Lecture3

HTML5基础

Outline

- 什么是*HTML5?*
- HTML5特征
- HTML5工具

什么是 HTML5?

- HTML5 是下一代 HTML 标准。
- HTML , HTML 4.01的上一个版本诞生于 1999 年。自从那以后，Web 世界已经经历了巨变。
- HTML5 仍处于完善之中。然而，大部分现代浏览器已经具备了某些 HTML5 支持。
- HTML5 是 W3C 与 WHATWG 合作的结果,WHATWG 指 Web Hypertext Application Technology Working Group。

Why HTML5?

- HTML5 Paves the Cow Paths
  - Because HTML5 takes a pragmatic approach, fixing common real-world problems
- HTML5 Simplifies
- HTML5 is Universal
  - HTML5 works in all languages
  - WAI – ARIA
- HTML5 Means Less Plugins
- HTML5 is Secure by Default

Paved Cow Path

HTML4

```
<form>
<input name="email" type="text">
```

crapload of validation code or extra js lib

```
(?:[a-z0-9!#$%&'*+/=?^_`{|}~-]+(?:\.[a-z0-9!#$%&'*+/=?
^_`{|}~-]+)*|"(?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21\x23-
\x5b\x5d-\x7f]|\\[\x01-\x09\x0b\x0c\x0e-\x7f])*")@(?:(?:
[a-z0-9](?:[a-z0-9-]*[a-z0-9])?\.)+[a-z0-9](?:[a-
z0-9-]*[a-z0-9])?|\[(?:(?:25[0-5]|2[0-4][0-9]|[01]?[0-9]
[0-9]?)\.){3}(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?|[a-
z0-9-]*[a-z0-9]:(?:[\x01-\x08\x0b\x0c\x0e-\x1f\x21-
\x5a\x53-\x7f]|\\[\x01-\x09\x0b\x0c\x0e-\x7f])+)\])
```

HTML5

```
<input type=email required>
```

Simplified Doctype

HTML4/XHTML

- HTML 4.01 Strict
- HTML 4.01 Transitional
- HTML 4.01 Frameset
- XHTML 1.0 Strict
- XHTML 1.0 Transitional
- XHTML 1.0 Frameset
- XHTML 1.1

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

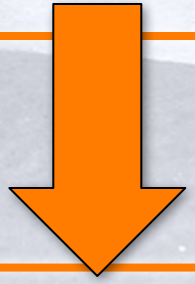
HTML5

```
<!DOCTYPE html>
```

Simplified Character Set

HTML4

```
<meta http-equiv="Content-Type"
content="text/html; charset=utf-8">
```



HTML5

```
<meta charset=utf-8>
```

Simplified Markup

HTML5

```
<!DOCTYPE html>
<meta charset=utf-8>
<title>HTML5</title>
<h1>HTML5!</h1>
```

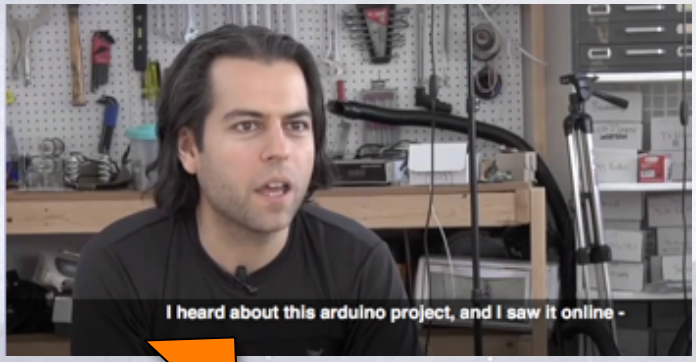
70 characters!

DOM

```
<!DOCTYPE html>
▼<html>
  ▼<head>
      <meta charset="utf-8">
      <title>HTML5</title>
    </head>
  ▼<body>
      <h1>HTML5!</h1>
    </body>
  </html>
```

Universal Access

- Support for all world languages
  - For example, the new <ruby> element
- Accessibility
  - Semantic markup
  - WebVTT




```
<video controls
        preload="metadata">
  <source src="rocpoc.mp4">
  <track label="English"
   kind="subtitles"
   src="subtitles_en.vtt”>
</video>
```

```
WEBVTT

1
00:00:01,000 --> 00:00:03,050
What do I think about HTML 5?...

2
00:00:04,000 --> 00:00:07,100
It’s pretty sweet. I just hope that
people use the new features
thoughtfully.
```

http://html5videoguide.net/presentations/WebVTT

HTML5 Means Less Plugins

- Because HTML5 provides native support for many features that were possible only with plugins or complex hacks (audio/video, drawing, sockets)

Plugins are on the way out

- Built-in is better than bolt-on —@brucel
- Plugins may not be installed (for long)
- Plugins can be an attack vector (Proxy poisoning)
- “Whenever a Mac crashes, more often that not is because of Flash” —Steve Jobs

Home > Industry News > Adobe kills mobile Flash, blames iPhone and iPad, “Occupy Flash” rises

Adobe kills mobile Flash, blames iPhone and iPad, “Occupy Flash” rises

November 14, 2011 by Bill Palmer

by Bill Palmer

Data Storage Solutions
Best-in-class data storage products for AV, Enterprise and Home Users.
www.promarktech.com
AdChoices

Adobe has discontinued its much maligned Mobile Flash Player software
smartphones and tablets, after years of bizarrely pushing forward with the
the the 1990s-era web development tool still had a place in the twenty-firs
long after the internet had passed it by. But just when it was starting to loo
Adobe finally figured out what everyone else had known about Flash for c
the company had to go and crush that notion by stating that it only killed n
Flash because Apple's refusal to allow the buggy and resource-hogging
onto its iPhone and iPad. In other words, Adobe never did figure out that

http://goo.gl/mzFjM

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Microsoft has Abandoned Silverlight and All Other Plugins in Metro IE

Posted by Jonathan Allen on Sep 15, 2011
Sections Development Topics Silverlight , .NET , Javascript , HTML5 , Web 2.0 Tags Windows 8 , Flash
Share | dz Bookmark this!

Though it has been hard, we have been trying to avoid reporting on rumors about the death of Silverlight for quite some time. As in all things, rumors tend to be exaggerated or out-right false. A good example of this is the idea that Web Forms has entered maintenance mode and would never be updated to HTML5. Unfortunately the end of Silverlight is no rumor; if Microsoft doesn't change course it, as well as Flash and other plugin technologies, will be effectively unusable when Windows 8 is released.

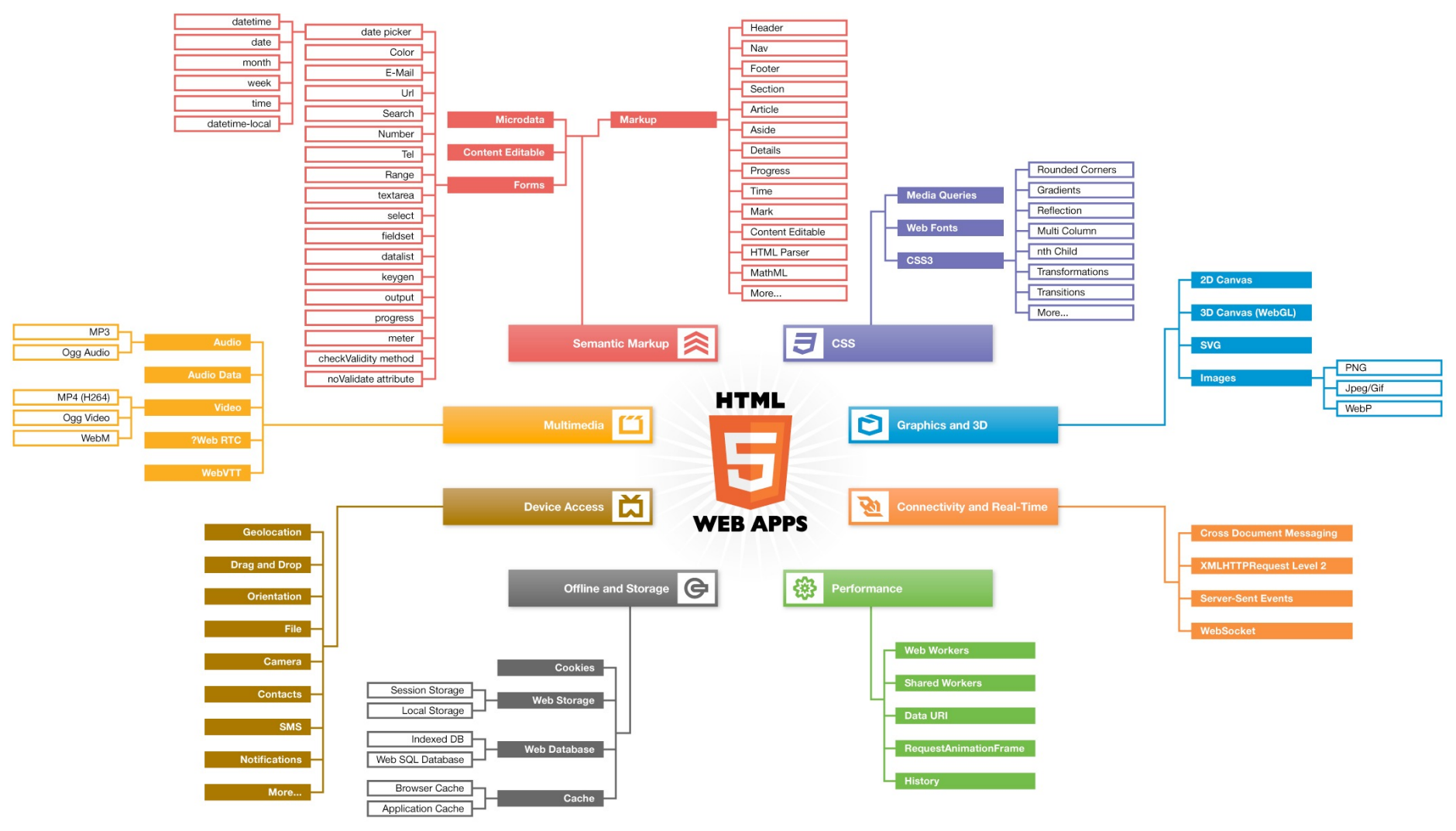
http://www.infoq.com/news/2011/09/Metro-Plug-ins

HTML5 is Secure by Default

- HTML5 uses origin-based security
- Defines secure cross-origin sharing
- Issues in HTML5 are fixed quickly

http://enable-cors.org/

HTML5 At a Glance



HTML5 的改进

- 新元素
- 新属性
- 完全支持 CSS3
- Video 和 Audio
- 2D/3D 制图
- 本地存储
- 本地 SQL 数据
- Web 应用

New APIs

- 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.
  - Canvas;
  - Timed Media Playback;
  - Offline;
  - Editable content;
  - Drag-and-drop;
  - History;
  - MIME type and protocol handler registration;
  - Microdata;
  - Web Messaging;
  - Web Storage – a key-value pair storage framework that provides behaviour similar to cookies but with larger storage capacity and improved API.

New HTML5 Elements

Layout (semantics)		Multimedia	Other
article	section	audio, video	command, *menu**
aside	nav	source	embed
figure	figcaption		
header	footer	**Graphics**	**Forms**
details	summary	canvas	datalist
wbr	hgroup	svg	progress
time	mark		output
meter	ruby, rp, rt		keygen

** menu redefined from HTML 4*

dev.w3.org/html5/markup/elements.html

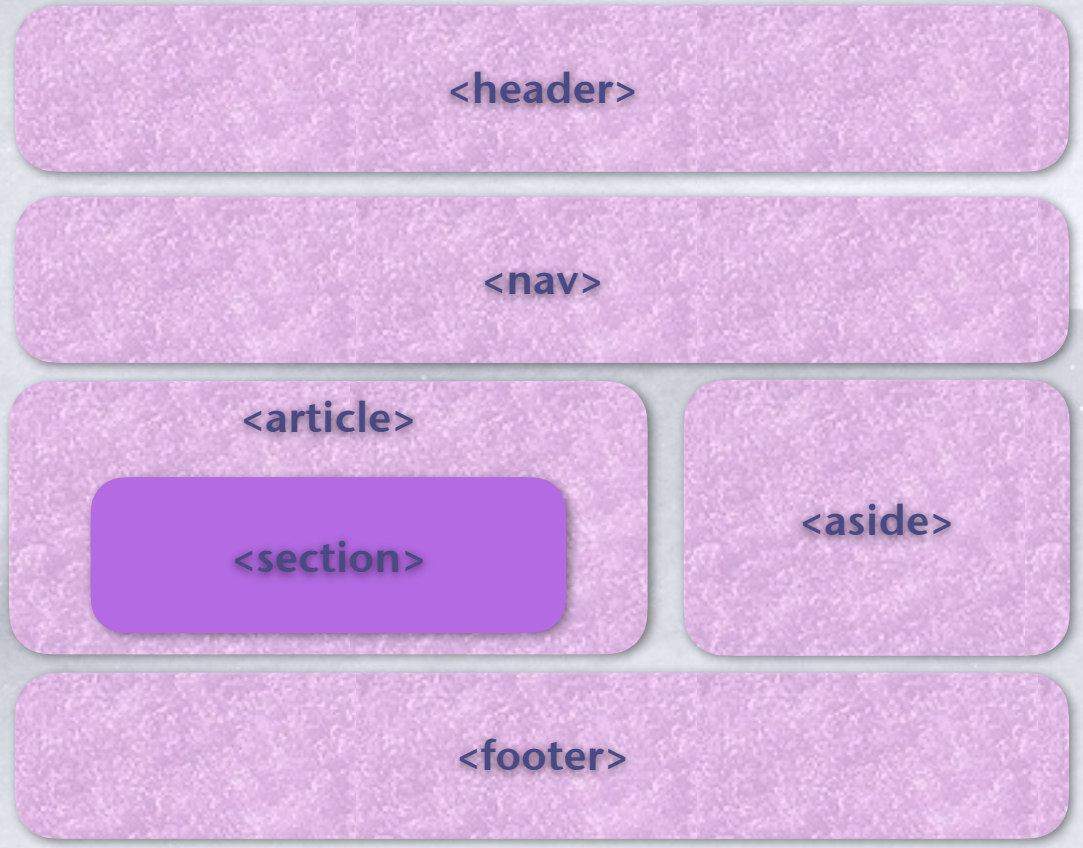
Obsolete Elements

- 能使用CSS替代的元素
  - basefont，center，font，tt，u
- 不再使用frame框架
- 只有部分浏览器支持的元素
  - applet，bgsound，marquee
- 其他被废除的元素
  - isindex，dir，rb等

语义化

- 根据结构化的内容选择合适的标签
- why
  - 有利于SEO
  - 开发维护体验好
  - 用户体验更好
  - 更好的可访问性，方便任何设备对代码进行解析

Semantic Markup



Moving to Structural/ Semantic Markup

- Identify functional areas/use structural tags
- Separate content from presentation
  - Move styles to CSS file
  - Use a reset stylesheet
  - Consider a grid system for layout
- Consider alternate layouts (e.g. mobile)

Microdata

- Emphasis on machine readability
- SEO advantages
- Use Microdata embed machine-readable data in HTML documents
- Easy-to-write syntax (add to any element)
- Compatible with other data formats such as RDF and JSON
- Use microdata vocabularies: http://data-vocabulary.org

HTML5 Microdata Example

HTML

```
<section itemscope>
 <article id="html5-fast-track"
           itemtype="http://data-vocabulary.org/Product">
  <header>
   <h1 itemprop="name”>HTML5 Fast Track</h1>
  </header>
  <p itemprop="description">The HTML5 Fast Track
     training course is a two day experience...
  </p>
 </article>
</section>
```

Microdata Testing

Google webmaster tools

Rich Snippets

Help with:

Documentation

Troubleshooting Help

Rich Snippets Testing Tool Beta

Use the Rich Snippets Testing Tool to check that Google can correctly parse your struct

Test your website

Enter a web page URL to see how it may appear in search results:

http://www.shopping.hp.com/product/printer/inkjet/1/sto Preview

Examples: Authors, Reviews, People, Events, Recipes, Product

Google search preview

HP Officejet 6000 Wireless Printer | HP Official Store
www.shopping.hp.com/product/printer/inkjet/1/storefronts/C9295A%2523B1H - Cached
★★★★☆ 60 reviews - $79.99 - In stock
The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

Note that there is no guarantee that a Rich Snippet will be shown for this page on actual

Extracted Author for this page

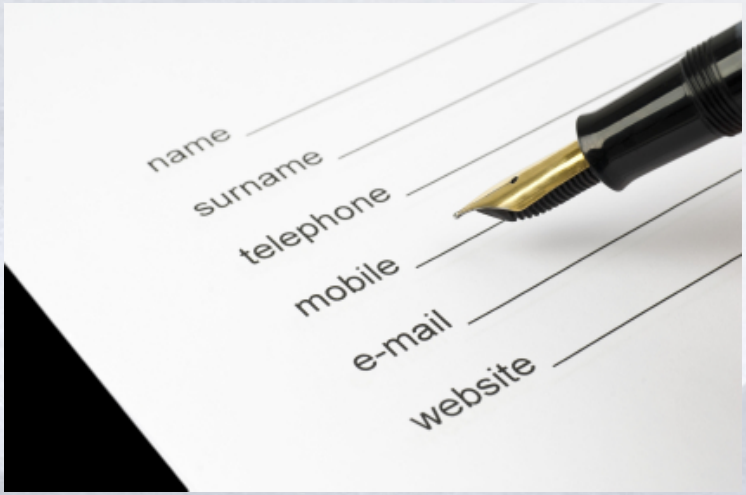
Page does not contain authorship information (learn more)

Extracted rich snippet data from the page

```
hproduct
  availability = In stock
  fn = HP Officejet 6000 Wireless Printer
  identifier
    type = SKU
    value = C9295A#B1H
  price = 79.99
  review hreview-aggregate
    item fn = HP Officejet 6000 Wireless Printer
    rating
      average = 3.5
    count = 60
```

http://www.google.com/webmasters/tools/richsnippets

HTML5 Forms



- New form functionality:
  - No JavaScript required
  - Native date and color pickers
  - Search, e-mail, web address
  - Client side validation
  - Spin boxes and sliders
- Features degrade gracefully 旧浏览器中新的表单控件会平滑降级(unknown input types are treated as text)
- Benefits:
  - Virtual keyboard support
  - Native widgets and error messages are internationalized

New Input Types

Runner: @peterlubbers

Tel #: 1-877-KAAZING

E-mail: peter

Please enter a valid email address

DOB:

T-shirt Size:

Small

Medium

Large

Shirt style:

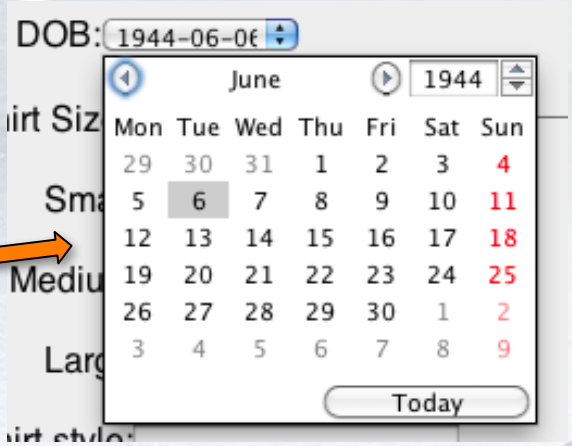
Shirt Color:

Expectations:

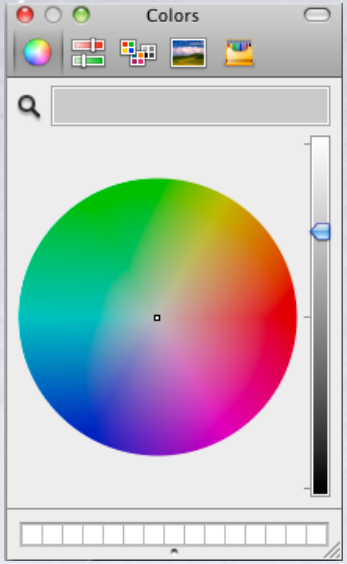
Confidence: 0%

Notes:

Register



Date picker



Color picker

HTML5 Audio and Video

- New HTML5 media elements
  - <audio> and <video>
- Native audio and video (no plugins required)
  - Programmable with JavaScript
  - Style with CSS
- Add videos and audio as if it was an image
- Codec support varies, but multiple source elements and fallback
- content can be used
  - Complete JavaScript API available

HTML5 Video Example

HTML

```
//Basic Video
<video controls src="goldrush.mp4">
    A movie about HTML5
</video>

// Video with additional attributes
<video id="movies"
    controls preload="metadata"
    width="400px" height="300px"
    poster="html5.png" >
      <source src="goldrush.webm">
      <source src="goldrush.mp4">
      <track label="English" kind="subtitles"
       srclang="en" src="subtitles_en.vtt">
    A movie by Rocky Lubbers
</video>
```

HTML5 Canvas and SVG

- Provide native drawing functionality
  - Previously possible only with plugins (Flash, Silverlight)
- Completely integrated into HTML5 documents (part of DOM)
  - Can be styled with CSS
  - Can be controlled with JavaScript
- Use for animation, charts, images, pixel manipulation, and so on
- Canvas supports 2D and 3D (WebGL)
- Will impact animated graphics and diagrams soon (use libraries)

Differences Between SVG and Canvas

- SVG is a language for describing 2D graphics in XML.
- Canvas draws 2D graphics, on the fly (with a JavaScript).
- SVG is XML based, which means that every element is available within the SVG DOM. You can attach JavaScript event handlers for an element.
- In SVG, each drawn shape is remembered as an object. If attributes of an SVG object are changed, the browser can automatically re-render the shape.
- Canvas is rendered pixel by pixel. In canvas, once the graphic is drawn, it is forgotten by the browser. If its position should be changed, the entire scene needs to be redrawn, including any objects that might have been covered by the graphic.

Comparison of Canvas and SVG

Canvas	SVG
• Resolution dependent • No support for event handlers • Poor text rendering capabilities • You can save the resulting image as .png or .jpg • Well suited for graphic-intensive games	• Resolution independent • Support for event handlers • Best suited for applications with large rendering areas (Google Maps) • Slow rendering if complex (anything that uses the DOM a lot will be slow) • Not suited for game applications

HTML5 Web 存储

- HTML5 web存储,一个比cookie更好的本地存储方式。

- 客户端存储数据的两个对象为：
  - localStorage - 用于长久保存整个网站的数据，保存的数据没有过期时间，直到手动去除。
  - sessionStorage - 用于临时保存同一窗口(或标签页)的数据，在关闭窗口或标签页之后将会删除这些数据。

HTML5 应用程序缓存

- 使用 HTML5，通过创建 cache manifest 文件，可以轻松地创建 web 应用的离线版本。
- HTML5 引入了应用程序缓存，这意味着 web 应用可进行缓存，并可在没有因特网连接时进行访问。
- 应用程序缓存为应用带来三个优势：
  - 离线浏览 - 用户可在应用离线时使用它们
  - 速度 - 已缓存资源加载得更快
  - 减少服务器负载 - 浏览器将只从服务器下载更新过或更改过的资源。
- manifest 文件是简单的文本文件，它告知浏览器被缓存的内容（以及不缓存的内容）。manifest 文件可分为三个部分：
  - CACHE MANIFEST - 在此标题下列出的文件将在首次下载后进行缓存
  - NETWORK - 在此标题下列出的文件需要与服务器的连接，且不会被缓存
  - FALLBACK - 在此标题下列出的文件规定当页面无法访问时的回退页面（比如 404 页面）

更新缓存

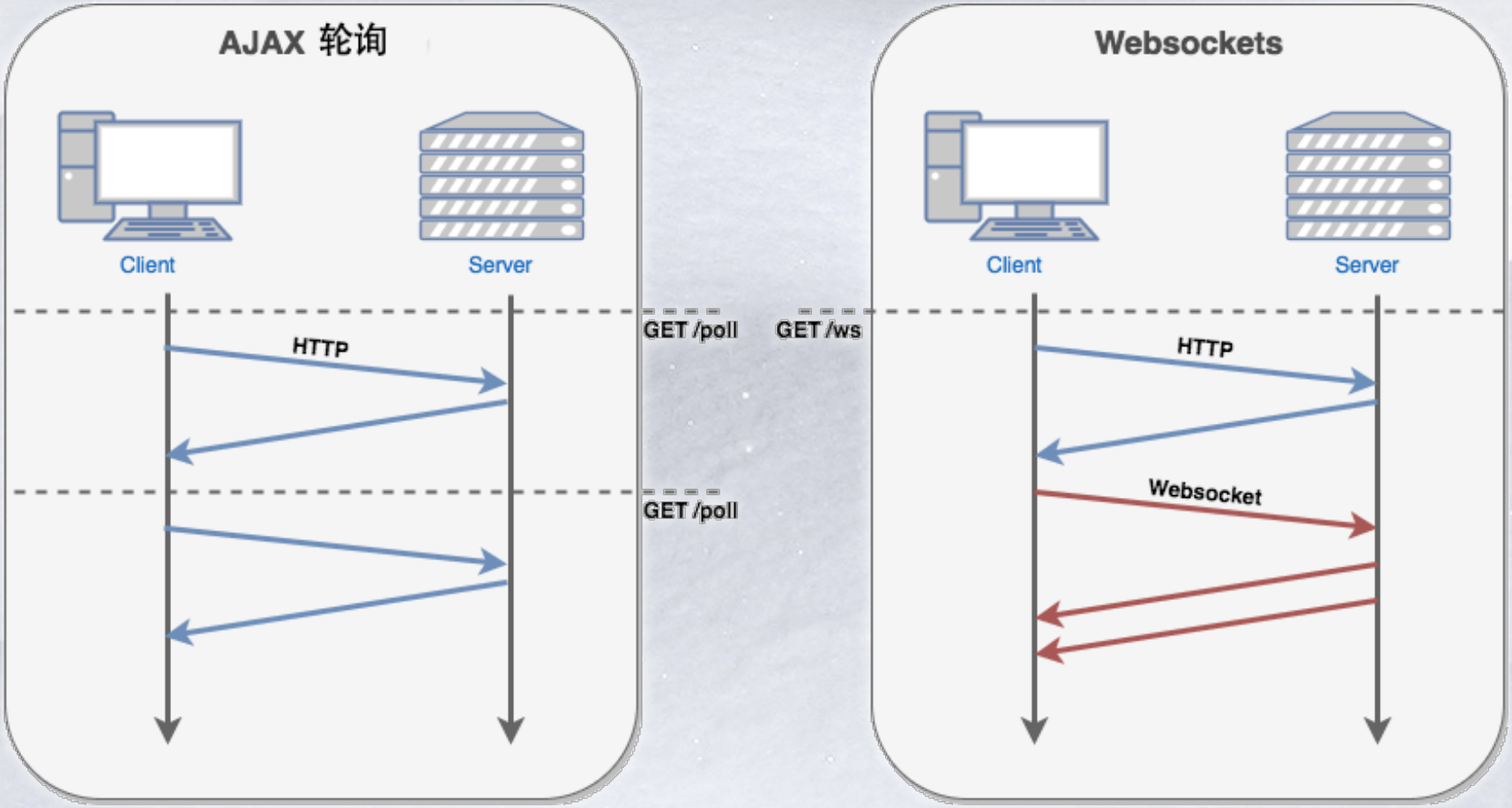
- 一旦应用被缓存，它就会保持缓存直到发生下列情况：
  - 用户清空浏览器缓存
  - manifest 文件被修改
  - 由程序来更新应用缓存

```
CACHE MANIFEST
# 2012-02-21 v1.0.0
/theme.css
/logo.gif
/main.js

NETWORK:
login.php

FALLBACK:
 /html/ /offline.html
```

HTML5 Web Workers

- 当在 HTML 页面中执行脚本时，页面的状态是不可响应的，直到脚本已完成。
- web worker 是运行在后台的 JavaScript，独立于其他脚本，不会影响页面的性能。可以继续做任何愿意做的事情：点击、选取内容等等，而此时 web worker 在后台运行。

HTML5 WebSocket



Feature Detection

- Feature detect with Modernizr (part of H5BP): http://www.modernizr.com
-

HTML5 Enabling JavaScript

- 使用 Sjoerd Visscher 创建的 "HTML5 Enabling JavaScript", " shiv" 来解决该问题:

```
<!--[if lt IE 9]>
 <script src="http://html5shiv.googlecode.com/svn/trunk/html5.js"></script>
<![endif]-->
```

```
<!--[if lt IE 9]>
 <script src="http://cdn.static.runoob.com/libs/html5shiv/3.7/
html5shiv.min.js"></script>
<![endif]
```

Who is Developing HTML5?

- Web Hypertext Application Technology Working Group (WHATWG)
  - http://www.whatwg.org/specs/web-apps/current-work/
- World Wide Web Consortium (W3C)
  - http://dev.w3.org/html5/spec/Overview.html
- Internet Engineering Task Force (IETF)
  - http://tools.ietf.org/html/draft-hixie-thewebsocketprotocol

References

- Pro HTML5 Programming (Apress, 2011)
- https://www.w3schools.com/

Thanks!!!