



J-Fall

11 november 2009 Spant!



A Google approach RIA: HTML5



Jeroen Benckhuijsen
Atos Origin

“Google OS Netbook will be here in 2010, with HTML5 local caching for offline use”, Eric Schmidt CEO Google

.nl.
jug



Who am i?

- Jeroen Benckhuijsen
- Atos Origin
- Software Architect
- Experience in Java, C, C++, ...
- Shameless plug:
 - Project lead for Mule SAML
 - Project lead for Atlassian Confluence NewCode macro





- “Rijke applicaties” zijn nu het domein van de browser plugins
- ***Gaat HTML 5 dit mogelijk maken binnen de browser?***
- ***Wanneer is HTML 5 eigenlijk beschikbaar?***



- Wat zoeken we in een RIA framework?
- Introductie HTML 5
- De mogelijkheden van HTML5
- Voldoende voor RIA?
- Q&A



Wat is een RIA framework?

- Two-way communicatie tussen Client-Server
 - Push & Pull
- “Desktop like experience”
 - Animatie effecten
 - Client-side processing
 - Offline werken
 - Drag & drop
 - Desktop integratie
- Rijke set aan componenten
 - Snel en eenvoudig ontwikkelen





Geschiedenis van HTML



ENQUIRE

Memo by T.B-L

HTML 2.0

HTML 3.2

HTML 4.0

HTML 4.01

HTML 5 Draft



1980 1984 1988 1992 1996 2000 2004 2008 2012



HTML 5: WHATWG ?

- WHATWG:
 - Web Hypertext Application Technology Working Group
 - Founded by individuals of Apple, the Mozilla Foundation, and Opera Software in 2004



“Concerned about the W3C’s direction with XHTML, lack of interest in HTML and apparent disregard for the needs of real-world authors”



HTML 5: Overview

- Grote set van verschillende specs
- HTML 5 in enge zin
 - Nieuwe en aangepaste tags
 - Oude tags verwijderd
- HTML 5 in brede zin:

Communication	Presentation	RIA	Other
WebSocket →	Canvas →	Local storage	Geo location
Server Events →	Video & Audio	Offline apps	History
→ Messaging	Inline editing →	Workers →	→ Selectors
		→ Drag & drop	



HTML 5: Tags en syntax



Syntax:

- X(HT)ML
- HTML



API: innerHTML,
classList, getSelection()



Integratie MathML en
SVG



Document structure tags:

- <section>, <article>, <aside>, <hgroup>, <header>, ...



Other elements:

- <canvas>, <video>, <audio>, <mark>, <progress>, ...



Removed:

- <center>, , <frame>, <basefont>, <strike>, ...

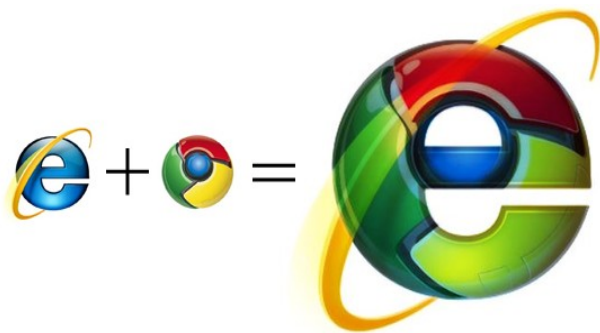


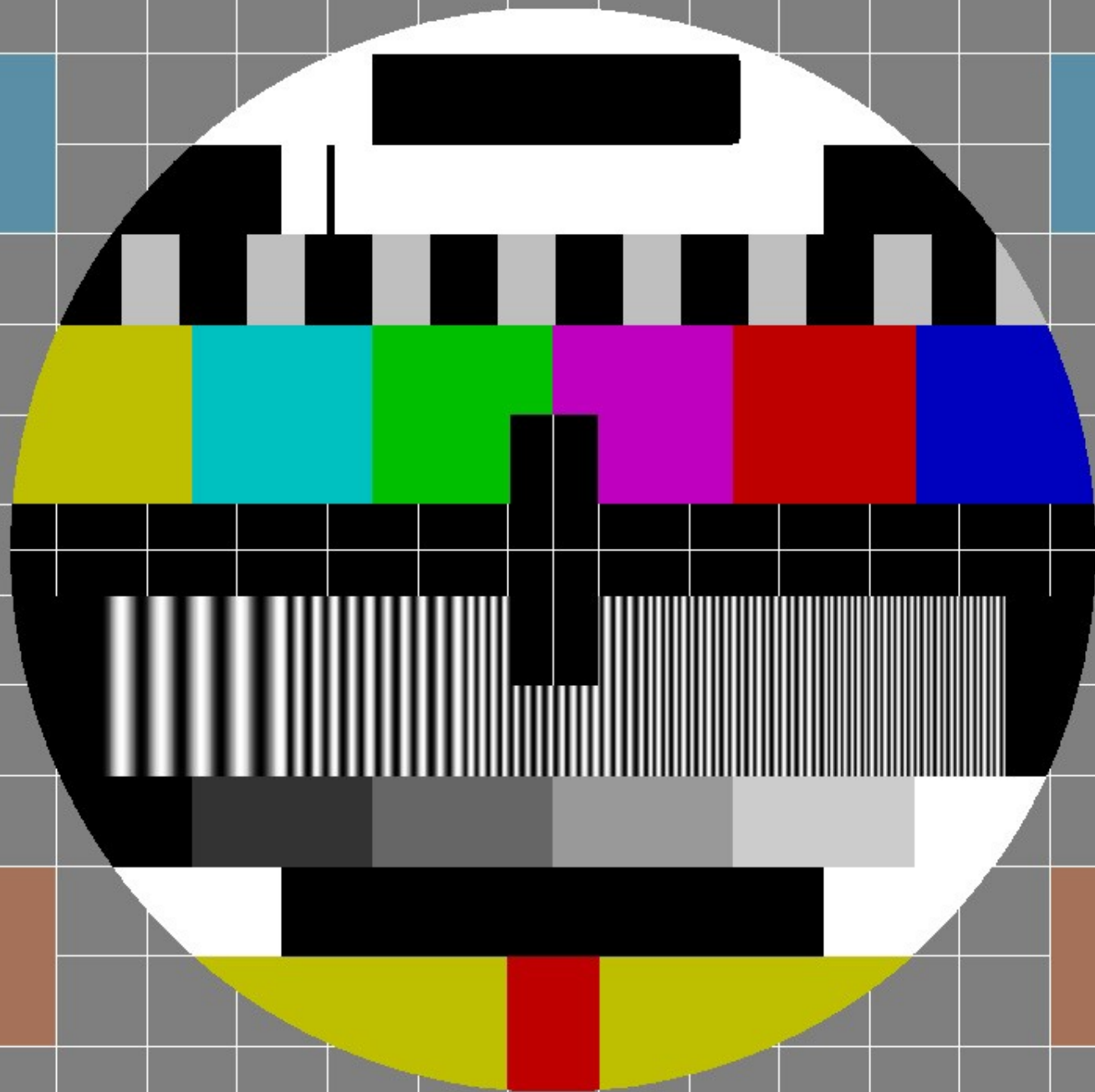
Browser vs. Document



HTML 5: Browser support

- Support vanuit Firefox, Safari, Opera, Chrome, IE
 - Internet Explorer minste ondersteuning
 - Google Frame kan helpen
- Support in praktijk verschilt
 - Mate van volwassenheid per API



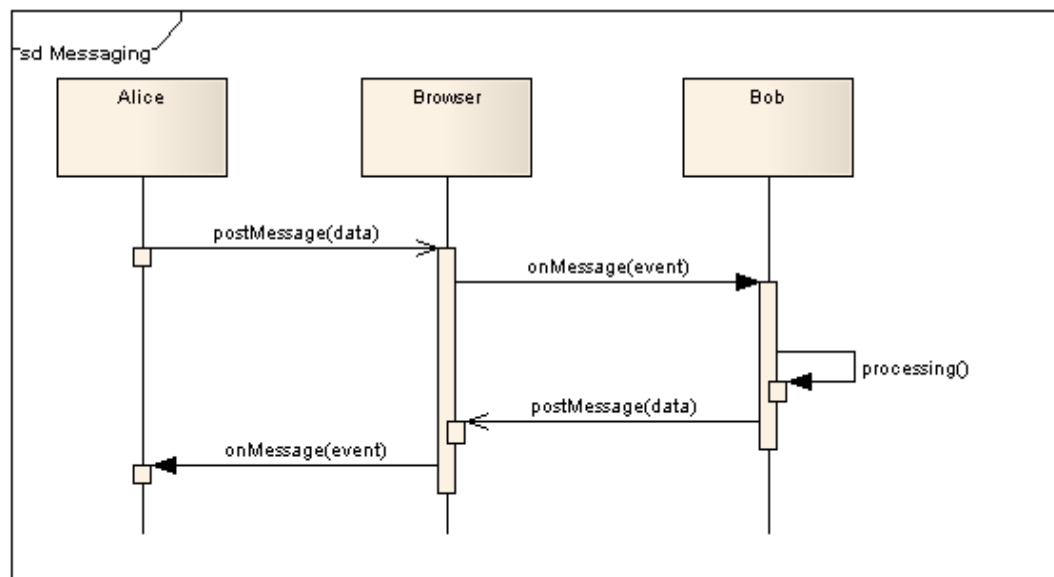




HTML 5: Messaging

- Messaging in de browser
- Basis van veel andere functionaliteiten
- Kern: `postMessage(data)` en `onMessage(event)`
 - Data: conversie naar JSON

```
onMessage = function(event) {  
    var data = event.data;  
  
    postMessage(newData);  
}
```






HTML 5: Canvas, Video, ...



YouTube HTML5 DEMO

Home Subscriptions Videos Shows Channels Search Upload

O3D Beach Demo



This demo is rendered in real time in a browser using O3D

★★★★★ 158 ratings 311,916 views

[Favorite](#) [Share](#) [Playlists](#) [Flag](#)

[MySpace](#) [Twitter](#) [Send Video](#)

▶ **Statistics & Data**

▶ **Video Responses (2)**

▼ **Text Comments (145)**

axturn1 (1 day ago)
at last!
No more papervision hehe... :)

Google April 17, 2009 Subscribe

This is a demo that demonstrates the potential of rendering 3D graphics in the browser, using O3D, an open-source web API for creating rich, interactive 3D applications in the browser. The app shown in the video is coded in javascript and HTML and runs in a web browser. [Learn more about O3D at http://code.google.com/vapis/o3d](http://code.google.com/vapis/o3d)

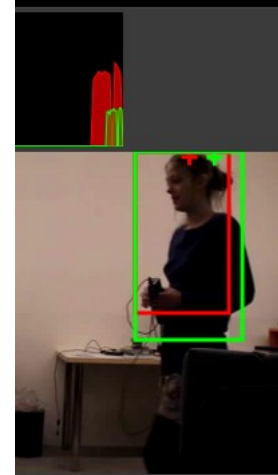
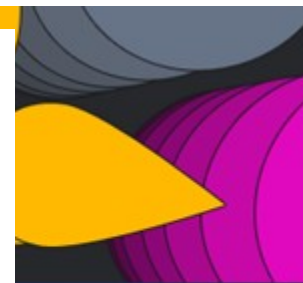
URL <http://www.youtube.com/watch?v=ufPFDXl>
Embed `<object width="560" height="340"><param`

▼ **More From: Google**

- Google Chrome, Japan**
2,427,313 views
- New features in Google Earth 4.3**
12,608,785 views
- Life at the Googleplex**
91,730 views
- Gmail: A Behind the Scenes Video**
1,189,420 views
- Google Creative Reel**
32,434 views

▼ **Related Videos**

- Introducing Android**
893,624 views
Google



Go !



HTML 5: Canvas, Video, ...

- Video: native browser support voor video's

- Codecs?

- <http://www.w3.org/html/wg/tracker/issues/7>

- WebCam?

- <http://www.w3.org/2009/05/DeviceAPICharter>



- Canvas: tekenen met JavaScript

```
<canvas id="tutorial" width="150" height="150">
</canvas>
```

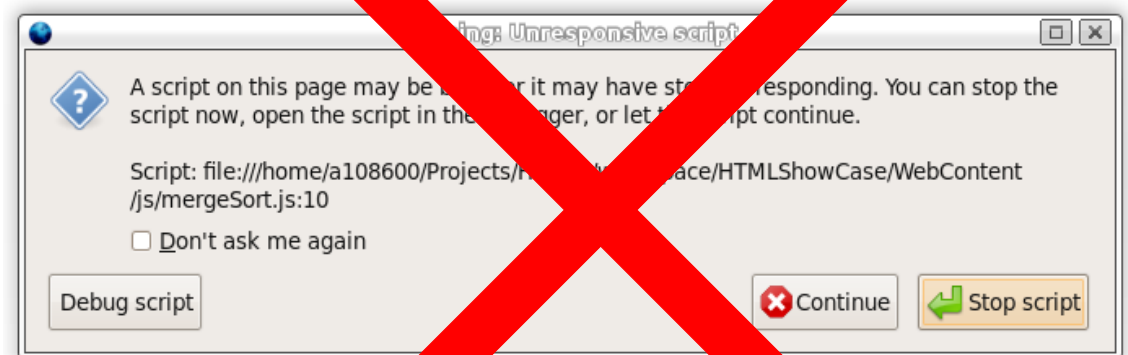
```
var canvas = document
    .getElementById("tutorial");
if (canvas.getContext) {
    var ctx = canvas.getContext("2d");

    ctx.fillStyle = "rgb(200,0,0)";
    ctx.fillRect (10, 10, 55, 50);
}
```



HTML 5: Web Workers

- Zware client-side reken taken niet mogelijk
 - Firefox: unresponsive script
- Huidige oplossing: server side
 - Nadeel: data transfer, belasting server





HTML 5: Web Workers



- WebWorkers (JavaScript threads) to the rescue!
 - Communicatie: messaging
 - Geen toegang tot DOM
 - Wel XMLHttpRequest (AJAX)



```
var worker = new Worker('worker.js');  
worker.onMessage = function(event) {  
  // Handle results from worker  
}  
  
worker.onError = function(event) {  
  // Handle errors from worker  
}  
  
worker.postMessage(data);
```

```
function do_it(data) {  
  // Complex calculation logic  
}  
  
onMessage = function(event) {  
  var result = do_it(event.data);  
  
  postMessage(result);  
}
```



HTML 5: Drag & Drop

- `<node draggable="true"/>`
- Events:
 - dragstart : Start dragging
 - dragenter : Binnekomen “drop-area”
 - dragover: Boven “drop-area”
 - dragleave: Verlaten “drop-area”
 - drop: Stop dragging & drop
- Event model
 - e.target
 - e.dataTransfer





HTML 5: Drag & Drop

- Niet altijd intuïtief

- ```
addEvent(dropzone, 'dragover', function (e) {
 if (e.preventDefault) e.preventDefault();
 this.className = 'items over';
 return false;
});
```

- ```
// to get IE to work  
addEvent(dropzone, 'dragenter', function (e) {  
    this.className = 'items over';  
    return false;  
});
```

- Idem voor “drop”



HTML 5: Working offline

- Benodigdheden voor offline werken
 - Detectie online zijn
 - Locale opslag
 - Beschikbaarheid van de applicatie
- Mogelijkheden in HTML 5
 - Navigator.online
 - Online/offline event
 - Application Cache
 - Web DB
 - Session storage en Local Storage





HTML 5: Offline werken

- Events en properties voor connectie status:
 - **Navigator.onLine: Boolean property**
 - **Online/offline event**



```
function online() {  
    var status = document.querySelector('#status');  
    if (status) {  
        status.className = navigator.onLine ? 'online' : 'offline';  
        status.innerHTML = navigator.onLine ? 'online' : 'offline';  
    }  
}  
  
document.addEventListener('DOMContentLoaded', online, true);  
window.addEventListener('online', online, true);  
window.addEventListener('offline', online, true);
```



Lokale opslag van Data

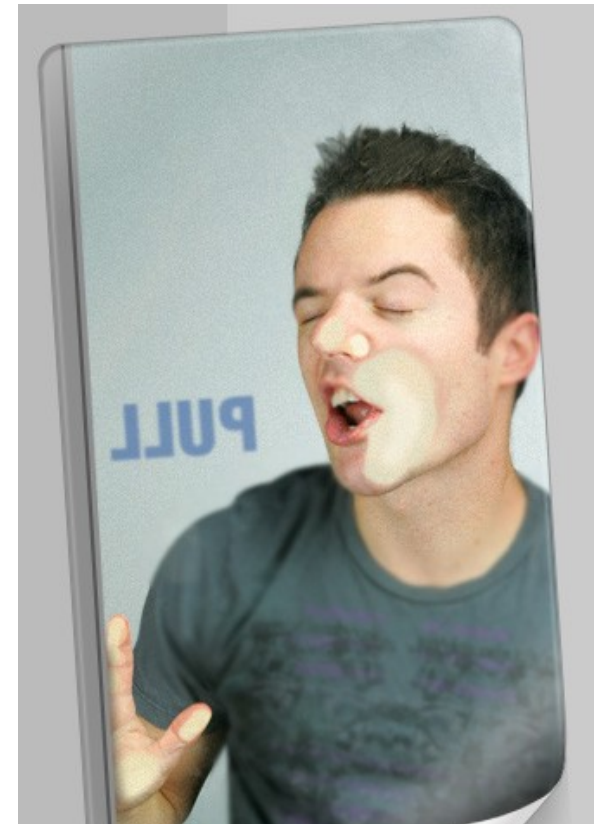
- Session/Local storage
 - “Map”-based implementatie
 - getItem(key), setItem(key, data)
- WebDB
 - SQLite API binnen de browser
 - Geen HTML 5, maar Web Applications





HTML 5: Web Socket & SSE

- HTTP: altijd request vanuit de client
- Huidige oplossingen:
 - Comet: AJAX long-polling
 - Plugins (Java, Flex, ...)
- Enter HTML 5! (sort of...)
- Server Sent Events:
 - Events vanuit de server
- Web Socket:
 - Full-Duplex communicatie





HTML 5: Concurrentie voor Flex?

- Two-way communicatie tussen Client-Server
 - ✗ Push & Pull
 - “Desktop like experience”
 - ✓ Animatie effecten
 - ✓ Client-side processing
 - ⚠ Offline werken
 - ✓ Drag & drop
 - ✗ Desktop integratie
 - Rijke set aan componenten
 - ⚠ Snel en eenvoudig ontwikkelen
- *HTML 5 biedt enige concurrentie*
 - *Ontwikkelingen gaan snel*
 - *Ruimte voor beide?*



De toekomst?

- Ondersteuning door browsers
 - Steeds beter
 - Zelfs Microsoft doet (deels) mee
- Componenten frameworks
 - Ondersteuning door b.v GWT?
 - As usual: browser verschillen wegwerken
- 3D accelerated graphics?
 - O3D – High level Scenegraph
 - WebGL – Low level, OpenGL API in JS



.nl.
jug



Q&A

Atos ™
Origin

