ISSN:0975-9646

Ch Rajesh, et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 5 (2) , 2014, 2408-2412

Research on HTML5 in Web Development

[1]Ch Rajesh, [2]K S V Krishna Srikanth

[1]*Department of IT, ANITS, Visakhapatnam*

[2]*Department of IT, ANITS, Visakhapatnam*

***Abstract*—HTML5 is everywhere these days. HTML5 is the new and elegant standard for HTML that provides web users and developers enhanced functionality. The older versions of HTML, HTML 4.01, which came in 1999, and the web development have changed notably since then. HTML 4, XHTML, CSS and the HTML DOM Level 2 are now replaced with HTML5. It was brought to deliver rich content without the need for additional plug-ins and proprietary technologies. The new power of HTML5 supplies the user everything from animation to graphics, music to movies, and can also be used to build complicated web applications and also supports cross-platform. HTML5 standard initiates the development of real-time collaborations in web browsers, which leads to less work for web developers.**

***Keywords*—Web, users, HTML, HTML5 features, accessibility**

I. Introduction

Web is a resource that is widely and steadily usable across many platforms. Some vendors have developed their *proprietary technologies* that provide more functionality than web standards such as the ability to build rich internet applications. For example, Adobe Systems Flash, Apple's Quick Time, Microsoft Silver Light, Google Gears, Oracle JAVAFX etc. provide the proprietary formats for running a web application.

The latest research on HTML by W3C is to create a standard that handles all the jobs that the proprietary technologies performing currently. **W3C** to increase web openness and platform independence is developing **HTML5** with cooperation of **Web Hypertext Application Technology Working Group (WHATWG)** as a standard that facilitates the users and developers with intensified functionality without much using the additional plug-ins [1].

HTML5

HTML5 is a new standard for HTML which allows us to build rich and interactive web pages which bring HTML into the world of application development started in the year **2004**. HTML moves from simply describing the basics of a text based web for presenting audio, video and animations to enabling offline functionality, geo location and local storage in client side databases.

With the development of HTML5 it has wide range of applications in multimedia direction [3]. It can play audio and video and supports animations from the browser without the need of the proprietary technologies. The features of HTML5 would add up value for web designers and developers.

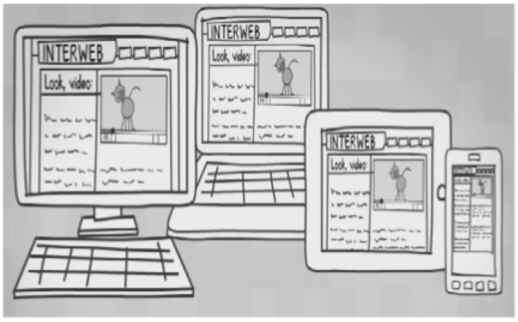


Fig 1. HTML5 cross-platform

HTML5 supports cross platform, designed to display web pages on a PC, or a Tablet, a Smartphone, or a Smart TV (**Fig-1**). HTML5 is been a working draft and some browser designers and websites are already adopting HML5 elements. HTML5 also support location based services open formats such as Scalable Vector Graphics (SVG), open XML file formats and high quality graphics.

The basic advantage for the developers and browsers is that they would be able to do more without the need of mastering or licensing multiple proprietary technologies that can develop rich web pages, enhanced forms and web based applications.

HTML5 FEATURES

HTML5 provides **new features** that include

- Canvas – 2D/3D Graphics
- Audio & Video
- Location based Services
- Working Offline
- Web Workers
- Drag & Drop
- New Input Types
- New Elements
- Form Elements

Canvas

HTML5 **<canvas>** element is used to draw graphics via java script on web pages that incorporate video and animations. Canvas is only a container for graphics and script is to be used to render 2D/3D graphics. Canvas provides several methods for drawing paths, boxes, circles, text and images which makes graphics-heavy pages render fast.

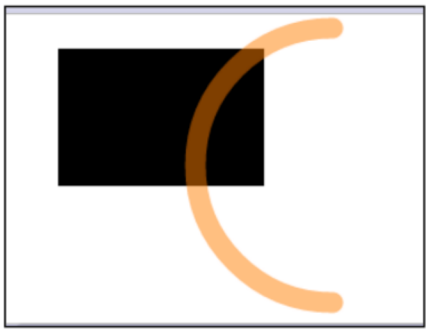


Fig 2. HTML5 Canvas

Fig 3. Pinball Game using Canvas

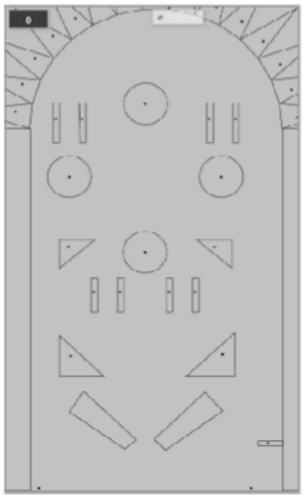


Fig 4. Polygon structure for Pinball Game with Canvas

SVG (Scalar Vector Graphics)

SVG defines vector-based graphics for the web. The clarity of SVG object do not change i.e., even if images are enlarged or compressed, quality of the image will not be lost [4].

SVG images can be searched, indexed, scripted, compressed and scalable. SVG images can be printed with high quality at any resolution and even they are zoomable (Fig-5, 6).

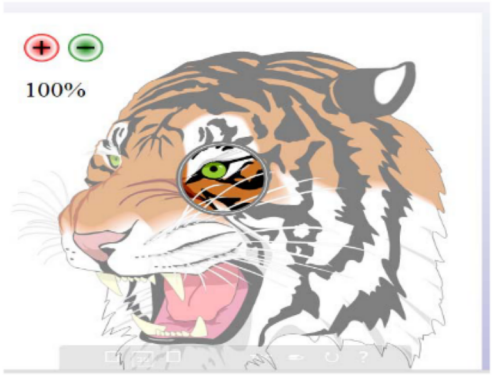


Fig 5. SVG Image before zoom

Fig 6. SVG after zoom
(Notice the quality of the image).

Audio & Video

Before HTML5 there is no standard for playing audio and video files on a webpage which generally requires a plug-in for different formats of audio and video [2]. HTML5 now provides a standard way to embed audio files and video files which includes non proprietary formats in the web page.

The tags **<audio>, <video>** and **<source>** tell the browser the associated information is to be handled as an HTML5 compatible streams. These would let users view and listen the audio and video embedded on the page without the use of specific players.

```
<audio controls>
    <source src="guitar.mp3"
            type="audio/mpeg">
     Your browser does not support the audio element.
</audio>
```

Fig 7. Output of Audio Tag

```
<video width="480" height="480" controls>
  <source src="clouds.mp4"
  type="video/mp4">
</video>
```

Fig 8. Output of Video Tag

Location-based Services

GeoLocation API is designed to provide user's location. It makes the information of mobile device's geographic location available to a Web application. It offers support for mobile browsers and Location-based applications by enabling interaction with GPS and JavaScript extensions. This API in HTML5 identifies the location of user browsing any website provided user allows it.

Working Offline

HTML5 as a standard also introduces new methods for enabling a web site or web application to function even without a network connection. Using the cache interface, HTML5 gives your application advantages of using cache for Offline browsing, higher speed, reducing server load etc. **AppCache** (Application Cache) allows applications to store data and programming code locally so that the web applications can work as desktop applications.

Web Storage

HTML5 provides **Web Storage** feature that can store data within the user's browser which is better than cookies used in older version. These support for client-side SQL database and offline application. Web Storage is more secure and faster. It is also possible to store large amounts of data, without affecting the website's performance offline. The data is stored in pairs of name/value, and a web page can only access data stored by it.

Web Workers

In a HTML page while executing scripts, the page becomes unresponsive until the script execution is completed. Web Workers are basically an API specification that lets users create background JavaScript threads to process CPU intensive tasks. These can't be interrupted by other scripts or user interactions. Normally in browsers to handle all the JavaScript code a single thread is created and all of them are run on a single thread. Whether you are doing some calculation or updating page elements, it speeds up background tasks.

Drag and Drop

HTML5 comes with a Drag and Drop API that brings native drag and drop support to the browser, making it much easier to support on devices such as mobile phones. This includes dragging of content and files from outside the browser, e.g. drag and drop to upload files or photos. In HTML5, drag and drop is part of the standard, and any element can be draggable. This is supported by many web applications.

New Input Types

HTML5 introduced new input types for simplifying the web page designing, even they have inbuilt support for CSS and JS. So, these new input types provide *better input control and validations*. The new input types provided are given below along with their HTML syntax.

TABLE 1
NEW INPUT TYPES IN HTML5

Input Types	Description	Syntax
color	To display the color palette	<input type="color" name="nwcolor">
date	To disaply the date picker	<input type="date" name="dob">

email	To validate email address	<input type="email" name="Email">
number	To accept only numbers	<input type="number" name="hrs" min="1" max="12">
range	To display a slider control for selecting a number	<input type="range" name="grade" min="1" max="10">
tel	To validate mobile / phone number	<input type="tel" name="usrtel">
time	To display time picker	<input type="time" name="usr_time">

New Elements in HTML5

In HTML 4.01 several elements are outdated, never used, or not used the way they were pre planned. All these elements are abolished or re-written in HTML5.

The elements which are deprecated in HTML5 are as follows:

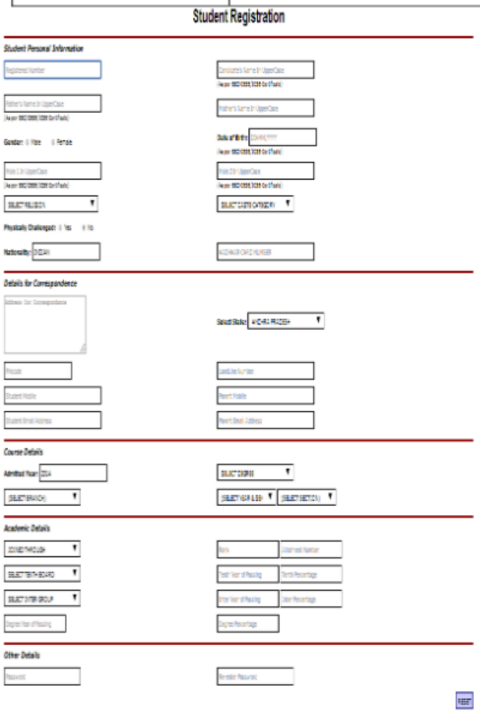
- <acronym>
- <applet>
- <basefont>
- <big>
-
- <dir>
- <font>
- <frame>
- <frameset>
- <isindex>
- <noframes>
- <s>
- <strike>
- <tt>
- <u>

To better serve today's web requirements, HTML5 has also introduced new elements for drawing graphics, displaying media content, for better page structure and better form handling, and several new APIs for drag and drop, for finding your geological location, for storing local data, and more.

The new elements of HTML5 and their description are given below.

TABLE 2
NEW ELEMENTS IN HTML5

Tag	Description
<canvas>	Defines graphic drawing using JavaScript
<audio>	To play audio formats like Mp3, Ogg and Wav
<video>	To play video formats like MP4,WebM and Ogg
<source>	Sub tag for both audio and video to specify the source file
<track>	Sub tag for both audio and video to specify text track, for example subtitles.
<embed>	Defines container for external applications (like plug-ins, flash etc.)



Fige 9. Web Form created using HTML 5 elements

All the HTML5 features mentioned above provides feasibility for the users and developers in developing web applications without the use of plug-ins [5].

An HTML form of 40 fields (Fig-9) may generally require a lot of validation scripts to be written using scripting language. To reduce the code size for such kind of forms HTML5 is the best way to use.

II. CONCLUSION

HTML5 introduces new elements and features that allow developers to improve interoperability, handling elements in a precise way saving time and costs. HTML5 is an awesome technology and has the possibility to make the web even more predominant and extensive as it is today from desktop computers to mobile devices and in the future maybe even domestics appliances. The potential of HTML5 will soften the line between desktop and online applications. The problem HTML5 may suffer in the coming days is that an opportunity will be available for the malware writers which may make today's common hacks.

REFERENCES

[1] HTML5 Web Application Development by Example, J M Gustafson
[2] Murach's HTML5 and CSS3 by Zak Ruvalcaba and Anne Boehm
[3] W3Schools.com, HTML5Rocks.com
[4] Wenling Hu, Hao Yuan, Jiangong Wang, Liang Wang, The Research and Application of Power System Visualization Based on HTML, IEEE 2011.
[5] Chen Li-Li, Liu Zheng-Long, Design of Rich Client Web Architecture Based on HTML5, ICCIS, 2012