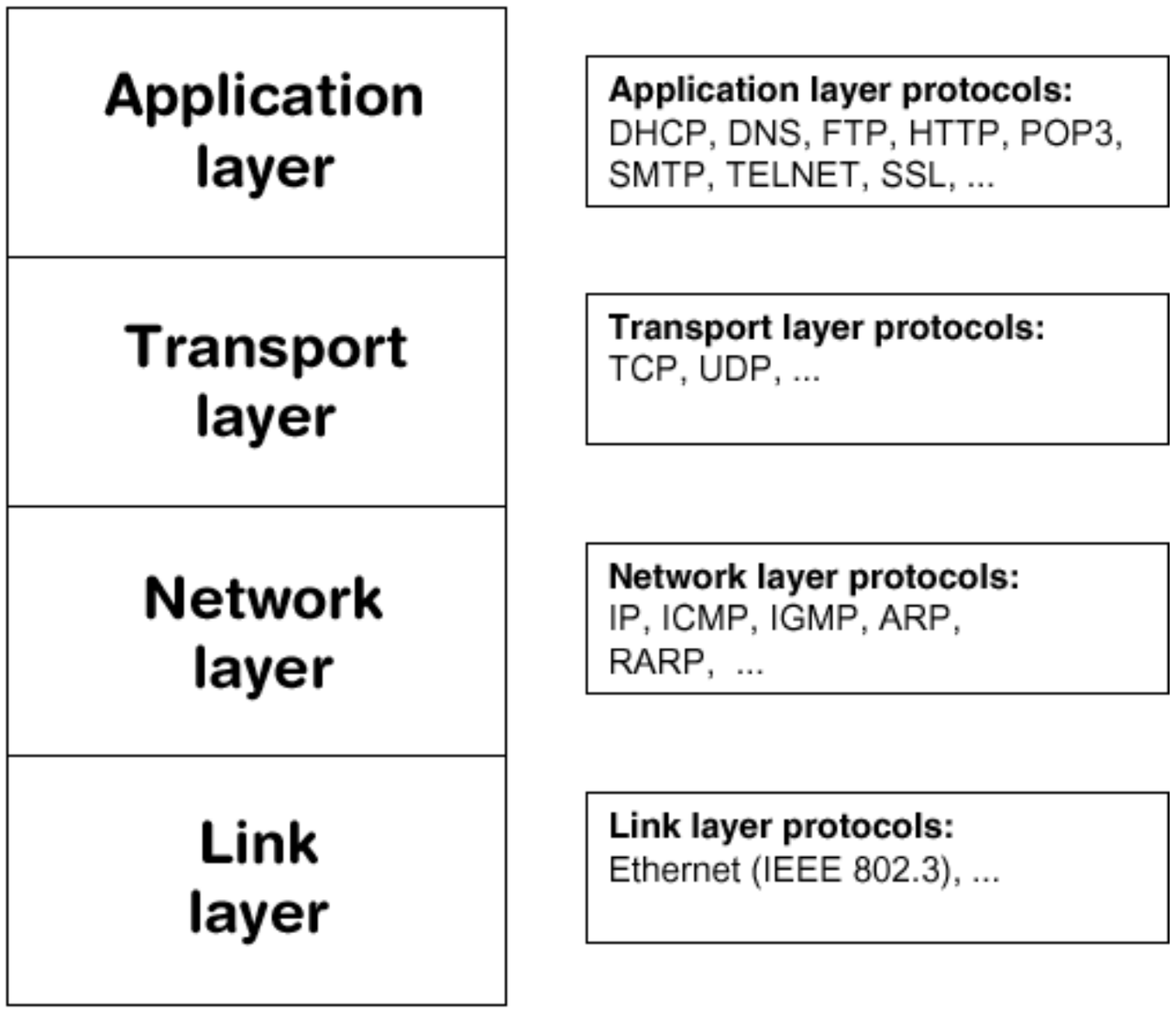
Tweets sent today

http://www.internetlivestats.com/

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

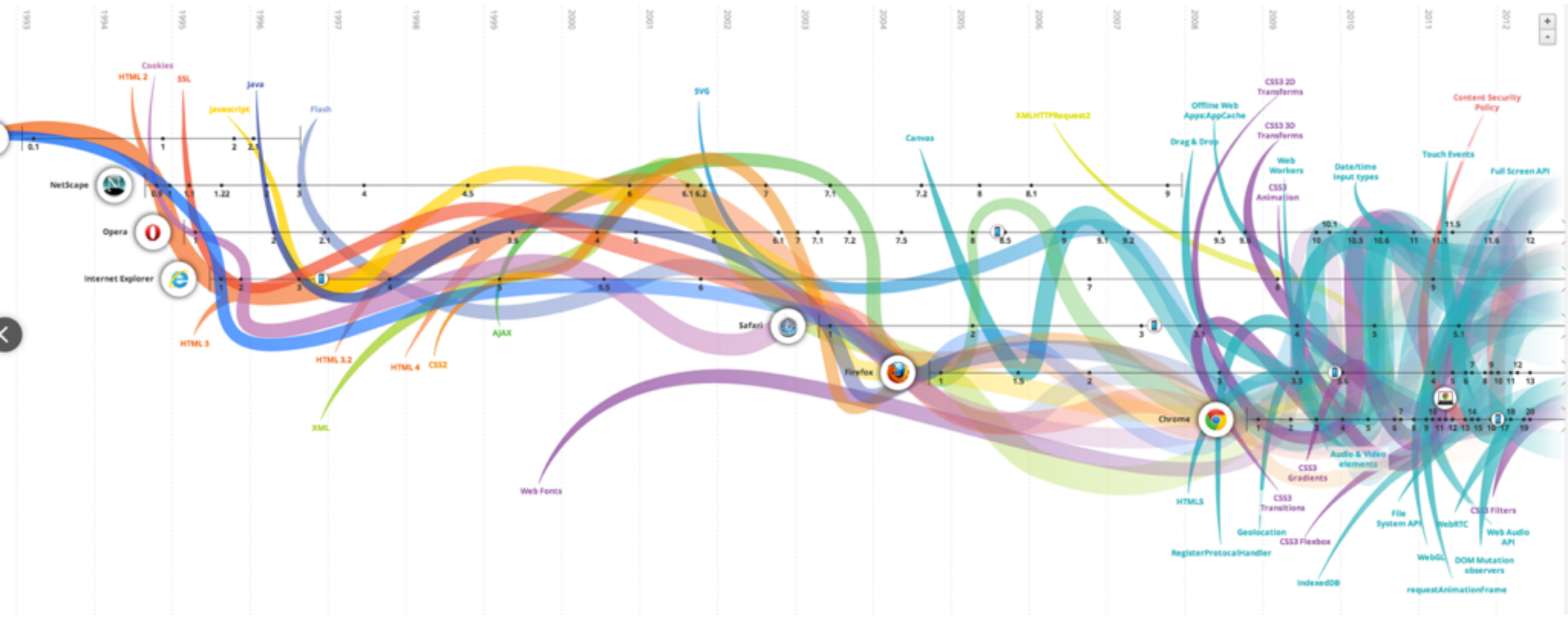
World Wide Web

- 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

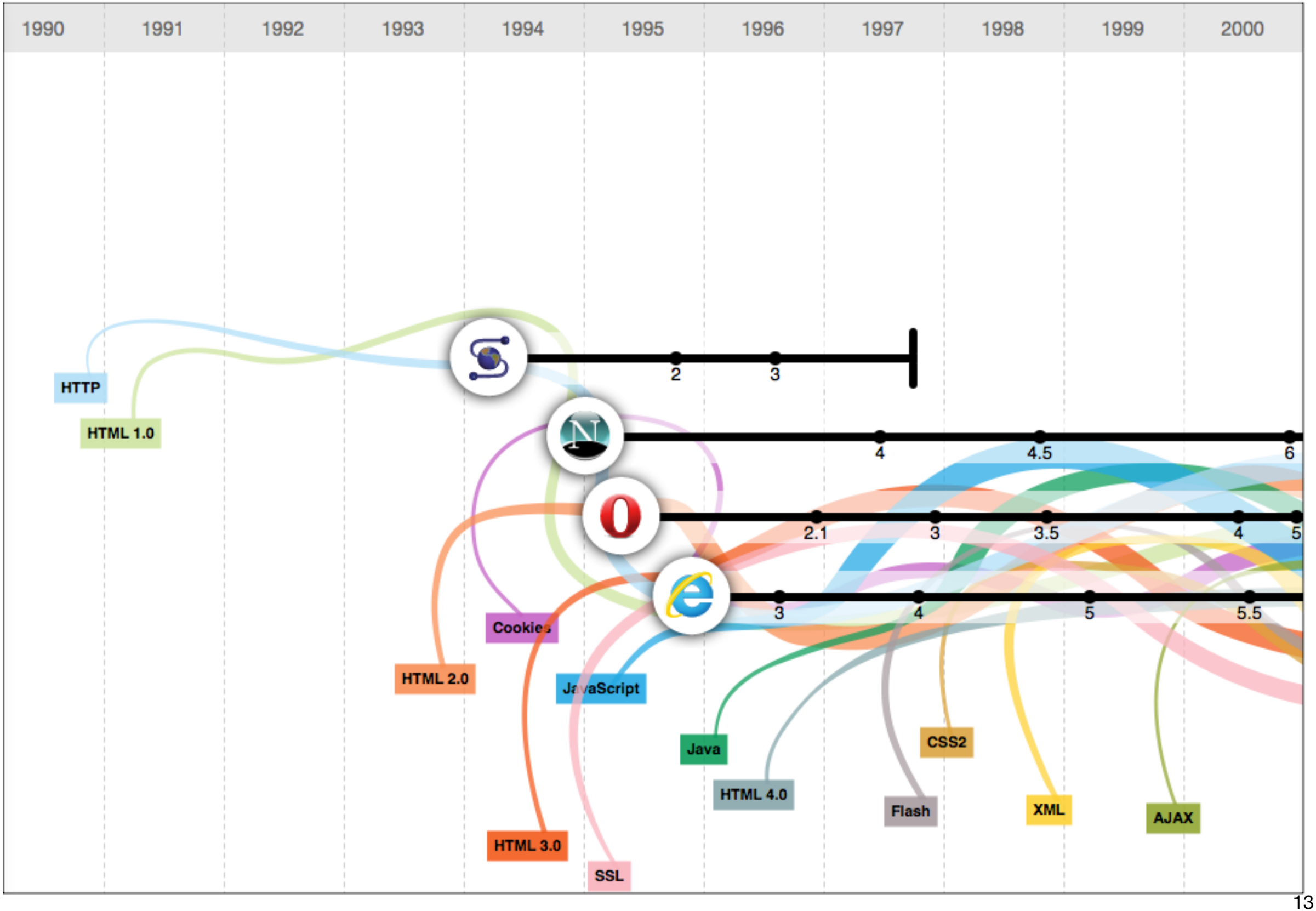
- WWW has made the Internet the most important communication medium of our days.

- Thanks to the simple to use graphical interface – The Web Browser – the WWW provides everyone with simple access to information

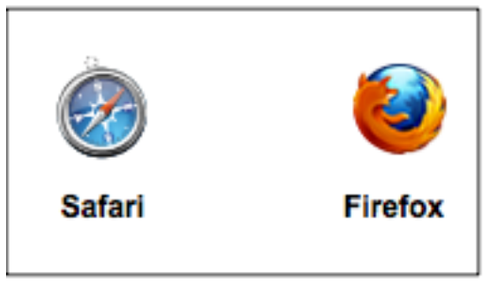
Evolution of the Web - 1990-2012

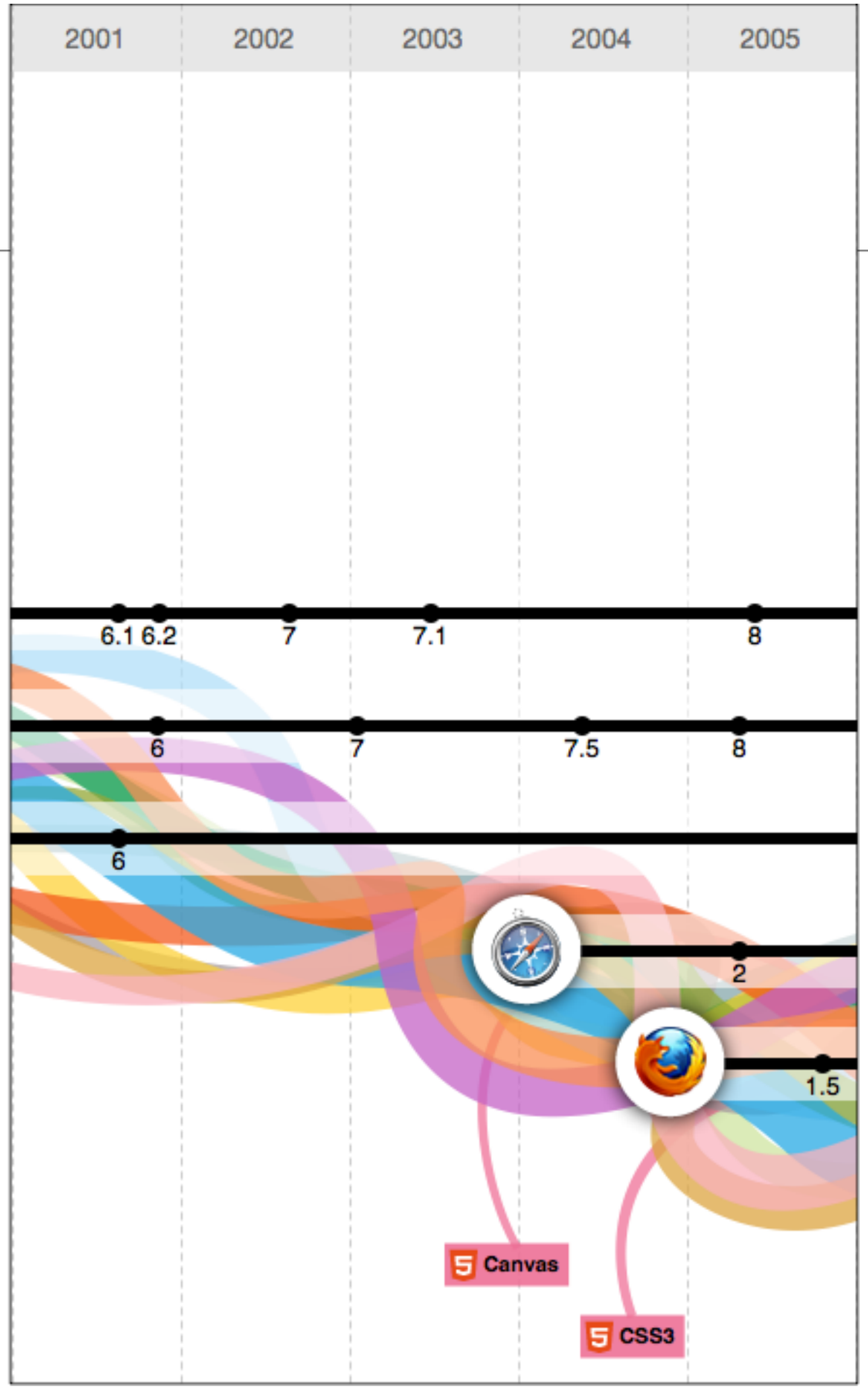


Evolution of the Web - 1990-2000

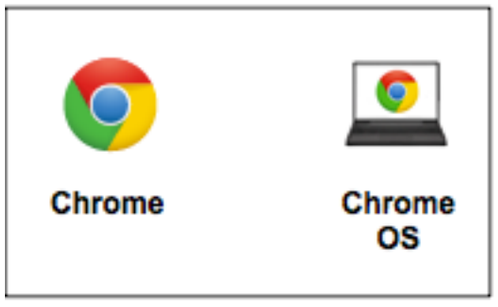


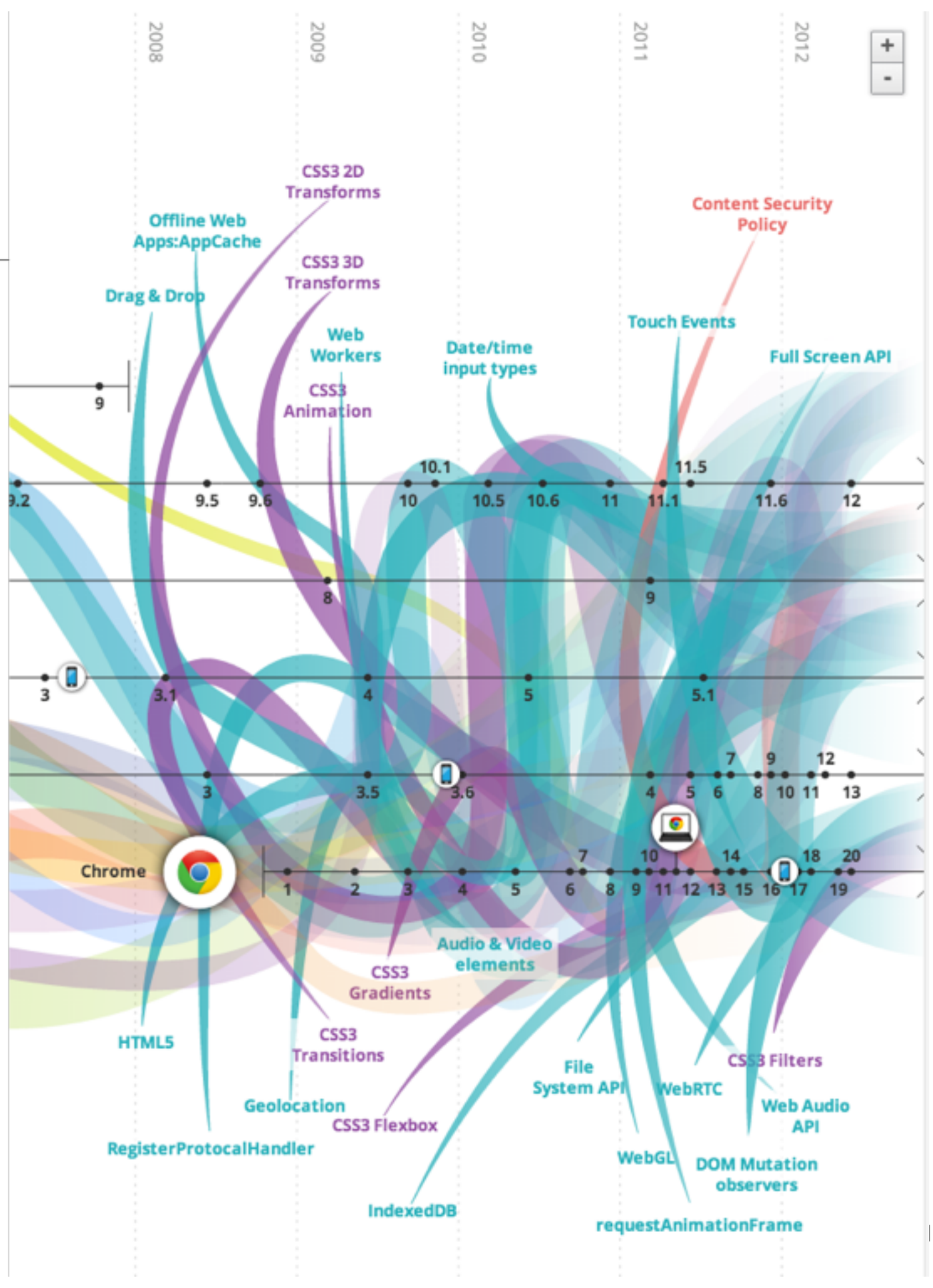
2001-2005


Safari
Firefox


2001
2002
2003
2004
2005
6.1
6.2
7
7.1
8
6
7
7.5
8
6
2
1.5
Canvas
CSS3

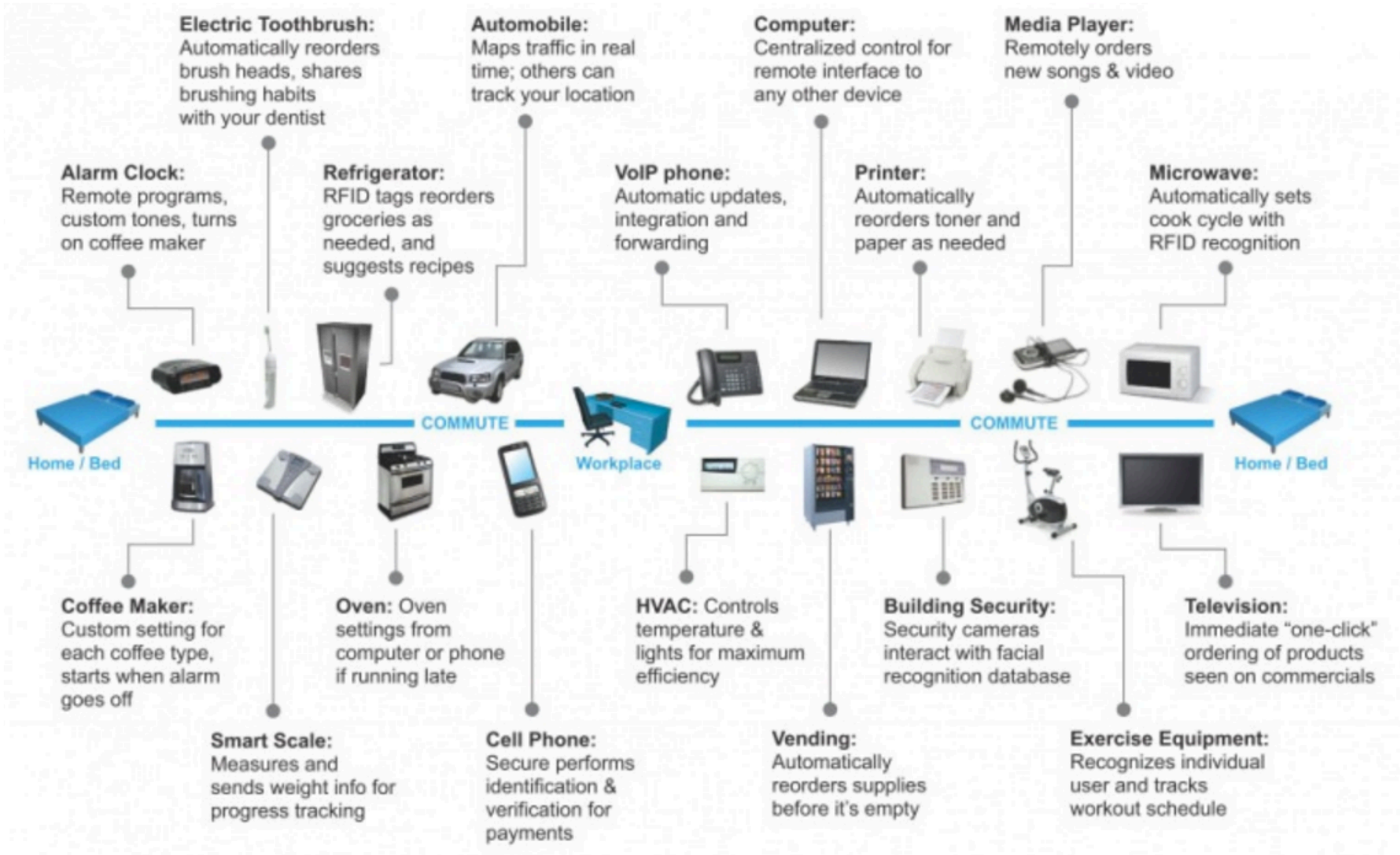
2006-2012


Chrome
Chrome OS


2008
2009
2010
2011
2012
CSS3 2D Transforms
Offline Web Apps:AppCache
CSS3 3D Transforms
Drag & Drop
Web Workers
CSS3 Animation
Date/time input types
Touch Events
Content Security Policy
Full Screen API
Chrome
HTML5
RegisterProtocalHandler
Geolocation
CSS3 Transitions
CSS3 Flexbox
CSS3 Gradients
Audio & Video elements
IndexedDB
File System API
WebGL
WebRTC
DOM Mutation observers
requestAnimationFrame
CSS3 Filters
Web Audio API

Devices: Conventional

Devices: Things!

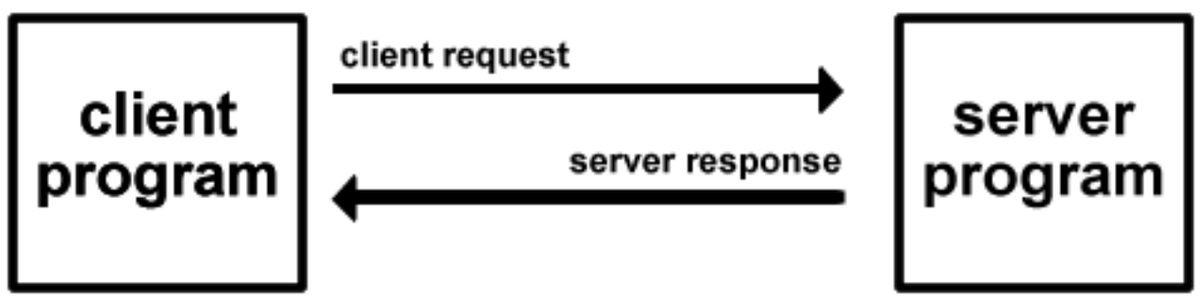


The Web

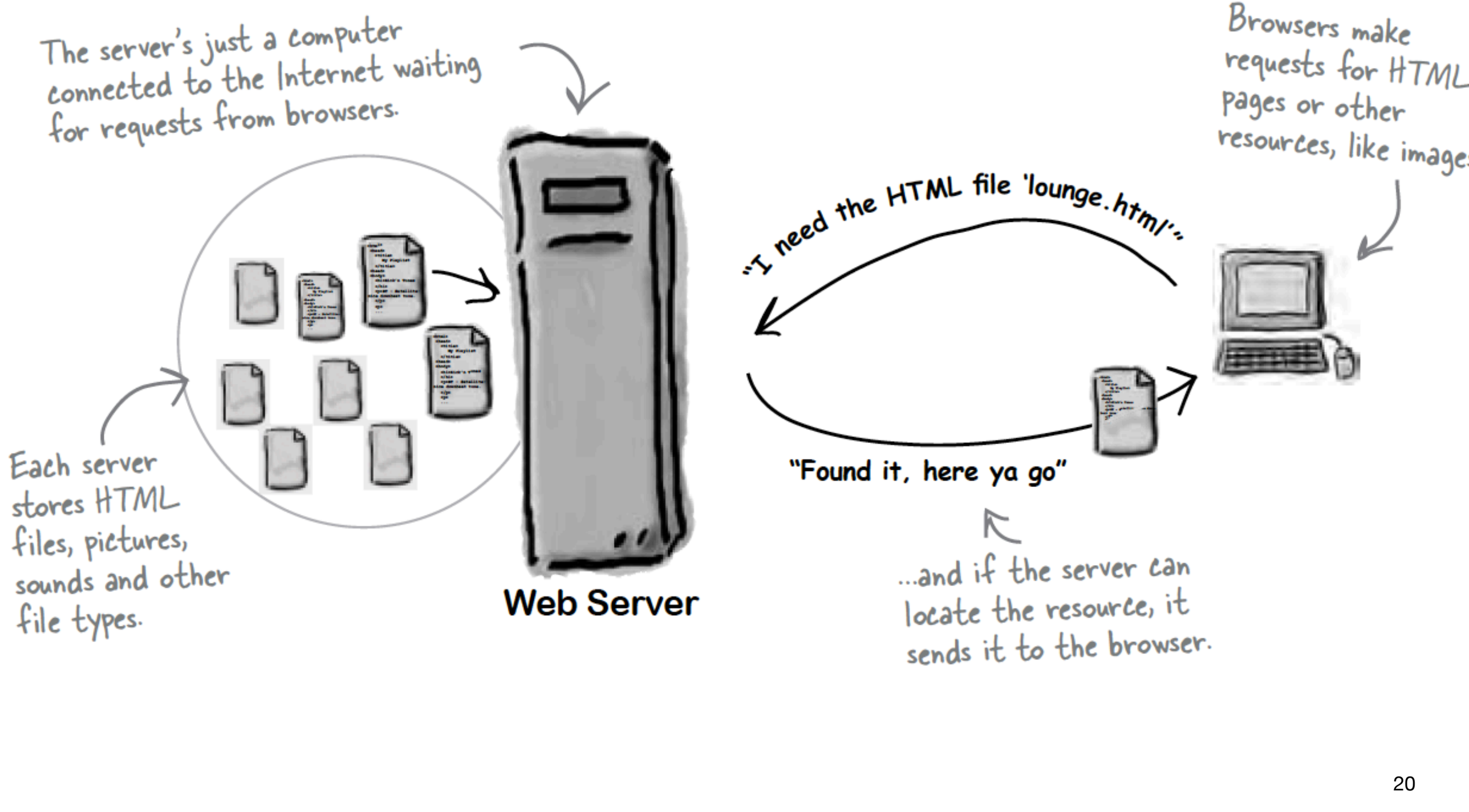
- Protocols & Standards
    - Protocol : agreed vocabulary to enable two programs to communicate
    - Standard: an agreed definition of the structure and meaning of a document
- Web Protocol
    - Hyper Text Transfer Protocol - HTTP
- Web Standard
    - Hyper Text Markup Language – HTML
    - Cascading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

Clients and Servers

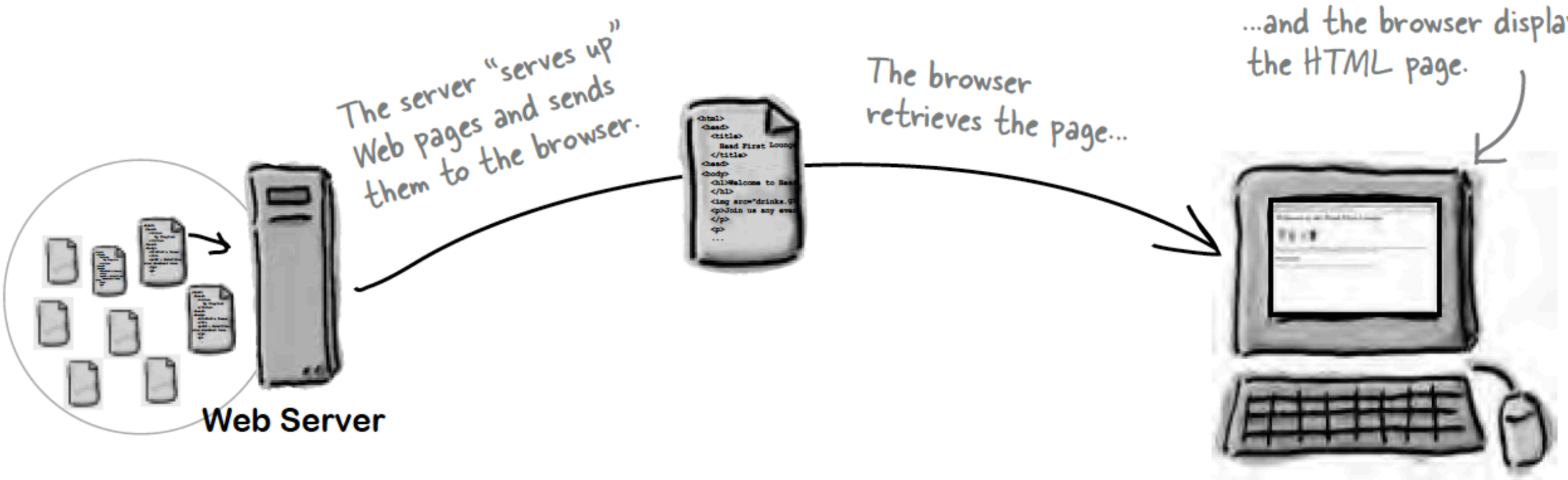
- Client/Server Computing:
    - The interaction between two programs when they communicate across a network.
    - A program at one site sends a request to a program at another site and awaits a response.
    - The requesting program is called a client; the program satisfying the request is called the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



Role of Server



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 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 denote the intention of the author regarding the structure and display of the document.

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.

HTML Tags (more correctly called Elements)

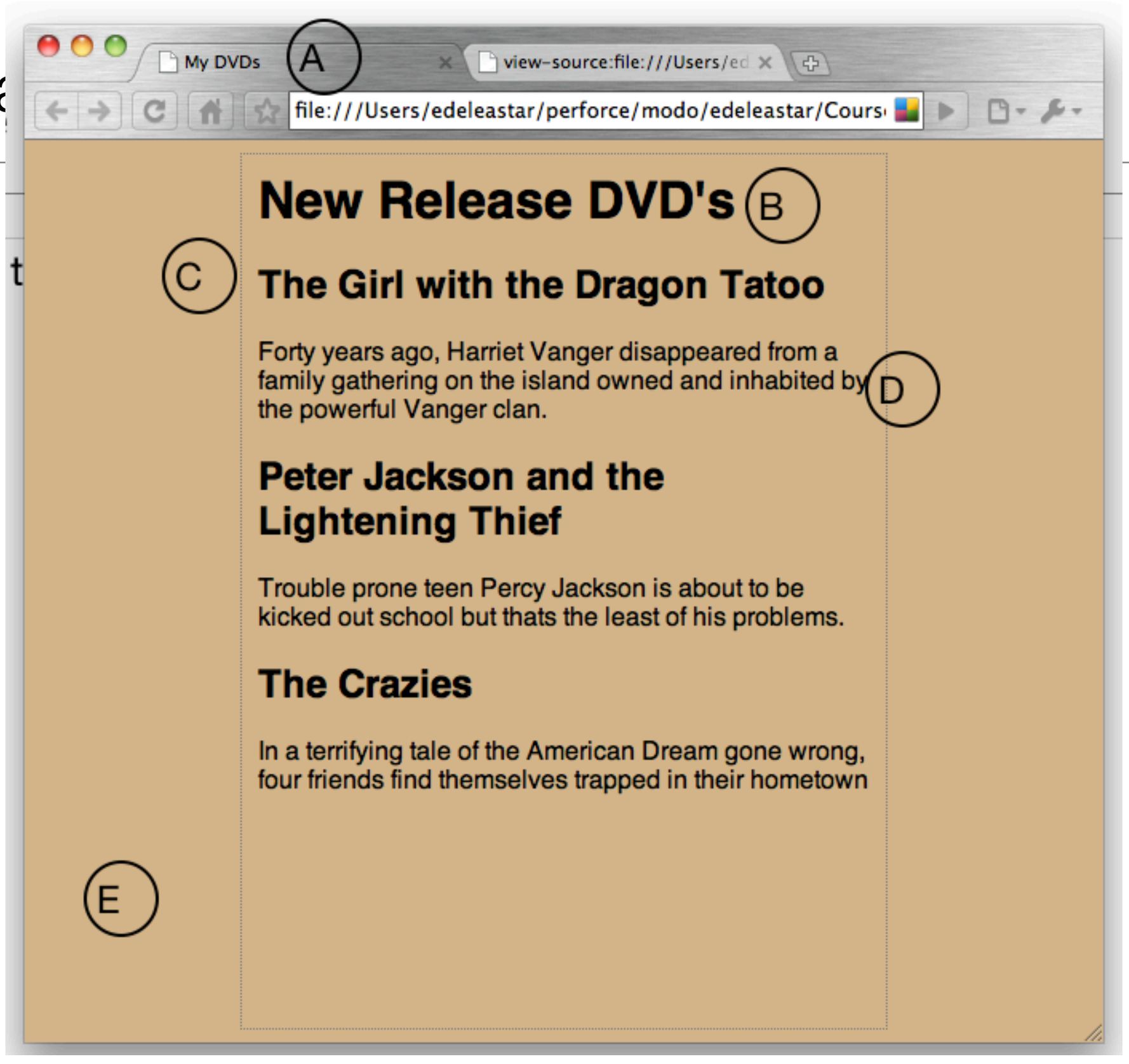
Starter Tags

<html>
<head>
<title>
<body>
<h1>
<h2>

<a>
<img>
<style>

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

The Pa


My DVDs
A
view-source:file:///Users/ed
file:///Users/edeleastar/perforce/modo/edeleastar/Cours
New Release DVD's
B
C
The Girl with the Dragon Tatoo
Forty years ago, Harriet Vanger disappeared from a family gathering on the island owned and inhabited by the powerful Vanger clan.
D
Peter Jackson and the Lightening Thief
Trouble prone teen Percy Jackson is about to be kicked out school but thats the least of his problems.
The Crazies
In a terrifying tale of the American Dream gone wrong, four friends find themselves trapped in their hometown
E

My DVDs | view-source:file:///Users/ed

view-source:file:///Users/edeleastar/perforce/modo/edel

```
1  <html>
2    <head>
3      <title>My DVDs</title>
4      <style type="text/css">
5        body
6        {
7          background-color: #d2b48c;
8          margin-left: 20%;
9          margin-right: 20%;
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>
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.
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>
```

A B C D E

Every word in <> is a *Html Element*

HTML 5 NEW TAG

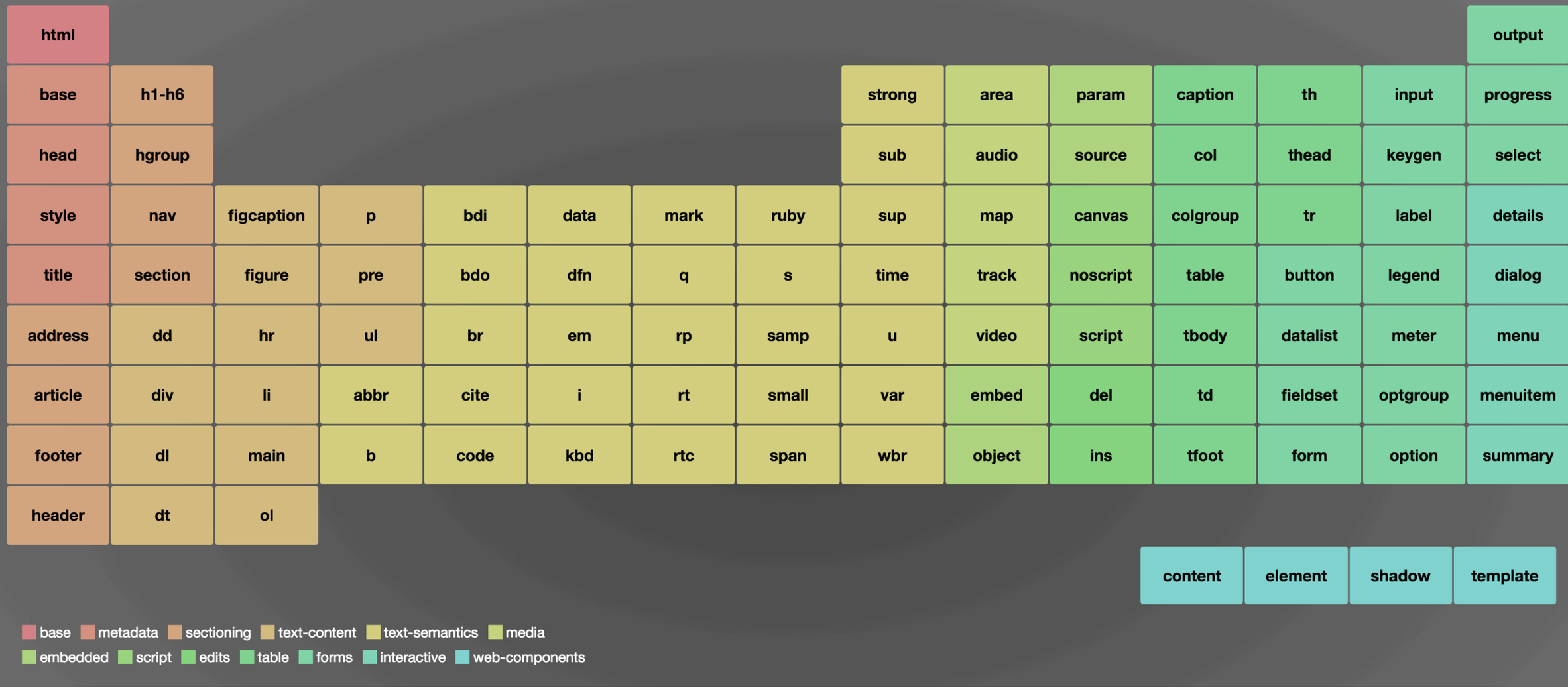
TAG NOT SUPPORTED IN HTML 5

<!--...-->	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
<b>	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
	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
<del>	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
	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
<font>	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, xmlns
<i>	Defines italic text
<iframe>	Defines an inline sub window height, name, sandbox, seamless, src, width
<img>	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 to 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, 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



Major Categories of Elements

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

Agenda

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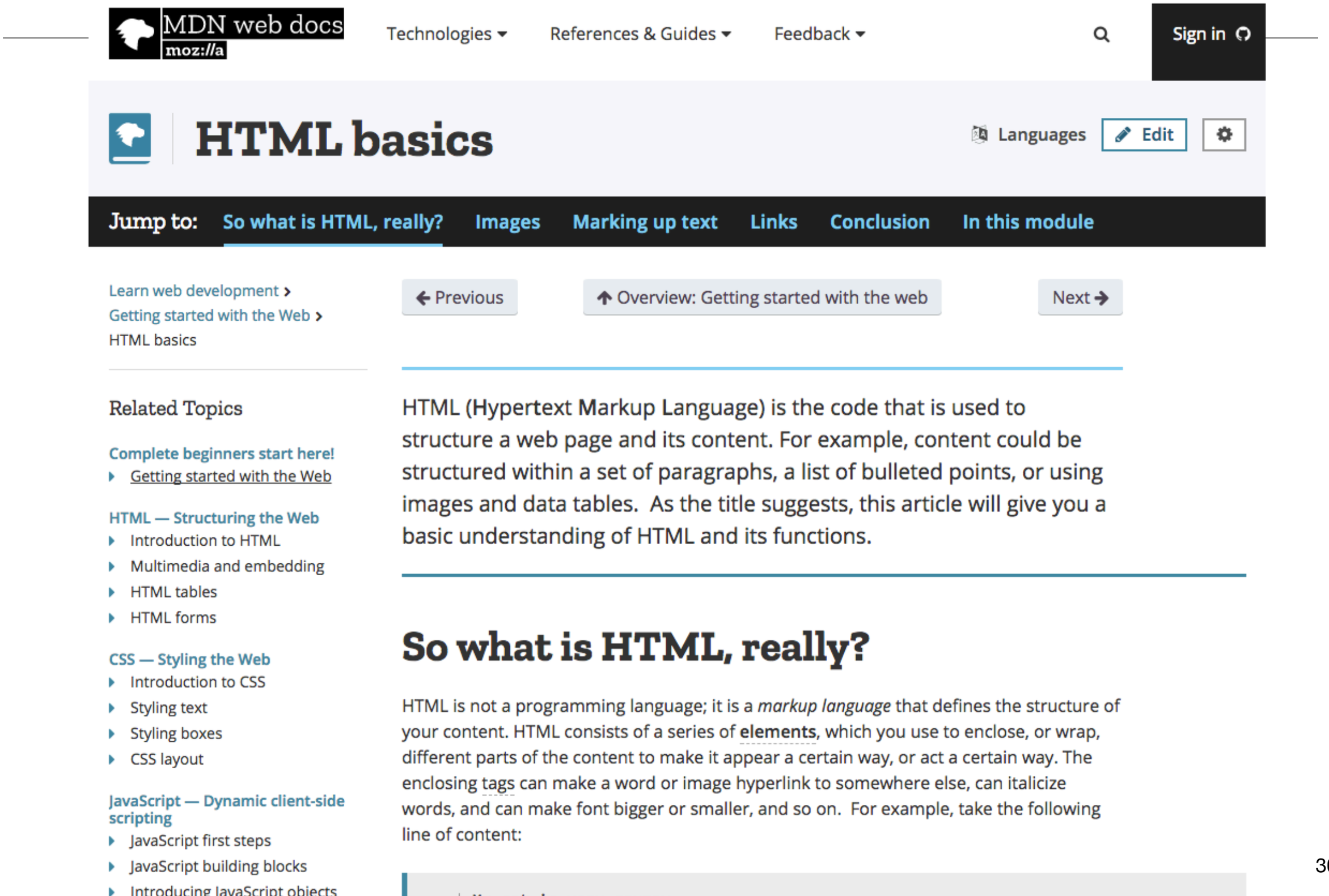
Useful References

Useful Web Resource: MDN Web Docs

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



HTML basics

MDN web docs
moz://a

HTML: Structuring the Web

- Introduction to HTML
  - Introduction to HTML overview
  - Getting started with HTML
  - What's in the head? Metadata in HTML
  - HTML text fundamentals
  - Creating hyperlinks
  - Advanced text formatting
  - Document and website structure
  - Debugging HTML
  - Assessment: Marking up a letter
  - Assessment: Structuring a page of content
- Multimedia and embedding
  - Multimedia and embedding overview
  - Images in HTML
  - Video and audio content
  - From object to iframe — other embedding technologies
  - Adding vector graphics to the Web
  - Responsive images
  - Assessment: Mozilla splash page

HTML basics

MDN web docs
moz://a

HTML: Structuring the Web

- HTML tables
  - HTML tables overview
  - HTML table basics
  - HTML Table advanced features and accessibility
  - Assessment: Structuring planet data
- HTML forms
  - HTML forms overview
  - Your first HTML form
  - How to structure an HTML form
  - The native form widgets
  - Sending form data
  - Form validation
  - How to build custom form widgets
  - Sending forms through JavaScript
  - HTML forms in legacy browsers
  - Styling HTML forms
  - Advanced styling for HTML forms
  - Property compatibility table for form widgets

HTML basics

MDN web docs
moz://a

CSS: Styling the Web

- Introduction to CSS
  - Introduction to CSS overview
  - How CSS works
  - CSS syntax
  - Selectors introduction
  - Simple selectors
  - Attribute selectors
  - Pseudo-classes and pseudo-elements
  - Combinators and multiple selectors
  - CSS values and units
  - Cascade and inheritance
  - The box model
  - Debugging CSS
  - Assessment: Fundamental CSS comprehension
- Styling text
  - Styling text overview
  - Fundamental text and font styling
  - Styling lists
  - Styling links
  - Web fonts
  - Assessment: Typesetting a community school homepage

HTML basics

MDN web docs
moz://a

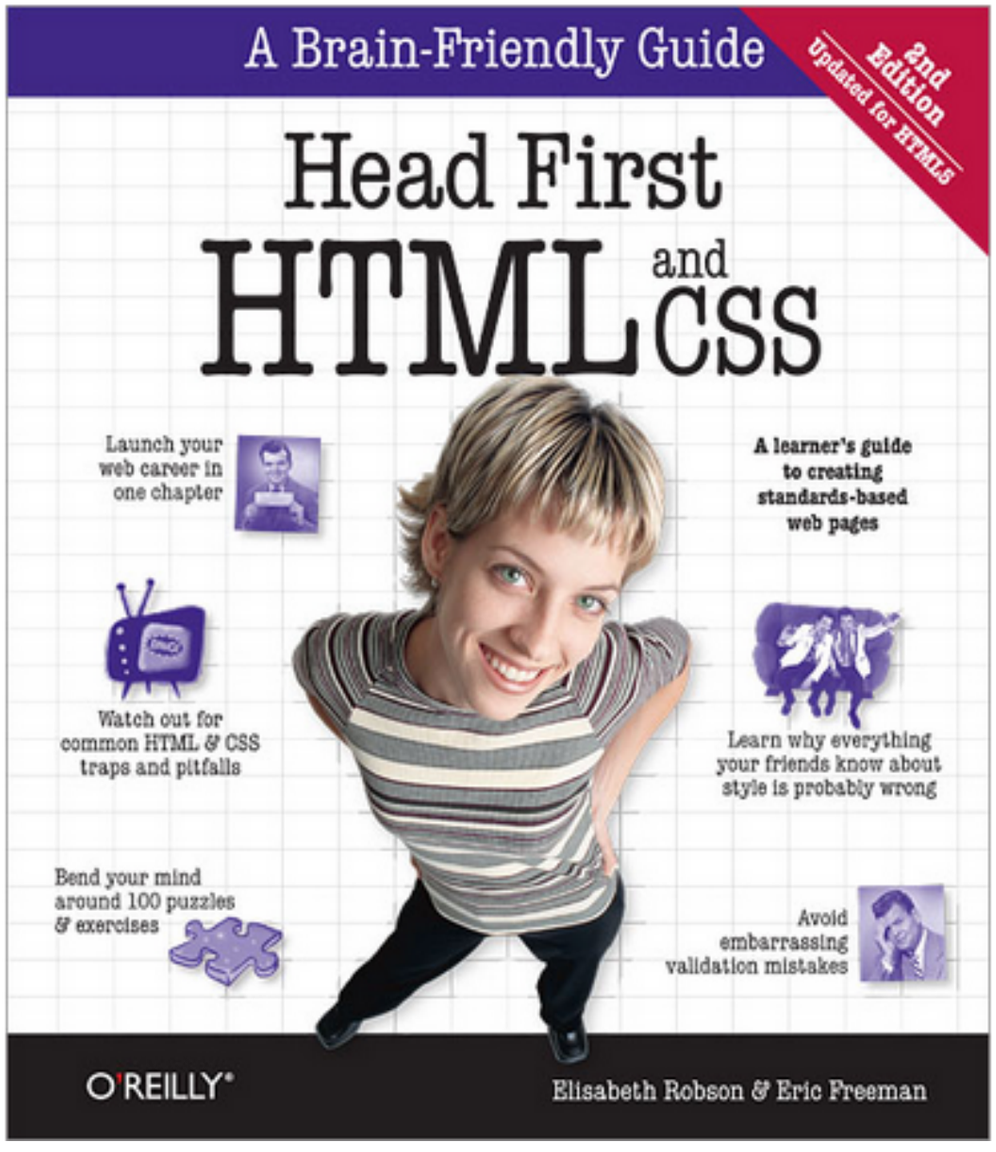
CSS: Styling the Web

- Styling boxes
  - Styling boxes overview
  - Box model recap
  - Backgrounds
  - Borders
  - Styling tables
  - Advanced box effects
  - Assessment: Creating fancy letterheaded paper
  - Assessment: A cool-looking box
- CSS layout
  - CSS layout overview
  - Introduction
  - Floats
  - Positioning
  - Practical positioning examples
  - Flexbox
  - Grids

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
Print: $49.99
Ebook: $39.99
Bundle: $54.99

If you have little or no programming experienc
started with the core concepts of writing computer programs --
functions, and objects --... Read more.

Head First 2D Geometry
By Lindsey Fallow, Dawn Griffiths
November 2009
Print: $19.99
Ebook: $15.99
Bundle: $21.99

Having trouble with geometry? Do Pi, the Pytha
calculations just make your head spin? Relax. With Head First 2
everything from triangles, quads, and... Read more.

Head First iPhone Development
By Dan Pilone, Tracey Pilone
October 2009
Print: $44.99
Ebook: $35.99
Bundle: $49.49

Let's say you have an idea for a killer iPhone a
Head First iPhone Development will help you get your first applic
Read more.

Head First PMP, Second Edition
By Jennifer Greene, Andrew Stellman
July 2009
Print: $69.99
Ebook: $55.99
Bundle: $76.99

Learn the latest principles and certification obje
Fourth Edition, in a unique and inspiring way with Head First PMP
book helps... Read more.

Head First Data Analysis
By Michael Milton
July 2009
Print: $49.99
Ebook: $39.99
Bundle: $54.99

How can you learn to manage and analyze all k
First Data Analysis, where you'll learn how to collect and organiz
more.

Head First Networking
By Al Anderson, Ryan Benedetti
May 2009
Print: $54.99
Ebook: $43.99
Bundle: $60.49

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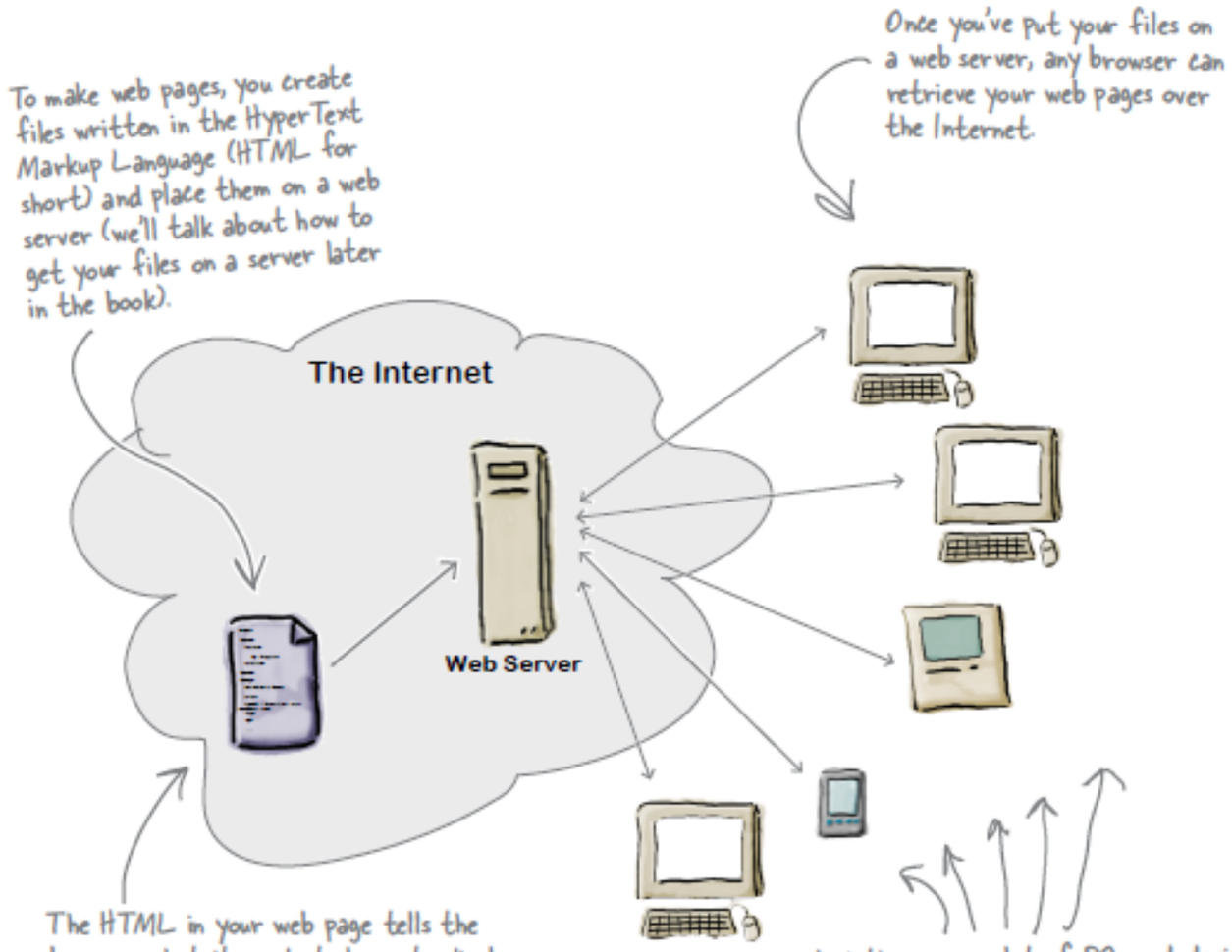
The Web
~~Video~~ killed the radio star

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)
    <img src="drinks.gif">                              (C)
    <p>
    (D)  Join us any evening for refreshing elixirs,
         conversation and maybe a game or
         two of <em>Dance Dance Revolution</em>.        (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.

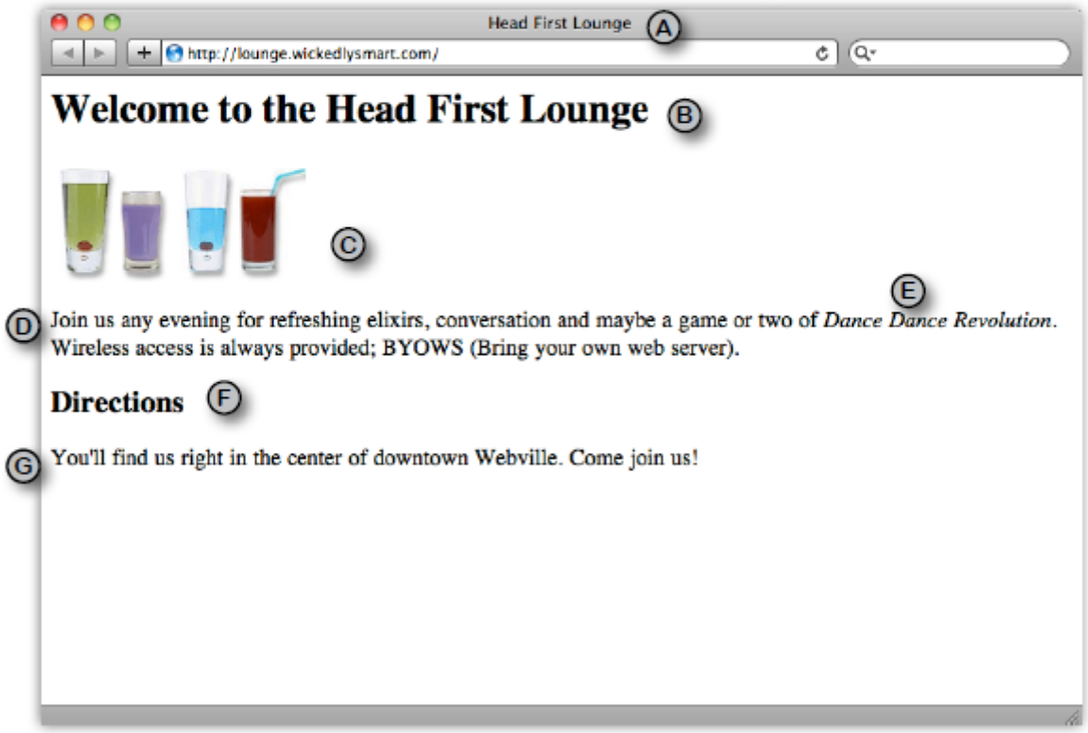
At this point you should just be getting a feel for what HTML looks like; we're going to cover everything in detail in a bit. For now, study the HTML and see how it gets represented in the browser on the next page. Be sure to pay careful attention to each letter annotation and how and where it is displayed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

Notice how each tag in the HTML maps to what the browser displays.



A flavour of the book…