
Mobile: HTML5 or native?

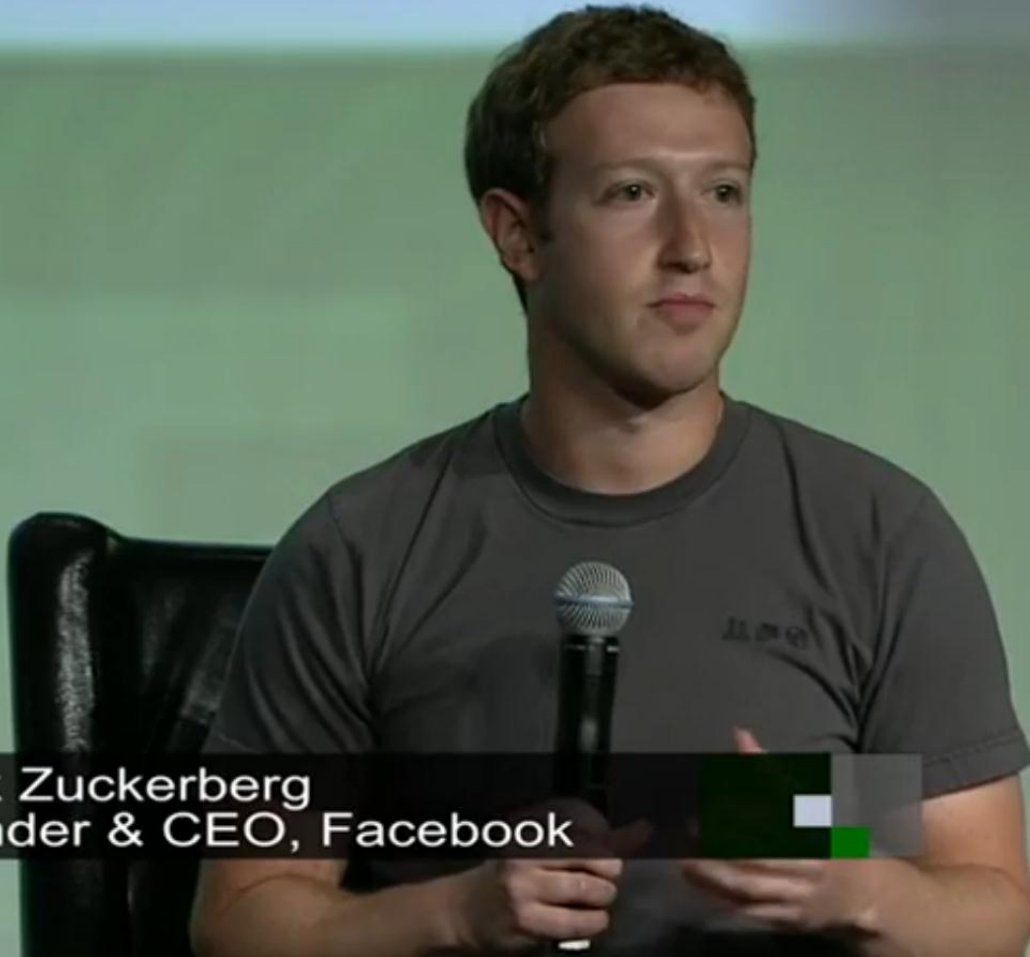
Deciding right for your needs



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Twitter: @xnka

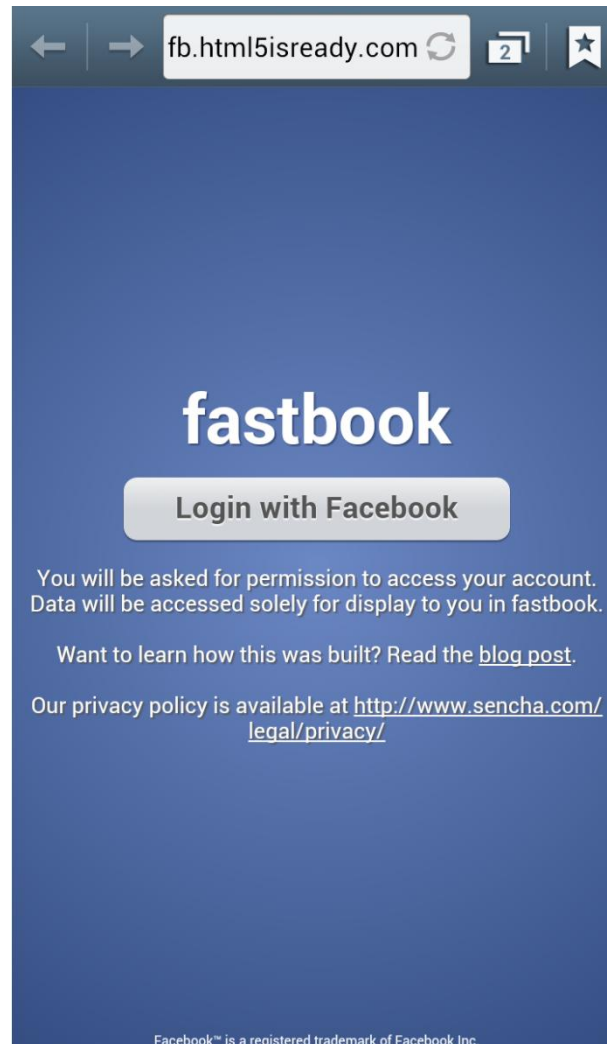
Our biggest mistake was betting too much on HTML5 rather than native applications It just wasn't there



Mark Zuckerberg
Founder & CEO, Facebook

September 11th, 2012 <http://techcrunch.com/2012/09/11/mark-zuckerberg-our-biggest-mistake-with-mobile-was-betting-too-much-on-html5/>

Challenge accepted! HTML5 is ready



Facebook native

vs.

Fastbook HTML5



Facebook - Native
iPhone 4S

Fastbook - HTML5
iPhone 4S

Displaying lots of data is not technology related



Questions to solve:

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

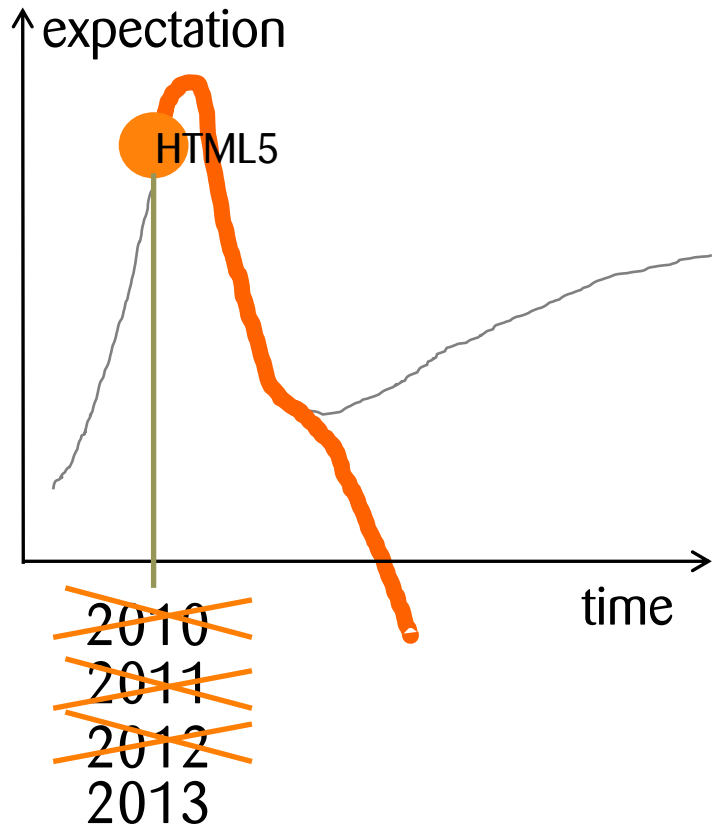
→ This is maybe not your problem

→ Facebook's problems are not everyone's problems

→ Facebook still likes and uses HTML5

HTML5 vs. native?

What evangelists are saying



VS



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



HTML5

native

Facets in mobile development



User experience

Screen size segmentation

Supporting main platforms

Application lifecycle management (ALM)



Facets in mobile development



User experience

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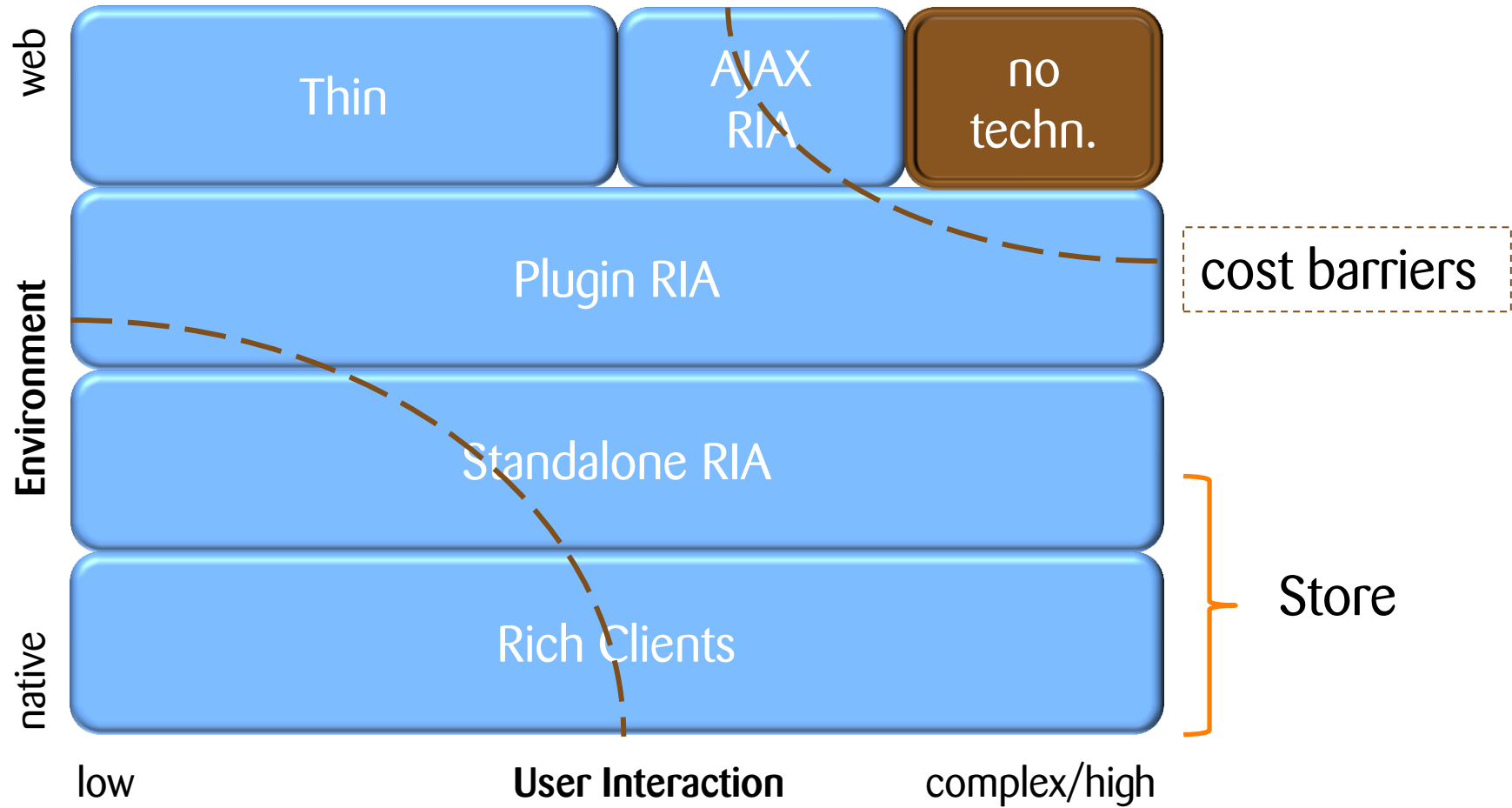
Supporting main platforms

Application lifecycle management (ALM)



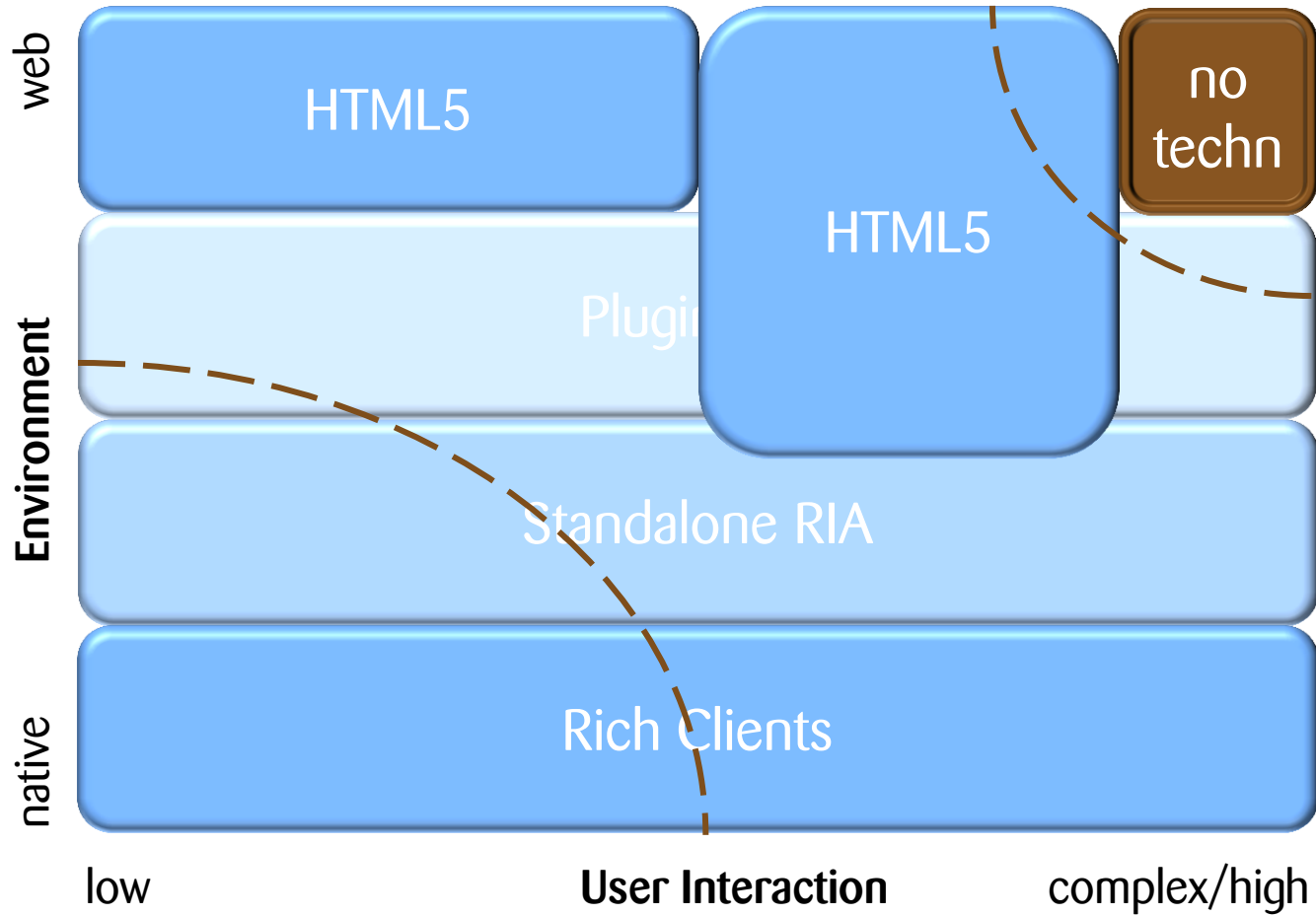
Classification 2010 (before HTML5)

Thin, RIA, Rich



Classification 2013

HTML5 and Rich



HTML5 is more than a hype



expands AJAX-RIA-box to the right

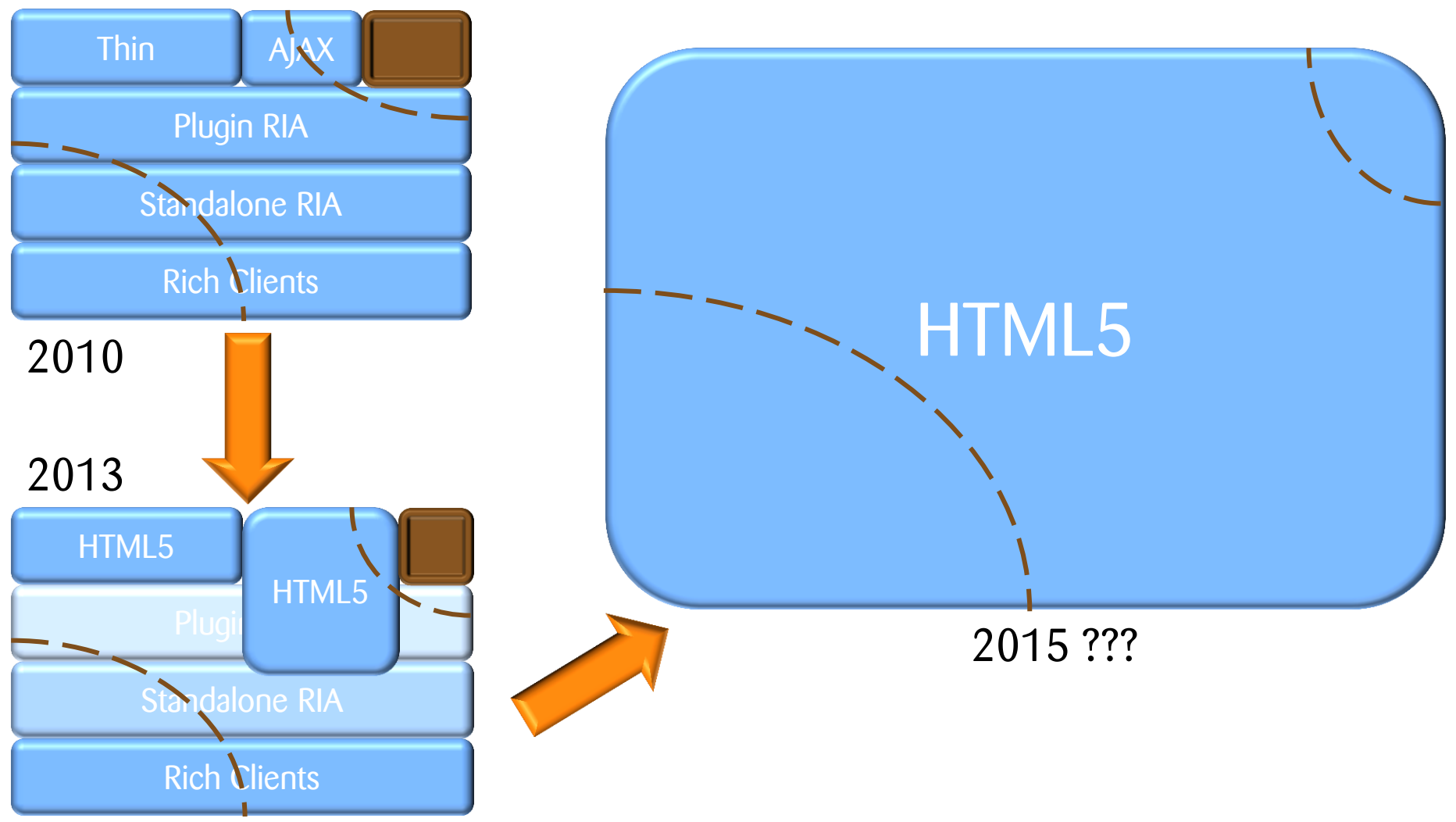
- New types for <input> tag
- Drag and drop
- Canvas and WebGL
- Web sockets

expands AJAX-RIA-box to the bottom

- Offline capabilities/
application cache
- Local storage and
indexed database
- File-API
- Geolocation
- Web messaging /
Channel messaging

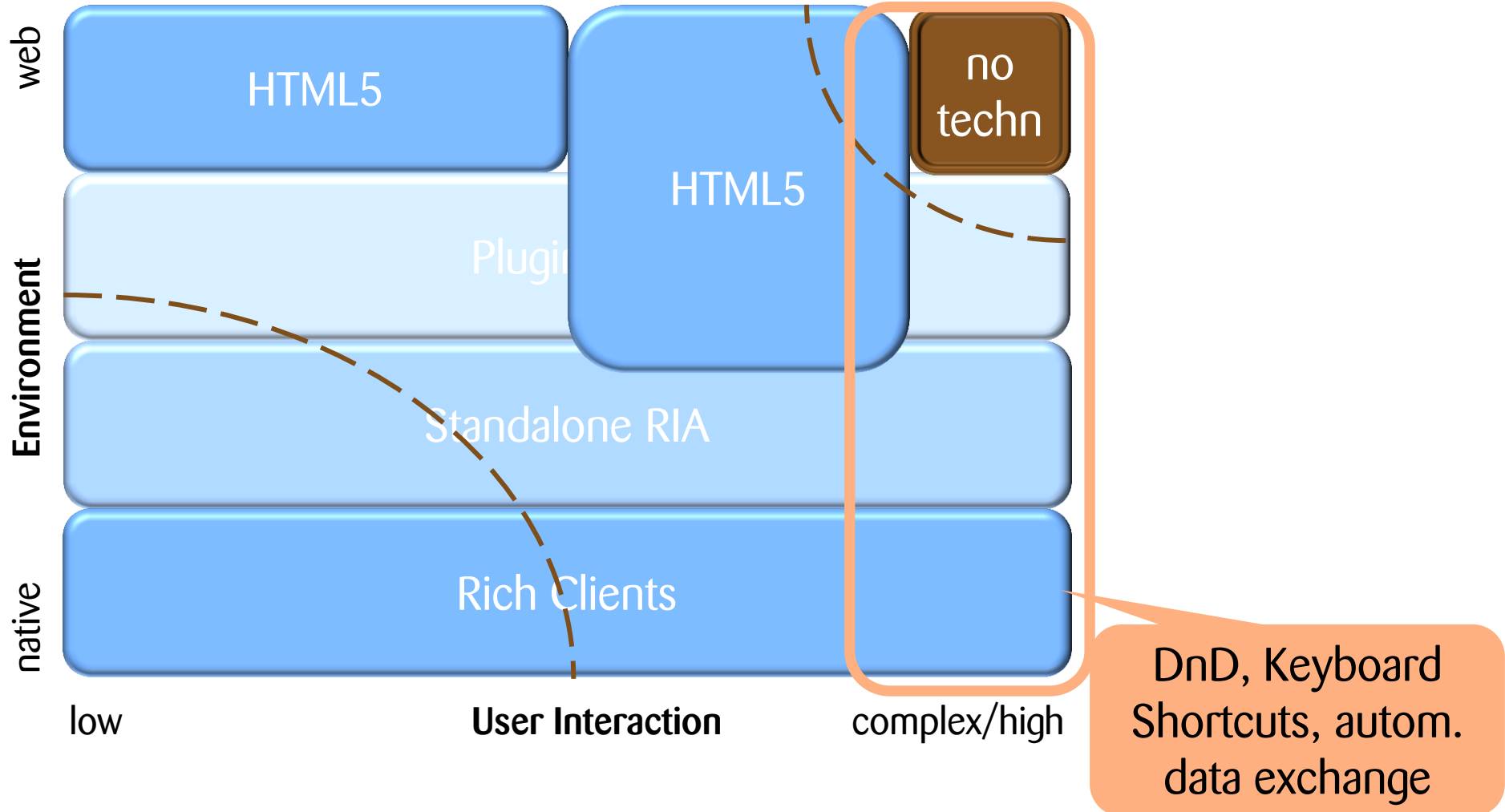
Classification 2015

HTML5 for everything?



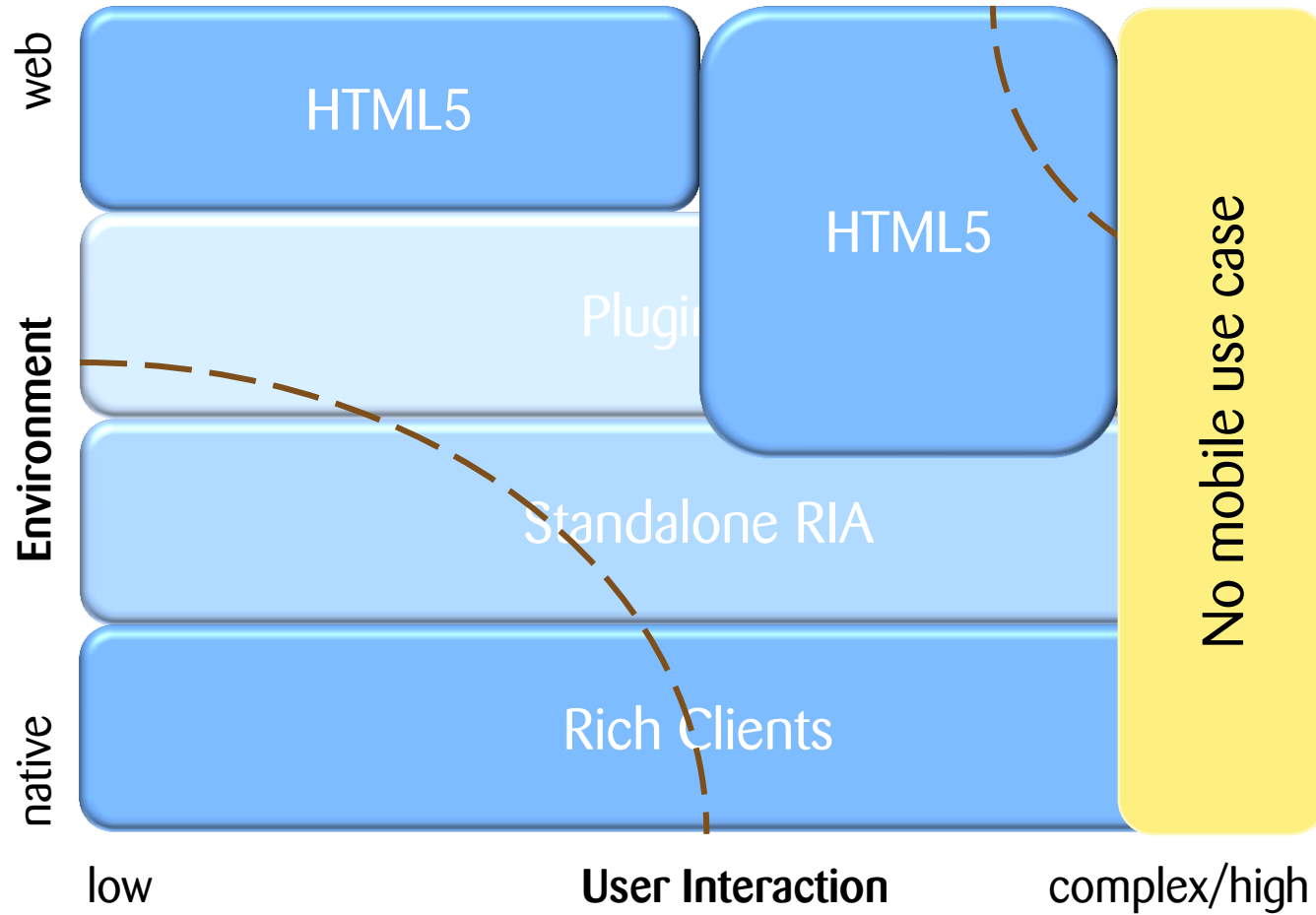
HTML5 for everything?

- Challenge complex user interaction



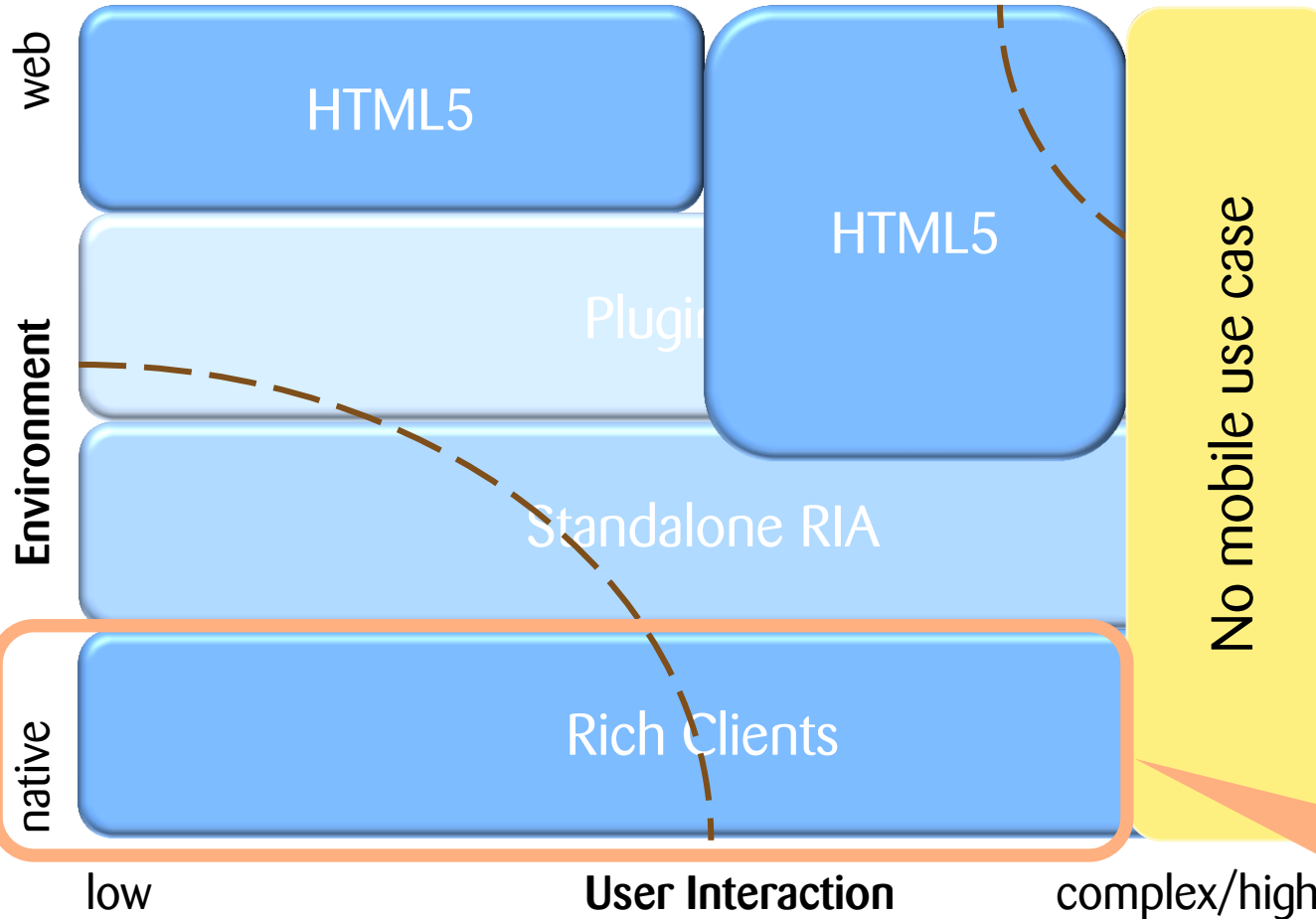
HTML5 for everything?

- Challenge complex user interaction



HTML5 for everything?

- Challenge native APIs and look and feel



Access file system, webcam, native look and feel

Can I use the file system with HTML5?

www.caniuse.com



Filesystem & FileWriter API - **Working Draft**
Method of reading and writing files to a sandboxed file system.

***Usage stats:** **Global**

Support:	31.23%
Partial support:	0.39%
Total:	31.62%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	BlackBerry Browser
								2.1	
								2.2	
						3.2		2.3	
						4.0-4.1		3.0	
	8.0					4.2-4.3		4.0	
	9.0	18.0	24.0 <small>webkit</small>	5.1		5.0-5.1		4.1	
Current	10.0	19.0	25.0 <small>webkit</small>	6.0	12.1	6.0	5.0-7.0	4.2	7.0
Near future		20.0	26.0 <small>webkit</small>		12.5				10.0 <small>webkit</small>
Farther future		21.0	27.0 <small>webkit</small>						

Notes | [Known issues \(0\)](#) | [Resources \(2\)](#) | [Feedback](#) | [Edit on GitHub](#)

No notes

Can I use the webcam with HTML5?

www.caniuse.com



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.

***Usage stats:** Global Support: 45.39%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Blackberry Browser
								2.1	
								2.2	
						3.2		2.3	
						4.0-4.1		3.0	
	8.0					4.2-4.3		4.0	
	9.0	18.0 moz	24.0 webkit	5.1		5.0-5.1		4.1	
Current	10.0	19.0 moz	25.0 webkit	6.0	12.1	6.0	5.0-7.0	4.2	7.0
Near future		20.0 moz	26.0 webkit		12.5				10.0
Farther future		21.0 moz	27.0 webkit						

Notes | Known issues (0) | Resources (2) | Feedback | [Edit on GitHub](#)

No notes

Can I use geolocation and device orientation?

www.caniuse.com



Geolocation - **Candidate Recommendation**

Method of informing a website of the user's geographical location

		*Usage stats:		Global	
		Support:			83.08%
		Partial support:			0.03%
		Total:			83.11%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Blackberry Browser
								2.1	
								2.2	
						3.2		2.3	
						4.0-4.1		3.0	
	8.0					4.2-4.3		4.0	
	9.0	18.0	24.0	5.1		5.0-5.1		4.1	
Current	10.0	19.0	25.0	6.0	12.1	6.0	5.0-7.0	4.2	7.0
Near future		20.0	26.0		12.5				10.0
Farther future		21.0	27.0						

Device Orientation events - **Working Draft**

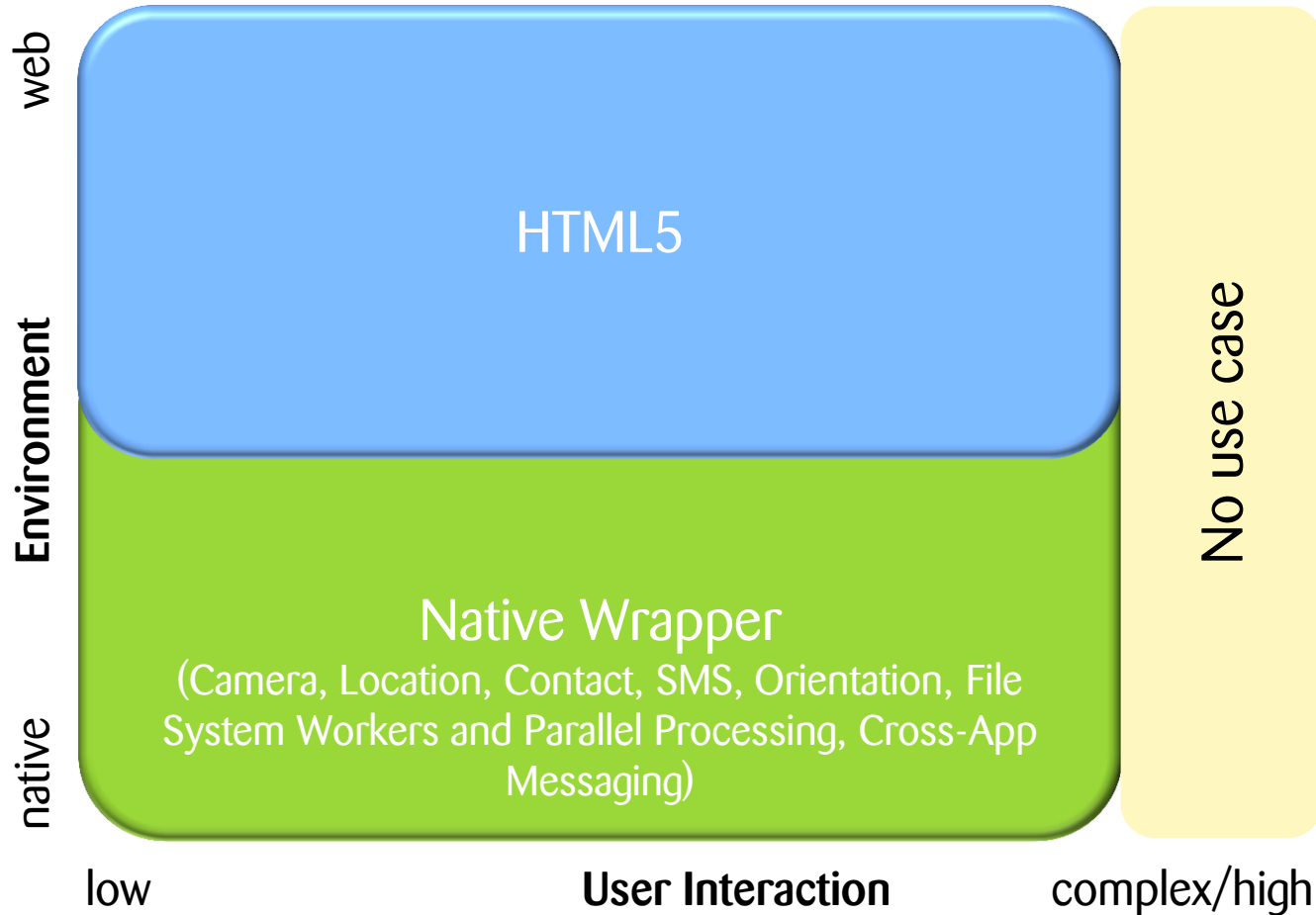
API for detecting orientation and motion events from the device running the browser.

		*Usage stats:		Global	
		Support:			41.3%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Blackberry Browser
								2.1	
								2.2	
						3.2		2.3	
						4.0-4.1		3.0	
	8.0					4.2-4.3		4.0	
	9.0	18.0	24.0	5.1		5.0-5.1		4.1	
Current	10.0	19.0	25.0	6.0	12.1	6.0	5.0-7.0	4.2	7.0
Near future		20.0	26.0		12.5				10.0
Farther future		21.0	27.0						

Mobile HTML5 and wrapper

→ Hybrid apps



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

```
yepnope({  
  test : Modernizr.geolocation,  
  yep  : 'normal.js',  
  nope : ['polyfill.js', 'wrapper.js']  
});
```



Looks the way you styled it

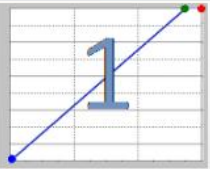



May conflict with known and expected interaction paradigms

- Backlink
- Arrows in lists
- No contextual action bar available (just the one of the browser)

Gespeicherte Prüfungen

Prüfungen anzeigen 

Neue Berechnung

**Methode 1**neue Prüfung erstellen **Methode 2**neue Prüfung erstellen **Methode 4**neue Prüfung erstellen 

Hilfe



m.niko.ch/noten

 zurück

Methode 1 - Hilfe

Wie funktioniert die Methode 1?

Die Methode 1 berechnet die Noten linear zu den Punktwerten, 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

User experience

HTML5 or native?



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

native

HTML5

Facets in mobile development



User experience

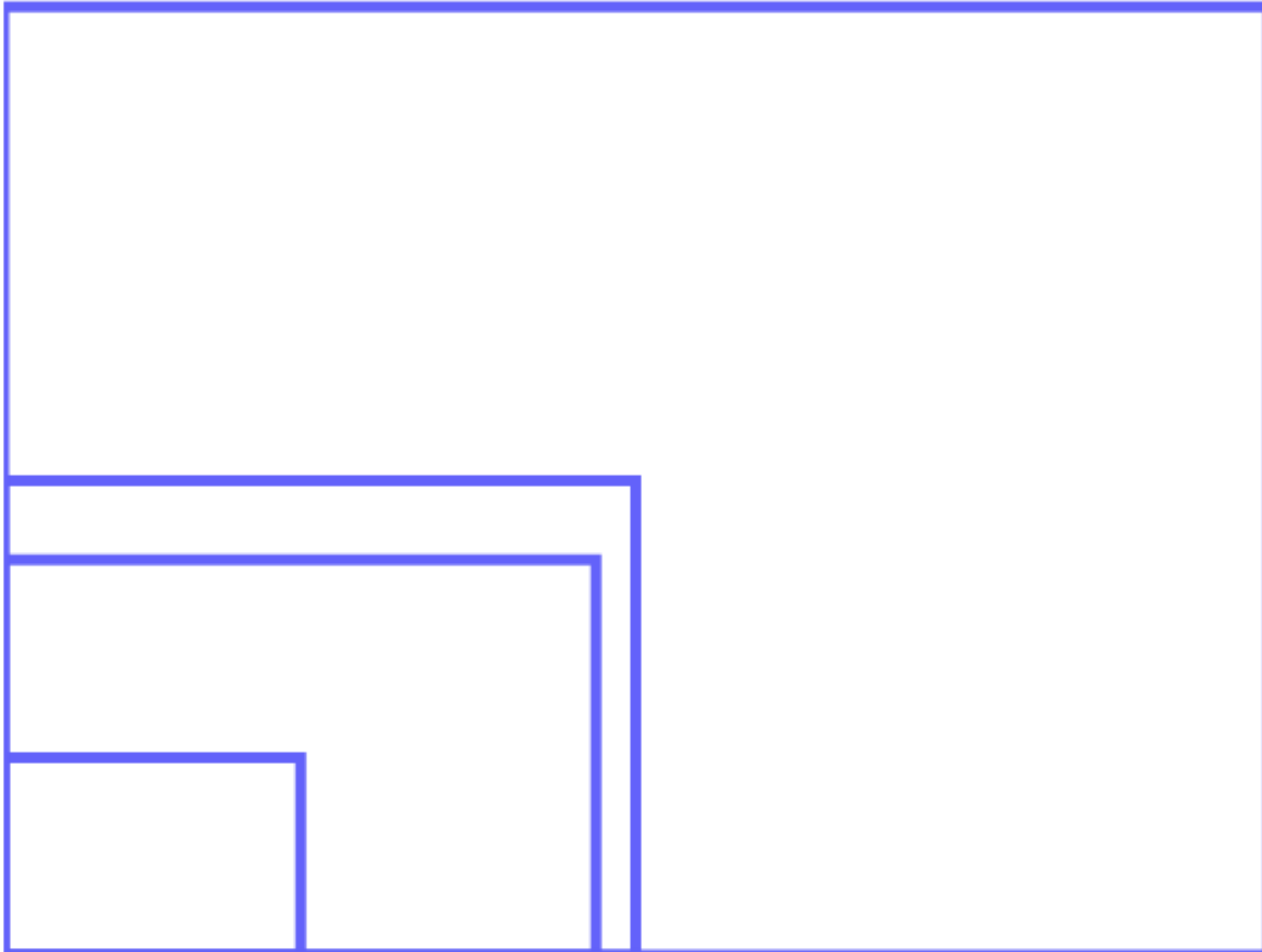
Screen size segmentation

Supporting main platforms

Application lifecycle management (ALM)

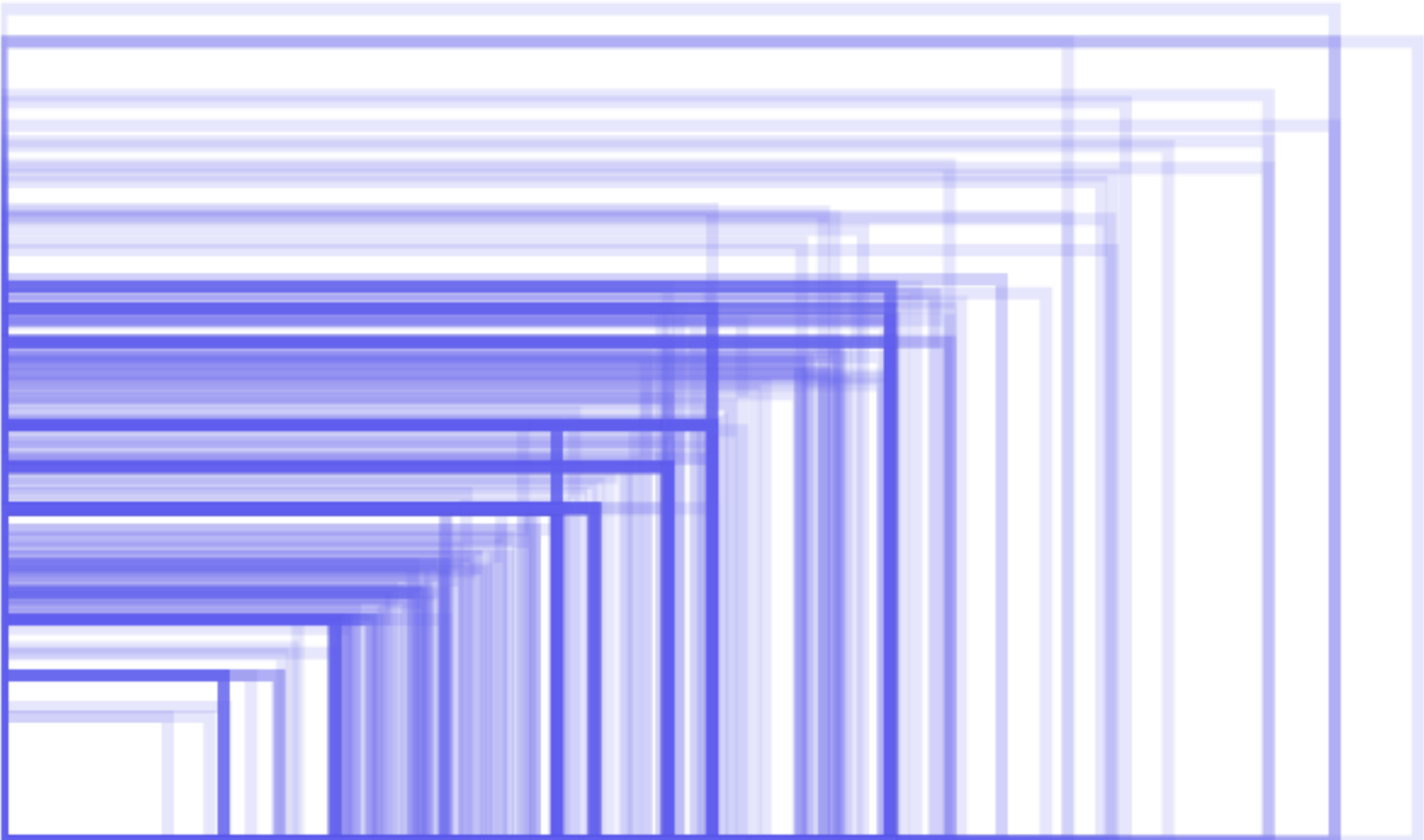


iPad and iPhone screen sizes



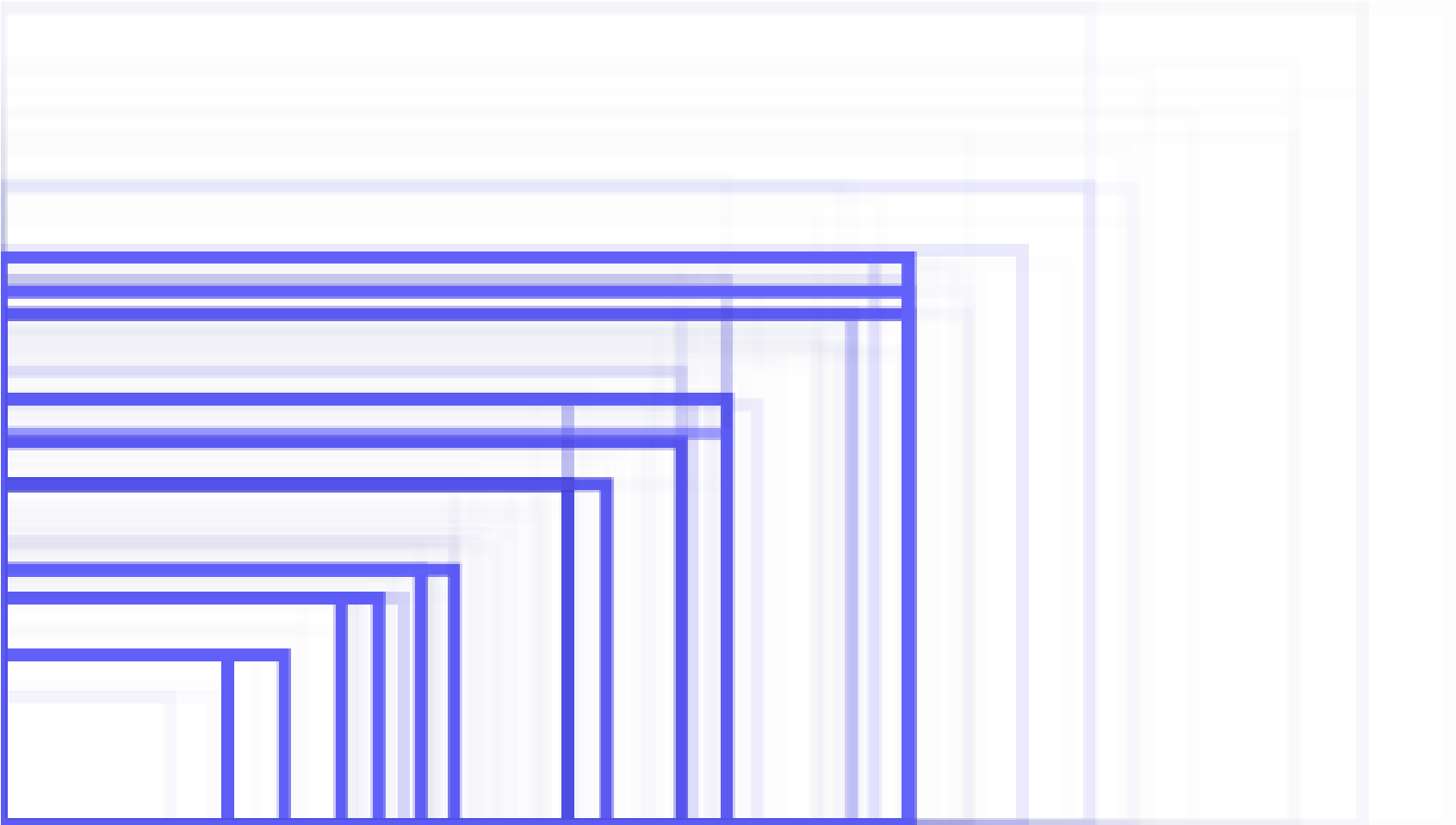
Source: <http://opensignal.com/reports/fragmentation.php>

Android screen sizes



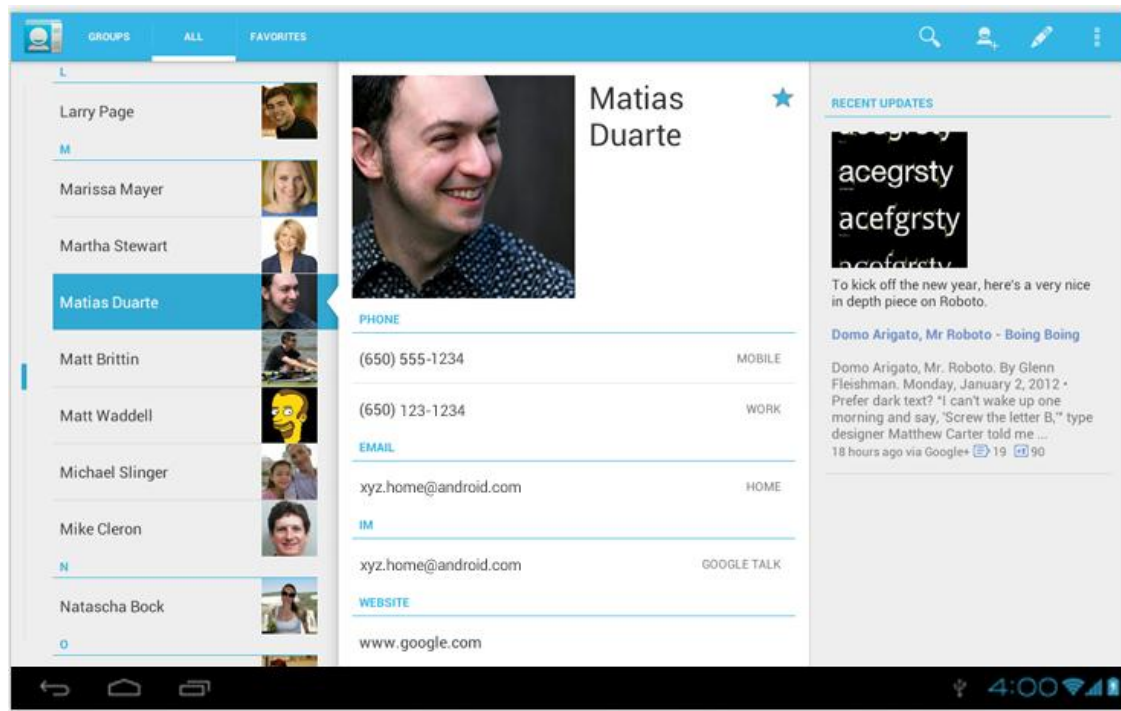
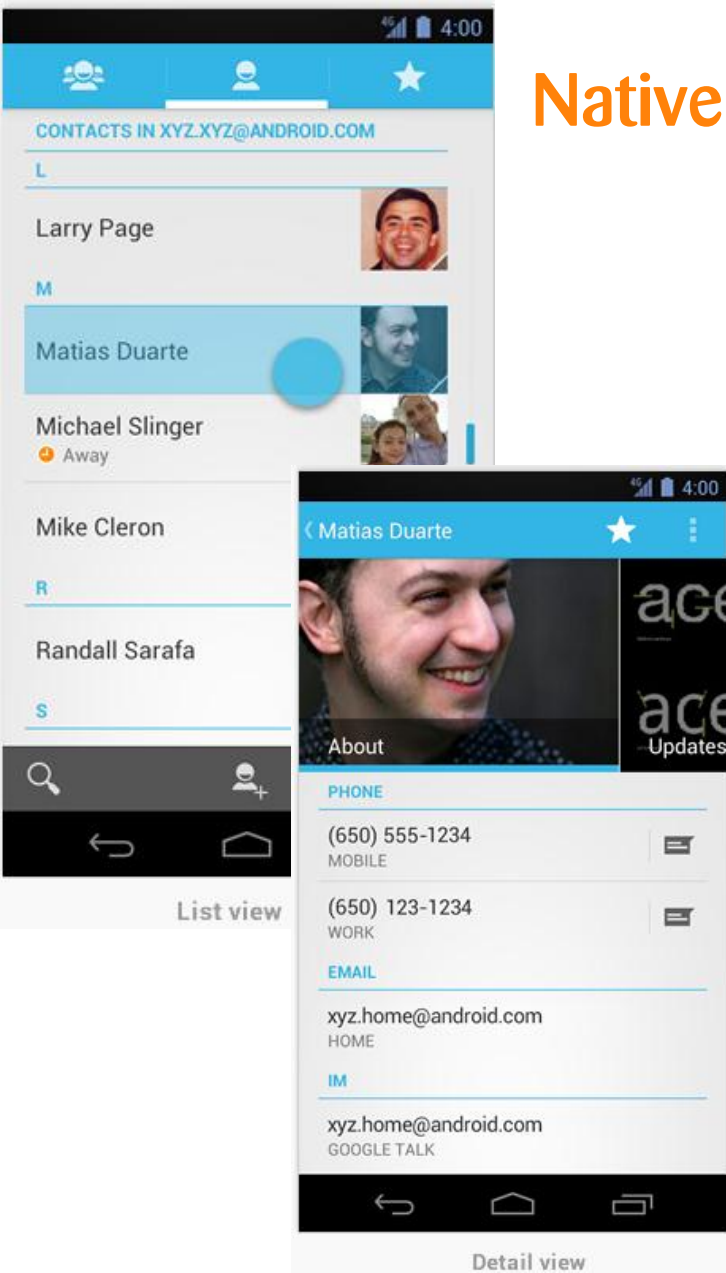
Source: <http://opensignal.com/reports/fragmentation.php>

Android screen sizes of popular phones



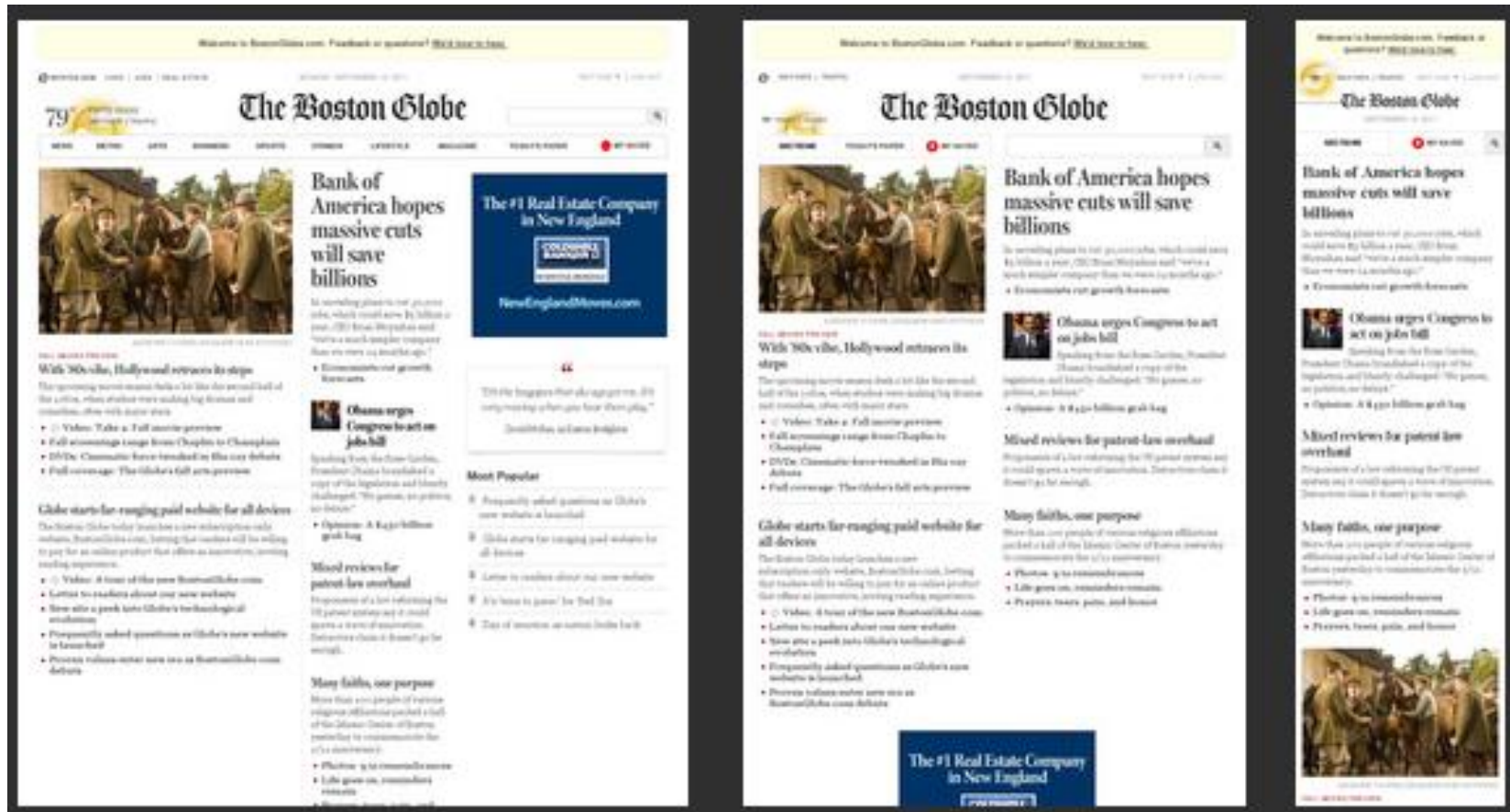
Source: <http://opensignal.com/reports/fragmentation.php>

Native: programmatically with OS support



Source <http://developer.android.com/design/patterns/multi-pane-layouts.html>

HTML5: Responsive design



source: <http://www.lukew.com/ff/entry.asp?1514>

source: <http://designmodo.com/responsive-design-examples/>

Mobile Page instead of responsive design?



search.ch

tel.search.ch - Das Telefonbuch

Start **Telefonbuch** Karte Routenplaner Wetter Fahrplan **aktuell** Schneebericht Mehr

4'160'538 Einträge

Wer/was Wo Suchen Privat

Suchassistent

4'160'538 Einträge

Name, Vorname

Branche, Beruf

Strasse

Ort

Kanton

Telefon-Nr.

Privat Firma

Internationale Suche

[Deutschland](#), [Frankreich](#), [Italien](#), [Österreich](#), [Grossbritannien](#), [USA](#) und [82 weitere Länder](#)

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tel.search.ch

search.ch Telefonbuch Wetter Mehr

Suchen

4'160'538 Einträge

Tipp: Sie können die Wörter abkürzen
 Umkreissuche

[Installieren Sie jetzt unsere Android-App - gratis!](#)

Anzeige

Screen size segmentation HTML5 or native?



Easier with HTML5

Save costs with HTML5

→ Advantage HTML5



HTML5

native

Facets in mobile development

User experience

Screen size segmentation

Supporting main platforms

Application lifecycle management (ALM)



Mobile platform market share

March 2012 and 2013



Platform	Market Share  World		Market Share  Europe		Market Share  Switzerland	
	2013-03	2012-03	2013-03	2012-03	2013-03	2012-03
Android	37.19	(23.61)	45.42	(31.72)	33.22	(25.53)
iOS	27.18	(23.99)	38.99	(41.63)	62.74	(70.14)
Windows Phone	?	?	02.58	(00.99)	02.00	(00.92)
Symbian	07.99	(31.48)	02.32	(08.31)	01.05	(01.67)
Blackberry	03.27	(06.43)	04.59	(12.00)	00.23	(00.40)

Source: <http://stats.areppim.com/>

How to handle fragmentation?



native

- 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

HTML5

Supporting main platforms

HTML5 or native?



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

HTML5

interim balance: responsive design, mobile page, hybrid application or native?



	responsive design	mobile page	hybrid app	native
Fast changes / Always up to date				
Works with sensors (e.g. geolocation)				
No additional code to maintain				
Appstore presence and monetarisation				
No additional costs (e.g. dev. licence)				

Facets in mobile development



User experience

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Why is ALM a mobile topic?



Native:

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

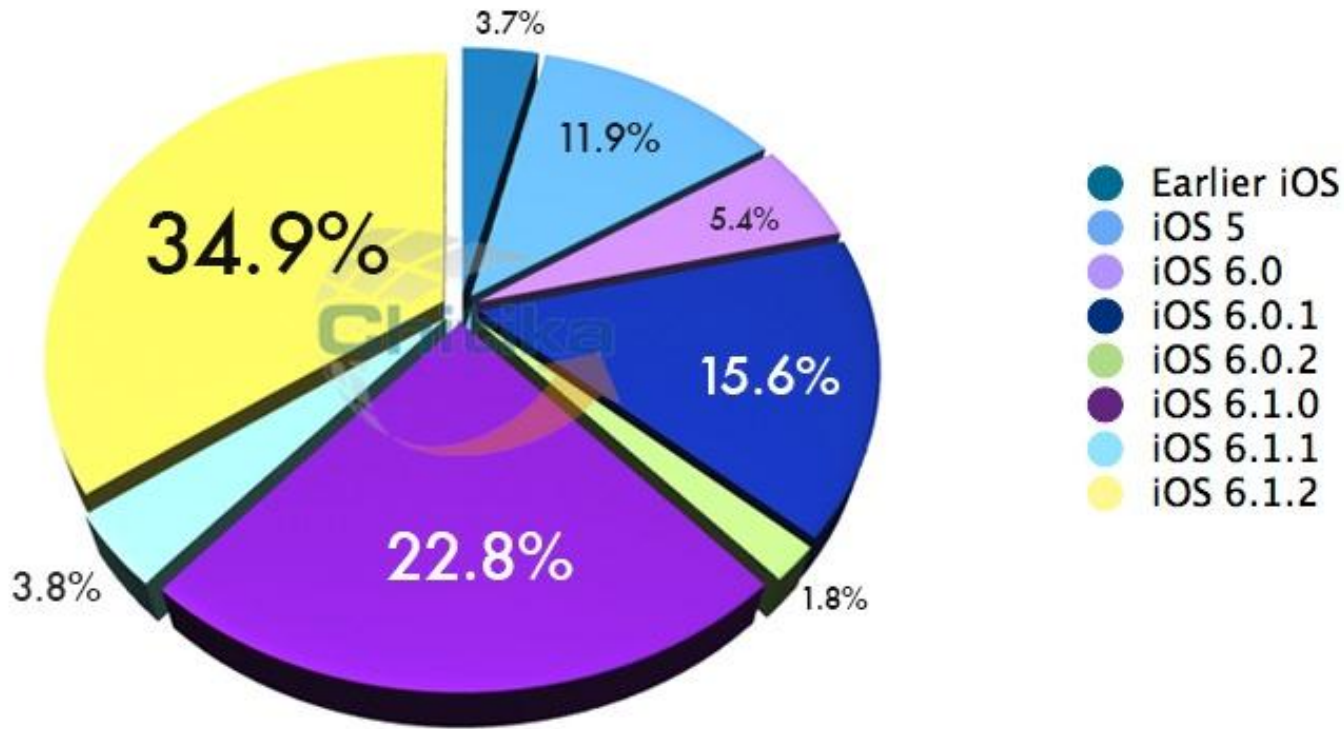
HTML5:

- Support how many browsers?

iOS 6 is the main version for iOS



iOS Version Distribution - February 25th, 2013

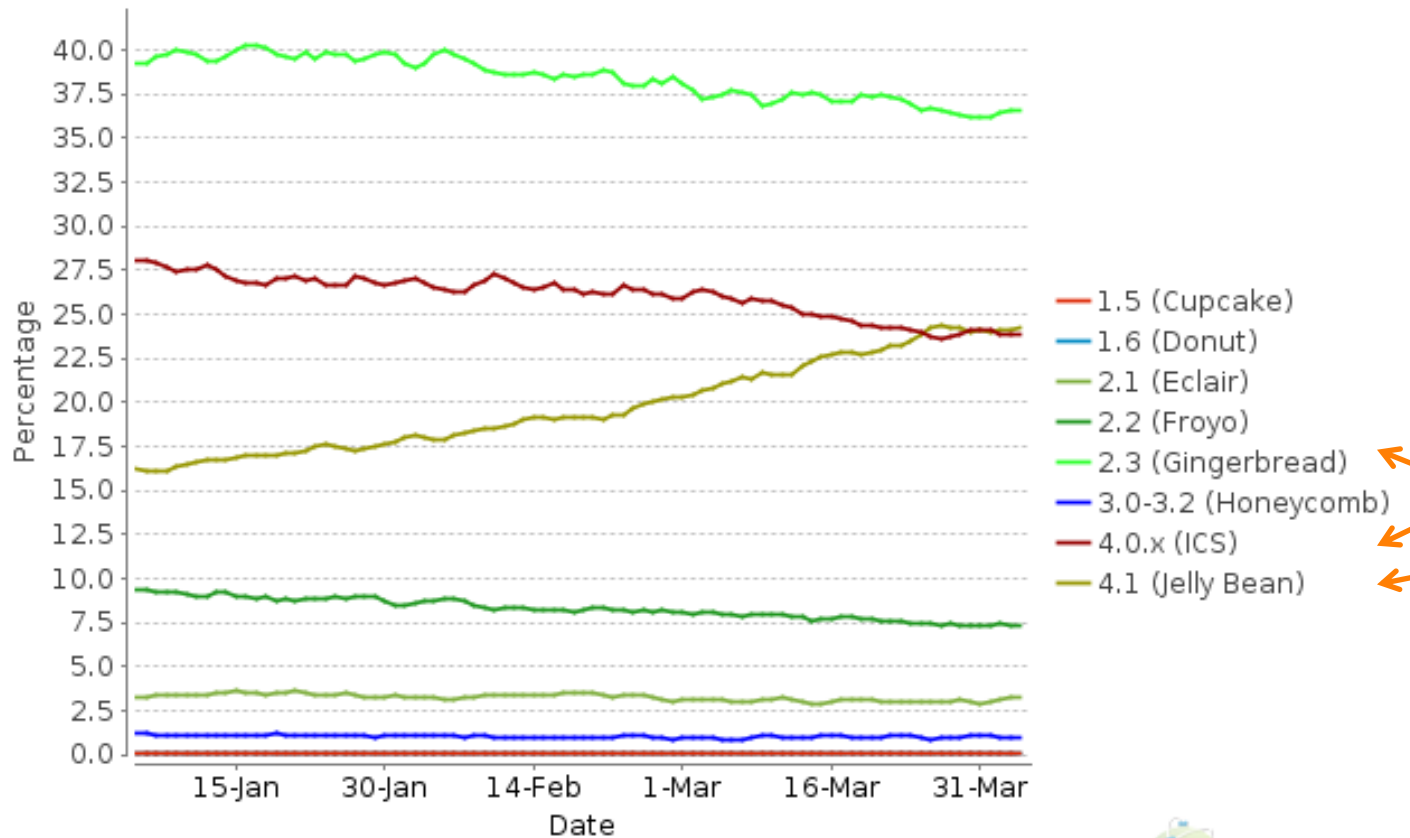


Data Driven By: Chitika Insights, February 2013
Data is representative of U.S and Canadian mobile Web traffic only.
Time series is represented in UTC.

Source: <http://forums.macrumors.com/showthread.php?t=1548883>

New android versions need time

Most common SDK versions, April 7, 2013



93% with
3 Android
Versions



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

Application Lifecycle Management (ALM)

HTML5 or native?



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!

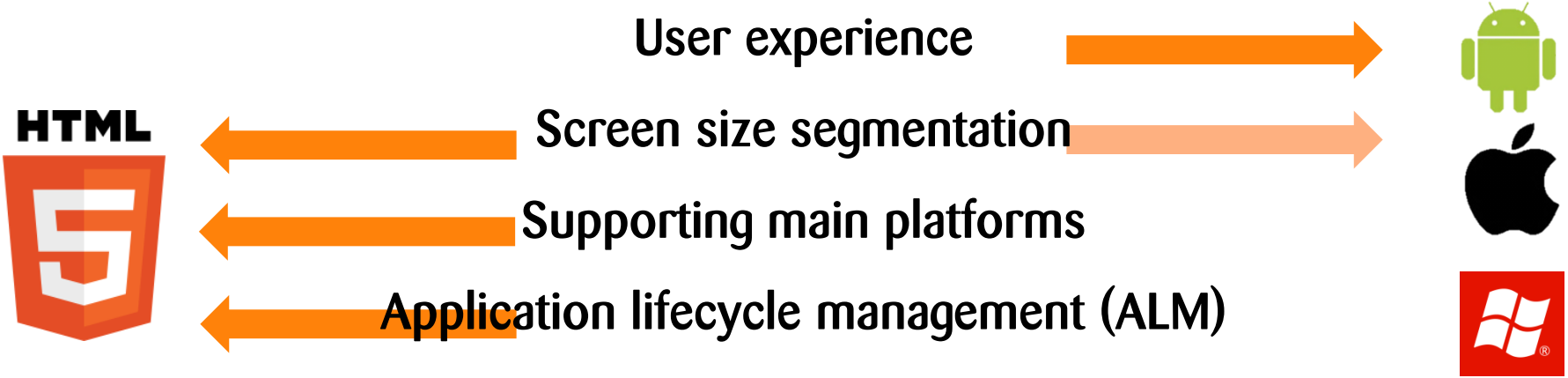
Do you need to update fast? → HTML

native

HTML5

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

Summary

HTML5 or native? / HTML5 and native!



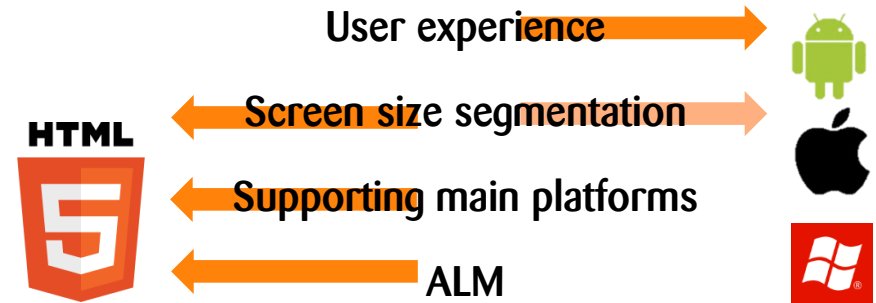
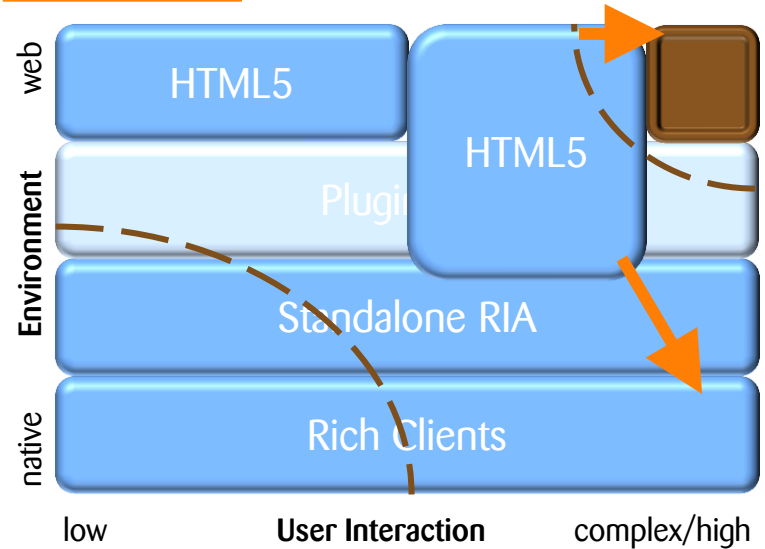
Reconsider your decisions made years ago

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

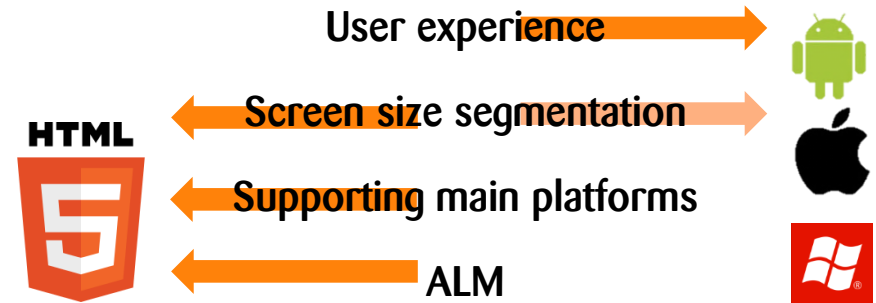
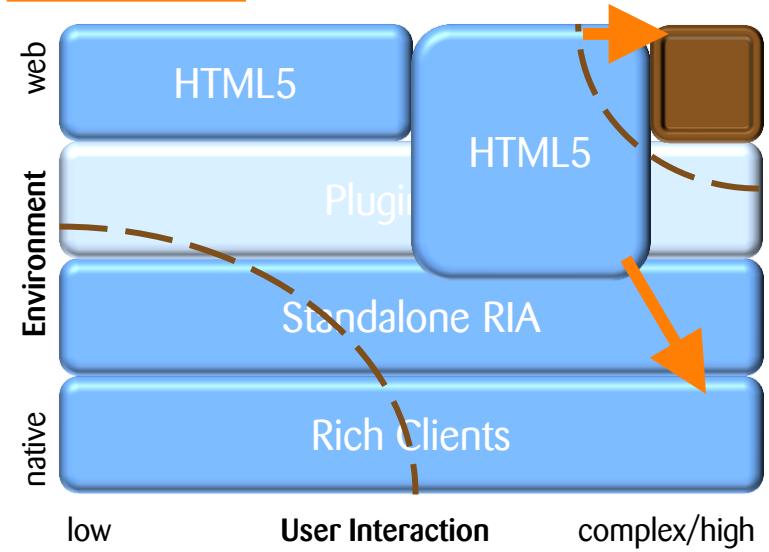
Best user experience is with native



Questions?



niko.ch/talks



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?**

http://www.zuehlke.com/fileadmin/pdf/others/whitepaper_mobile_engineering.pdf

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

<http://www.zuehlke.com/fileadmin/pdf/others/ios-android-wp7-alle-auf-einen-streich.pdf>

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

http://www.zuehlke.com/fileadmin/pdf/fachartikel/218_ix_reicher_werden_nka.pdf

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/>
<http://www.lukew.com/ff/entry.asp?1514>

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 Facebook Video <http://vimeo.com/55486684>

Facebook still likes Web apps in some circumstances.

http://news.cnet.com/8301-1023_3-57511142-93/html5-is-dead-long-live-html5

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/>