HTML5

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Lecture outline

- HTML5 as a Web Standard
- Basic Elements, Semantic and Visual Markup, MathML, SVG, ...
- Differences between HTML5 and XHTML
- HTML5 DOM
- Relation to CSS and ECMAScript (JavaScript)

HTML5 - The Web Standard

HTML5

- Defines HTML5 language
  - Can be instance of either SGML (HTML) or XML (XHTML).
  - Both syntaxes are allowed.
- Defines detailed processing model supporting interoperable implementations.
- Improves documents markup.
- Introduces web application markup and API.

HTML5

- Objectives:
  - HTML 4 and older - too vague structure.
  - XHTML 1.x - too strict structure.
  - To create standard that combines positive from both specifications.
- Latest version HTML 5.2 [HTML 5.2]
  - Commonly used HTML5

HTML5 Syntaxes

- HTML
  - Backward compatible with HTML 4 and XHTML 1
  - Not fully compatible with SGML HTML 4 specification:
    - Do not support processing instructions.
    - Short markup notation
      - Empty start tag (<>)
      - Empty end tag (</>)
      - ...
    - mimetype text/html

HTML5 Syntaxes

- HTML sandboxed
  - Uses HTML Syntax
  - Suitable for pages from untrusted sources
    - mimetype text/html-sandboxed
- XML
  - XHTML 1 compatible
  - Namespace http://www.w3.org/1999/xhtml must be defined
  - Mimetype:
    - application/xhtml+xml
    - application/xml

Document Type Declaration

- Used by browser to select correct web page rendering mode.
- No other purpose.
- For XML syntax is optional.
- DOCTYPE: <!DOCTYPE html>
- Case insensitive at HTML syntax.
- No reference to DTD.
  - Used by browser to select correct web page rendering mode.

What’s new

- SVG and MathML markup can be placed directly.
- HTML document with SVG figure:

```
<!DOCTYPE html>
<title>SVG in text/html</title>
<body>
 <p>
 Blue ellipse
 <svg>
  <ellipse cx="100" cy="100" rx="90" ry="30" fill="blue"/>
 </svg>
 </p>
</body>
```

Language Changes

- Many new elements added.
  - Structure description:
    - section, article, aside, header, footer, figure,
- Multimedia support:
  - video, audio.

```
<figure>
 <video src="sample.mp4"></video>
 <figcaption>Ukázkové video</figcaption>
</figure>
```

Language changes

- Many new elements and attributes introduced
  - New HTML forms input types
    - Element input attribute type values
  - Omitted some elements:
    - frame
    - frameset
    - noframes
    - ...
  - Omitted some attributes.
  - See specification HTML5 Differences from HTML4 for more.

Language changes

- New attributes:
  - Attribute media on elements a and area
  - Global attribute contenteditable
  - Attribute draggable
  - Element input types values has changed.
  - ...
- Omitted elements
  - frame, frameset, noframes -
    - Frames not allowed to display pages.
    - Reduces accessibility.
  - Font
  - Applet

Language changes

- Omitted some attributes:
  - rev, charset (link, a)
  - longdesc (img, iframe)
  - target (link)
  - align
  - background
  - bgcolor

Language changes

- Added RIA accessibility improving attributes (see WAI ARIA).
  - ARIA roles attributes - values:
    - link
    - button
    - checkbox
    - menuitem
    - ...
  - States and properties attributes (attributes aria-*):
    - aria-atomic
    - aria-busy
    - ...

Language changes

- API
  - Multimedia (video/audio) playback
  - Web application off-line work.
  - Content type processing application registration.
  - Content editing in cooperation with contenteditable cooperation.
  - Using Drag&Drop in cooperation with attribute draggable.
  - ...

Generating HTML5 using XSLT

- HTML 5 document declaration does not contain DTD reference.
- Document declaration is used only to select proper HTML5 rendering mode.
- The document type declaration

  <!DOCTYPE html SYSTEM 'about:legacy-compat'>

  <xsl:output method="html" doctype-system="about:legacy-compat" encoding="UTF-8" indent="yes"/>
- When using saxon 9.4+

  <xsl:output method="html" version="5.0" encoding=UTF-8" indent="yes"/>
- Should not be used if the short version can be generated.

HTML5 Resources

- HTML5 specification.
- XHTML 1.0, HTML 4 and HTML5 differences
- HTML5 devoted pages
  - html5tutorial
  - Canvas tutorial
  - HTML 5 tag reference na w3schools
- GUG Brno meating presentation of HTML5
  - Fully operational in Google Chrome and Safari, viewable in Opera.
- HTML5 support testing On-line tool.
- ...

HTML5 DOM

HTML DOM

- What is HTML DOM?
  - Object oriented representation of web page.
    - Defines document logical structure.
    - Based on W3C DOM
    - General API for XML processing.
    - A set of interfaces and objects designed for managing HTML and XML documents.
  - API for HTML processing.
    - Closely tied to Java and JavaScript.
    - Allows programmer to create, navigate and modify document content.
- DOM originated as a specification to allow JavaScript script and Java programs to be portable among web browsers.
  - Also influenced by SGML.

HTML DOM

- What the HTML DOM is not?
  - Although DOM is influenced by Dynamic HTML, in Level 1 does not implement all Dynamic HTML.
  - It’s not binary specification – it’s source code in particular language compatible across platforms.
  - It’s not way to persist objects into XML or HTML.
  - It’s not set of data structures.
  - DOM does not define “the true inner semantics” of XML or HTML.

DOM Interfaces and Objects

- Many objects are based on several interfaces:
  - Node
  - Document
  - Element
  - Entity
  - EntityReference
  - Event
  - Text
  - … (see DOM Documentation)

DOM and CSS

- Cascading Style Sheets
  - Used to visualize (X)HTML and XML Data
  - Describe various visual properties of document elements.
  - CSS Selector corresponds to the path in DOM