

MOBILE APPLICATIONS

MOBA1, HS15

TOPICS MOBA1

1. Introduction
2. Mobile Platform
3. Mobile Web
4. Update on CSS and JS
5. Mobile Web APIs
6. Mobile Web Frameworks
7. Web Component Technologies
8. Native Apps
9. Introduction to Swift
10. iOS / Cocoa (Part 1)
11. iOS / Cocoa (Part 2)
12. iOS / Cocoa (Part 3)
13. More on iOS
14. Summary, Exam Preparation

OUTLOOK MOBA2 (PLANNED)

1. Design, Usability, Accessibility (Part 1)
2. Design, Usability, Accessibility (Part 2)
3. Android Development (Part 1)
4. Android Development (Part 2)
5. Android Development (Part 3)
6. Android Development (Part 4)
7. Android Development (Part 5)
8. Other Platforms: Overview
9. Other Platforms: Firefox OS
10. Hybrid Apps: PhoneGap
11. Trends: Wearables
12. Trends: Beacons
13. Trends: Mobile Payment
14. Summary, Exam Preparation

LESSONS AND SELF-STUDY

- Lecture: two lessons per week
- Practical exercises: also two lessons
- Self-study

PREVIOUS KNOWLEDGE

- HTML, CSS, JavaScript (WEB1-3)
- Programming in C and Java

ASSESSMENT

Weight	Type
20%	Exercises and tests during class time
80%	Final exam

EXERCISES AND TESTS

- t_1 : A short test in week 6 (15 min, open book)
- e_1 : Result of selected exercise (week 1-7)
- t_2 : A short test in week 12 (15 min, open book)
- e_2 : Result of selected exercise (week 8-14)

Result: $(\max(t_1, fe) + \max(e_1, fe) + \max(t_2, fe) + \max(e_2, fe)) / 4$

Weight: 20%

fe: result of the final exam

FINAL EXAM

- Written exam
- January 2016
- Different types of questions / tasks
 - Multiple choice, code examples, ...
- Open book

DOCUMENTS

In electronic form in OLAT:

- Slides
- Exercises
- Additional material

OLAT

<https://olat.zhaw.ch/url/RepositoryEntry/185073669>

- Weekly schedule
- Documents
- Course details and conditions
- Forum

PRACTICAL LESSONS AND LECTURES

PRACTICAL LESSONS

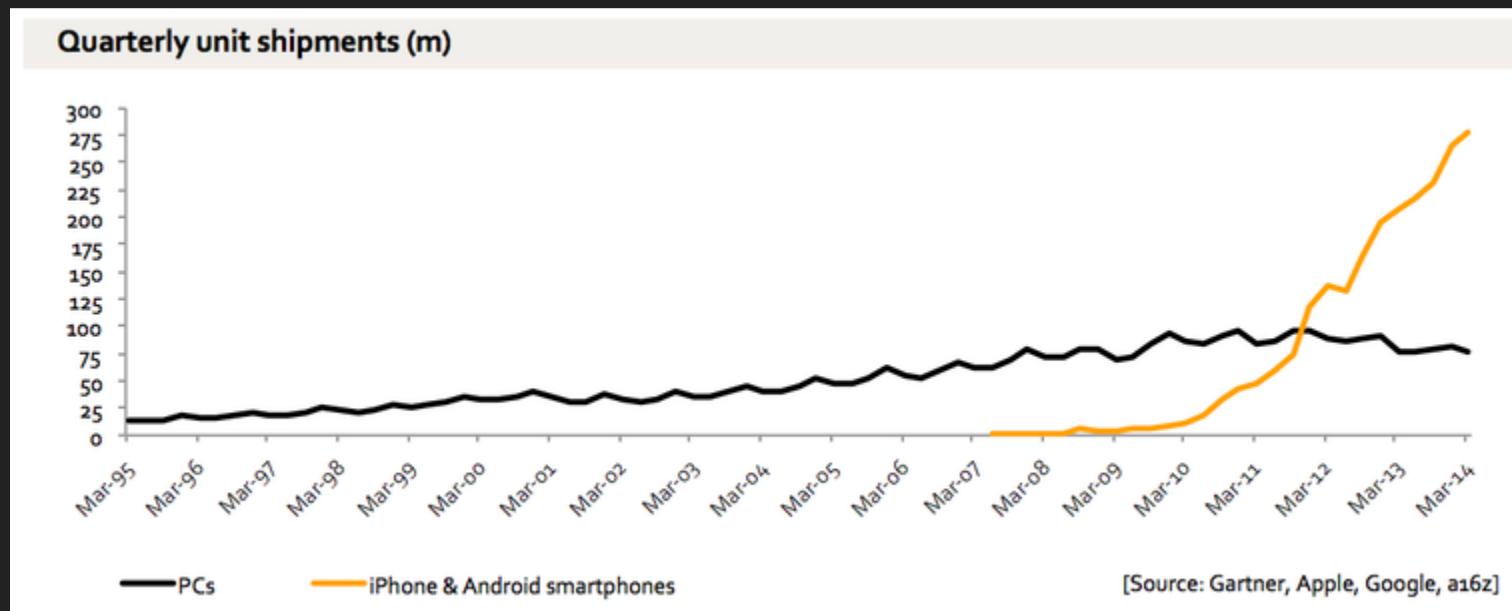
- Tasks explained
- You work with your notebooks
- Teamwork is appreciated

LECTURES

- Private conversations disturbing
- Interaction and participation appreciated
- Take notes

MOBILE DEVICES

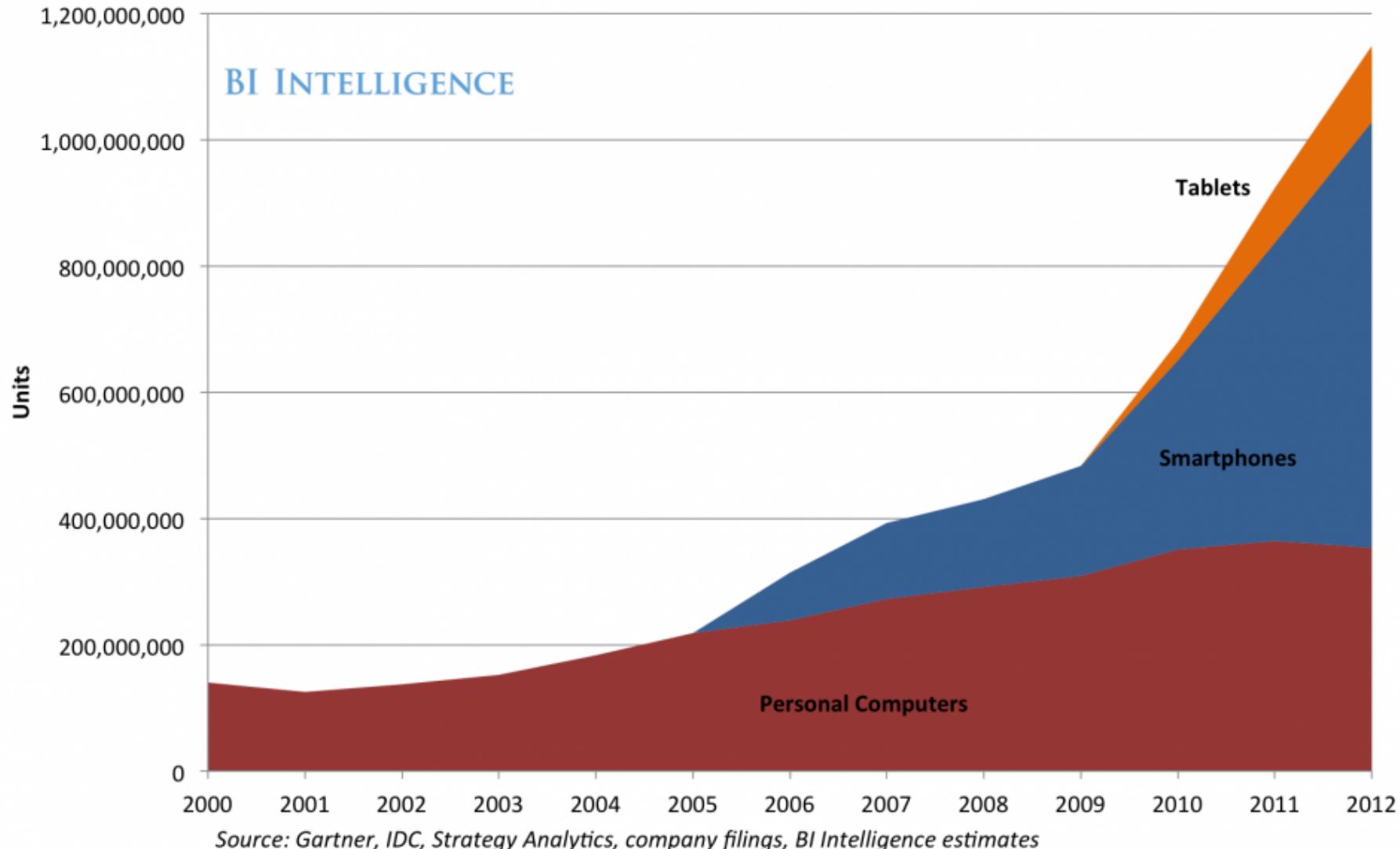
SMARTPHONE AND TABLET MARKET



↓ more ↓

SMARTPHONE AND TABLET MARKET

Global Internet Connected Device Shipments



FEATURE PHONE TO SMART PHONE



MOBILE DEVICES



↓ more ↓

MOBILE DEVICES



MOBILE DEVICES



MOBILE DEVICES



MOBILE DEVICES

- Notebooks
- Netbooks
- Feature Phones
- Personal Digital Assistants
- Smartphones
- Tablets
- Smartwatches

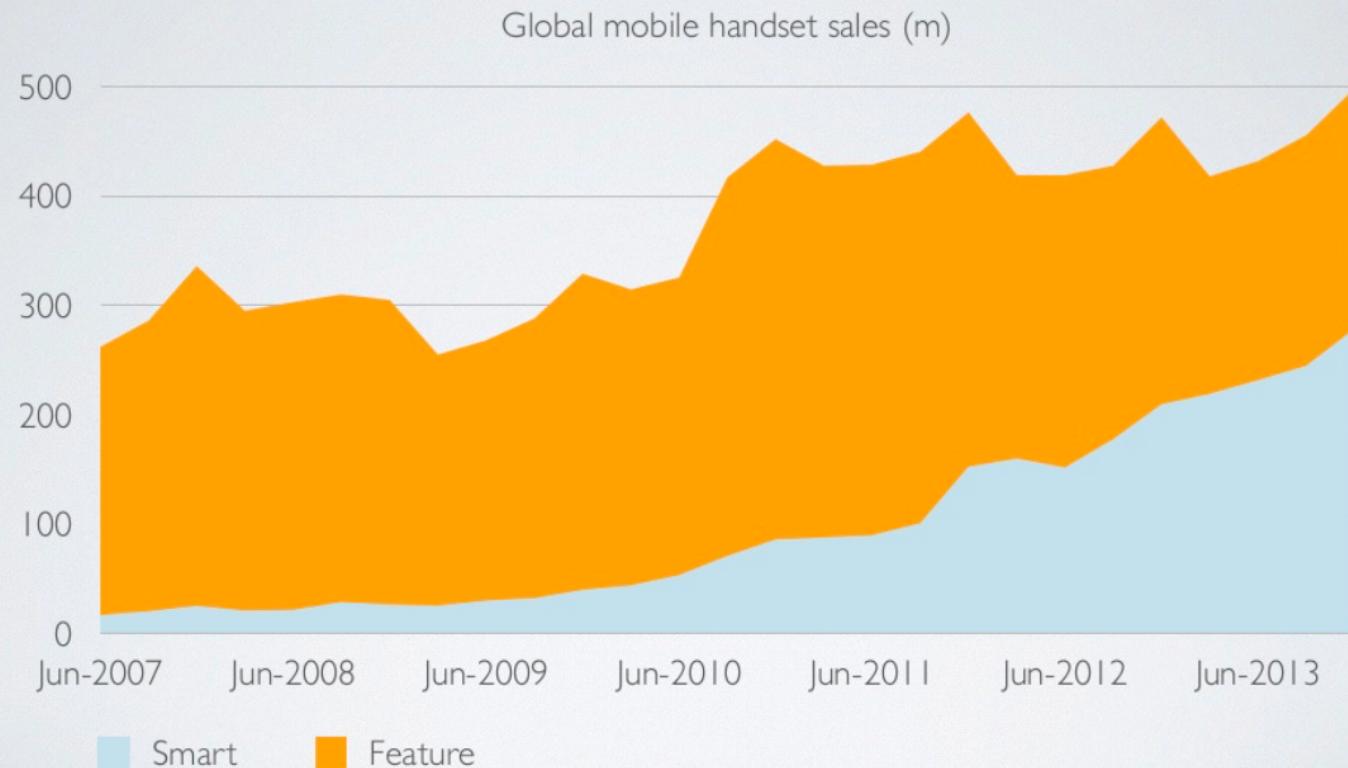
↓ more ↓

MOBILE DEVICES

- Calculator watches
- Handheld game consoles
- Head-mounted displays
- Wearable computers
- Portable media players
- Digital still cameras (DSC)
- Digital video cameras (DVC) or digital camcorders
- Personal navigation devices (PND)

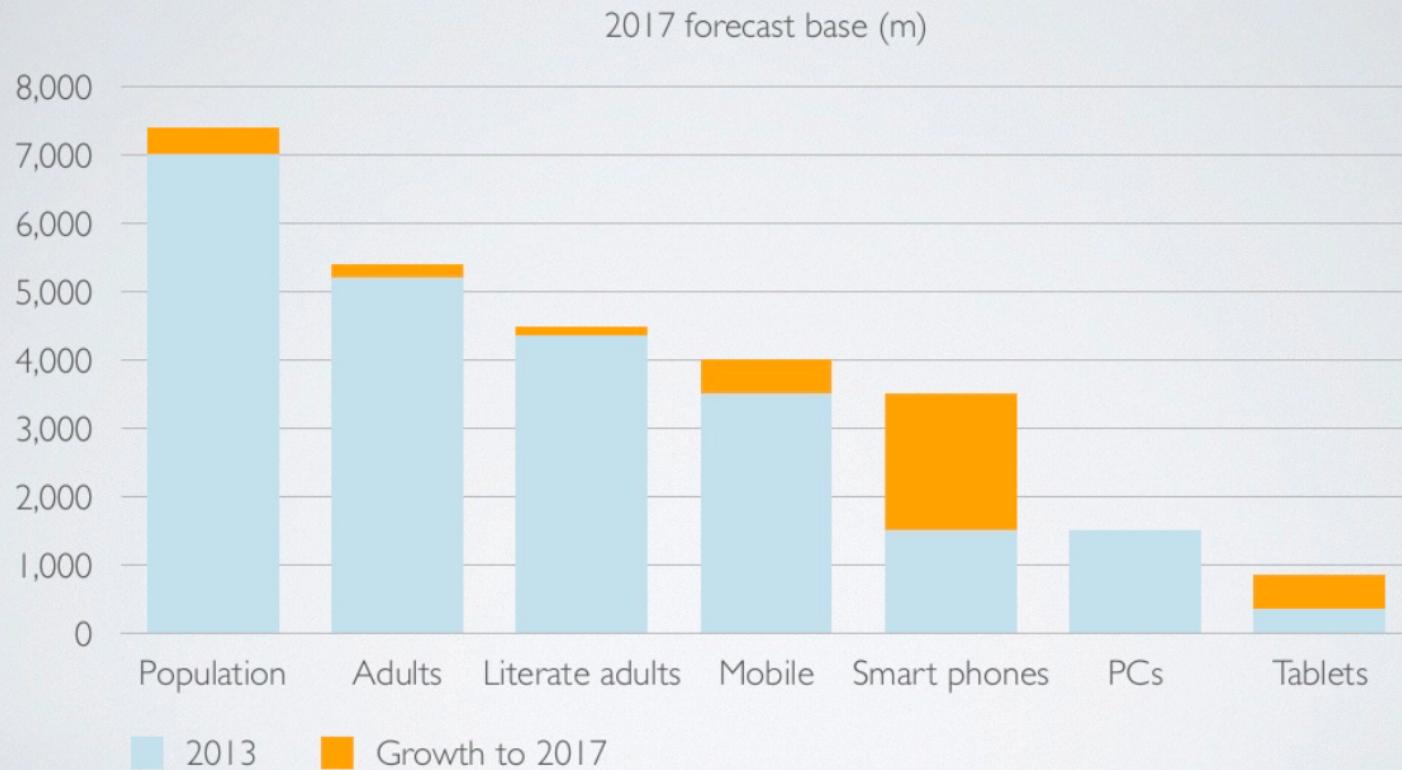
MOBILE DEVICES

Category conversion



MOBILE DEVICES

The world in 2017



GOOGLE GLASS



MOBILE DEVICES IN MOBA 1/2

- In MOBA1/2 we focus on Smartphones and Tablets
- With some comments on Smartwatches and Wearables
- Priority on devices with widespread mobile OSs

MOBILE APPLICATIONS

MOBILE APPLICATIONS

- Traditionally we targeted phones
- Then tablets followed
- Today we have a complete range of device types
 - smartwatch, phone, tablet, TV and automotive
 - Each one poses its own usability challenges

MOBILE APPLICATIONS

- Native
- Web-based
- Hybrid

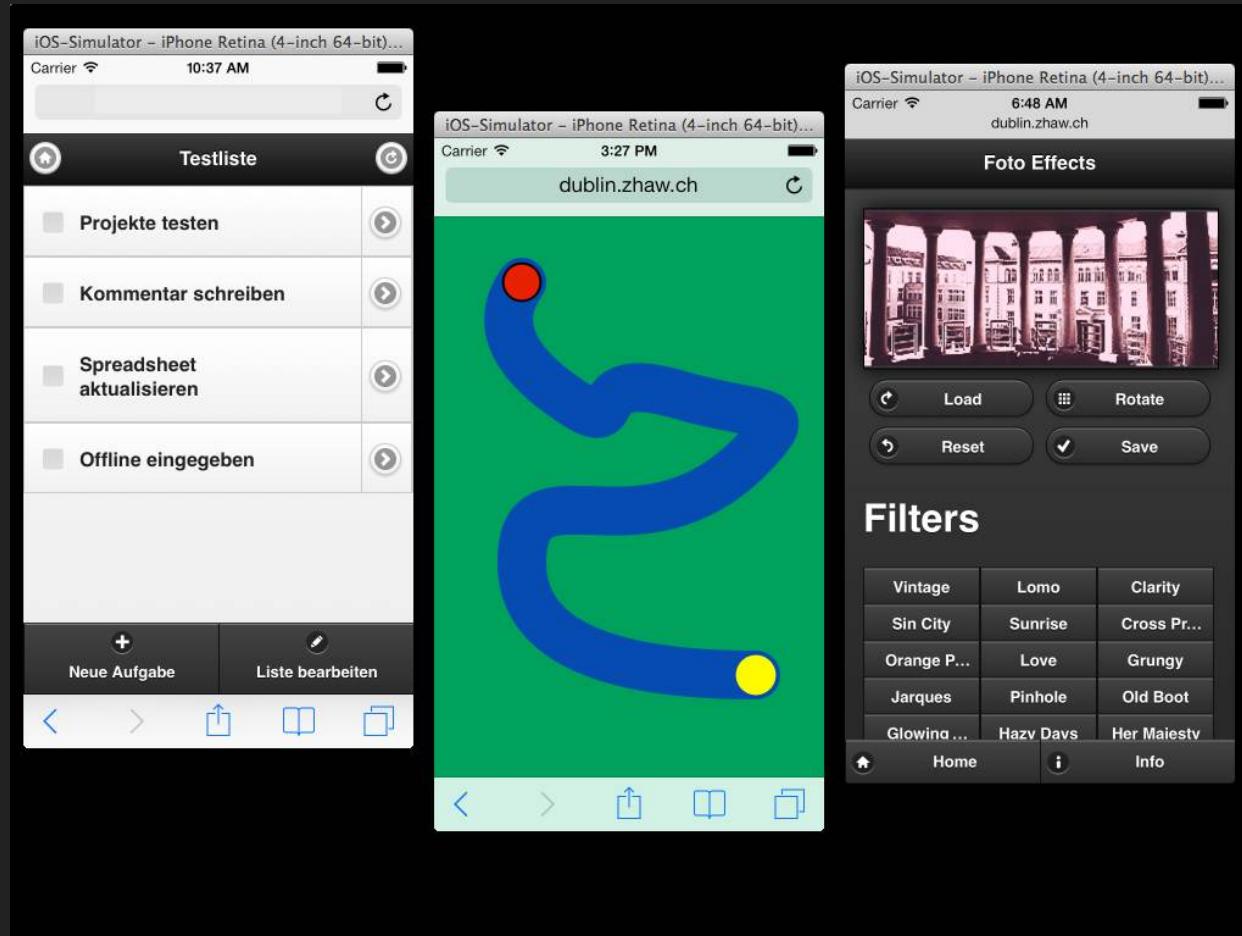
NATIVE MOBILE APPLICATIONS

- Platform specific language
- Platform specific APIs
- Platform specific central app store
- Advantages
 - Usually offer the best performance
 - Deepest integration
 - Best overall user experience
- Disadvantage
 - Most complex development option

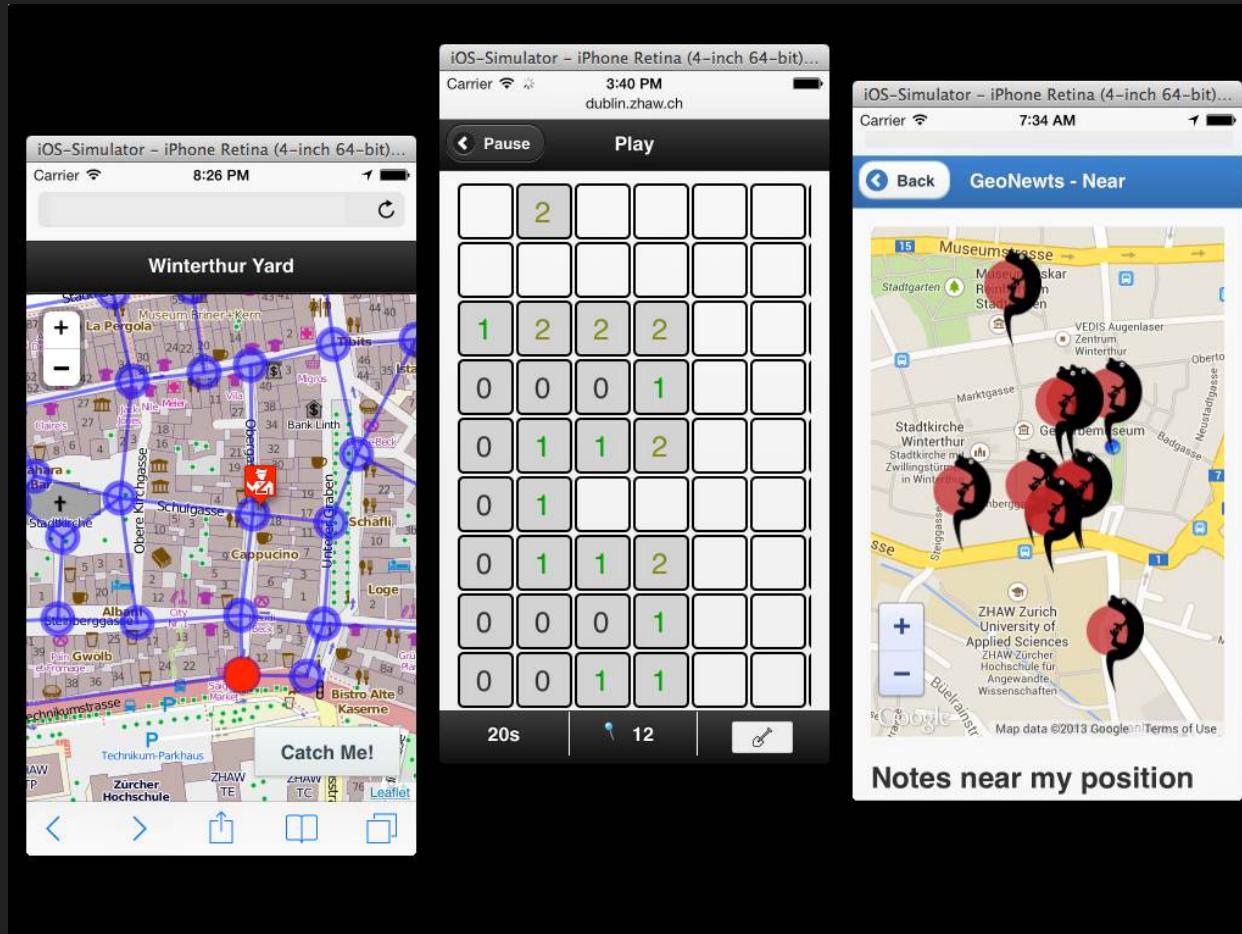
WEB-BASED MOBILE APPLICATIONS

- Based on HTML(5), JavaScript and CSS
- Do not rely on an app store
- Essentially locally stored mobile sites
- Try to emulate the look-and-feel of an app
- Can be added to the home screen
- Frameworks like PhoneGap can build a native wrapper around such apps

SAMPLE WBE PROJECTS



SAMPLE WBE PROJECTS



THINK ABOUT / DISCUSS ...

What ist the difference between a web-based mobile app
and website designed for mobile devices?

↓ more ↓

MOBILE FRIENDLY WEBSITE

- No fixed boundary to mobile apps
- Pages fetched from server
- Document (text, links) rather than application character
- Can also be added to the home screen
- Designed for mobile devices or responsive webdesign

WEB-BASED MOBILE APP

See above, slide *Web-based Mobile Applications*

HYBRID MOBILE APPLICATIONS

- Use native code for enhanced performance and integration with the platform
- Use a webview together with HTML5-based content for other parts of the app
- Allow to revise content and features without using the app stores

INSIDE VIEW

- iPhone 6
- Samsung Galaxy S5

↓ iPhone 6 ↓



Li-ion Polymer Battery
3.82V == 6.91Whr
APN: 616-0805



WARNING

Authorized Service
Provider Only

Potential for fire or
burning. Do not
disassemble, puncture,

AT&T
60887864 820-3486-12 94V 0.00V

F3X43330
6KPG16TA

Do not drop, puncture, crush, heat, or burn.



TIS 2217-2548
Apple South Asia
(Thailand) Limited



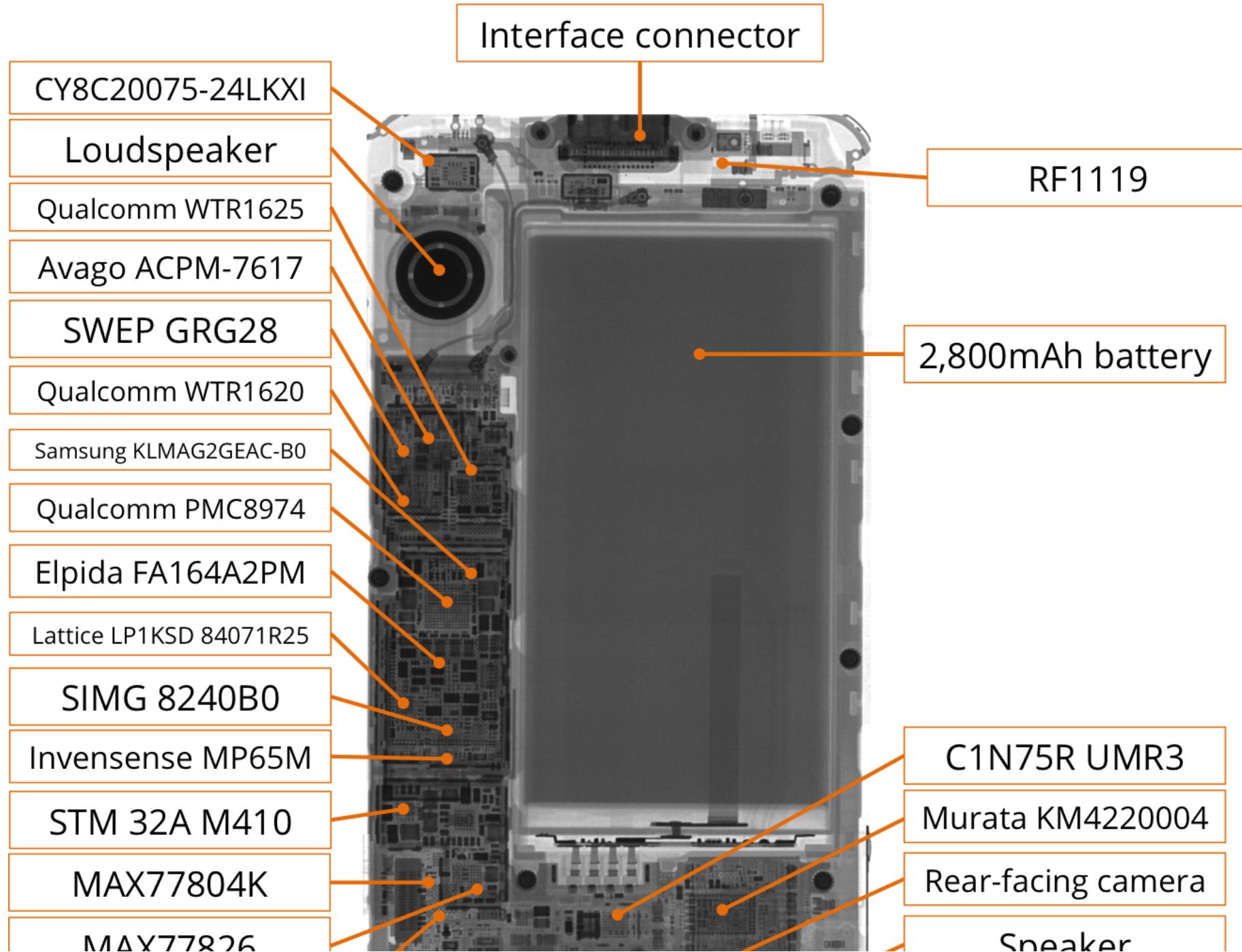
1810mAh
Apple Japan



Li-ion



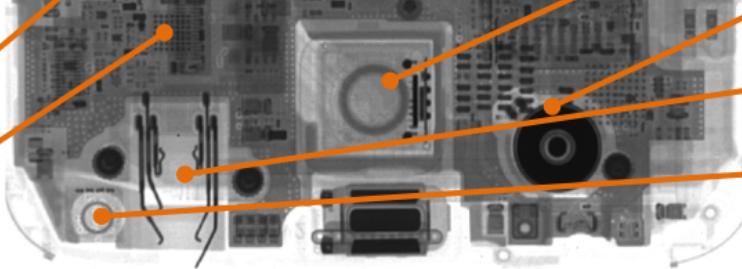
↓ Samsung Galaxy S5 ↓



MAX77820

Qualcomm WCD9320

NXP 47803



Speaker

Audio jack

Front-facing camera

THINK ABOUT / DISCUSS ...

What ist the future, mobile web apps or native apps?

THINK ABOUT / DISCUSS ...

Developing native apps, which platforms should be targeted?

- iOS
- Android
- Windows Phone
- Firefox OS
- Ubuntu
- ... other ?
- ... Feature phones?

↓ more ↓

FEATURE PHONES

- Globally one third of all phones sold in Q3 2014 were feature phones
- Install base much higher than that
- But: Android is increasingly taking over the low-cost handset market
- Apps typically developed using Java ME or BREW (Qualcomm)

THINK ABOUT / DISCUSS ...

Mobile platform wars over?

- Apple and Google's Android have won: unlikely that other platforms will be relevant
- Apple camped out at the high end, Android taking the rest
- But Google's control of Android is partial
- Facebook and Amazon trying to extract value
- Samsung's position uncertain

THINK ABOUT / DISCUSS ...

Different focus for innovation

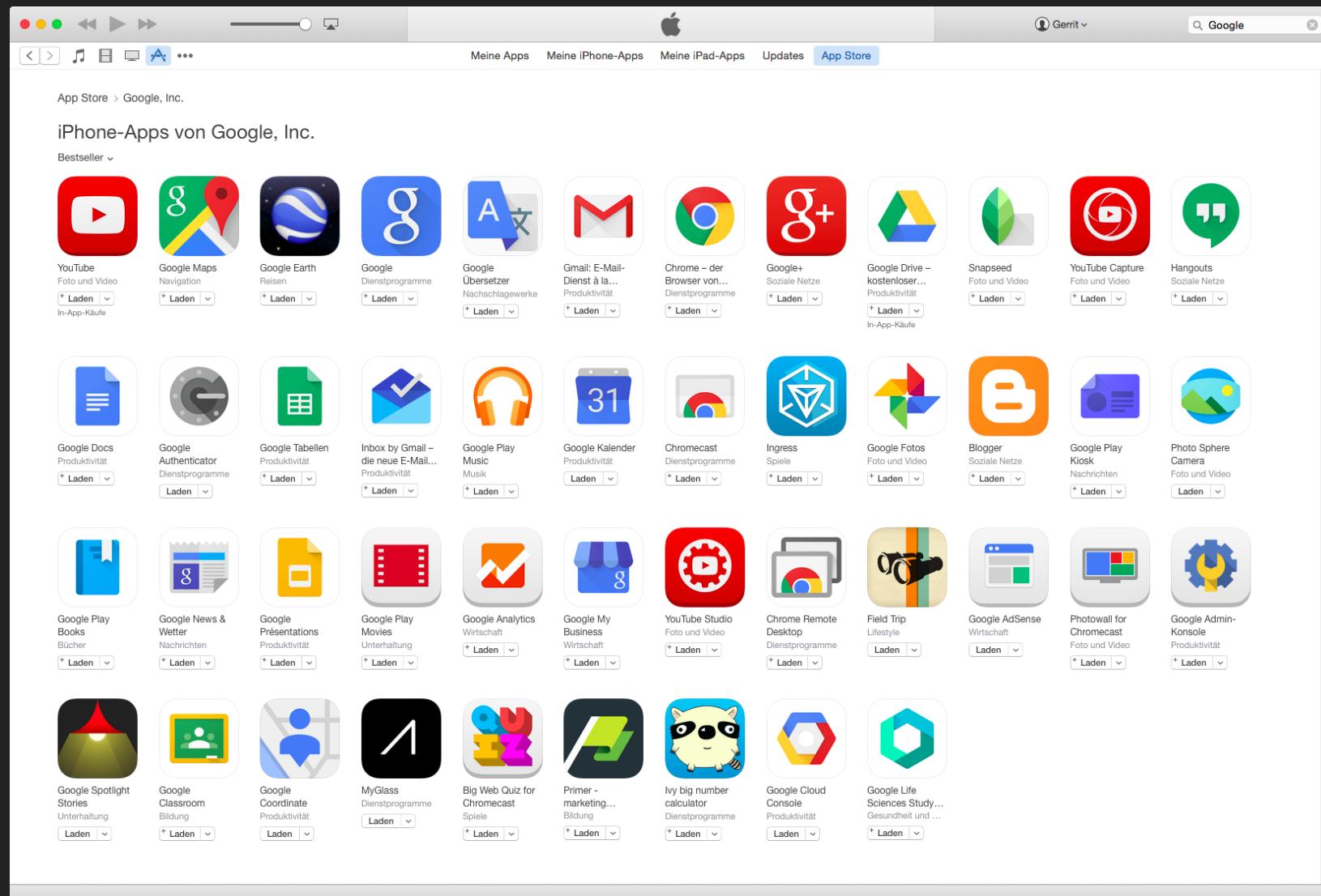
Apple

- Integrated hardware & software
- Fingerprints, Bluetooth, Airdrop, 64 bit etc
- Move innovation down the stack (hard for Google)
- Directed discovery (iBeacon)

Google

- Systemic fragmentation, little hardware control
- Google Now, Maps, Plus, semantic search etc
- Move innovation up the stack (hard for Apple)
- Predictive discovery (Now)

GOOGLE APPS FOR IOS



MARKET SHARE (→ EXERCISE)

The irrelevance of Microsoft



MARKET SHARE (→ EXERCISE)

Period	Android	iOS	Windows Phone	BlackBerry OS	Others
Q1					
2015	78.0%	18.3%	2.7%	0.3%	0.7%
2014	81.2%	15.2%	2.5%	0.5%	0.7%
2013	75.5%	16.9%	3.2%	2.9%	1.5%
2012	59.2%	22.9%	2.0%	6.3%	9.5%

(Source: [IDC](#))

NEWS

FROM THE NEWSTICKER

- 07.2015: Major Flaw In Android Phones Would Let Hackers In With Just A Text

SOURCES AND FURTHER INFORMATION

SOURCES

- Slides and other material from courses WEB1, WBE
- Mobile Developer's Guide To The Galaxy, 15th Edition, Enough Software,
http://www.enough.de/index.php?id=mobile_developers_guide
- Mobile is eating the world, Benedict Evans, 2013,
<http://de.slideshare.net/bge20/2013-11-mobile-eating-the-world>
- Mobile, context and discovery, Benedict Evans, keynote at the InContext 2014 conference, <http://de.slideshare.net/bge20/2014-02-incontext>,
Youtube: <https://www.youtube.com/watch?v=VnhbvS0MBXE>

