>CONFESS_2015

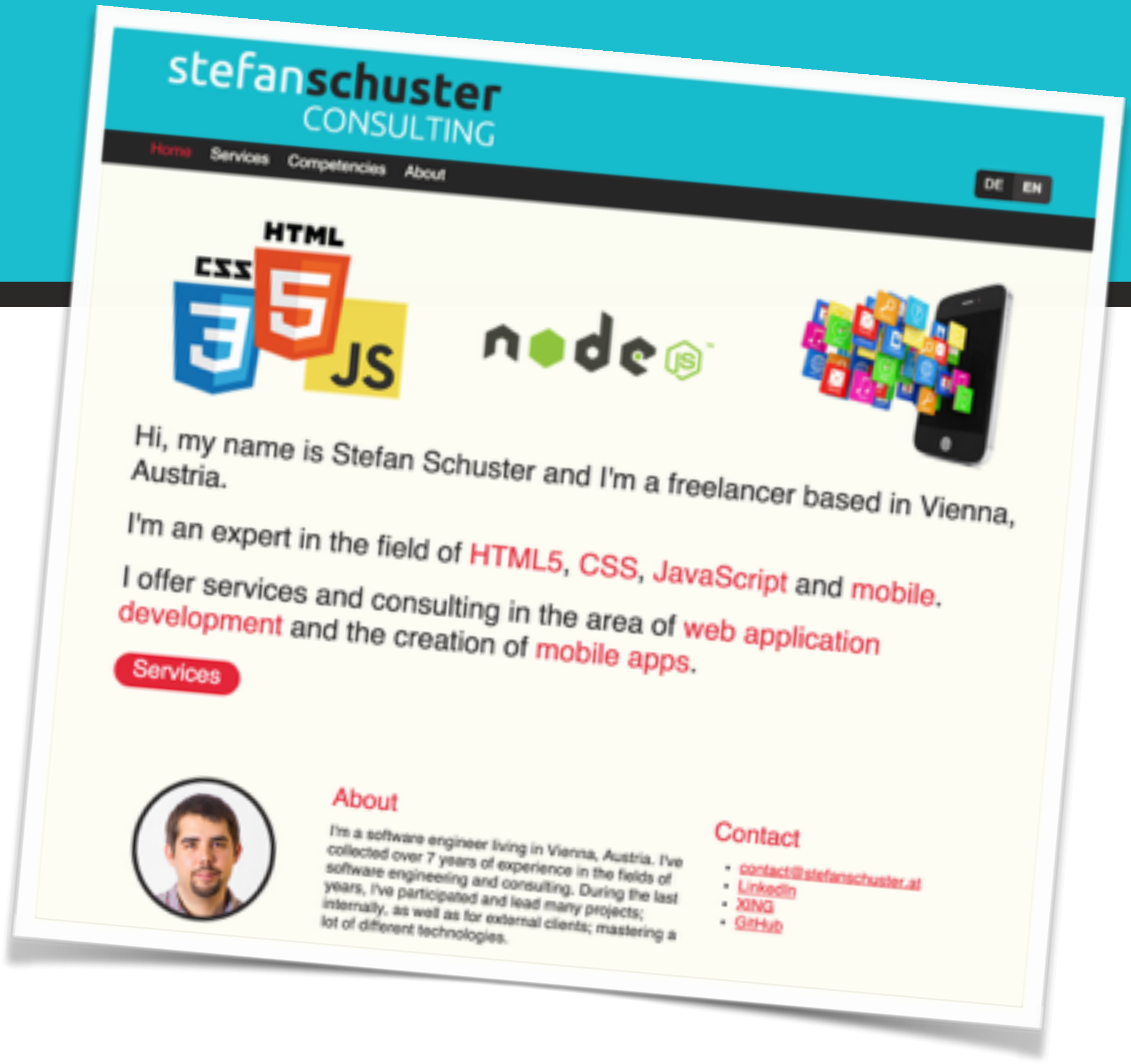
Conference for
Enterprise Software
Solutions_

Mobile Application Development: Native vs. Cordova vs. WebApp

Stefan Schuster

About me

- Stefan Schuster
- Freelancer with focus on web and mobile since 2014
  - Irian
  - Jollydays
  - AllAboutApps
- Previously worked for Irian for 7 years



Hi, my name is Stefan Schuster and I'm a freelancer based in Vienna, Austria.

I'm an expert in the field of HTML5, CSS, JavaScript and mobile.

I offer services and consulting in the area of web application development and the creation of mobile apps.

Services

About

I'm a software engineer living in Vienna, Austria. I've collected over 7 years of experience in the fields of software engineering and consulting. During the last years, I've participated and lead many projects; internally, as well as for external clients; mastering a lot of different technologies.

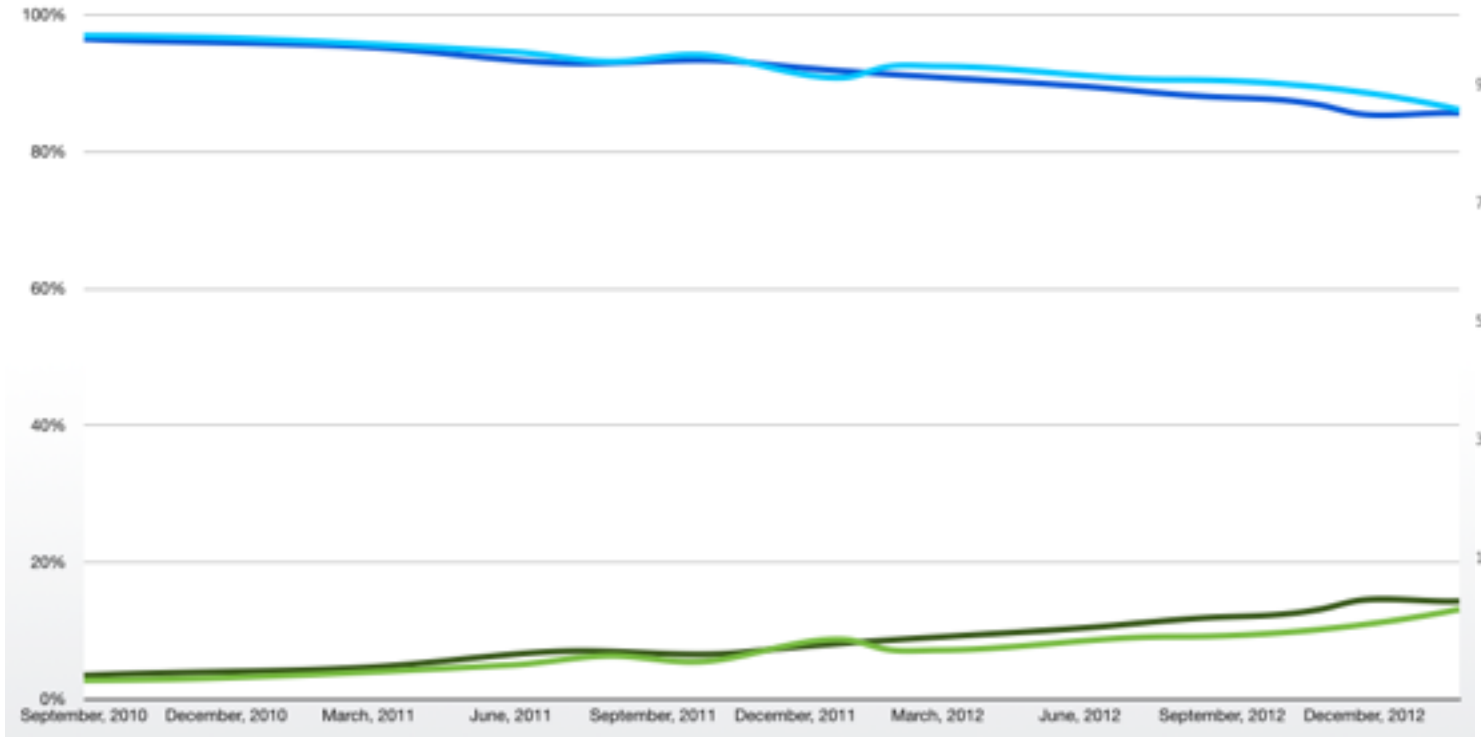
Contact

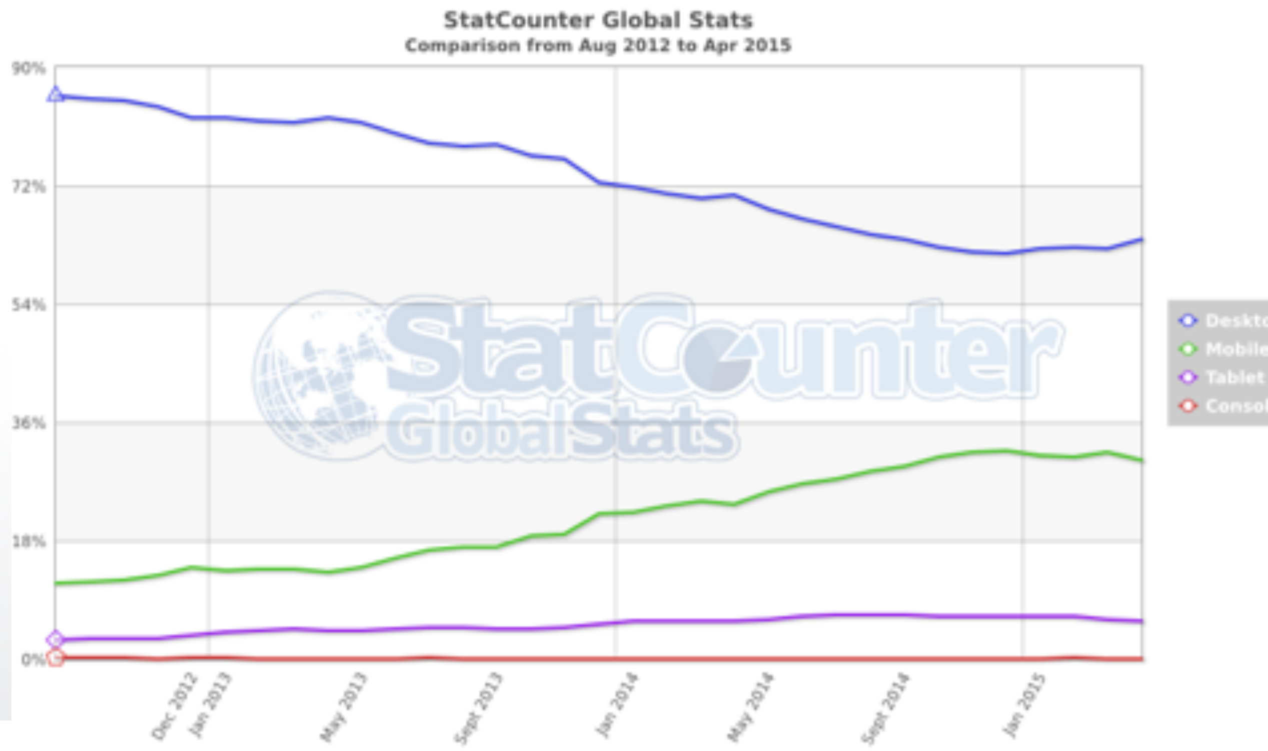
- contact@stefanschuster.at
- LinkedIn
- XING
- GitHub

Mobile Application Development

Mobile

- It's no secret
  - Mobile (web + apps) more important than ever before





Mobile

- New product? New website?
  - Mobile
- Find restaurant, look up next bus stop?
  - Mobile
- Communicate with friends?
  - Mobile
- Track fitness, plan workout
  - Mobile

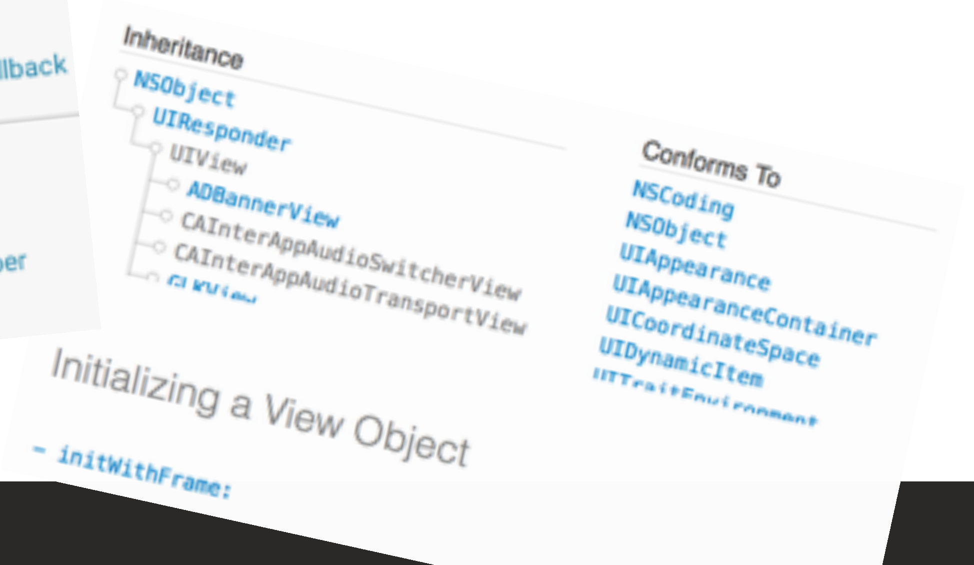
You have to think about mobile

Different approaches

Native · Cordova · Web

public class
Activity
extends ContextThemeWrapper
implements LayoutInflater.Factory2 Window.Callback

```
java.lang.Object
 ↳android.content.Context
   ↳android.content.ContextWrapper
     ↳android.view.ContextThemeWrapper
       ↳android.app.Activity
```



Inheritance

```
NSObject
 UIResponder
  UIView
   ADBannerView
   CAInterAppAudioSwitcherView
   CAInterAppAudioTransportView
```

Conforms To

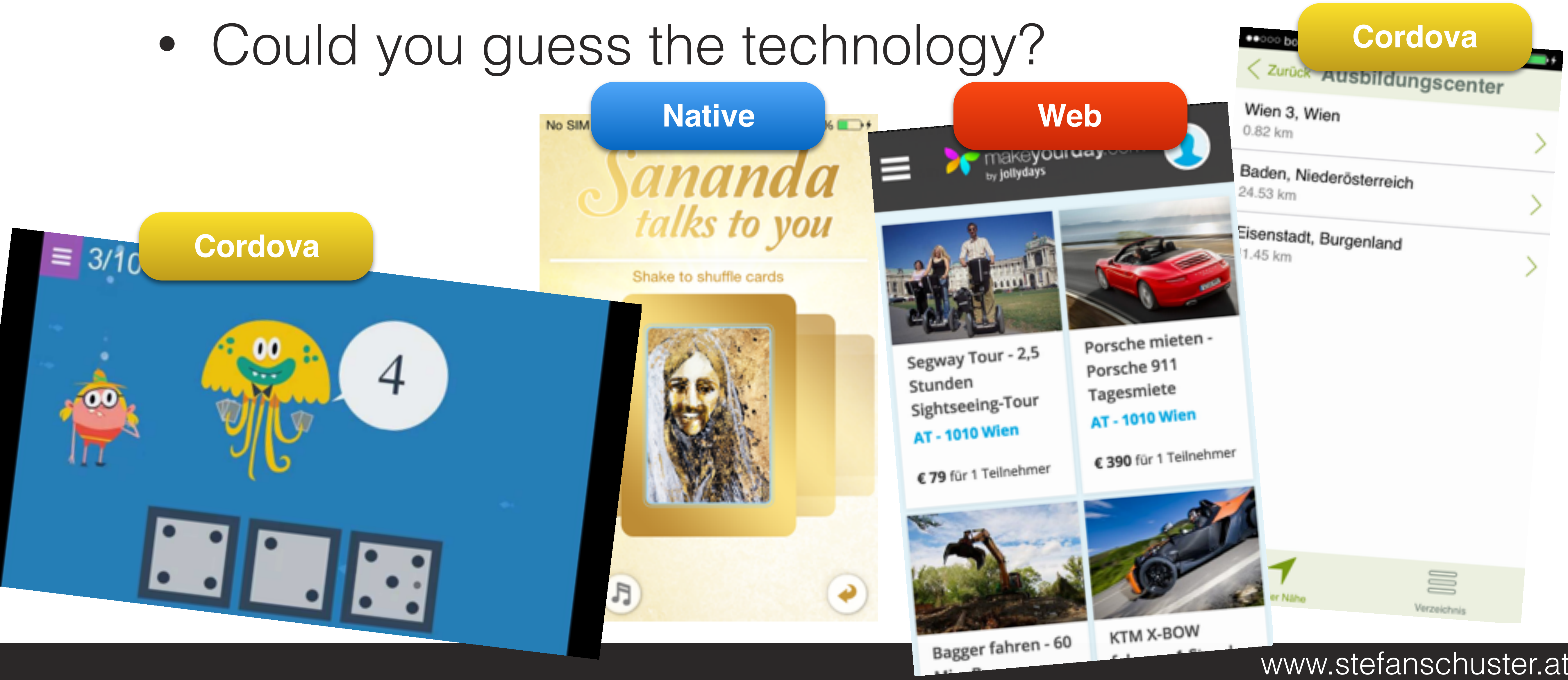
```
NSCoding
NSObject
UIAppearance
UIAppearanceContainer
UICoordinateSpace
UIDynamicItem
```

Initializing a View Object

`- initWithFrame:`

Three approaches

- Native - Cordova - Web
  - What's possible with each?
  - What's the advantage / disadvantage with each?
  - Could you guess the technology?



Overview

- Look & Feel
- Performance
- Features
- Portability
- App Store
- Cost

Native

Native

- What does native mean?

- SDK - Programming Patterns / Language
  - iOS SDK (Objective-C, Swift)
  - Android SDK (Java)
- Resource Handling
  - iOS: Interfaces, Bundles / @2x, @3x, ...
  - Android: XML Resources / HDPI, XHDPI, ...

Native

- Native != Native

- C/C++ libraries
  - No problem at all in iOS
  - Android NDK (possible, but not recommended)

- Game Engines
  - e.g. Unity
    - C# / UnityScript

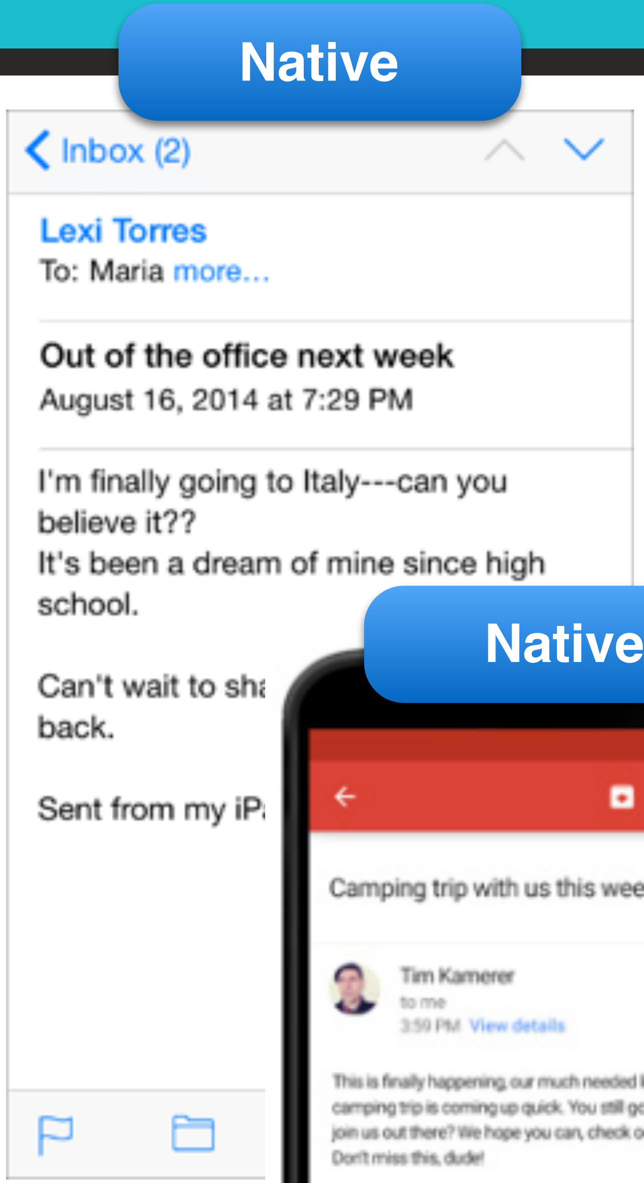
Look & Feel

- UI
  - Usually biggest part of typical apps
  - Usually least portable
  - Biggest difference between platforms

Look & Feel

- "Native" look & feel
  - Design, Fonts, ...
  - Usage paradigms
    - Back button
    - Scroll to top
    - Swipe from left

- Using native UI development tools ensures that an app feels at home on a platform



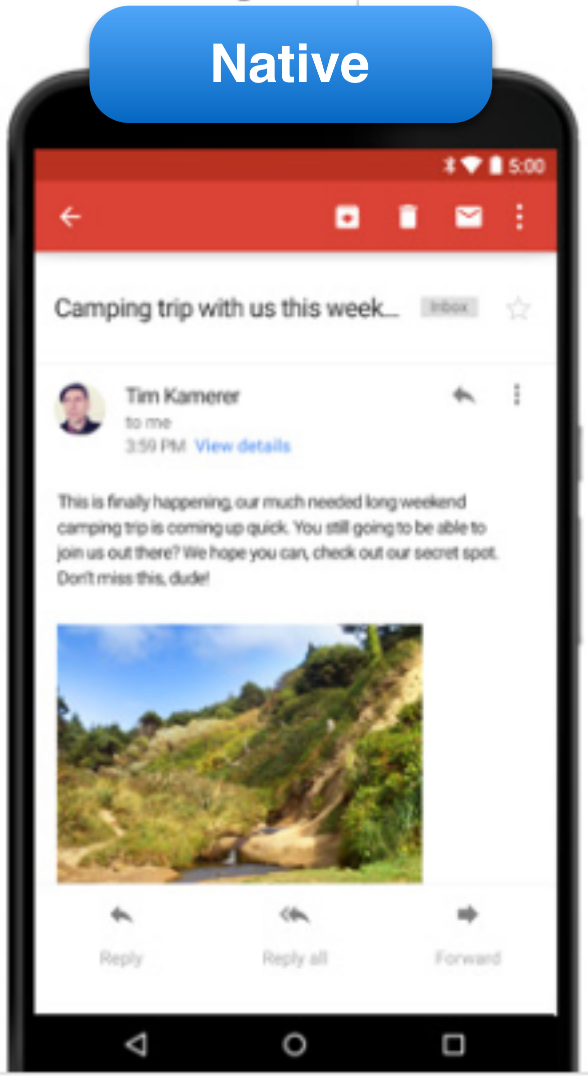
Lexi Torres
To: Maria more...

Out of the office next week
August 16, 2014 at 7:29 PM

I'm finally going to Italy---can you believe it??
It's been a dream of mine since high school.

Can't wait to sha
back.

Sent from my iP



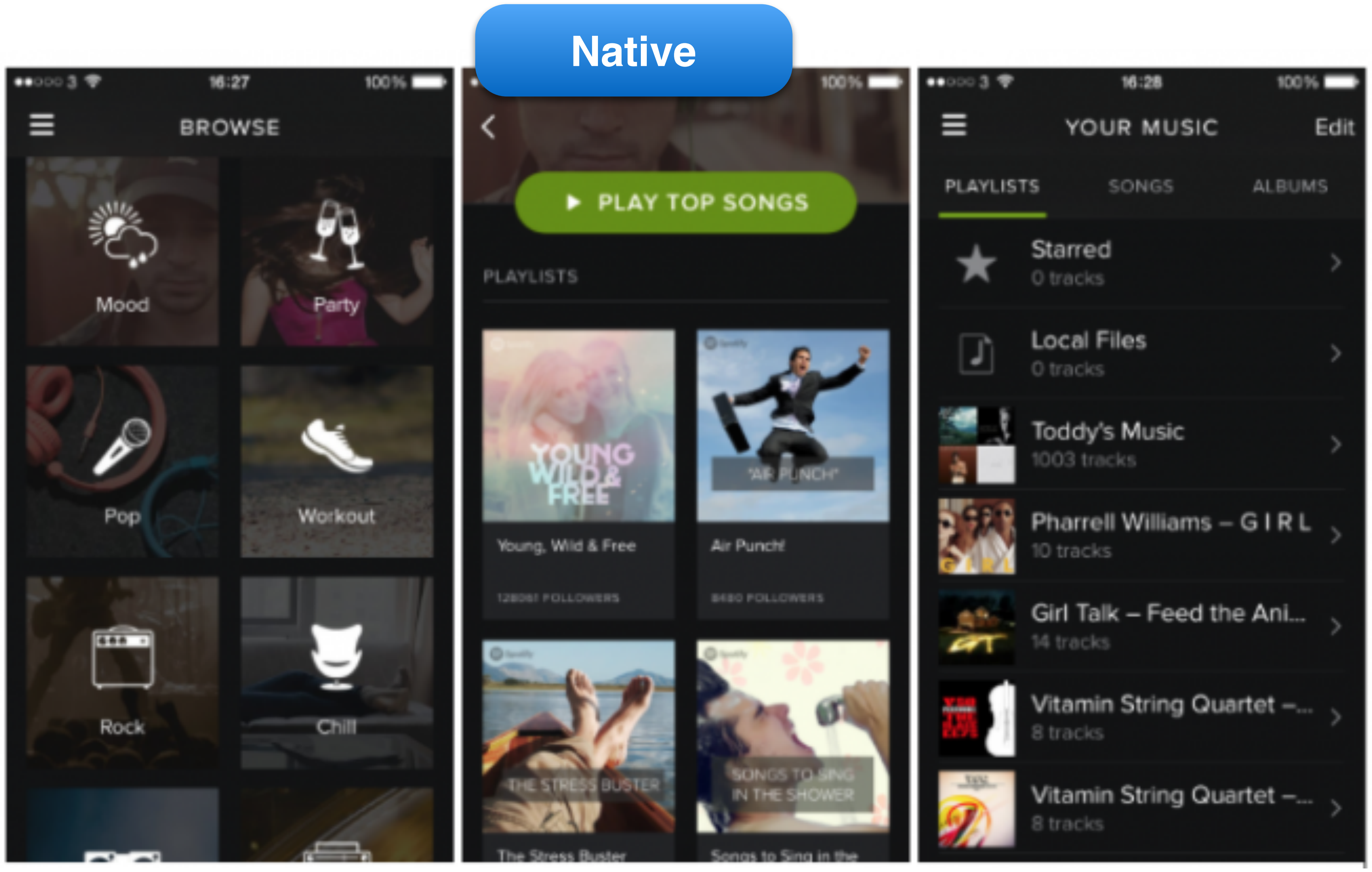
Camping trip with us this week... Inbox

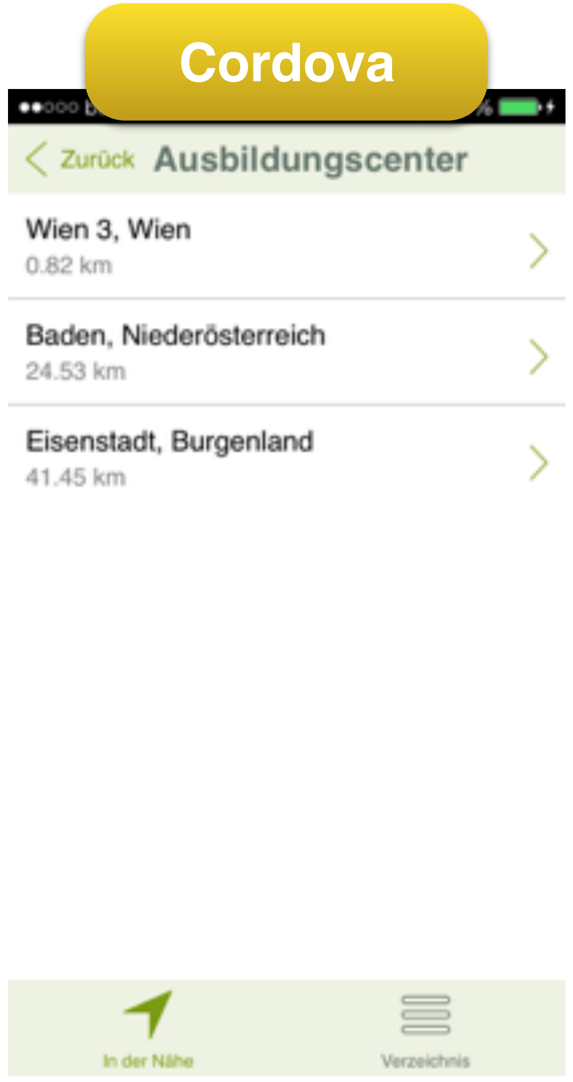
Tim Kamerer
to me
3:59 PM View details

This is finally happening, our much needed long weekend camping trip is coming up quick. You still going to be able to join us out there? We hope you can, check out our secret spot. Don't miss this, dude!

Look & Feel

- But native look less and less "wanted"





Performance

- Unquestionably native results in best performance
  - Compute intensive (e.g. image manipulation)
  - Audio/Video
  - Animations
  - Startup Time
  - Responsiveness

- Also depends on targeted devices

Features

- Each platform has their own "native" features, which users might expect as well
  - iCloud integration
  - GameCenter / Play Game services
  - Background Tasks / Multitasking
  - Push notifications
  - Custom Keyboards
  - Browser Addons (password manager, ...)
  - TouchID

App Stores

- Biggest advantage of native apps
  - Visible in App Stores
  - Visible on Home Screen
  - Apps can be charged for
    - Maybe even in-app purchases

Conclusion

- Native Apps have biggest advantages
  - "Feel at home" on platform
    - Look & Feel
    - Meet user expectations
  - Performance
  - Platform integration (iCloud, ...)
  - App Store

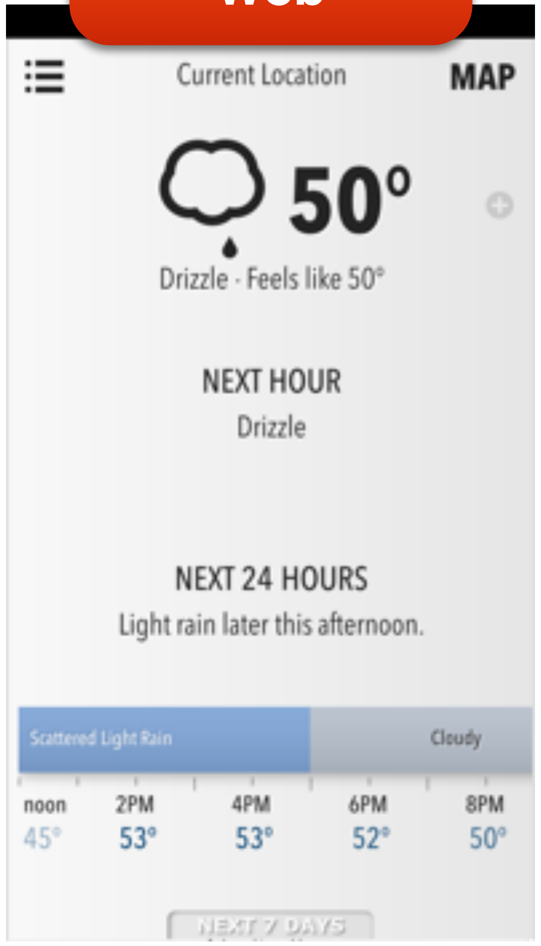
- Drawback: More work

Web

Web

- Can be basically anything that you can open in a web browser
  - Huge range

Web



Current Location MAP

50°

Drizzle · Feels like 50°

NEXT HOUR

Drizzle

NEXT 24 HOURS

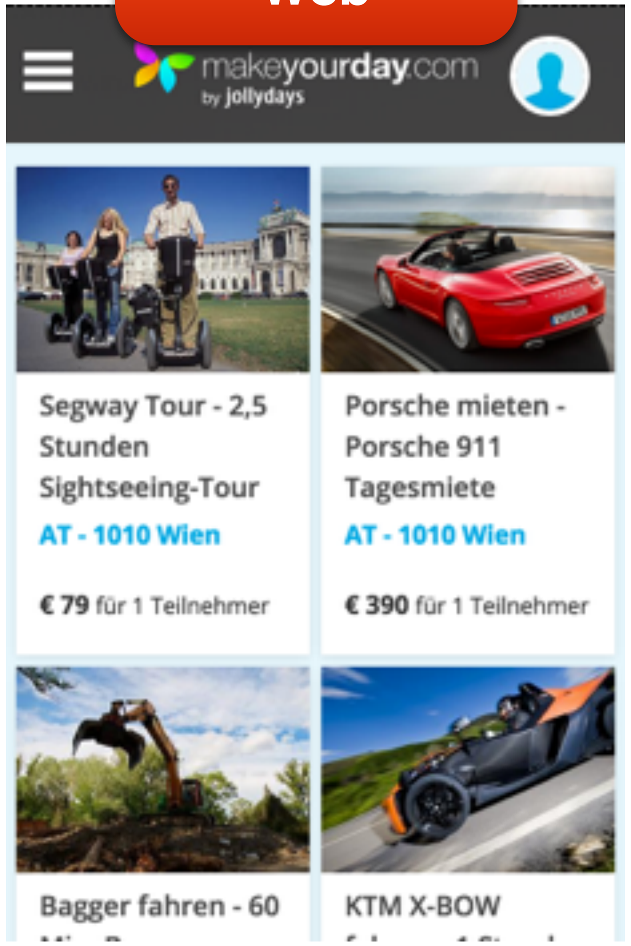
Light rain later this afternoon.

Scattered Light Rain Cloudy

noon	2PM	4PM	6PM	8PM
45°	53°	53°	52°	50°

NEXT 7 DAYS

Web



makeyourday.com by jollydays

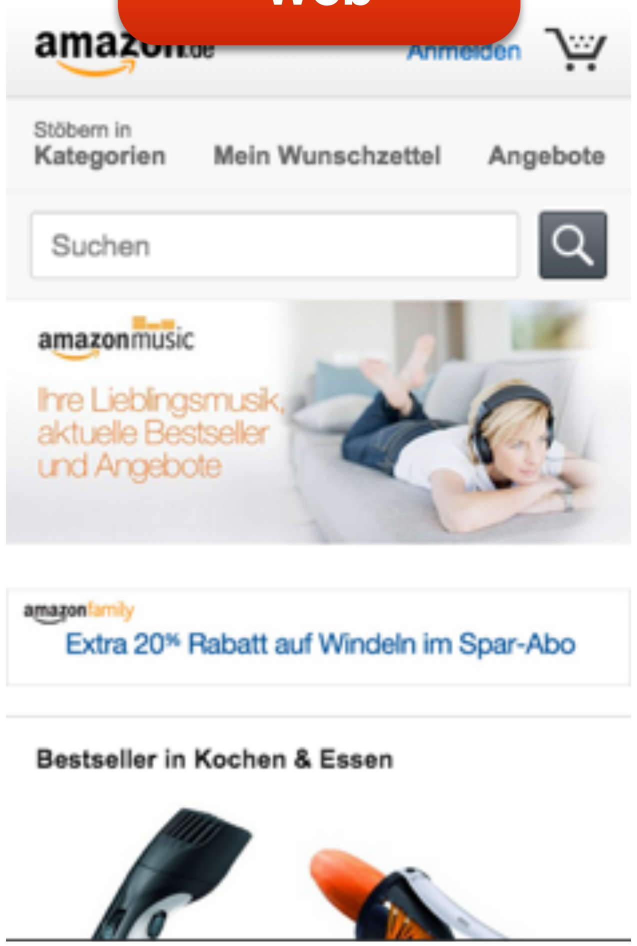
Segway Tour - 2,5 Stunden Sightseeing-Tour
AT - 1010 Wien
€ 79 für 1 Teilnehmer

Porsche mieten - Porsche 911 Tagesmiete
AT - 1010 Wien
€ 390 für 1 Teilnehmer

Bagger fahren - 60

KTM X-BOW

Web



amazon.de Anmelden

Stöbern in Kategorien | Mein Wunschzettel | Angebote

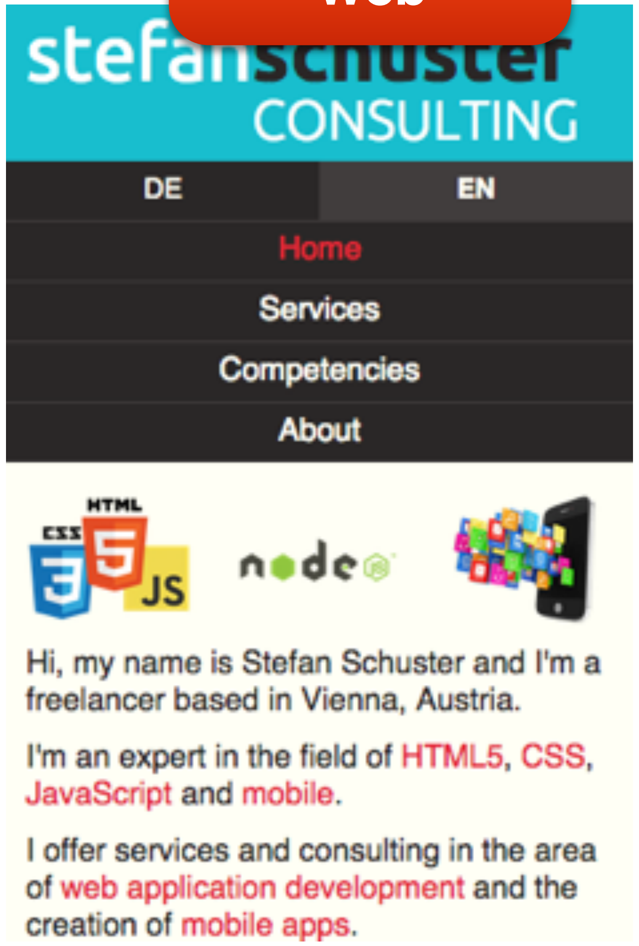
Suchen

amazonmusic
Ihre Lieblingsmusik, aktuelle Bestseller und Angebote

amazonfamily
Extra 20% Rabatt auf Windeln im Spar-Abo

Bestseller in Kochen & Essen

Web



stefanschuster CONSULTING

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Home
Services
Competencies
About

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Web

- Can be basically any technology that can be used to develop front-ends
  - HTML5, CSS3
  - JS, TypeScript, CoffeeScript
  - Angular, jQuery, Dojo
  - LESS, SASS, Stylus

Web

- Anything is possible in the web
  - Responsive websites
  - Dedicated mobile apps

- Web-Tech/Resources/Know-How can be reused
- "Cheaper" (more portable)

Look & Feel

- Look & Feel can be anything
  - Attempts to rebuild native style
  - It'll never be 100% perfect

- Browser vs. "Add to Home Screen"
- Usability
  - Overscroll
  - Swipe from left (browser back)
  - Flickering

Performance

- A lot is possible nowadays
  - CSS3 transforms/transitions with "native" speed
  - Canvas rendering
  - Fast JS engines
- But of course limited

Features

- By the way: Offline
  - Possible but complex
- Again: A lot is possible nowadays
  - Multitouch
  - Location access
  - Accelerometer / Gyro access
  - Audio/Video
- Compared to native: limited

App Stores

- Visible in Google ...
  - ... but not in app stores
- Visible on homescreen ...
  - ... only if user adds bookmark

- Can't use App Store purchase infrastructure

- But: You're in control
  - Update whenever you want
  - No submission process

Conclusion

- Everything's possible
  - Have a website? Make it mobile!
  - Have web development skills? Use them!
  - Native apps not possible in enterprise? Web!

- But don't expect mobile web apps to match native ones
- Don't underestimate work to truly optimize/develop for mobile

Cordova

Cordova

- Mix of both worlds
  - Basically Web-App
  - Delivered in an App-Container

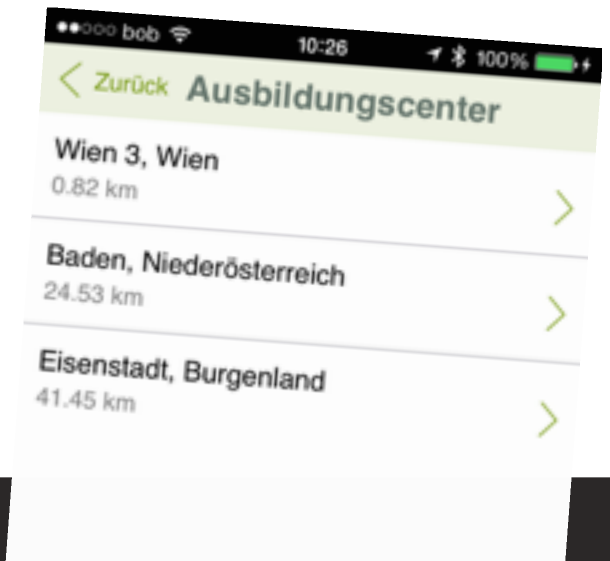
  - Some limits of web-apps are removed
  - Some limits stay

Cordova

- Like web apps
  - Any web technology can be used (HTML5, CSS, JS)
  - Existing know-how and resources can be used
  - Therefore can be "cheaper" than native
    - More portable

Look & Feel

- Like web apps
  - Look & Feel can be anything
  - It'll never be 100% perfect
  - Some usability issues are solved (no chrome, overscroll, browser gestures, ...)
  - Still requires platform specific work
    - Android Back button vs. toolbar navigation
    - Scroll to top ...



Wien 3, Wien
0.82 km

Baden, Niederösterreich
24.53 km

Eisenstadt, Burgenland
41.45 km

Performance

- Like web apps
  - Limited to what modern web technology can achieve
  - Performance critical parts (e.g. SVG rendering) could be moved out into a plugin
    - Requires native code
    - Requires implementation per platform

Features

- Not like web apps
  - Plugins not only for performance
  - Plugins provide JS APIs to native features
    - In App Purchase
    - Storage
    - Camera
    - ...
  - Offline: resources packaged

App Stores

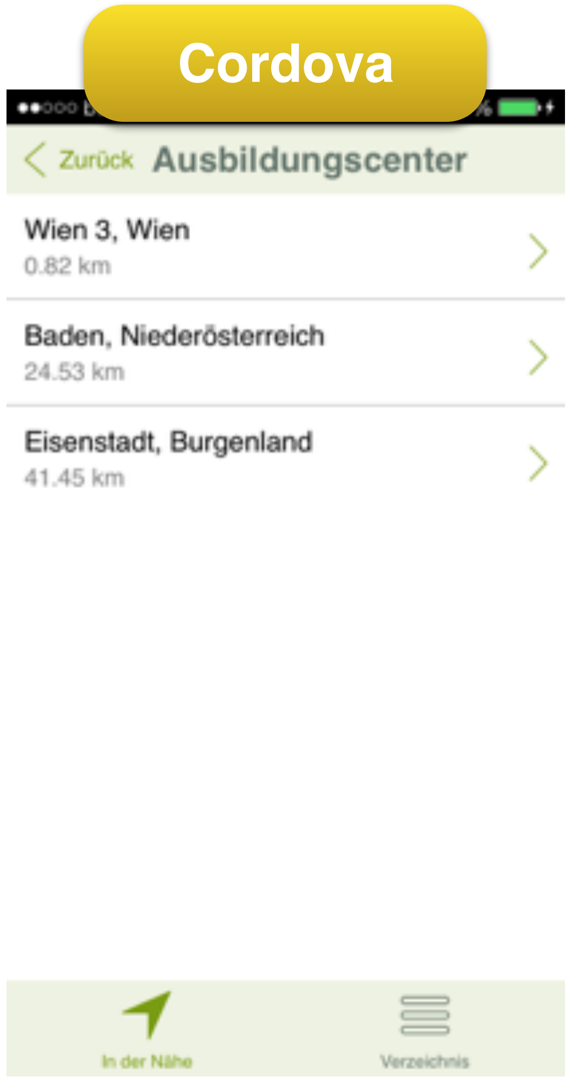
- Since it's delivered as app
  - Visible in App Stores
  - Visible on Homescreen
  - Can use App Store Purchase systems

- But still...
  - "Compile" for each platform
  - Submission for each platform

Conclusion

- Combines both worlds
  - Real App (Store, ...)
  - Still portable (Web Tech)
  - Limited "nativeness"

- Depending on the app this might be the best compromise



Wien 3, Wien
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41.45 km

Summary

Summary

Web

- You have to think about mobile
  - The least you can do is some optimizations for your web properties (make it usable)
  - Better even create real mobile web apps/pages
  - Or if you have (technical/political) limits: web is your only choice - done right a lot is possible
  - Web offers you full control (updates, ...)
  - But is limited in regards to performance and features

Summary

Cordova

- You want a real mobile app - but not native?
  - Cordova's your best choice: real app, web tech
  - Platform independent development
  - Web version for free
  - Still limited though
    - Some performance limits removed
    - Some feature limits removed
  - A lot of work - don't underestimate
    - Adapt to each platform? Extra work!
    - Implement something platform independently that would be for "free" native? Extra work!

Summary

Native

- Real mobile apps
  - Feel at home on their system (UX/UI)
  - Get out the most of current devices (performance)
  - Integrate with their OS (eco-system)

Summary

Native

Cordova

Web

- What to use?
- It depends!
    - Performance / Feature requirements
    - Existing Know-How / Resources
- But: First-class apps are native...

Thank you!

Questions?

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