

# Web Technologies

Lecture 2  
HTML and CSS

# HTML

- **Hyper Text Markup Language**
  - Describes web documents
  - Made up of **nested HTML markup tags**
    - <html></html>
  - Tags are the **building blocks** of websites
    - Embedded images and objects
    - Interactive web forms
    - Organized content
  - Each tag describes different **document content**
    - <head></head>
    - <body></body>
  - Web browsers **interpret** the tags and display the result on screen

# Brief History

- **1980** – physicist Berners-Lee (CERN) proposed ENQUIRE a system for sharing documents
- **1989** – Berners-Lee proposed an Internet based hypertext system
- **1990** – Berners-Lee wrote a browser and server for it
- **1991** – 1<sup>st</sup> publicly available description of HTML
  - 18 tags inspired from SGMLSquid
  - 11 are still used in HTML 4

# Brief history

- **1995** – HTML 2.0 specification is created
- **1996** – World Wide Web Consortium (W3C) takes over the specifications
- **1999** – HTML 4.01 specification is published
- **2000** – HTML becomes an international standard (ISO/IEC 15445:2000)
- **2004** – work on HTML 5 begins
- **2014** – HTML 5 standard is finalized

# Markup language

- **System for annotating a document**
- Idea derives from the *marking up* of documents by editors
- Some languages have predefined presentation semantics (HTML) other do not (XML)
- **Classification**
  - Presentational markup
    - Used by traditional word processing editors
    - Markup hidden from users, editors, authors
  - Procedural markup
    - Embedded in text
    - Provides instructions on how to process the text
    - Latex, PostScript
  - Descriptive (semantic) markup
    - Label part of the text rather than providing specific instructions, i.e., decouple the structure from the rendering of the document
    - HTML's tag <cite>

# HTML 4

- SGML application
- Three **flavors**
  - **Strict**
    - Deprecated elements are forbidden
  - **Transitional**
    - Deprecated elements are allowed
  - **Frameset**
    - For frame related elements only
- Major **changes**
  - Adopted many browser specific tags and attributed
  - Began the transition from visual markup tags **to Cascading Style Sheets (CSS)**
    - Old HTML:
      - `<font color="red">Text in red</font>`
    - New CSS:
      - `<p style="color:red">Text in red</p>`

# HTML structure

- **Tags/Elements and attributes**

- `<tagName1 attributeName1="value1" attributeName2="value 2">content</tagname1>`

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/transitional.dtd">
<html>
  <head>
    <title>This is a title</title>
  </head>
  <body>
    <!-- Comment: display text in blue -->
    <p style="color:blue">Hello world!</p>
  </body>
</html>
```

# HTML metadata

- Allows to insert extra information in the document
- Placed inside the <head></head> tag
  - **Character set encoding**
    - <meta http-equiv="content-type" content="text/html; charset=UTF-8">
  - **Keywords and description**
    - <meta name="keywords" content="HTML, CSS, XML, XHTML, JavaScript">
    - <meta name="description" content="Free Web tutorials on HTML and CSS">
  - **Refresh page**
    - <meta http-equiv="refresh" content="30">
  - **Author info**
  - Etc.

# Transitional vs. strict

- **Transitional** is a flavor which enables older version HTMLs to be migrated to version 4
- **Looser content model**
  - Inline elements and direct text allowed in `<body>`, `<blockquote>`, `<form>`, `<noscript>` and `<noframes>` tags
- **Presentation elements allowed**
  - Underline (`<u>`), strikeout (`<s>`), `<center>`, `<font>`, `<basefont>`
- **Presentation attributes allowed**
  - Background, align, bgcolor, vspace, hspace, clear, compact, type, width
- **Other elements**
  - Applet, menu, dir, isindex
- In addition, in the **Frameset flavor** `<frameset>` replaces `<body>` and contains `<frame>` tags
- In the **Strict flavor** the use of CSS is required for cosmetics



# HTML 5

- 28 October 2014 – **specification** is released
- Defines a single markup language which **combines** a series of features introduced by various specifications and browsers
- Encourages **interoperable** implementations
  - What runs on Firefox should run unchanged on IE or Chrome
- “**Living standard**”: can be improved but older features cannot be removed
- 2011 – 34 out of 100 most popular websites used HTML 5
- 2014 – 153 of Fortune 500 US companies used HTML 5 on their websites

# HTML 5

- New syntactic features
  - <video>, <audio>, <canvas>, <svg>
- Removed deprecated tags
  - <font>, <center>
- New page structure tags
  - <main>, <section>, <article>, <header>, <footer>, <aside>, <nav>, <figure>
- Modified existing tags
  - <a>, <cite>, <menu>
- DOM is part of HTML 5
- Not based on SGML anymore
- Includes the Web Forms 2.0

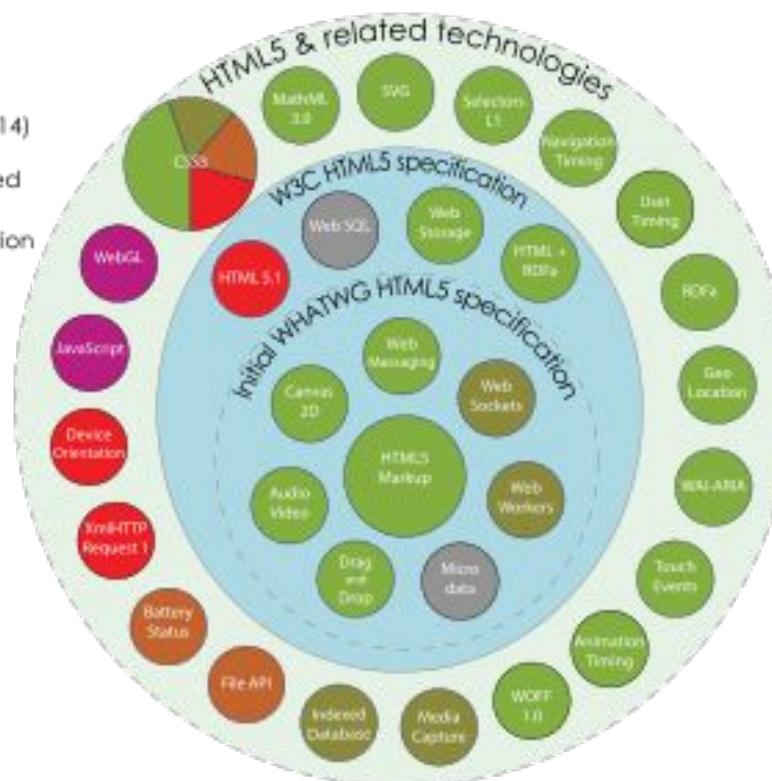
# New APIs

- APIs that can work with Javascript

## HTML5

Taxonomy & Status (October 2014)

- Recommendation/Proposed
- Candidate Recommendation
- Last Call
- Working Draft
- Non-W3C Specifications
- Deprecated or inactive



# More differences

- Simpler doctype declaration
  - <!DOCTYPE html>
- Simpler character encoding
  - <meta charset="UTF-8">
  - Default encoding is UTF-8

# Cascading Style Sheets

- First released in 1996
- Style sheet **language** for describing the **presentation** of a document written in a markup language
  - Not restricted to HTML
- **Separates** the document content from the presentation
  - CSS: all heading 1 elements should be bold
  - HTML: this text should be a level 1 heading

# CSS syntax

- Set of **rules**
    - **Declaration block**
      - Specifies the style sheet
      - Property + value
        - **Example:** *color:red*
    - **Selectors**
      - Declare which part of the HTML the style sheet applies to
        - Elements, classes, pseudo-classes, ids
        - **Example:** *p .myclass { color:red }*  
Colors all p with the class myclass in the red color
- ```
<p class="myclass">Red text</p>
<p>Not red text</p>
<p class="myclass">Another red text</p>
```

# Inserting CSS

- **Inline**
  - `<p style="color:red;font-size:14pt;font-weight:bold">`
- **Internal stylesheet** (as any HTML element)

```
<style>
  p {
    color:red;
    font-size:14pt;
    font-weight:bold;
  }
</style>
```
- **External stylesheet** (in a standalone .css file)

```
<head>
  <link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
```

# Multiple stylesheets

- If an element has more than one stylesheet
  - **Example:** one internal and one in an external file
- The more specific style will be applied
  - I.e., The closest to the element: external → internal → inline

## Example:

- External:

```
h1 {  
    color: navy;  
    margin-left: 20px;  
}
```
- Internal:

```
h1 {  
    color: orange;  
}
```

The style will be

```
color: orange;  
margin-left: 20px;
```



# CSS 3

- Work on the standard started in 1998
- Split in **modules**
- Most modules are **W3C Recommendations** and **many** of the new properties are already implemented in modern browsers
- Old CSS still present
- Still many debates
  - Example: *“The CSS Working Group has reached an impasse on the issue of percentage margins (and padding) in flex and grid layout, and needs your input to help decide it.”* (May 5, 2015 – [www.css3.info](http://www.css3.info))

# New CSS modules

- **New modules**
  - Selectors
  - Box Model
  - Backgrounds and Borders
  - Image Values and Replaced Content
  - Text Effects
  - 2D/3D Transformations
  - Animations
  - Multiple Column Layout
  - User Interface

# CSS 3 primer

- Shadow effects

Property					
text-shadow	10.0	4.0	3.5	4.0	9.5
box-shadow	9.0	10.0 4.0 -webkit-	4.0 3.5 -moz-	5.1 3.1 -webkit-	10.5

CSS 3:

```
h1 {  
    text-shadow: 2px 2px red;  
}
```

HTML:

```
<h1>Test-shadow effect!</h1>
```

## Text-shadow effect!

# What's next?

- Web forms
- XML & XHTML
- Javascript
  - State vs. stateless
- Dynamic HTML manipulation
- AJAX
  - Synchronous vs. asynchronous
- JQUERY