Mobile: HTML5 or native?

Deciding right for your needs
Our biggest mistake was betting too much on HTML5 rather than native applications. It just wasn't there.
Challenge accepted!
HTML5 is ready
Facebook native

vs.

Fastbook HTML5

Source: http://vimeo.com/55486684
Displaying lots of data is not technology related

Questions to solve:

- Local caching
- Identity over server roundtrips
- Update tracking
- When and how to refresh?

→ This is maybe not your problem

→ Facebook's problems are not everyone’s problems

→ Facebook still likes and uses HTML5
HTML5 vs. native?
What evangelists are saying
Goal of this talk

Identify your needs and use case
Provide facts and arguments
Showing the limits and strengths of HTML5 (focus on mobile)
Help finding your decision
Facets in mobile development

User experience
Screen size segmentation
Supporting main platforms
Application lifecycle management (ALM)
Facets in mobile development

User experience

Screen size segmentation

Supporting main platforms

Application lifecycle management (ALM)
Classification 2010 (before HTML5)
Thin, RIA, Rich

- Thin
- AJAX RIA
- no techn.

Environment
- Plugin RIA
- Standalone RIA
- Rich Clients

User Interaction
- low
- complex/high

Store
- cost barriers

Mobile: HTML5 or native? | Nikolaos Kaintantzis
11. April 2013
Classification 2013
HTML5 and Rich

- HTML5
- Plugin RIA
- Standalone RIA
- Rich Clients

User Interaction:
- low
- complex/high

Environment:
- web
- native

Mobile: HTML5 or native? — Nikolaos Kaintantzis
11. April 2013
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HTML5 is more than a hype

expands AJAX-RIA-box to the right
- New types for `<input>` tag
- Drag and drop
- Canvas and webGL
- Web sockets

expands AJAX-RIA-box to the bottom
- Offline capabilities/Application cache
- Local storage and indexed database
- File-API
- Geolocation
- Web messaging/Channel messaging
Classification 2015
HTM5 for everything?

Mobile: HTML5 or native? | Nikolaos Kaintantzis

Thin
AJAX
Plugin RIA
Standalone RIA
Rich Clients

2010

2013

HTML5

HTML5

HTML5
2015 ???
HTML5 for everything?
- Challenge complex user interaction

User Interaction

- Low complexity:
  - HTML5
  - Plugin RIA

- Complex/high complexity:
  - Rich Clients
  - Standalone RIA
  - No technology

DnD, Keyboard Shortcuts, automated data exchange
HTML5 for everything?
- Challenge complex user interaction

Web
- HTML5

Environment
- Plugin RIA
- Standalone RIA
- Rich Clients

Native
- No mobile use case

User Interaction
- Low
- Complex/high

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11. April 2013
HTML5 for everything?
- Challenge native APIs and look and feel

---

**Environment**
- **native**
  - Rich Clients
  - User Interaction
  - Standalone RIA
  - Plugin RIA
- **web**
  - HTML5

**User Interaction**
- low
- complex/high

**Access file system, webcam, native look and feel**
# Filesystem & FileWriter API - Working Draft

Method of reading and writing files to a sandboxed file system.

<table>
<thead>
<tr>
<th>Show all versions</th>
<th>IE</th>
<th>Firefox</th>
<th>Chrome</th>
<th>Safari</th>
<th>Opera</th>
<th>iOS</th>
<th>Opera Mini</th>
<th>Android Browser</th>
<th>Blackberry Browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>10.0</td>
<td>19.0</td>
<td>25.0</td>
<td>webkit 5.1</td>
<td>6.0</td>
<td>12.1</td>
<td>6.0</td>
<td>5.0-7.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Near future</td>
<td>20.0</td>
<td>26.0</td>
<td>25.0</td>
<td>webkit 6.0</td>
<td>12.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farther future</td>
<td>21.0</td>
<td>27.0</td>
<td></td>
<td>webkit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes

Known issues (0) Resources (2) Feedback

No notes
Can I use the webcam with HTML5?

www.caniuse.com

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### getUserMedia/Stream API - Working Draft

Method of accessing external device data (such as a webcam video stream). Formerly this was envisioned as the `<device>` element.

<table>
<thead>
<tr>
<th>Show all versions</th>
<th>IE</th>
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<th>Chrome</th>
<th>Safari</th>
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<tbody>
<tr>
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<td>19.0</td>
<td>moz</td>
<td>25.0</td>
<td>webkit</td>
<td>12.1</td>
<td>6.0</td>
<td>5.0-7.0</td>
<td>4.2</td>
</tr>
<tr>
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</tr>
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<td>Farther future</td>
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<td>webkit</td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**
No notes

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Can I use geolocation and device orientation?

www.caniuse.com

# Geolocation - Candidate Recommendation
Method of informing a website of the user's geographical location

<table>
<thead>
<tr>
<th>Show all versions</th>
<th>IE</th>
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<td>6.0</td>
<td>5.0-7.0</td>
<td>4.2</td>
<td>7.0</td>
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<tr>
<td>Near future</td>
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<td>12.5</td>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farther future</td>
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<td>27.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# Device Orientation events - Working Draft
API for detecting orientation and motion events from the device running the browser.

<table>
<thead>
<tr>
<th>Show all versions</th>
<th>IE</th>
<th>Firefox</th>
<th>Chrome</th>
<th>Safari</th>
<th>Opera</th>
<th>iOS Safari</th>
<th>Opera Mini</th>
<th>Android Browser</th>
<th>Blackberry Browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>9.0</td>
<td>18.0</td>
<td>24.0</td>
<td>5.1</td>
<td>3.2</td>
<td>4.0-4.1</td>
<td>4.2-4.3</td>
<td>3.2</td>
<td>7.0</td>
</tr>
<tr>
<td>Near future</td>
<td>10.0</td>
<td>19.0</td>
<td>25.0</td>
<td>6.0</td>
<td>12.1</td>
<td>6.0</td>
<td>5.0-7.0</td>
<td>4.2</td>
<td>10.0</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mobile HTML5 and wrapper

→ Hybrid apps

Native Wrapper
(Camera, Location, Contact, SMS, Orientation, File System Workers and Parallel Processing, Cross-App Messaging)
Missing HTML5 features (or support old browsers)

Use fallbacks and polyfills

- Use one of the 100+ HTML5 frameworks
- Check with modernizr to see if a feature is missing
- Modernizr includes YepNope.js for conditional loading of external js and css resources

```javascript
yepnope({
  test : Modernizr.geolocation,
  yep : 'normal.js',
  nope : ['polyfill.js', 'wrapper.js']
});
```
Looks the way you styled it

May conflict with known and expected interaction paradigms

- Backlink
- Arrows in lists
- No contextual action bar available (just the one of the browser)
Wie funktioniert die Methode 1?

Die Methode 1 berechnet die Noten linear zu den Punktewerten, d.h. der Punkteunterschied von einer Note zur nächsten ist immer gleich gross. Dabei können Sie bestimmen, mit welcher Punktzahl ein(e) SchülerIn die beste Note und welche Note ein(e) SchülerIn mit null Punkten erhält.

Die Methode 1 verlangt (siehe untenstehende Abbildung) folgende Werte: (Im Beispiel wird das Schweizer Notensystem verwendet; mit der Eins als schlechtester und der Sechs als bester Note)

Die **maximal mögliche Punktzahl**, die an der Prüfung möglich war. Im Beispiel: 60

Die **beste Note** in Ihrem Bewertungssystem.
An HTML5 app may look native but not feel native

- Some transitions and effects need hardware performance
- Animations when clicking on widgets are different than native

Feel depends on

- the maturity of the framework you use
- browser and the capability the OS gives to the browser
Best user experience is with native

Performance and reactivity could become UX issues
- e.g. slow rendering of big object graphs

Look and feel might not be an issue
- e.g. Business-to-Employee (B2E)-Apps

Use the company CI as look and feel is much easier with HTML5
Facets in mobile development

User experience
Screen size segmentation
Supporting main platforms
Application lifecycle management (ALM)
iPad and iPhone screen sizes

Source: http://opensignal.com/reports/fragmentation.php
Android screen sizes

Source: http://opensignal.com/reports/fragmentation.php
Android screen sizes of popular phones

Source: http://opensignal.com/reports/fragmentation.php
Native: programmatically with OS support

HTML5: Responsive design
Mobile Page instead of responsive design?

---

**Search.ch**

- Start
- Telefonbuch
- Karte
- Routenplaner
- Wetter
- Fahrplan
- Schneebericht
- Mehr

**Search Assistant**

- Suchen
- Eintrag suchen

**International Search**

- Deutschland, Frankreich, Italien, Österreich, Grossbritannien, USA und 82 weitere Länder

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11. April 2013

Slide 32
Screen size segmentation
HTML5 or native?

Easier with HTML5

Save costs with HTML5

→ Advantage HTML5
Facets in mobile development

- User experience
- Screen size segmentation
- Supporting main platforms
- Application lifecycle management (ALM)
<table>
<thead>
<tr>
<th>Platform</th>
<th>Market Share World 2013-03</th>
<th>Market Share Europe 2013-03</th>
<th>Market Share Switzerland 2013-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android</td>
<td>37.19 (23.61)</td>
<td>45.42 (31.72)</td>
<td>33.22 (25.53)</td>
</tr>
<tr>
<td>iOS</td>
<td>27.18 (23.99)</td>
<td>38.99 (41.63)</td>
<td>62.74 (70.14)</td>
</tr>
<tr>
<td>Windows Phone</td>
<td>?</td>
<td>02.58 (00.99)</td>
<td>02.00 (00.92)</td>
</tr>
<tr>
<td>Symbian</td>
<td>07.99 (31.48)</td>
<td>02.32 (08.31)</td>
<td>01.05 (01.67)</td>
</tr>
<tr>
<td>Blackberry</td>
<td>03.27 (06.43)</td>
<td>04.59 (12.00)</td>
<td>00.23 (00.40)</td>
</tr>
</tbody>
</table>

How to handle fragmentation?

- For each Platform
  → Need skills for each platform and language

- Cross compiling (e.g. with Mono/Xamarin)
  - Non UI-Code is common / But code each UI
  → Reuse skills in common code / UI skills for each platform / Know how for cross compiler

- Interpreted apps (e.g. with Appcelerator Titanium)
  - One Language for all platforms & native widgets on each
    → Learn framework or reuse JavaScript skills

- Generated apps
  → Modelling skills needed or reused

- Hybrid Apps

- Web Apps
  - Responsive design
  - Mobile site

} reuse HTML, JS and CSS skills
Supporting main platforms
HTML5 or native?

Native:
- Main is a small number
- Having skills for each platform already
- UI is less expensive than the rest (much common and less UI code)
- You want the best user experience on each platform

HTML5:
- Main is a big number of platforms and versions
- You wish less code to maintain
- You don’t have people or money to support each platform
## interim balance: responsive design, mobile page, hybrid application or native?

<table>
<thead>
<tr>
<th>Feature</th>
<th>responsive design</th>
<th>mobile page</th>
<th>hybrid app</th>
<th>native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast changes / Always up to date</td>
<td>✅</td>
<td>✅</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Works with sensors (e.g. geolocation)</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>No additional code to maintain</td>
<td>✅</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Appstore presence and monetarisation</td>
<td>✗</td>
<td>✗</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>No additional costs (e.g. dev. licence)</td>
<td>✅</td>
<td>✅</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>
Facets in mobile development

User experience
Screen size segmentation
Supporting main platforms
Application lifecycle management (ALM)
Why is ALM a mobile topic?

Native:
- Support how many platforms?
- Support how many platform versions?
- Prepare for next platform version?

HTML5:
- Support how many browsers?
iOS 6 is the main version for iOS

iOS Version Distribution - February 25th, 2013

34.9%
22.8%
15.6%
11.9%
5.4%
3.7%
3.8%
1.8%

New android versions need time

Source: http://www.appbrain.com/stats/top-android-sdk-versions

93% with 3 Android Versions
Are you willing to maintain 1x Phone and 3x Android?
And are you willing to adapt your app for the new versions?
And pay the costs?

- Yes:
  - native o.k.

- No:
  - HTML5 is the only way
  - Native: bad customer reviews rating for unsupported versions!

Do you need to update fast? ➔ HTML
Summary
Facets in mobile development

And what is about conflicts?
I need exiting user experience and have to support many platforms!

⇒ HTML5 and native!
  - Important use cases native
  - Remaining in HTML5
Reconsider your decisions made years ago

There are lot of standards around HTML5 that will empower HTML5 in native direction
→ More use case are possible with HTML5

There are limits and cost barriers
→ for HTML5 and native

User experience is important for customers

Best user experience is with native
Questions?

User experience

Screen size segmentation

Supporting main platforms

ALM

niko.ch/talks

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Want more?

http://www.zuehlke.com/de/zuehlke-group/educationcentre/kursangebot.html

Zühlke trainings in
- UI-Engineering
- Interaction Design
- Usability Engineering

Trainings with me
- UI-Engineering
- Requirements Engineering
  Advanced Level – Elicitation & Consolidation

Coming soon
- HTML5 and JavaScript
Peter Friese: Cross platform mobile development
http://de.slideshare.net/peterfriese/cross-platform-mobile-development-11239246

Mischa Demarmels, Katja Neumann und Thomas Memmel: Mobile Engineering - Welche Umsetzungsstrategie ist die richtige?

Romano Roth und Oliver Brack: iOS, Android, WP7... Alle nativ auf einen Streich!

Nikolaos Kaintantzis: Reicher werden - Wie HTML5 Rich Internet Applications verändert.

Peter Kröner: Die Karte des HTML5-Universums
http://www.peterkroener.de/die-karte-des-html5-universums/

Compatibility tables for support of HTML5, CSS3, SVG and more in desktop and mobile browsers:
http://caniuse.com/
Responsive Navigation Patterns
http://bradfrostweb.com/blog/web/responsive-nav-patterns/

Styleguide Android-Apps:
http://developer.android.com/design/index.html

Responsive Design Examples
http://designmodo.com/responsive-design-examples/

5 Really Useful Responsive Web Design Patterns:
http://designshack.net/articles/css/5-really-useful-responsive-web-design-patterns/

Standards for Web Applications on Mobile
http://www.w3.org/Mobile/mobile-web-app-state/

HTML5 compatibility on mobile and tablet browsers
http://mobilehtml5.org/
Fastbook Homepage:
http://fb.html5isready.com/

Blog The Making of Fastbook: An HTML5 Love Story
http://www.sencha.com/blog/the-making-of-fastbook-an-html5-love-story

Fastbook vs Faceboom Video  http://vimeo.com/55486684

Facebook still likes Web apps in some circumstances.

HTML5 isn't Facebook's 'biggest mistake'
http://www.theregister.co.uk/2012/09/14/facebook_html_5_vs_native_apps/

polyfills  http://tinyurl.com/polyfill

modernizr  http://modernizr.com/

YepNope.js  http://yepnopejs.com/