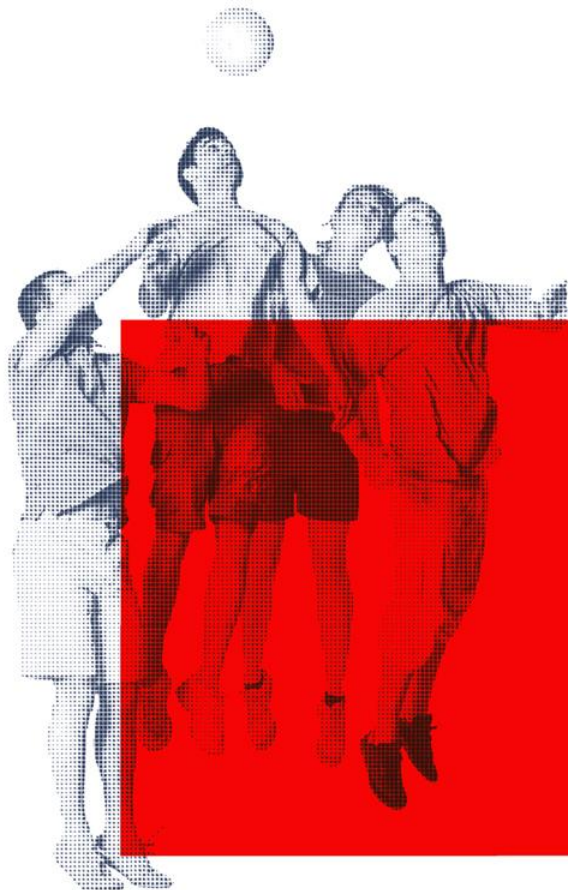




HTML5

An Overview



Mischa Kölliker

Principal Consultant

mischa.koelliker@trivadis.com

JUGS

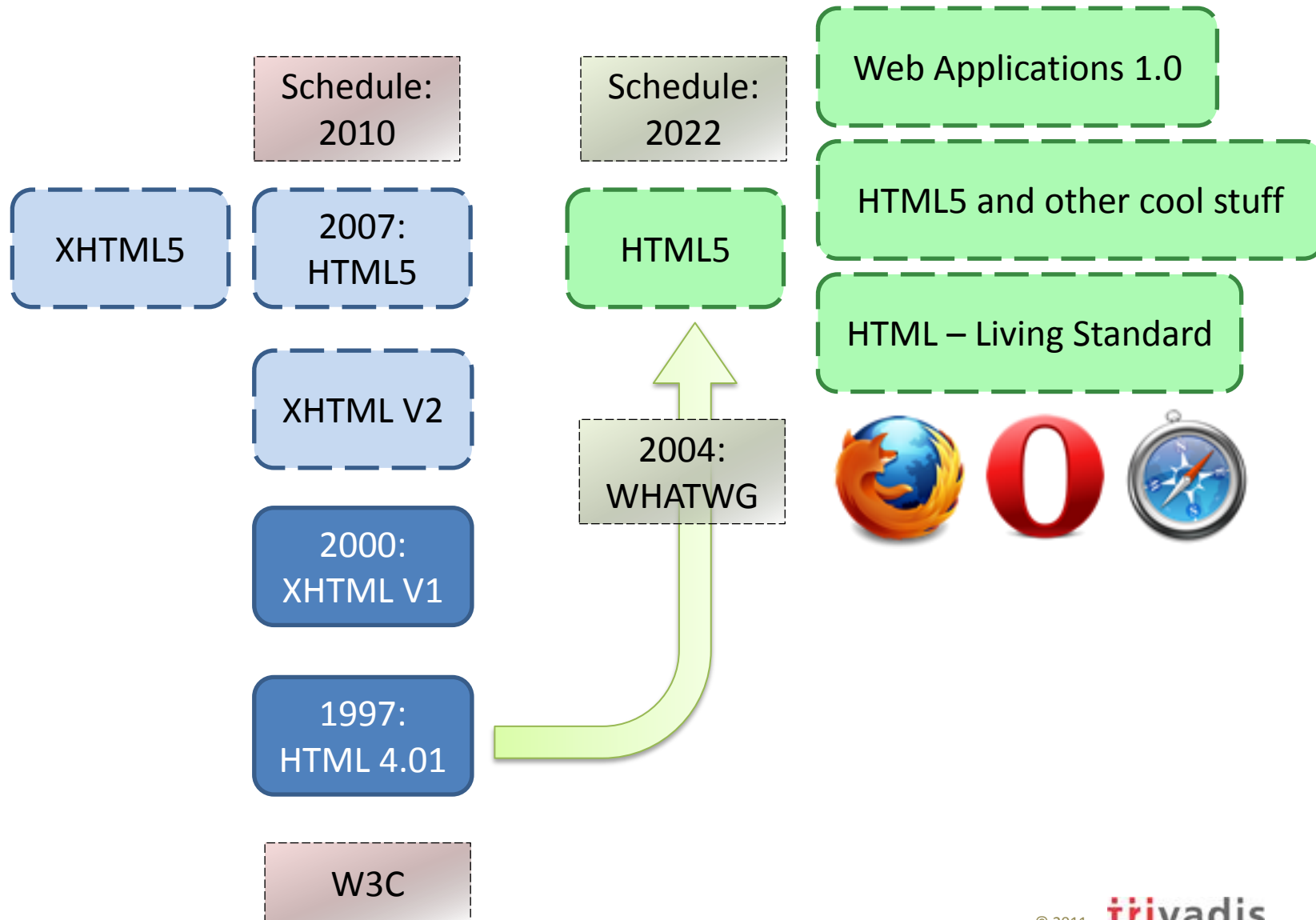
Zürich, May 11, 2011

trivadis

makes **IT** easier.



The Tale of a Brave New Standard



WHATWG Core Principles

Be Backward Compatible

Specs Match Implementation

if not, change the specification

Detailed Specification

to achieve complete interoperability

What Makes a HTML-Doc a HTML5-Doc

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

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html
    PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">

<!DOCTYPE HTML>
```

Boring Features

`<video>`

`<audio>`

Embed Video

```
<!DOCTYPE html>
<title>Video/Canvas Demo 0</title>

<video controls loop>
  <source src=video.webm type=video/webm>
  <source src=video.ogv type=video/ogg>
  <source src=video.mp4 type=video/mp4>
</video>

<style>
video {
  position: absolute;
  top: 50%;
  left: 50%;
  margin: -180px 0 0 -240px;
}
</style>
```

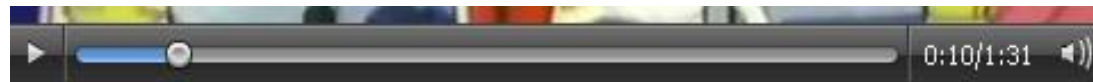
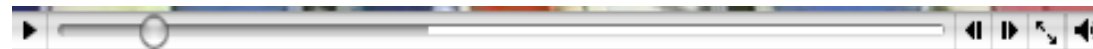
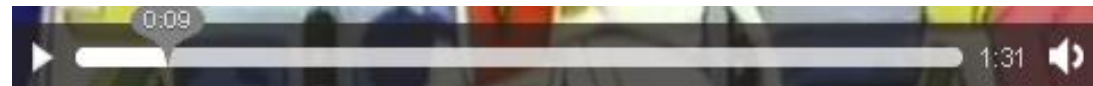
None of the Formats Are Supported By All Browsers

CODECS/ CONTAINER	IE	FIREFOX	SAFARI	CHROME	OPERA	IPHONE	ANDROID
Theora + Vorbis+Ogg	-	3.5+	(QT)	5.0+	10.5+	-	-
H.264 + AAC+MP4	9+	-	3.0+	5.0+	-	3.0+	2.0+
WebM	(9+)	-	(QT)	6.0+	10.6+	-	Future

Flash supports H.264 video and AAC audio in an MPEG-4 container

HTML5 Video for all major browsers: <http://static.etianen.com/html5media/>

Video Controls



„Real“ Markup – Not Everything Is a DIV

<article>

<nav>

<section>

<aside>

<header>

<hgroup>

<footer>

<details>

<summary>

<figure>

<figcaption>

- Improve search engine results quality
- Support screen readers
- Support styling

HTML5 Is Mostly About APIs: Geolocation

```
var timerId = navigator.geolocation.watchPosition(successCallback,  
                                                    errorCallback,  
                                                    options);
```

```
var successCallback = function(position) {  
    document.getElementById('location').innerHTML =  
        'Timestamp: ' + position.timestamp + '<br>' +  
        'Latitude: ' + position.coords.latitude + '<br>' +  
        'Longitude: ' + position.coords.longitude + '<br>' +  
        'Altitude: ' + position.coords.altitude + '<br>' +  
        'Accuracy: ' + position.coords.accuracy + '<br>' +  
        'Altitude Accuracy: ' + position.coords.altitudeAccuracy + '<br>' +  
        'Heading: ' + position.coords.heading + '<br>' +  
        'Speed: ' + position.coords.speed + '<br>';  
};
```

```
var errorCallback = function(error) {  
    alert('Error ' + error.code + ': ' + error.message);  
};
```

HTML5 Is Mostly About APIs: Geolocation

```
var timerId = navigator.geolocation.watchPosition(successCallback,  
                                                    errorCallback,  
                                                    options);
```

```
var options = {  
    enableHighAccuracy: false,  
    timeout: 5000,  
    maximumAge: 0  
};
```

```
navigator.geolocation.clearWatch(timerId);
```

HTML5 Is Mostly About APIs



Geolocation in Action

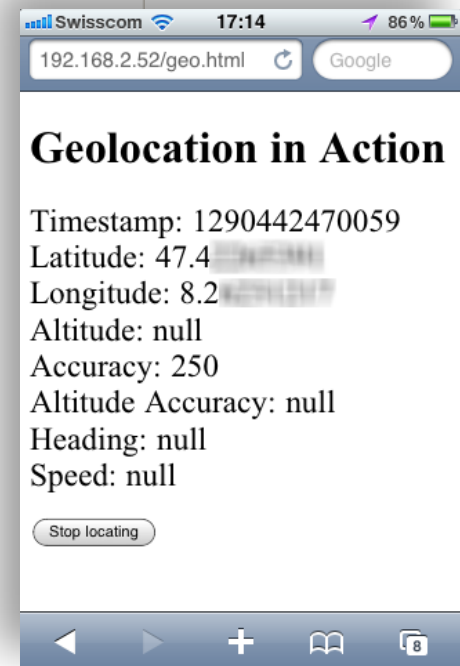
Locate...

Stop locating

Geolocation in Action

Timestamp: 1290416309128.9202
Latitude: 47.369023
Longitude: 8.538032
Altitude: null
Accuracy: 166000
Altitude Accuracy: null
Heading: null
Speed: null

Stop locating



As Everyone Is Connected – HTML5 Goes Offline

```
if(typeof localStorage !== 'undefined'){  
    var data = date.value + ': ' + todo.value;  
    var localTodosJSON = localStorage.getItem('todos');  
    if(localTodosJSON){  
        localTodos = JSON.parse(localTodosJSON);  
        localTodos.push(data);  
    }  
    else{  
        localTodos = [data];  
    }  
    localStorage.setItem('todos', JSON.stringify(localTodos));  
    addTodo(date.value + ': ' + todo.value);  
}
```

- There is also a sessionStorage

Network State Events

```
if(document.addEventListener){
    window.addEventListener('online', function(){
        startSync();
    }, false);
}
else{ // IE knows On/Offline-Events only on Body element
    document.body.attachEvent('ononline', function(){
        console.log('Ab jetzt im Online-Modus');
        startSync();
    });
}
```

- There is a corresponding ,offline' event

Offline Application Events

```
CACHE MANIFEST
```

```
about.html  
offline.html
```

```
NETWORK:
```

```
blog.html
```

```
FALLBACK:
```

```
/ offline.html
```

Events:

- checking
- noupdate
- downloading
- progress
- cached
- updateready
- obsolete
- error

Offline DEMO

Web SQL API

```
db = openDatabase("html5demos", "1.0", "HTML 5 Database API example", 200000);
if (db) {
    db.transaction(function(tx) {
        tx.executeSql("CREATE TABLE IF NOT EXISTS tweets (id REAL UNIQUE, text TEXT,
            created_at TEXT, screen_name TEXT, mention BOOLEAN)",
            [], function (tx, result) {
                clear();
            });
    });
}

db.transaction(function (tx) {
    tx.executeSql('SELECT * FROM tweets WHERE mention = ? AND id > ? ORDER BY id DESC',
        [mention, latest],
        function (tx, results)
        {
            var tweets = [], i, since_id = 0, script;

            // ...

        }, function (tx) {
            status.innerHTML = 'error occurred, please reset DB';
        });
});
```

Web SQL & Indexed DB

- Even more ways to set a Super-Cookie
- Web SQL is no longer maintained
- Instead, Indexed DB is now state of the art

New Form/Input Element-Types

- Color
- Date, Month, Week, Time, Datetime, Datetime-local

- Email, Url, Tel

- Number, Range

- Search

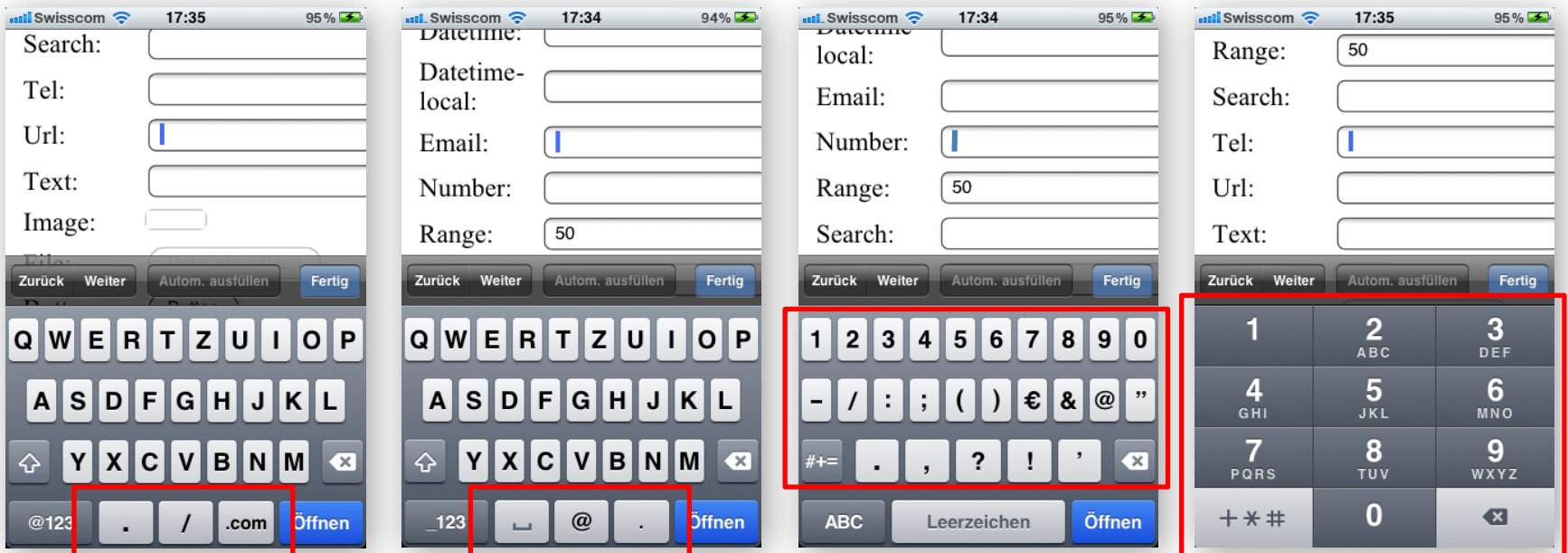
- <keygen>

- <output>

November							2010
Week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
44	1	2	3	4	5	6	7
45	8	9	10	11	12	13	14
46	15	16	17	18	19	20	21
47	22	23	24	25	26	27	28
48	29	30	1	2	3	4	5
49	6	7	8	9	10	11	12
Today							None

- Validation
- Out-of-form-input-elements

HTML5 Form Fields on the iPhone



Some Form Attributes

- autocomplete
- form
- list – together with `<datalist>`
- multiple
- placeholder
- indeterminate ☒
- required, min, max, maxlength, pattern

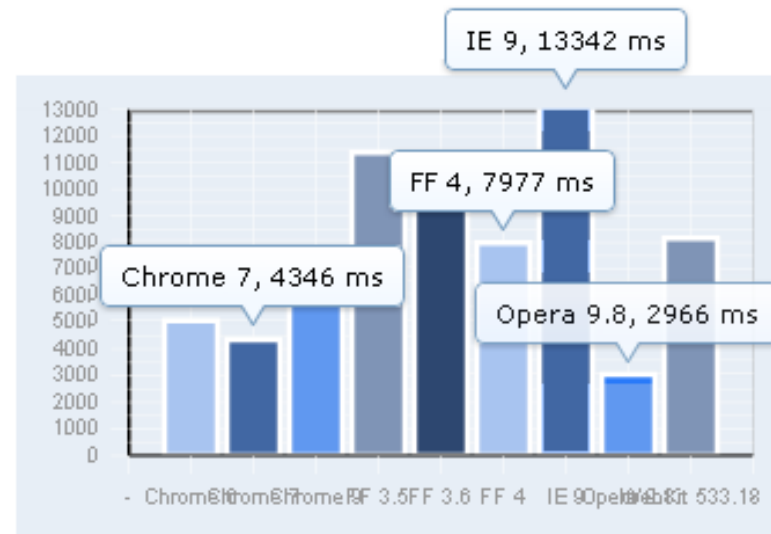
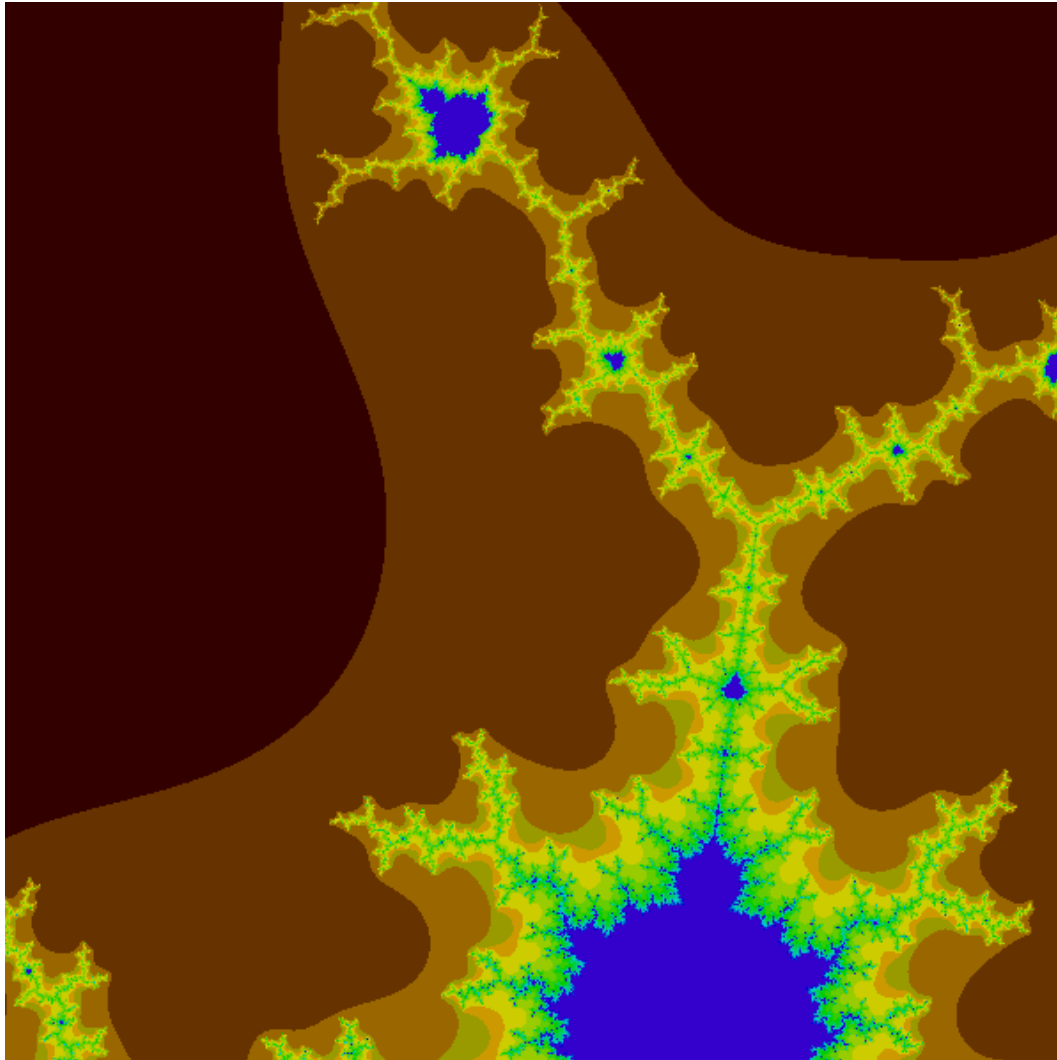
Yellow
Red
Green
Geenly



Drag & Drop

- IE 5 implementation with some additions
 - Every element can be **draggable**
 - Cross-Site and Cross-Browser drag&drop
- Ugliest API of HTML5
 - not intuitive
 - CSS hacks (WebKit)

Canvas



Web Sockets

```
GET /demo HTTP/1.1
Upgrade: WebSocket
Connection: Upgrade
Host: example.com
Origin: http://example.com
WebSocket-Protocol: sample
```

```
HTTP/1.1 101 Web Socket Protocol Handshake
Upgrade: WebSocket
Connection: Upgrade
WebSocket-Origin: http://example.com
WebSocket-Location: ws://example.com/demo
WebSocket-Protocol: sample
```

<http://www.websockets.org/echo.html>

Web Sockets

```
websocket = new WebSocket(wsUri);  
websocket.onopen = function(evt) { onOpen(evt) };  
websocket.onclose = function(evt) { onClose(evt) };  
websocket.onmessage = function(evt) { onMessage(evt) };  
websocket.onerror = function(evt) { onError(evt) };  
  
function onMessage(evt) {  
    writeToScreen('<span>RESPONSE: ' + evt.data + '</span>');  
}  
  
websocket.send(message);
```

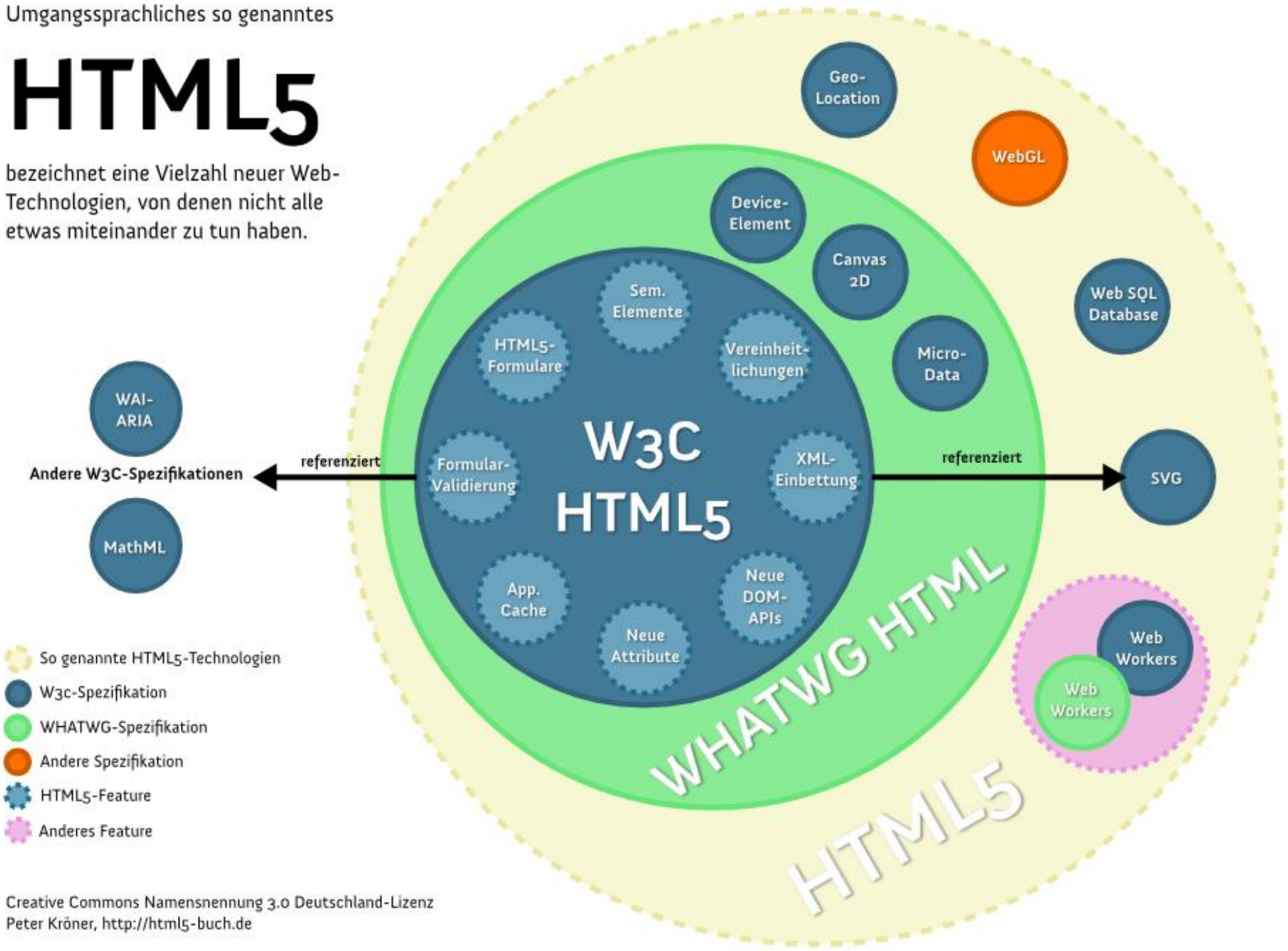
Is There Something More?

- Web Workers – Threaded JavaScript
- Indexed DB API – Replaces Web SQL
- Embedded MathML and SVG
- Microdata
- Canvas 3D / WebGL
- Device Element
- Channel Messaging
- PeerConnection

Umgangssprachliches so genanntes

HTML5

bezeichnet eine Vielzahl neuer Web-Technologien, von denen nicht alle etwas miteinander zu tun haben.



www.html5test.com



11.0.696

your browser scores

288

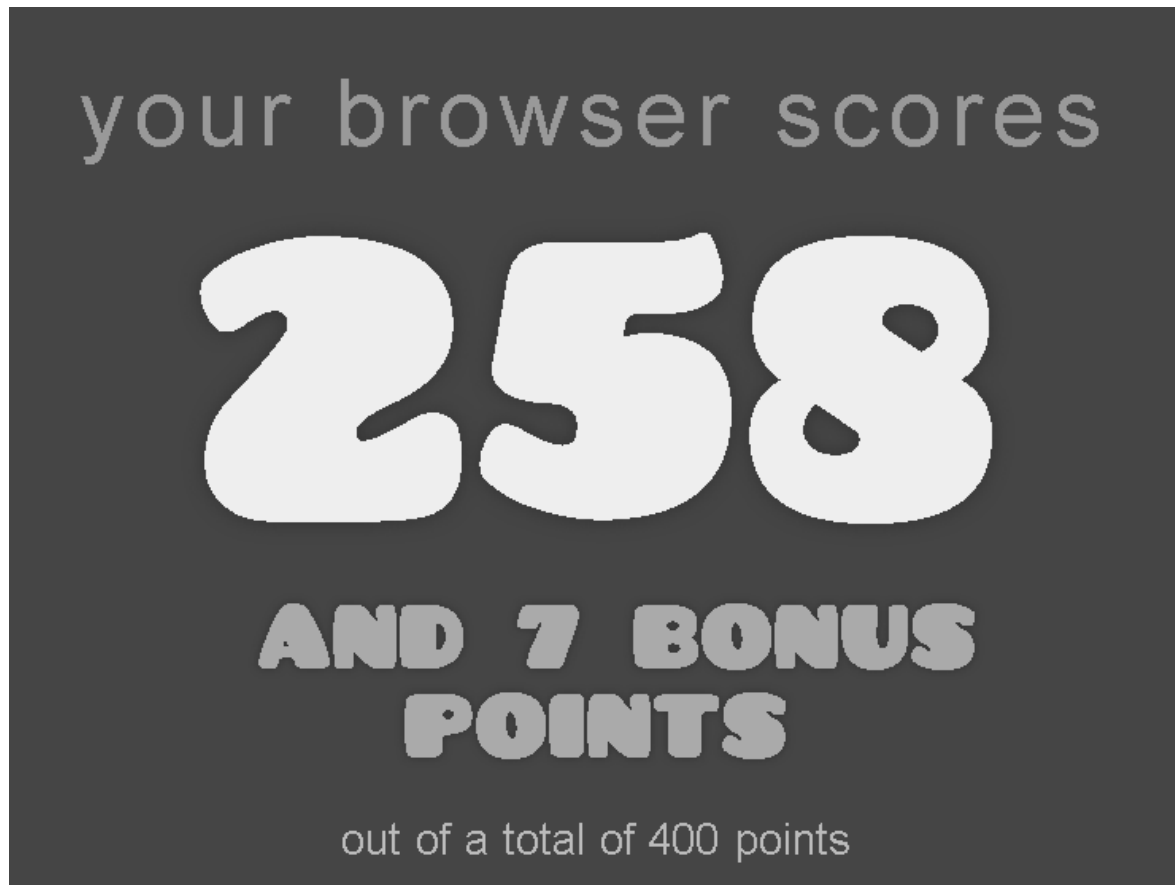
**AND 13 BONUS
POINTS**

out of a total of 400 points

www.html5test.com



11.10

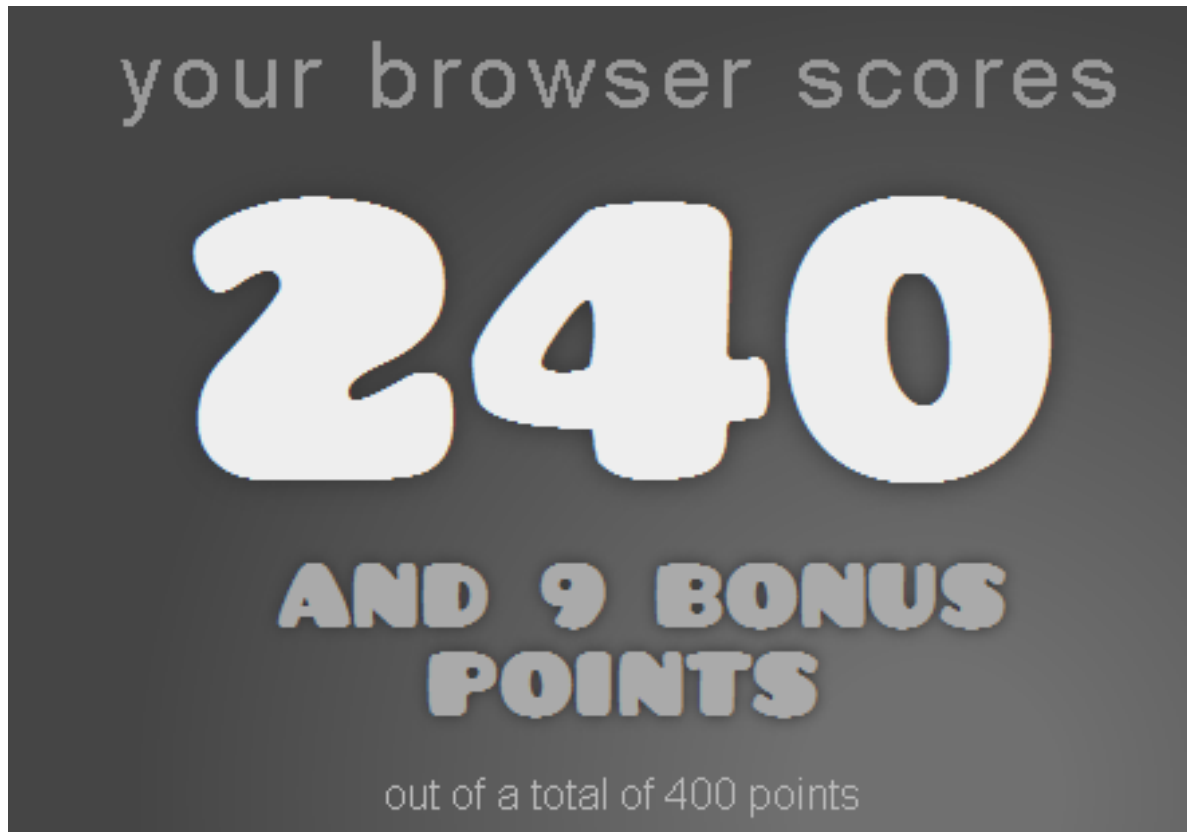


Opera 10.63: 159 + 7

www.html5test.com



4.0



FF 3.6: 155+ 4 Bonus Points

www.html5test.com



5.0.4

your browser scores

228

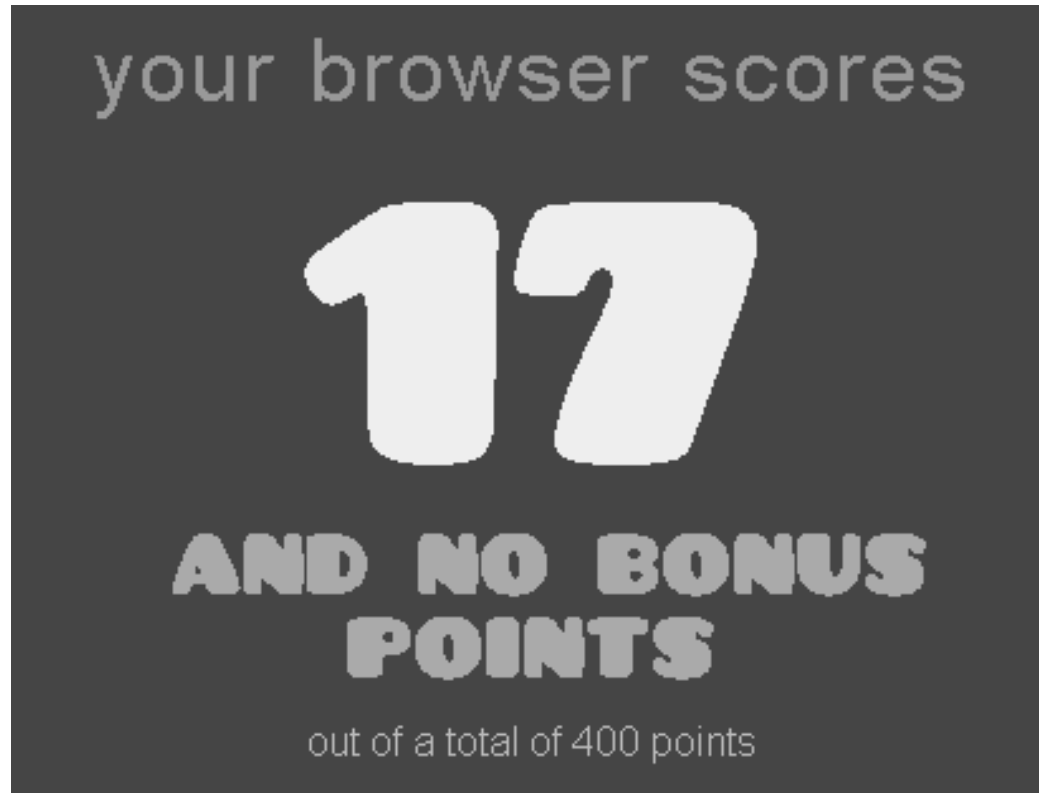
**AND 7 BONUS
POINTS**

out of a total of 400 points

www.html5test.com



7.0.5730

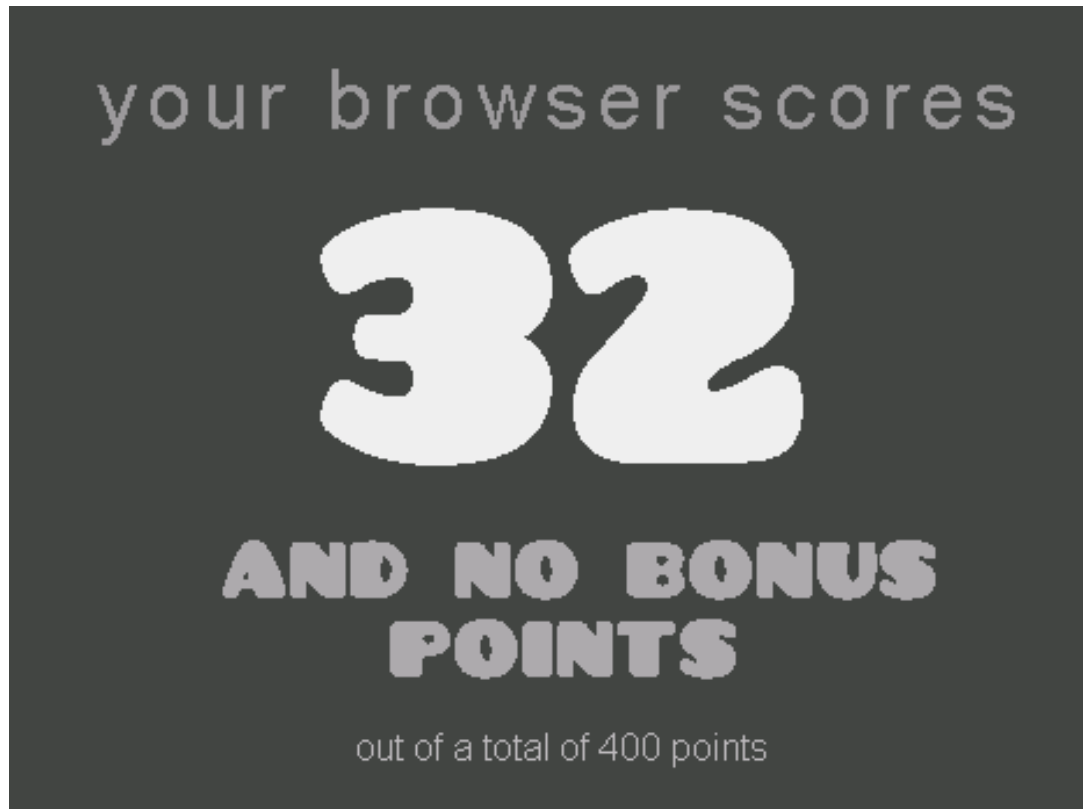


Also valid for IE 6

To be fair...



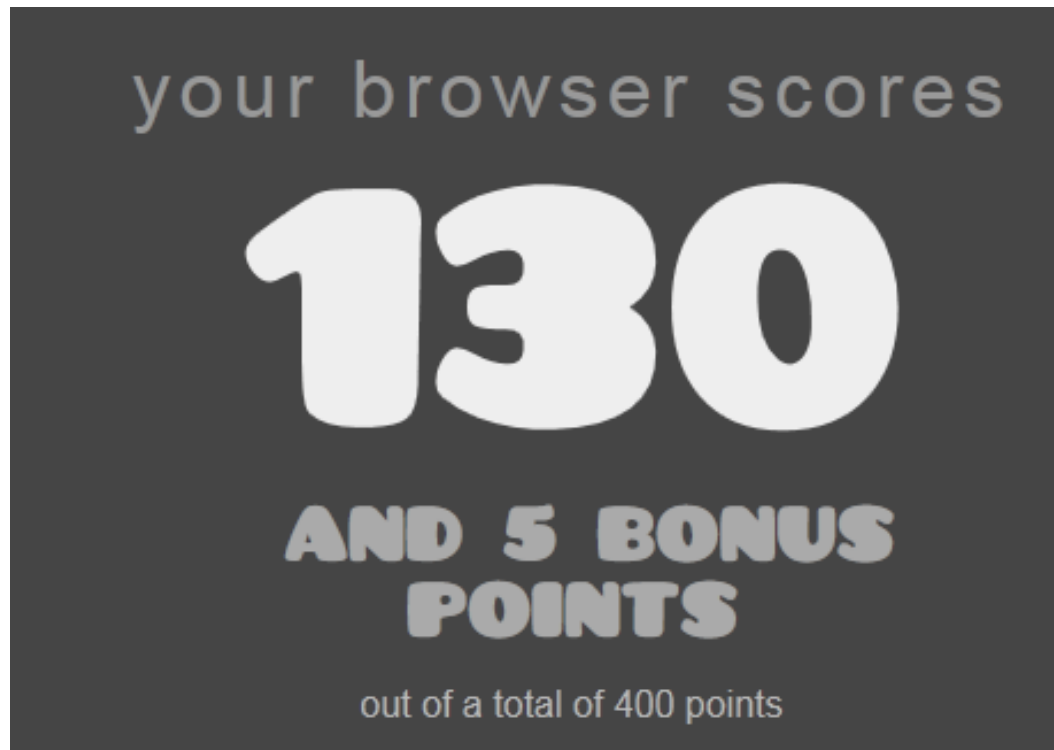
8.0.6001



To be really fair...



9.0.8112



www.caniuse.com

Nov 2010:

Summary

Calculation of support of currently displayed feature lists

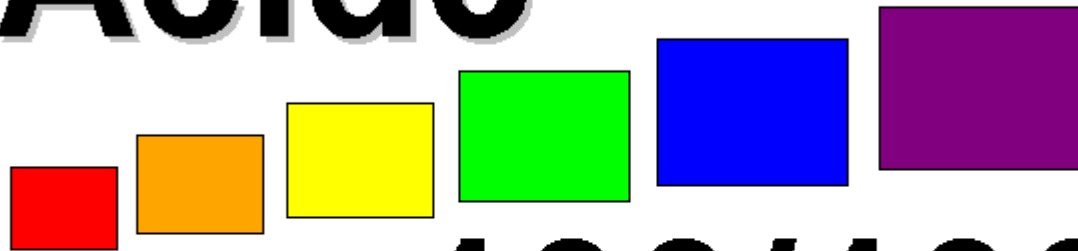
	Internet Explorer	Firefox	Safari	Chrome	Opera
Two versions back	6.0: 4%	3.0: 40%	3.2: 54%	5.0: 83%	10.1: 51%
Previous version	7.0: 11%	3.5: 68%	4.0: 74%	6.0: 87%	10.5: 70%
Current	8.0: 26%	3.6: 74%	5.0: 84%	7.0: 89%	10.6: 75%
Near Future (early 2011)	8.0: 26%	4.0: 91%	5.0: 84%	8.0: 93%	10.6: 75%
Future (mid/late 2011)	9.0: 62%	4.0: 91%	5.*: 91%	9.0: 93%	11.0: 79%

Apr 2011:

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	7.0: 14%	3.5: 57%	3.2: 44%	8.0: 85%	10.6: 69%	3.2: 54%			2.1: 49%
Previous version	8.0: 27%	3.6: 65%	4.0: 62%	9.0: 85%	11.0: 71%	4.0-4.1: 64%		10.0: 48%	2.2: 53%
Current	9.0: 58%	4.0: 84%	5.0: 75%	10.0: 88%	11.1: 76%	4.2-4.3: 65%	5.0-6.0: 35%	11.0: 70%	2.3: 56%
Near future	9.0: 58%	5.0: 86%	5.0: 75%	11.0: 88%	11.5: 78%				
Farther future	10.0: 66%	6.0: 86%	6.0: 85%	12.0: 88%	12.0: 78%				

acid3.acidtests.org

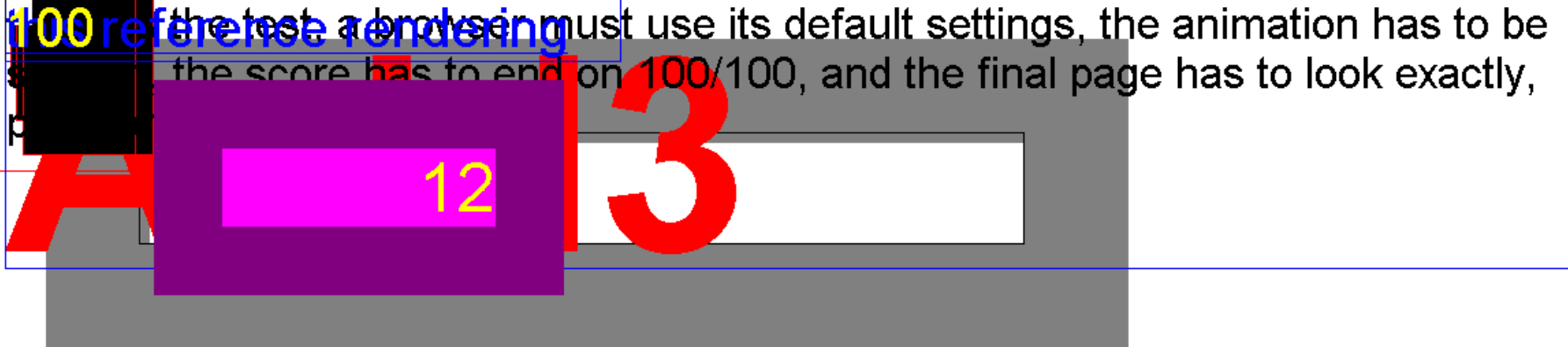
Acid3



100/100

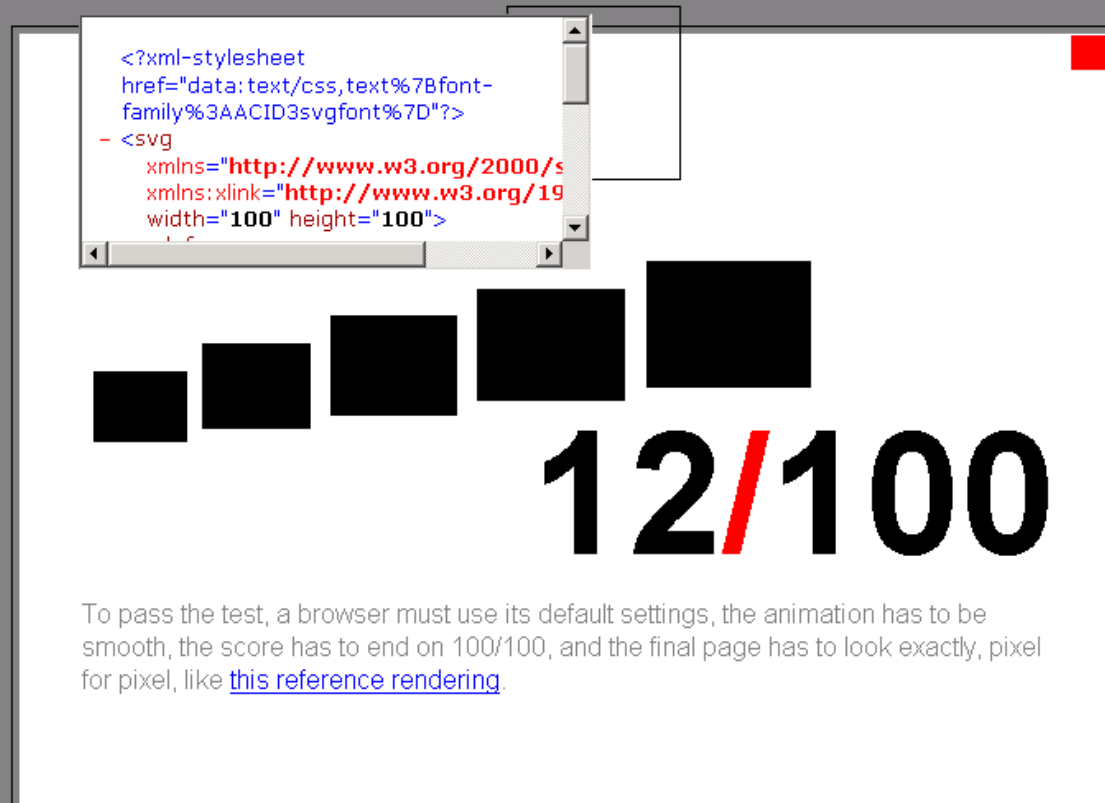
To pass the test, a browser must use its default settings, the animation has to be smooth, the score has to end on 100/100, and the final page has to look exactly, pixel for pixel, like [this reference rendering](#).

acid3.acidtests.org – Featuring IE7

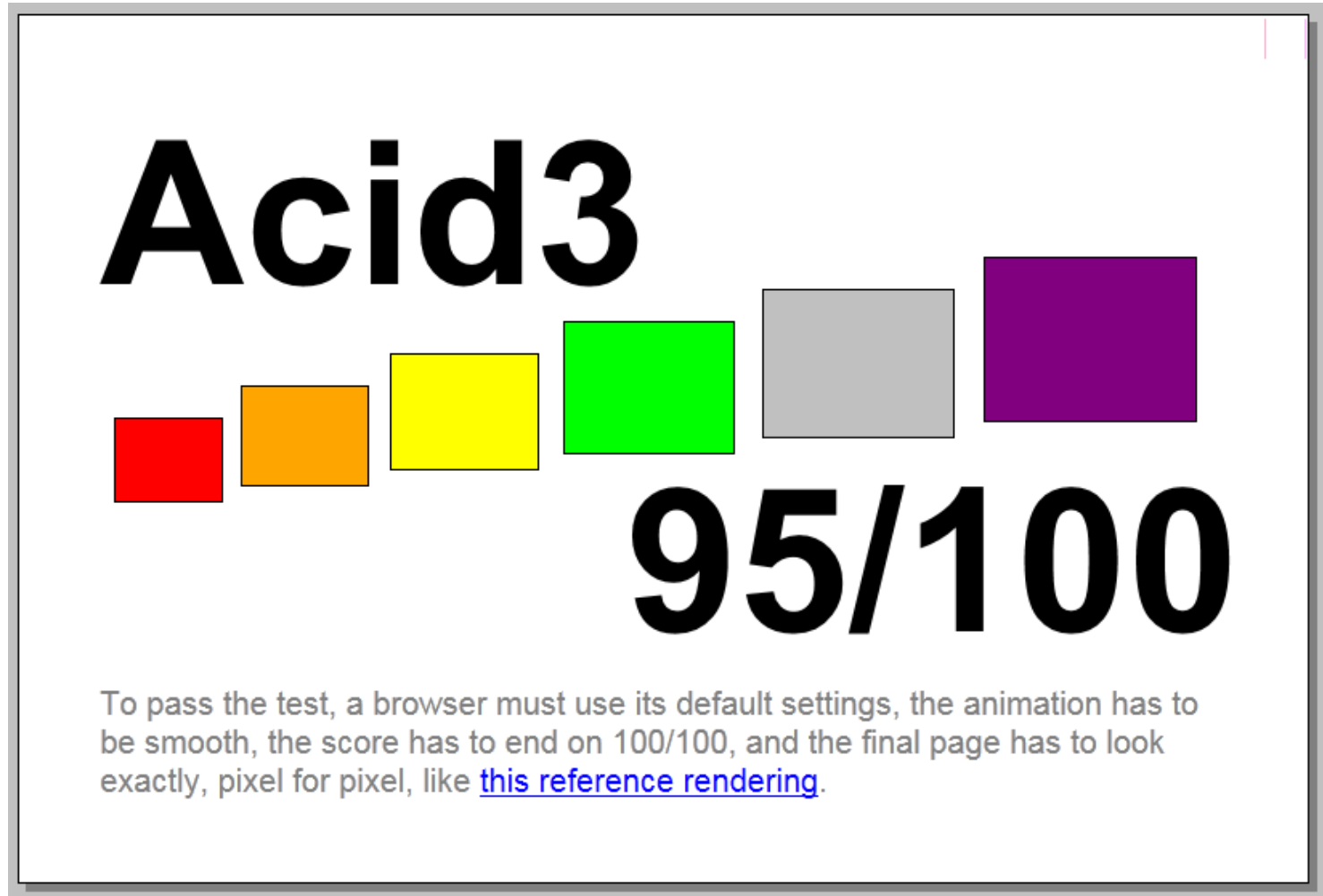


acid3.acidtests.org – Featuring IE8

FAIL
YOU SHOULD
NOT SEE THIS
AT ALL

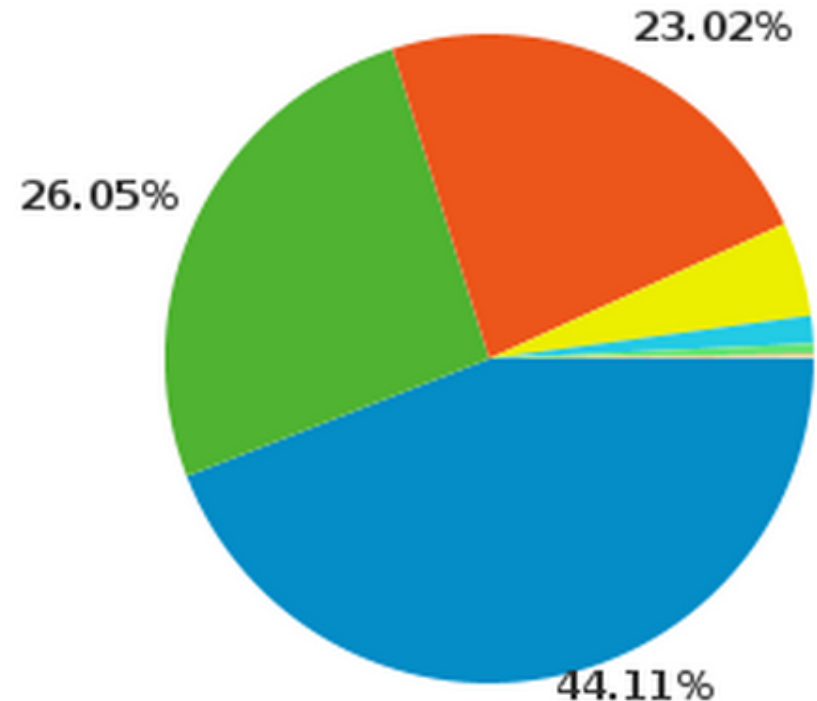


acid3.acidtests.org – Finally IE9



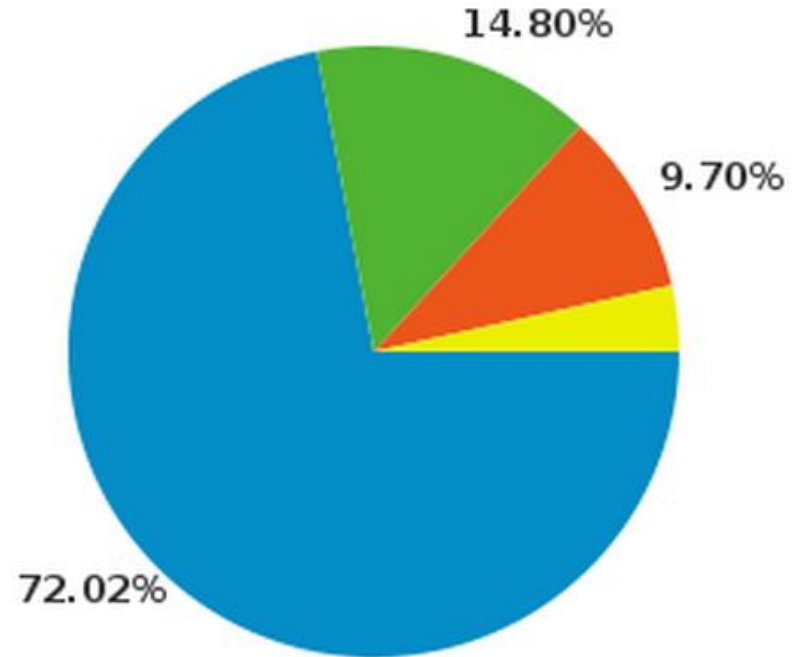
Some User Stats: Browsers

Internet Explorer	1,351	44.11%
Firefox	798	26.05%
Safari	705	23.02%
Chrome	144	4.70%
Opera	42	1.37%
Mozilla Compatible A	16	0.52%
Camino	4	0.13%
BlackBerry9700	1	0.03%
Opera Mini	1	0.03%
SeaMonkey	1	0.03%



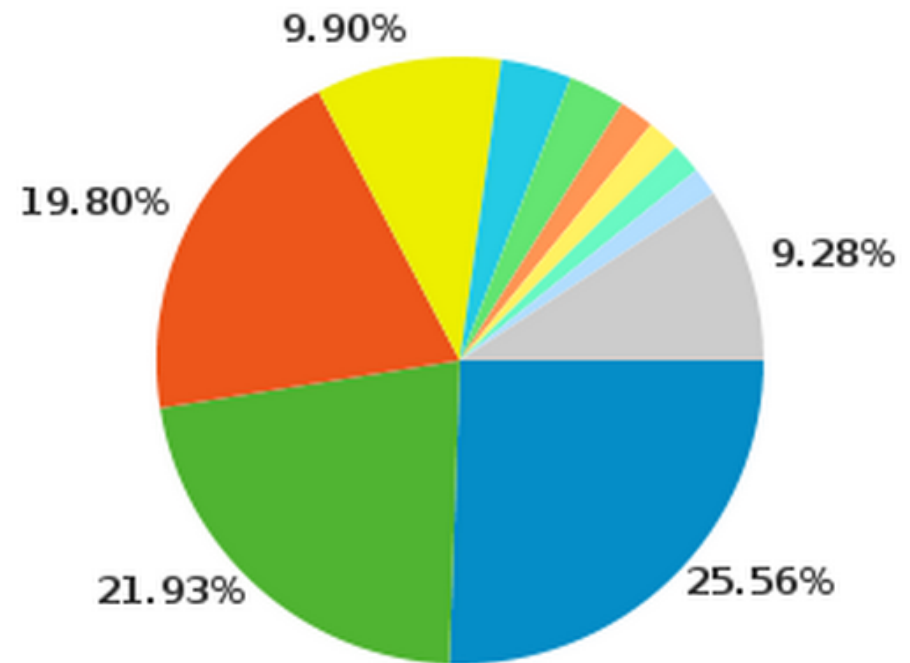
Some User Stats: IE Versions

8.0	973	72.02%
7.0	200	14.80%
9.0	131	9.70%
6.0	47	3.48%



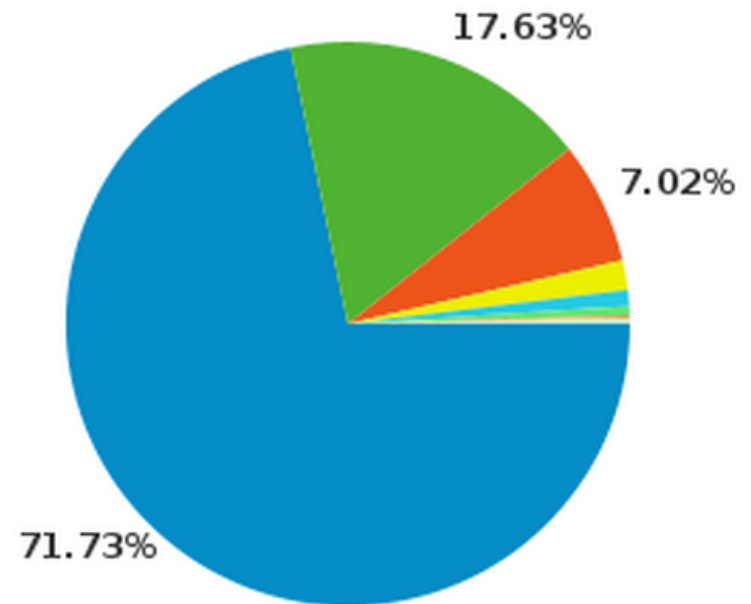
Some User Stats: FF Versions

■ 4.0.1	204	25.56%
■ 3.6.16	175	21.93%
■ 3.6.17	158	19.80%
■ 4.0	79	9.90%
■ 3.6.13	30	3.76%
■ 3.6.8	24	3.01%
■ 3.5.19	15	1.88%
■ 3.5.18	14	1.75%
■ 3.6.15	13	1.63%
■ 3.6.3	12	1.50%



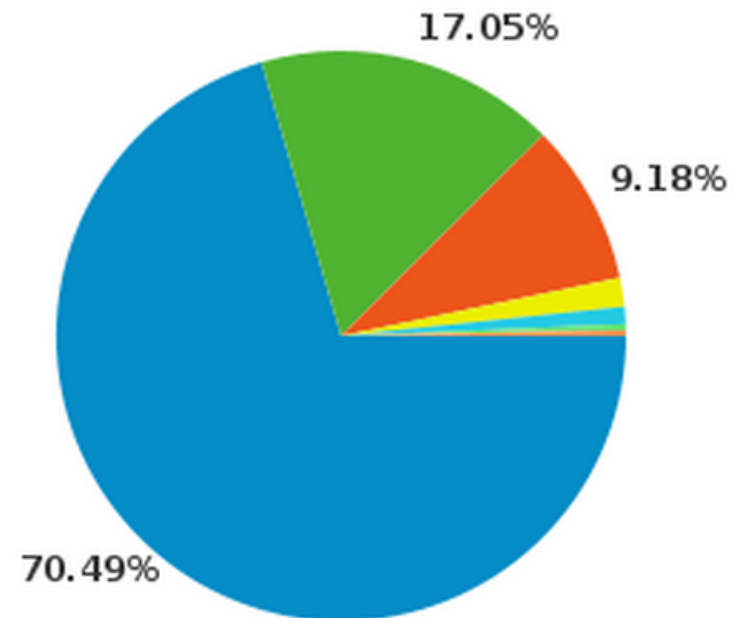
Some User Stats: Operating Systems

Windows	2,197	71.73%
Macintosh	540	17.63%
iPhone	215	7.02%
iPad	52	1.70%
Android	28	0.91%
Linux	16	0.52%
SymbianOS	5	0.16%
(not set)	3	0.10%
iPod	3	0.10%
SunOS	2	0.07%
BlackBerry	1	0.03%
Nokia	1	0.03%



Some User Stats: Mobile

iPhone	215	70.49%
iPad	52	17.05%
Android	28	9.18%
SymbianOS	5	1.64%
iPod	3	0.98%
BlackBerry	1	0.33%
Nokia	1	0.33%



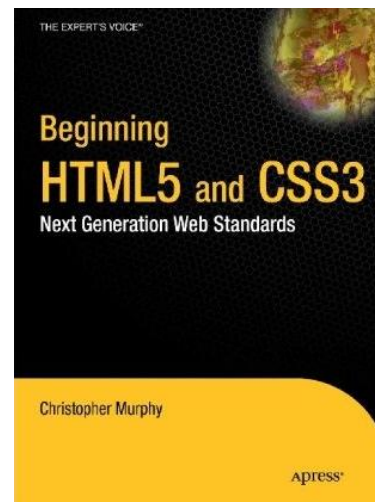
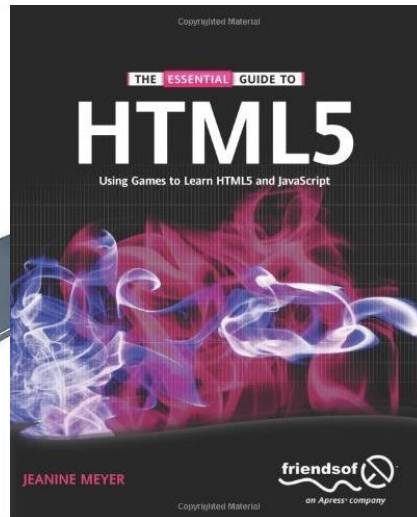
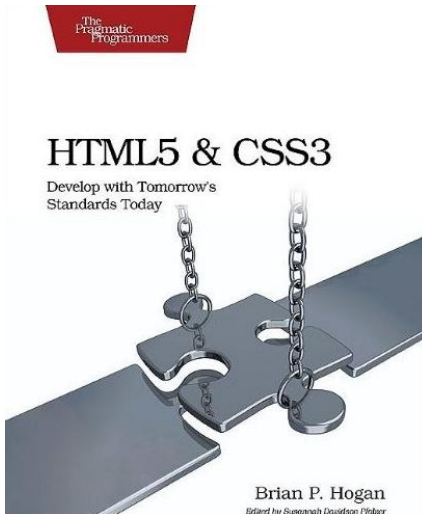
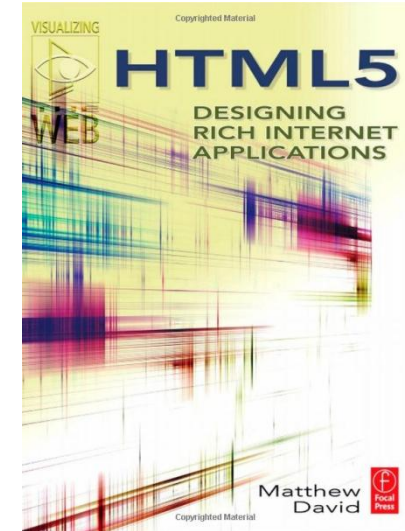
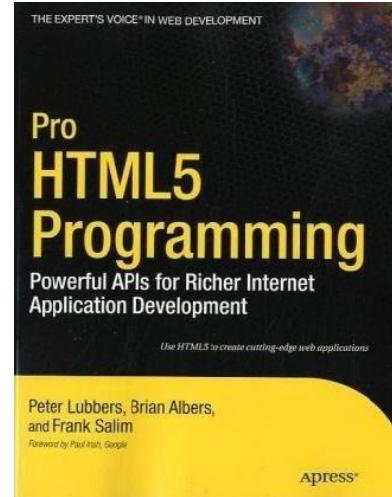
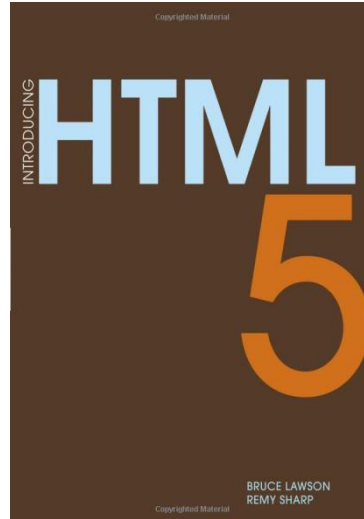
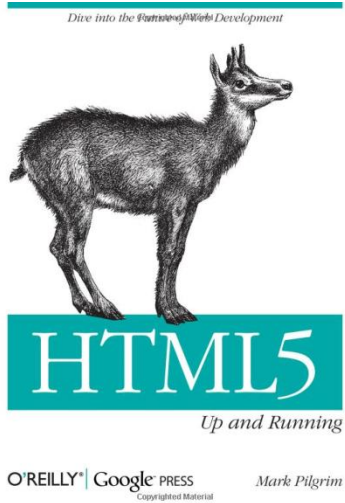
Conclusion

- HTML5 is not „one big thing“
- There is no schedule and no commitment
- With more features comes more diversity
- New security concerns (local storage, geoloc.)
- With graceful fallback, HTML5 can be used today
- Mobile devices are a good start

About Competitors: Is Flash Dead Now?

- <video>: H.264 vs. Ogg/Vorbis vs. WebM
- HTML5-support differs often in tiny details
- The Browser-competition will go on
- Adobe doesn't sleep as well (performance)
 - AIR 2.5 runs officially on iOS
 - with byte-code-cross-compiler
 - but there is still no browser-plugin

Books



Links

Specs

- <http://dev.w3.org/html5/spec/Overview.html>
- <http://www.whatwg.org/>

Tests

- <http://www.html5test.com/>
- <http://caniuse.com/>
- <http://test.w3.org/html/tests/reporting/report.htm>
- <http://findmebyip.com>

Demos

- <http://html5demos.com/>
- <http://mugtug.com/sketchpad/>
- http://mrdoob.com/projects/chromeexperiments/google_gravity/

Links

Info

- <http://diveintohtml5.org/>
- <http://webkit.org/blog/1273/the-html5-parsing-algorithm/>
- <http://html5doctor.com/>
- http://www.quackit.com/html_5/
- <http://hacks.mozilla.org/category/html5/>

Libraries / Tools

- <http://www.modernizr.com/>
- <http://jacwright.com/blog/428/simpli5-an-html5-javascript-framework/>
- <http://www.tile5.org/>
- http://www.kaltura.org/project/HTML5_Video_Media_JavaScript_Library
- <http://html5.validator.nu/>

