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Web technology for web development

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Abstract: The general idea of the new version of Hyper Text Markup Language (HTML) and other tools presented in this paper is the establishment of uniform solutions for technologies and functions which have already been in use by various plugins proposed by developers. Many of these functions are now implemented in browsers. Latest version of HTML also introduces semantic markup, which can be used for marking the document structure as well as its elements and data. The new version of HTML enforces separation of the content of the page from its style. The latest version of CSS has a modular structure, in which different modules define different styling features. The development cycles of the individual modules are independent, their support and implementation in various browsers.

Keywords - CSS3, HTML5, JavaScript, Web forms 2.0, World Wide Web

I. INTRODUCTION

The concept of the World Wide Web is concurrently tied with the Hyper Text Markup Language (HTML) the language for describing web pages. HTML uses markup tags for describing structural semiology of a web page by denoting its elements: lists, paragraphs, headings, tables, sections, collective forms and others. Elements with their corresponding attributes can be nested one in another, creating a typical tree structure. HTML empowers also the inclusion of external resources into web documents, such as videos, images and other objects, which is also become parts of a web page. One of the good practices in current web development are separate definition of style and structure.

The structure of web pages and their contents are defined in HTML, while its final presentation and style are in the domain of CSS. Such division enables better flexibilities and control over the final coming into view of a web page, and it also reduces the complexity of HTML record and eliminates the redundancy in style definitions. The separation of the content from the style enables more web pages to share the same style and also a single page to use many styles at the same time.

Further CSS, a scripting language JavaScript is frequently used in combination with HTML. JavaScript is interpreted by a web browser and provides web page with dynamics and interactivity. The JavaScript code can interrelate with the DOM (Document Object Model) through the various API (Application Programming Interface) library based on a mechanism of user-triggered events.

In the 1990s majority of web pages were static and intended primarily for reading and browsing while the first decade of the new century brings more dynamic web pages and applications. Users neither browse the Web nor contribute to it by producing and up-loading their own content. The called Web 2.0 evolved and brought some major changes in web development. The new way of interaction with Web calls also for the evolution of web languages with the main intention to formalize some already established good practices in web development.

The new version of hypertext markup language by presenting its new elements and extensions. We list also some most essential JavaScript APIs which enable an entirely new way of web development by providing a browser based database, information on geolocation, full-duplex communication between a browser and a server and other new features. Besides, we point out also some new options in the CSS syntax numerous new design options and also simplify and standardizes some features that have been available before but suffered from poor browser support.

II. BACKGROUND

HTML 1.0 was released in 1993 with the intention of sharing information which will be clear and accessible via web browsers. however not several of the developers were concerned in making websites. Therefore the language was also not growing.

Then comes the HTML 2.0, published in 1995, that contains all the options of HTML1.0 along with that few extra options, that remained because the standard language for coming up with and making websites till Jan 1997 and refined various core features of HTML. Then comes the HTML 3.0, wherever Dave Raggett who introduced a recent paper or draft on HTML. It enclosed improved new features of HTML, giving a lot of powerful characteristics for webmasters in coming up with web pages. However these powerful features of latest HTML over-involved the browser in applying further enhancements. Then comes HTML 4.01, that is wide used and was a successful version of HTML before HTML 5.0, that is presently currently and used worldwide.

Without CSS web pages are plain and much from inspirational. Words scroll across the entire page and are difficult to read. But, before CSS that's specifically what web pages gave the look of. The introduction of CSS is part responsible for however the web looks and feels nowadays. And, far from being created and so finished, it's a frequently evolving language.

CSS (1996) allows the user to select font style and size and change the color of the text and background. CSS2 (1998) has capabilities that permits the user to design page layout. CSS3 (1999) allows the user to form displays from documents and to select from a wider range of fonts as well as those from Google and Typecast. Uniquely, CSS3 permits the user to include rounded borders and use multiple columns. CSS3 is taken into account to be easier to use (when compared to CSS2) because it's completely different modules

III. HTML5

HTML (Hyper Text Markup Language) is in the continuous development since it is introduction in the early 1990. The majority of its choices and functionalities square measure made public through specifications, but a number of them unit together results of sensible development practices and also the implementations of machine readable text nomenclature inside the fashionable browsers. the particular machine-readable text nomenclature version - HTML4 has been in use for just about a decade. per W3C (World Wide net Consortium) one in all of} the huge disadvantages of HTML4 is that "it does not offer enough knowledge to form implementations that interoperate with every various and, plenty of considerably, with a vital mass of deployed content. identical goes for XHTML1, that defines associate XML publication for HTML4, and DOM Level 2 machine-readable text nomenclature, that defines JavaScript genus for every machine-readable text nomenclature and XHTML". so as to present higher flexibility and skill of the machine-readable text nomenclature implementations and at constant time produce net pages plenty of interactive and providing higher user experience, the event of HTML5 began at intervals the WHATWG (Web electronic text Application Technology Operative Group) initiative and conjointly the W3C organization. the event is based on the study of the present HTML4 implementations, sensible practices and analyses of the already deployed web site.

HTML5 square measure backward compatible with HTML4 and XHTML1, supporting every, machine-readable text nomenclature and XML (Extensible Markup Language) syntax. it's going to together introduce new interfaces to support trendy trends, like loaded web applications (RIA). Currently, these interfaces swear powerfully on the employment of difficult JavaScript code and proprietary plug-ins, like Adobe Flash, Microsoft Silverlight and Sun JavaFX. the final set up taught by the web developers is to implement the key functionalities for such interfaces in browsers themselves and deduct the dependence on varied proprietary plugins. it's expected that HTML5 will bring home the bacon the candidate for recommendation standing in 2012 and become a recommendation in 2022. The work on HTML5 will not be completed notwithstanding inside ensuing few years, plenty of and plenty of its functionalities unit supported by net browsers.

3.1 Changes in the Language

The most of web pages this day uses common structures such as headers, footers and sidebars to denote the semantic structure of the pages. Because HTML versions in uses today do not provide particular markup for this purpose, web developers use div and span elements, assigning them a unique id or arranging them into classes. HTML5 introduces a group of recent parts, that permit linguistics marking of the document structure. They represent more particular replacement for the general div and span element.

HTML5 introduce few other new elements, among which is the most interesting are:

- elements are support multimedia and graphic con-tent: video, canvas audio and audio.
- embed is used for the immerse content, handled by the plugins;
- elements for the display of quantities (progress, time, meter etc.);
- ruby for specify annotations which are used in East Asian typographies.

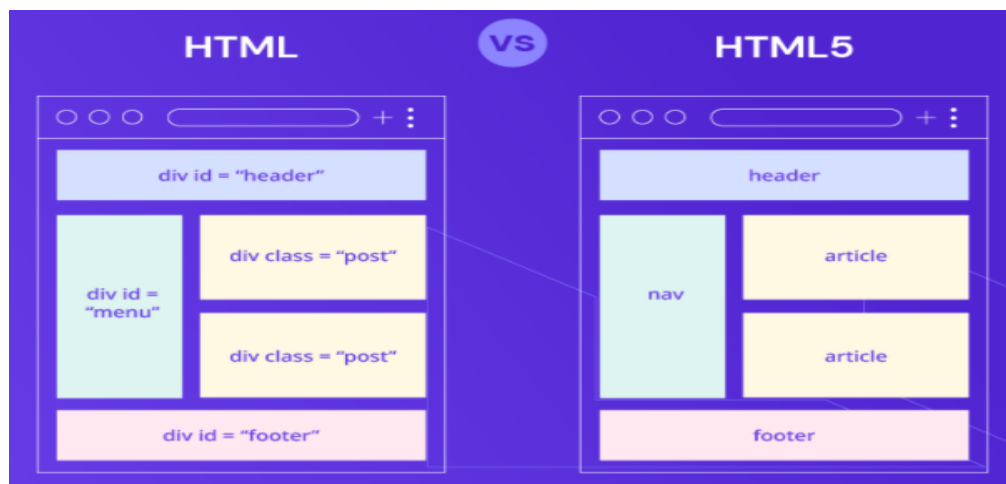


Figure 1. Current (using div elements) and the new approach to structuring a web page.

New technology for web development 275 HTML5 enforces strict partition of content and styling of a web page, which is manifested in the absence of the presentational attributes (e.g. align, border, height, size) and elements (e.g. font, center, u, strike). Pages styling and design can be done with CSS. Frames are not supported in HTML5, due to their negative impact on the us abilities of a web pages. The elements and area have a new attribute called ping. It defines the URLs (Uniform Resource Locators), where a browser can send a notifications when the users visit hyperlink. The user tracking is today mostly performed through the server-side redirects, which causes a long waiting for selected pages. The ping attribute empower the user agents to inform the user which addresses will be notify. In case of privacy concerns a user can turn off the notifications while he or she cannot influence the swing. The other newness in HTML5 include new global attribute, relations in elements link and events and many other.

3.2 Web Forms

Web forms enable to communication between a web client and web server. The data in the forms entered by the users is sent to a server which is responds according to the received values (e.g. returns the result of the search). The choice of the widgets used in forms is limited. One of the good web development practice is the validation of more complex data on the client side. The latter is preformed using JavaScript and any another client side scripting languages. To provide new form widgets and to avoid validation of data on two sides, several custom form widgets were developed that can be used through third-party JavaScript library. The developer required have encouraged the development of a new generation of Web forms, called Web Forms 2.0, which is found their way into HTML5 specifications. New widgets are introduced new values of the attribute type of the input elements (search, url, emails, date time, date, months, week, time, date time-local, tel, number, range, color). further new widgets, HTML5 also introduces the increase of the existing ones as well as the automatic validation of the entered data. Regarding forms two or more novelties should be mentioned in this context. The first one has to do with the form elements which do not have to the descendants of the form element anywhere. They can be placed everywhere in the HTML document instead and linked to a proper form by using their new form attributes. The second novelty concerns the use of the Hyper Text Transfer Protocol methods when sending data to the server. apart from GET and POST in HTML5 also PUT and DELETE methods are supported.

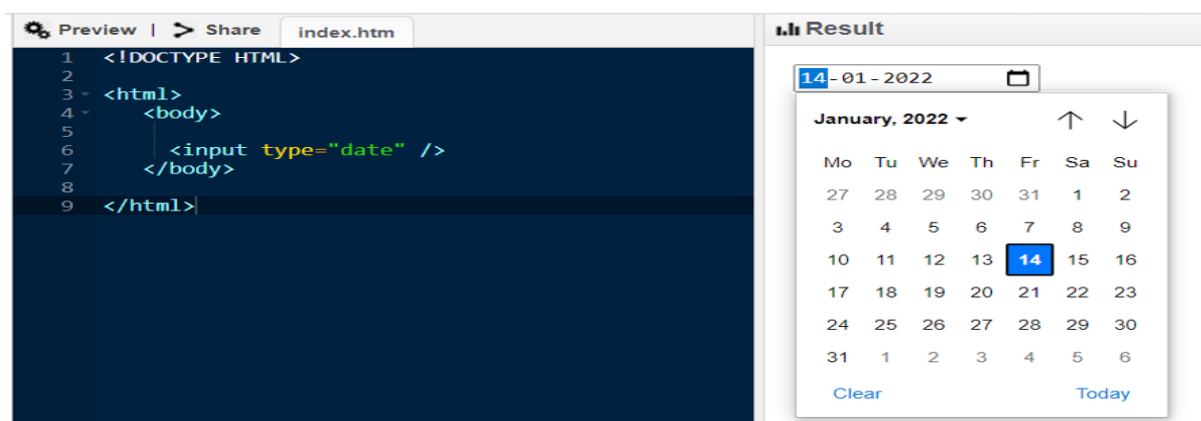


Figure 2. New date form widget

3.3 Semantics

The HTML tags are intended for report how to display the information and not what this information means. An important mode on the Web is the introduction of semantics into the resources. further defining the document structure in HTML5 the definition markup is used also for recording microdata and assistive technology for disabled users.

3.4 Microdata

The mechanism of microdata enables the information in HTML documents, primarily intended for the end users (contact information, location information etc.), to be machine readable and can be used for automatic processing Ex- for indexing, searching, storing, cross referencing, analyzing etc.

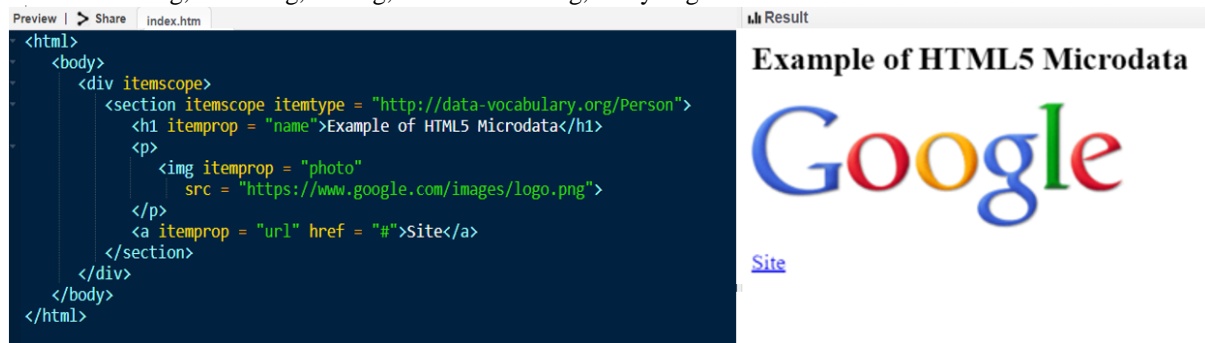


Figure 3. Example of using microdata.

The model of microdata is consist of groups of properties named items. The items and their properties are presented in the context of the live elements. An item can be created using the item scope attributes in any element. Each item has it is own type (item type), a global identifier (item id) and a set of name value pairs. The itemprop attributes can be used in any of the items descendants to express a property, while the value of this attribute denotes the value of the properties.

3.5 Accessibility

A significant portions of the Web contents is currently unreachable to users with disabilities, especially to those that depend on assistive tools, for example screen readers and Braille keyboards. The most problems for such tools is reading and interpreting the content which is uses advanced, frequently updated user interfaces developed with the combination of the technology AJAX (Asynchronous JavaScript and XML) HTML and JavaScript. The efficient technologies do not properly understand the roles, states and properties of such widgets and cannot follows the dynamically updating contents on the web pages.

The overcome this problem, the Web Accessibility Initiative (WAI) started the ARIA (Accessible Rich Internet Applications) project. ARIA specifications define a semantic models, which enables the authors to semantically describe the widgets and their behavior, documents structure and the areas that will be updated. In this way, the usable technologies would gather enough information to make advanced web applications usable also to people with disabilities.

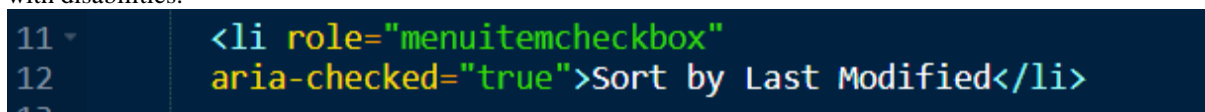


Figure 4. Example of using ARIA attributes

The list item element is assigned a role (with the role attribute) of the elements that acts as a checkbox items. It is initial property checked is set to true (using aria-* set of attributes). Using JavaScript, the attributes could be changed according to user actions. According to the definition model authors can appoint the roles the elements have on the page and define their states and properties. States and properties define the elements current exposition state and property and can therefore change from time to time while on the other hand a role remain unchanged when the pages updates.

3.6 Audio and Video

Before HTML5, playing of audio and video contents in a browser has only been possible by the use of third-party plug-ins with the Adobe Flash being the leading technology. Besides introducing new elements for embedding audio and video contents in a web page, HTML5 also defines an interface for manipulation with such content without the need for plugins. The general solution was the choice of a typical format supported by all browsers. the fundamental demand for such format was that it ought to not be proprietary. It ought to conjointly have smart compression and image quality as well as tiny process necessities. A hardware resolution for the decryption ought

to conjointly exist. Instead of more popular MP3 and H.264, the W3C organization chose for audio and Ogg Theora for video records, mainly because they are both license-free, which is not true for the rival MP3 and H.264. Despite everything mentioned, the particular draft of the HTML5 specifications will not specify either a default format or the other formats that ought to be supported by the browsers. the ultimate agreement between the W3C and browser vendors has ne'er been reached. thus vendors singly choose the formats inbuilt their browsers. Apple doesn't support the Ogg Theora in its campaign browser, due to the lack of the hardware acceleration and some uncertainties relating to the patents. On the opposite hand, Mozilla Foundation and Opera oppose to the employment of H.264 due to the costly licensing. Google's Chrome supports each Theora and H.264. The latter, however, cannot be enclosed in the open supply project Cr and is supported largely as a result of it's employed by Google's YouTube, that is the World's most vital video portal. The latter, however, cannot be enclosed in the open supply project Cr and is supported largely as a result of it's employed by Google's YouTube, that is the World's most important video portal.

3.7 Graphic

In the recent web development the graphic rendering on the net pages has solely been doable with the aid of plug-ins, like Flash or Silverlight. With the HTML5, the practicality required for graphical rendering is implemented in browsers in the type of Canvas and SVG (Scalable Vector Graphics) technologies. The graphical parts square measure utterly integrated into HTML and also are a section of the document object model (DOM). Their vogue will be outlined through CSS and will be manipulated through the JavaScript. Canvas permits dynamic rendering of graphics, e.g. graphs, electronic image pictures, animations and games, victimization scripting. The canvas part and its attributes breadth and height outline a show region, that is then accessible through JavaScript code victimization Canvas API drawing functions. Canvas doesn't differentiate between the objects within the graphic and will not contain the relations between these objects (such as DOM). The basic parts of canvas graphic square measure pixels. The rendered graphic is there-fore final and can't be rescaled. The individual graphic objects can't be accessed, manipulated or interacted. In order to create any changes, the whole graphic should be redrawn. The basic Canvas API permits second rendering. 3D rendering are doable victimization the online customary Web GL. though the Web GL is still in the development, it is by experimentation supported in most fashionable browsers. HTML5 supports additionally browser-native rendering victimization SVG (Scalable Vector Graphics). SVG is associate degree XML-based language for describing second vector graphics. in contrast to Canvas, SVG permits rendering in high resolution at any level of magnification due to its vector nature. Today, SVG is used largely for displaying static contents (maps, plans etc.) with the help of browser plugins. SVG is based mostly on a special XML object model through that the individual graphic objects will be accessed and manipulated victimization JavaScript. SVG permits additionally interactivity by victimization event-handlers as-signed to any SVG graphic object.

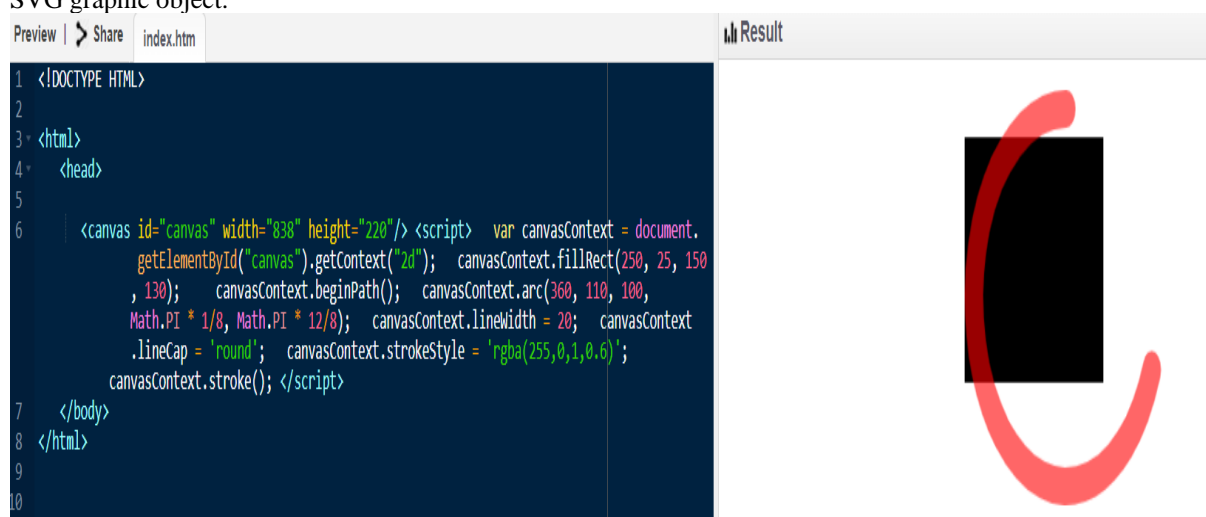


Figure 5. Canvas element and the manipulation of its content using JavaScript (adapted from [10])

IV. CSS (CASCADING STYLE SHEETS)

The markup languages area unit used primarily to outline basic structure of internet documents and pages whereas on the different hand the final presentation and rendering area unit sometimes outlined with CSS a mode sheet language that defines presentation linguistics. The technique of planning sites with CSS is sort of fourteen years recent with the CSS a pair of.1 being the leading normal for the last twelve years. It is wide supported by the majority of internet browsers, and it evolved quickly over the last decade. In conjunction with the new markup

languages the new CSS area unit being projected yet CSS3 is that the new potential normal presently within the state of operating draft or candidate recommendation. The huge specification of CSS3 normal is split into many modules that area unit developed singly with completely different progress speeds DOM.

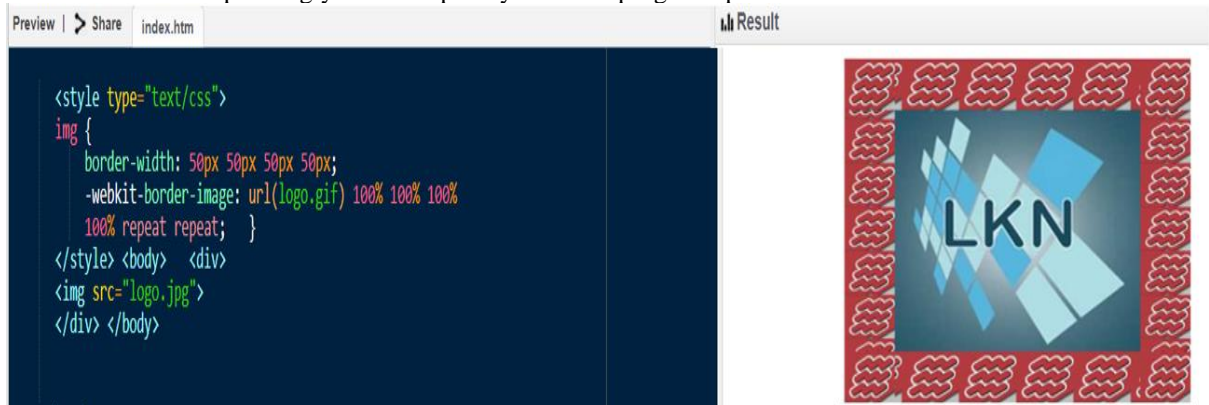


Figure 6. Use of one image as a border of the other image

V. CONCLUSION

The general plan of HTML5 and alternative tools conferred during this paper is that the formal specification and therefore the institution of uniform solutions for technologies and functionalities that have already been in use through numerous hacks and plug-ins planned by internet developers. The bulk of fashionable made, and interactive internet styles was based mostly on Adobe Flash technology that was supported by all major browser vendors. The Flash plug-in offered Associate in Nursing glorious support for multimedia system content, particularly animations and animated interfaces. HTML5 simplifies the implementation of such practicality through native browser support. The new notable trend on the internet nowadays is the introduction of linguistics in internet documents. The website is formed and designed primarily to be scanning and understood by people; thus a laptop cannot offer any in depth facilitate by analyzing, looking out and process the knowledge. The introduction of linguistics can eventually lead to the third generation of internet, the supposed linguistics internet. New development practices, made website and therefore the would like for linguistics in internet documents area unit already manifesting themselves in observe.

Besides some changes in Hyper Text Markup Language syntax and vocabulary, the foremost vital new options in HTML5 area unit the introduction of linguistics within the kind of microdata and ARIA attributes, support for RIA by delivery new kind widgets, support for multimedia system and dynamic graphic rendering.

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REFERENCES

- [1] HTML5 differences from HTML4, W3C Working Draft, 24. 6. 2010, <http://www.w3.org/TR/html5-diff/>
- [2] HTML5, A vocabulary and associated APIs for HTML and XHTML, W3C Working Draft, 24. 6. 2010, <http://www.w3.org/TR/html5/>
- [3] Web Workers, Editor's Draft, 25. 6. 2010 <http://dev.w3.org/html5/workers/>
- [4] The Web Sockets API, W3C Work. Draft, 22. 12. 2009, <http://www.w3.org/TR/websockets/>
- [5] JavaFX, <http://javafx.com/>
- [6] Geolocation API Specification, W3C Working Draft, <http://www.w3.org/TR/geolocation-API/>
- [7] WHATWG Wiki, Implementations in Web browsers, http://wiki.whatwg.org/wiki/Implementations_in_Web_browsers
- [8] HTML Microdata, W3C Working Draft, 24. 6. 2010, <http://www.w3.org/TR/microdata/>
- [9] Accessible Rich Internet Applications (WAI-ARIA) 1.0, W3C Working Draft, 15. 12 2009, <http://www.w3.org/TR/wai-aria/>
- [10] HTML5, Web Development to the next level, html5rocks.com, <http://slides.html5rocks.com/>
- [11] Cascading Style Sheets, Current Work <http://www.w3.org/Style/CSS/current-work>
- [12] WebSimpleDB API, W3C Working Draft, 29.9.2009, <http://www.w3.org/TR/WebSimpleDB/>
- [13] A. Trivero: Abusing HTML 5 Structured Client-side Storage, <http://trivero.secdiscovers.com/html5whitepaper.pdf>
- [14] A. Ranganathan: Beyond HTML5: Database APIs and the Road to IndexedDB, Mozilla.org, <http://hacks.mozilla.org/2010/06/beyond-html5-database-apis-and-the-road-to-indexeddb/>