

HTML5 – the new standard for Interactive Web

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Abstract:

HTML5 is the W3C's next major revision to HTML. Its main aim is to improve the language which support the latest multimedia while making it easily readable by humans and understood by computer and other devices. HTML5 is not any new language or development tool. It is just HTML with an extended layer of standardized tags and attributes for graphic and visual effects that reduces the need for special plug-ins. HTML5 is also a cross-platform language. It is designed to work whether you are using a PC, or a Tablet, a Smartphone, or a Smart TV. HTML5 based mobile apps are also becoming more popular and popular. This paper describes the current analysis of HTML5 on modern web browsers and mobile platforms. A number of new features introduced by HTML5 are examined and their security implications is analyzed and discussed and how HTML5-based apps can become vulnerable.

Keywords- HTML5, W3C, multimedia, graphic, plug-ins.

I. Introduction:

HTML5 is a core technology markup language of the Internet used for structuring and presenting content for the World Wide Web. It is the fifth revision of the HTML standard. Its core aims have

been to improve the language with support for the latest multimedia while keeping it easily readable by humans and consistently understood by computers and devices. HTML5 means different things to different people. To some, it just means new tags like <header> and <footer> and a handful of new attributes available in markup. To others, it means everything that's new and interesting on the Web, including technologies implemented in just a single browser or other specifications not officially part of HTML5. In fact, HTML5 is an umbrella term describing a set of HTML, CSS and JavaScript specifications designed to enable developers to build the next generation of Web sites and applications.[3][4]

II. Features:

A. New API:

HTML5 specifies scripting application programming interfaces (APIs) that can be used with JavaScript. Existing document object model (DOM) interfaces are extended and *de facto* features documented.

B. 2D Canvas Animation API:

New canvas functionality and JavaScript 2D canvas API allow two dimensional

drawing, graphics and animations. With this enhancement, cross-platform games become possible for mobile browsers.

```
<canvas id="myCanvas" width="200" height="100">
```

Fallback content, when canvas is not supported by the browser.

```
</canvas>
```

C. Custom Data Attributes

HTML5 now allows you to add valid data attributes, which helps in storing the data without affecting the web page UI. These data attributes can be added in a hidden manner from the user and can be later used by JQuery or your JavaScript functions. In order to make your custom data attribute valid, the attribute should be prefixed with the word "data".

```
<span class="user" data-domain="Technology" data-language="C#">
</span>
```

D. Native Audio & Video Controls

Built-in media support via the <audio> and <video> elements, offering the ability to easily embed media into HTML documents. Mobile browsers have the ability to natively control multimedia display, codec and user interfaces.

```
<video controls preload>
<source src="cohagenPhoneCall.ogv" type="video/ogg; codecs='vorbis, theora'" />
<source src="cohagenPhoneCall.mp4" type="video/mp4; codecs='avc1.42E01E, mp4a.40.2'" />
<p> Your browser is old
. <a href="cohagenPhoneCall.mp4">Download deo instead.</a> </p>
```

```
</video>
```

E. Web Storage:

Web Storage provides a way for websites to store information on your computer and retrieve it later.

Local Storage - stores data with no time limit session. Storage - stores data for one session Similar to cookies, but it's designed for larger quantities of information. Cookies are limited in size, and your browser sends them back to the web server every time it requests a new page (which takes extra time and precious bandwidth). HTML5 Storage stays on your computer, and websites can access it with JavaScript after the page is loaded.

F. Autofocus and Placeholder Attributes:

The autofocus feature is achieved by adding the autofocus attribute. This allows the control to have the focus automatically on page load.

```
<button id="Submit Button" autofocus></button>
```

Placeholder is a feature supported for input fields by adding the attribute placeholder. This feature displays the value provided for the placeholder attribute, like a water mark, until the focus is moved to the input control.

G. Web Database:

Web SQL Database API is a specification which covers storing and accessing data through SQL. It allows Web pages to contain code that interacts with an embedded client database, which is useful for applications wanting to store data locally or for off-line browsing. For example, phonebook contact information and preloading of data in preparation for 'off-line' mode are all easily within reach.

H.Drag and Drop

HTML5 comes with a Drag and Drop (DnD) API that brings native DnD 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.

III. HTML5 and Mobile:

In mobile devices, HTML5 is often used for mobile websites and mobile applications on Mobile operating systems such as Firefox OS, Sailfish OS, Tizen, and Ubuntu Touch. It provides developers with tools such as Offline Web Storage, GeoLocation API, Canvas Drawing, CSS3, and many more.

IV. HTML5 and Desktop:

As HTML5 allows for more sophisticated user experience development, it is starting to become a rival to desktop software development. HTML, JS and CSS are already installed cross-platform on the vast majority of the world's computers. It is not a proprietary technology and has numerous open source implementations, free of patents. The up and coming Chrome OS will be making heavy use of HTML5. Google is adding numerous HTML5 features into their online apps, such as the ability to drag and drop attachments into Gmail. Google wants to tempt more users away from the traditional desktop to its Web-based products.

V.Security Issues:

The decision to use HTML5 to develop mobile application cause code injection attack to be launched against mobile apps. Figure 1 illustrates the basic code injection attacks on HTML5-based mobile apps.

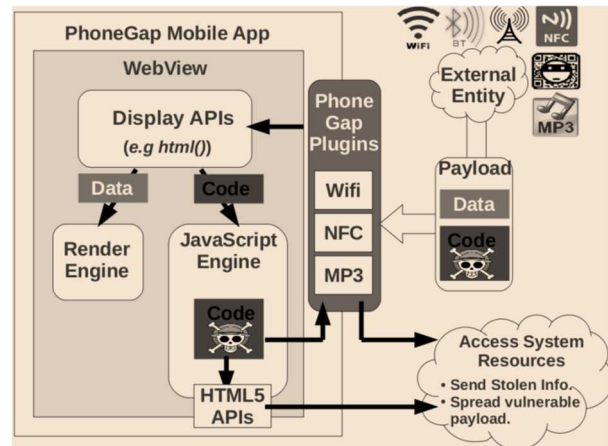
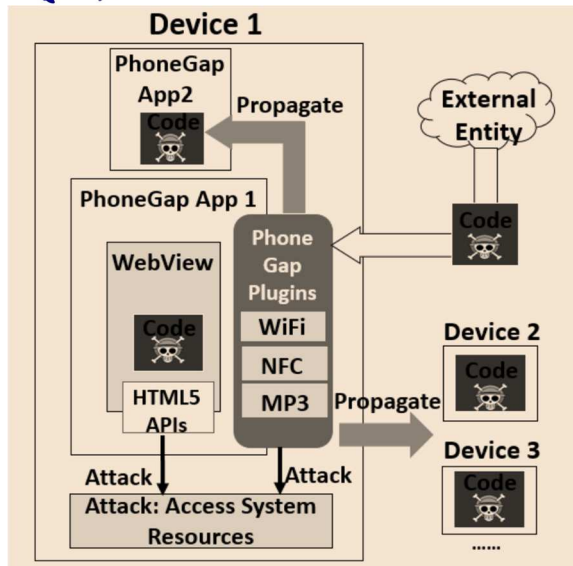


Figure 1: Basic Idea of Attack

Since smartphones constantly interact with the outside world, in addition to the traditional network channel, there are many new channels for untrusted data to enter mobile devices. If the code mixed in the data does not get a chance to be triggered, there is no risk caused by the code. That is why apps written using the native language are immune to this type of code injection attack. For example, even if attackers can embed a Java code inside a 2D barcode, there is not much chance for the code to be triggered mistakenly. This is not true for the HTML5-based apps, due to the dangerous features of the web technology.[1]

VI. Damage:

There are three types of damage: one type is caused by direct attacks on the victim's device (marked by the thin arrows in the figure), and the other two types are propagation damage (represented by the wide arrows marked with Propagate". It can be summarized by Figure 2.[1][2]



[2] "HTML5 SECURITY THE MODERN WEB BROWSER PERSPECTIVE"- Doug DePerry

Figure 2: Damage caused by code-injection attack.

VII. Conclusion:

HTML5 is rapidly advancing and will continue to evolve. While HTML5 competes directly against technologies like Flash, Flex and Silverlight, it seems to be working its way into everything. Currently, it may not be capable of creating as impressive a user experience as its competitors, but the sheer audience it will have access to will make it a serious player. Here, we have identified a code injection attack against HTML5-based We have studied about the attack on mobile devices As HTML5-based mobile apps are becoming more and more popular because of the portability advantage ,an outbreak of attack should be envisioned. Technologies such as PhoneGap are evolving to find practical solutions that are secure while maintaining the advantage of HTML5-based mobile apps.

VIII. References:

[1] "Code Injection Attacks on HTML5-based Mobile Apps" - Xing Jin, Tongbo Luo, Derek G. Tsui, and Wenliang Du.