

Development of Internet Applications

HTML5

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What is HTML5?

- HTML5 is direction the web is moved – future of web applications and development
- HTML5 is multiplatform
- HTML5 is not only marketing
- HTML5 is not XML
- HTML5 is not usable for everything
- HTML5 is still in progress
 - HTML5 Markup Last Call 24th May 2011



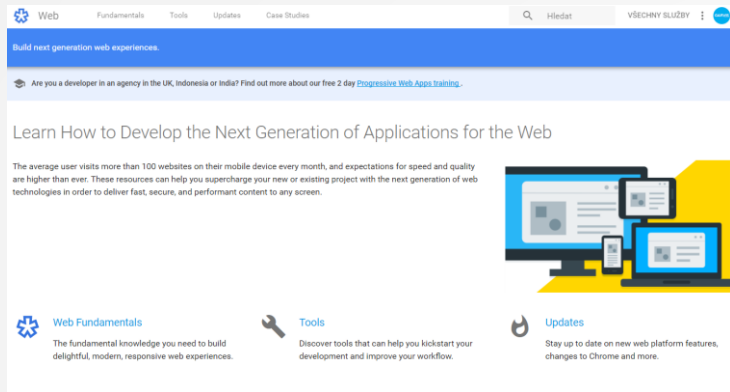
History of HTML5

- 1991 – HTML tags
- 1999 – HTML 4.01
- 2000 – XHTML 1.0 – future of the web
- 2002 – XHTML 2.0
- 2004 – WHATWG
 - Web Hypertext Application Technology Work Group
 - Based on Apple, Google, Mozilla, Opera
- 2007 – HTML Design Principles, HTML5 Draft
- 2009 – W3C finish XHTML 2.0 and focused on HTML5
- 2012 – W3C Candidate Recommendation
- 2014 – W3C Recommendation – HTML 5.0
- 2016 – W3C Recommendation – HTML 5.1

<http://html5please.com/>, <http://caniuse.com/>

Fundamentals of HTML5

- HTML5 = HTML + CSS + JS
- More straightforward and easier way for description of the web
- Open and still clear interpreted – specification of the result is more important than specification of input
- New possibilities
 - interactions with user
 - Visualization and multimedia
 - Usage of hardware sources
 - Semantic web
- HTML5 and XHTML
 - Close relation, XHTML rules can be used, XHTML 2 still exists



<https://developers.google.com/web/>

DIVE INTO HTML5

BY

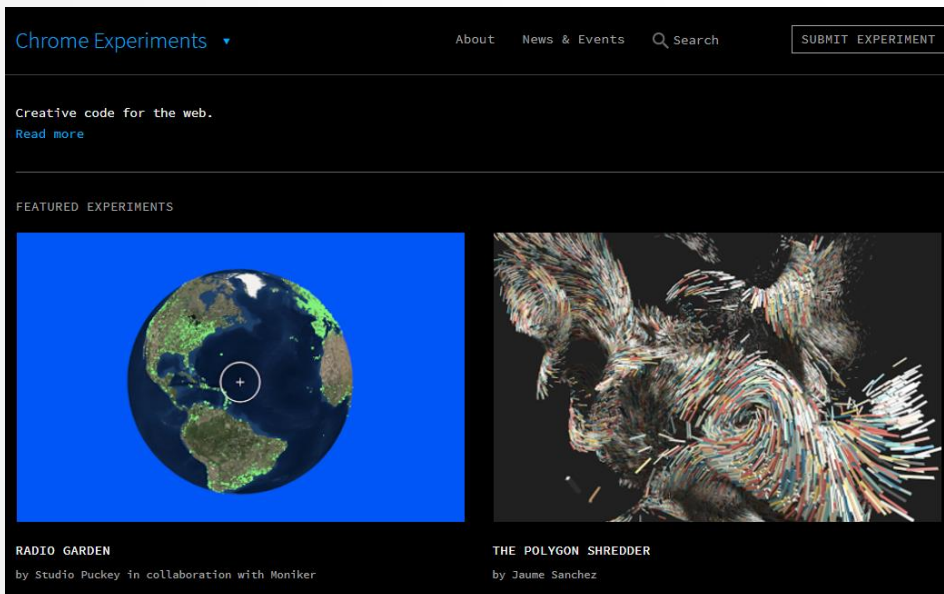
MARK PILGRIM

<http://diveintohtml5.info>

WITH CONTRIBUTIONS FROM THE COMMUNITY



<https://experiments.withgoogle.com/chrome>



HTML5 DOCTYPE

- **HTML5**

- `<!DOCTYPE html>`

- **XHTML 1.0 Transitional**

- `<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">`

Script, style and link

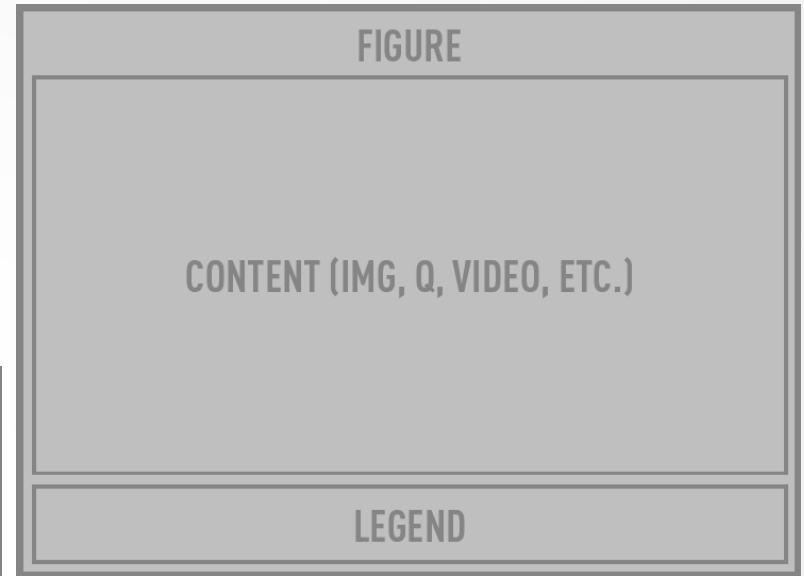
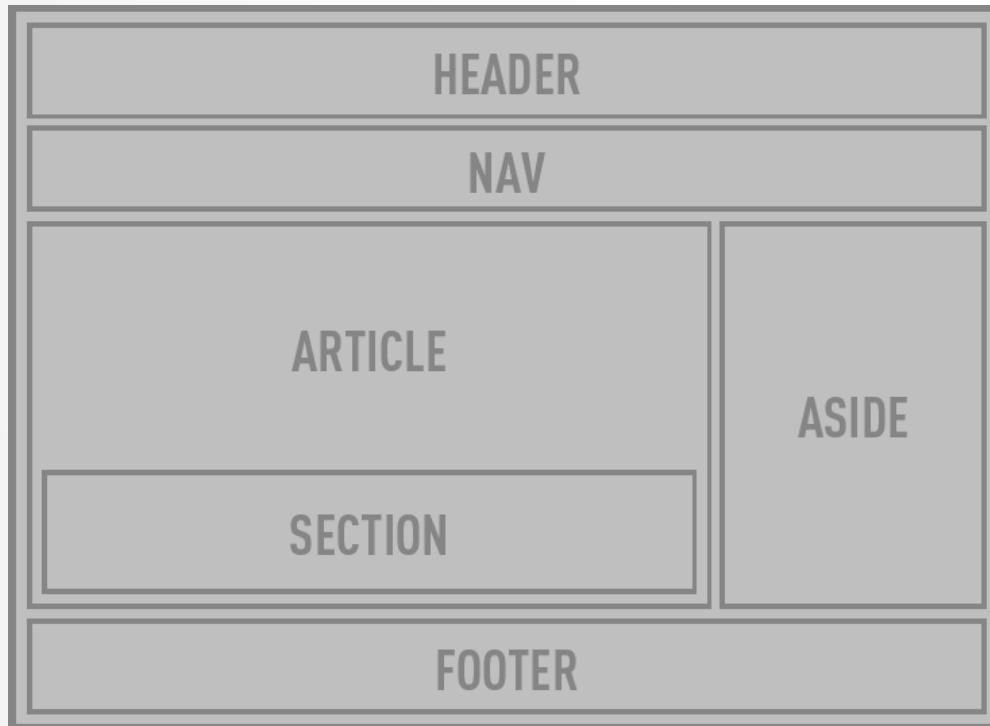
- HTML5

- `<script>`
// Code here.
`</script>`

- XHTML 1.0 Transitional

- `<script type="text/javascript">`
`/* */</code>
// Code here.
<code>/* */`
`</script>`

Structural elements with semantic

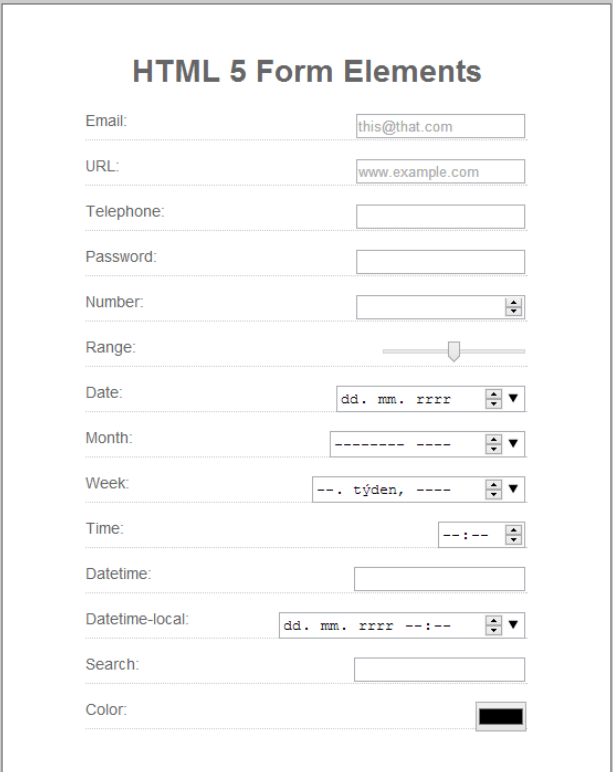


New elements

- METER
- PROGRESS
- DETAILS & SUMMARY
- TIME
- COMMAND
- DATAGRID
- DATALIST
- OUTPUT
- RUBY
- ADDRESS
- SECTION
- HGROUP
- MENU

New inputs within forms

- `<input type="date" />`
 - `<input type="datetime" />`
 - `<input type="email" />`
 - `<input type="month" />`
 - `<input type="number" />`
 - `<input type="range" />`
 - `<input type="tel" />`
 - `<input type="time" />`
 - `<input type="url" />`
- Included integrated validation and input control (mobile devices)
 - Multiple upload
 - <http://nativeformelements.com/>



The image shows a screenshot of a web form titled "HTML 5 Form Elements". The form contains several input fields demonstrating different HTML5 input types:

- Email:** A text input field containing "this@that.com".
- URL:** A text input field containing "www.example.com".
- Telephone:** A text input field.
- Password:** A text input field.
- Number:** A text input field with a spinner control on the right.
- Range:** A range slider control.
- Date:** A date picker control showing "dd. mm. yyyy".
- Month:** A month picker control showing "-----".
- Week:** A week picker control showing "--. týden, ----".
- Time:** A time picker control showing "--:--".
- Datetime:** A text input field.
- Datetime-local:** A datetime-local picker control showing "dd. mm. yyyy --:--".
- Search:** A text input field.
- Color:** A color picker control showing a black color swatch.

Multimedia

- `<video controls/>`
 - `<source src="test.mp4" />`
 - `<source src="test.ogg" />`
- `</video>`
- Native player within browser
- Problems with formats/codecs
 - H.264 – IE, Chrome, Safari (licencováno)
 - OGG – Firefox, Opera -
 - WebM/VP8 – Google, Mozilla, Adobe
- Similar with audio element

Canvas & SVG

- Canvas
 - Area for drawing
 - Set of drawing commands for bitmap 2D graphics
 - Performance - setTimeout/RequestAnimationFrame
 - 3D is not a part of canvas - WebGL
- SVG
 - Vector image format based on XML
 - Access based on DOM, everything is modified directly within the web browser

Microdata and Custom data attributes

- Microdata

- Successor of microformats, the goal is to include some semantic within the HTML code
- Attributes itemscope, itemtype and itemprop
- Relations to vocabularies www.schema.org

```
<li itemscope itemtype="http://data-vocabulary.org/Breadcrumb">  
  <a href="http://www.example.com/" itemprop="url">  
    <span itemprop="title">Example.com</span>  
  </a>  
</li>
```

- Data attributes

- Own attributes can be placed to all elements – prefix: **data-**

```
<ul id="semena-zelenina">  
  <li data-rozestup="10cm" data-cas-setby="Březen až červen">Mrkev</li>  
  <li data-rozestup="30cm" data-cas-setby="Únor až březen">Celer</li>  
  <li data-rozestup="3cm" data-cas-setby="Březen až září">Ředkvičky</li>  
</ul>
```

API

- ECMAScript 5 is a basis
- Next versions ECMAScript 6 – 8 (classes, etc.)
- Asynchronous script loading
- DataURI – included Base64 data as a source for linked multimedia

- Problem with standardization and development according to web browsers

- <https://tc39.github.io/ecma262/>

API

- Drag and drop – attribute draggable
- Editace obsahu – attribute contenteditable
- GeoLocation
- Offline mode – cache storage, cache manifest
- Web Sockets – bidirectional communication based on HTTP protocol
- Web Workers – way how to develop threads, no access to DOM, based on messages
- Communication among documents - messages
- Storage – local storage with simple API or based on database principles
- www.html5test.com

CSS3

- Natural HTML5 addition
- Everything is able to style, including video, audio or canvas elements
- Still in development, usage of vendor-prefixes, <http://www.w3.org/Style/CSS/current-work>
- Media Queries
 - @media screen and (min-width: 600px) and (max-width: 900px)
- New selectors and pseudo-selectors
 - :nth-child(N), :first-of-type

CSS3

- Colors – opacity, rgba, hsl/a, gradients
- Backgrounds – size, behavior, multiple backgrounds
- Borders – colors, images, rounded corners, shadows
- Text – wrapping, shadows, columns layout, custom fonts (otf, eot, ttf)
- Transformations (2D, 3D) – rotation, size, bevel, move
- Transitions and animations