

Design and Implementation of Mobile Applications

2018-19

Luciano Baresi

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- Professor @ DEIB
- Previously
 - Researcher at Cefriel
 - Visiting researcher
 - University of Oregon (USA)
 - University of Paderborn (Germany)
- Research interests
 - Software engineering
 - Dynamic software architectures
 - Service- and cloud-based systems
 - Mobile applications

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Our course

Our Course

- Taught in English
- No text book
 - No book can be written so quickly
 - Online material better than any book
 - Slides are available through my web page

When/Who

- Wednesday: 8:30-10
- Thursday: 8:30-10
- Teaching assistant
 - Giovanni Quattrocchi
- External guests (from industry)

Key ingredients

- Mobile application design
- Cross-platform development
 - Xamarin, PhoneGap, ReactNative, ecc.
- Android
- iOS

Final exam

- Project negotiation (not before end of October)
 - You propose an idea
 - Some proposals may be available
- Some comments
 - Novelty of idea is not key
 - 1 or 2 people (exceptionally 3 persons)
 - Expectations are becoming higher and higher
 - Complexity, graphical layout, “multi-device” support, testing, quality of documentation

Final exam

- Project discussion
 - On official dates only
- You must come with
 - Your design document (printed or by email)
 - A short presentation (brief introduction and design decisions)
 - Elevator pitch (short video, 30-60 seconds)
 - A demo (real device or simulator)
- Synergies are encouraged

I would like to get

- A well-engineered significant app
 - Some screens (significant application flow)
 - Multiple threads
 - Interaction with external services (not just Facebook)
 - “Nice” look and feel
 - Support for different classes of devices
- Earlier does not mean higher grades
- You keep any possible right on the app

A bit of history



Dr. Martin Cooper of Motorola, made the first US analogue mobile phone call on a larger prototype model in 1973





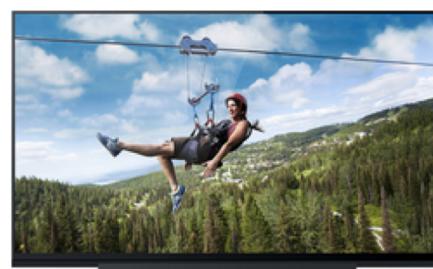
ANDROID WEAR



PHONES



TABLETS

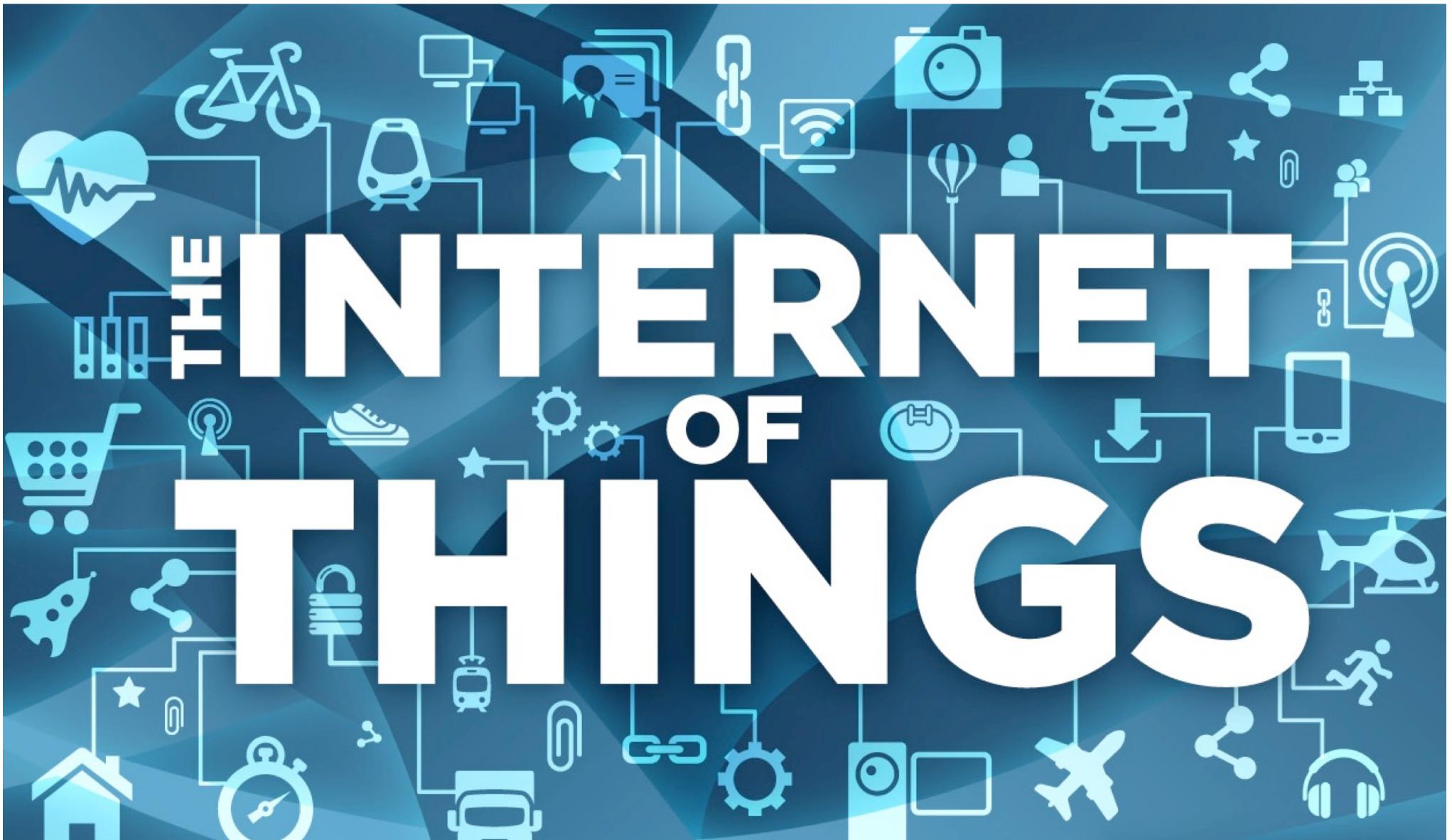


ANDROID TV



ANDROID AUTO

THE INTERNET OF THINGS

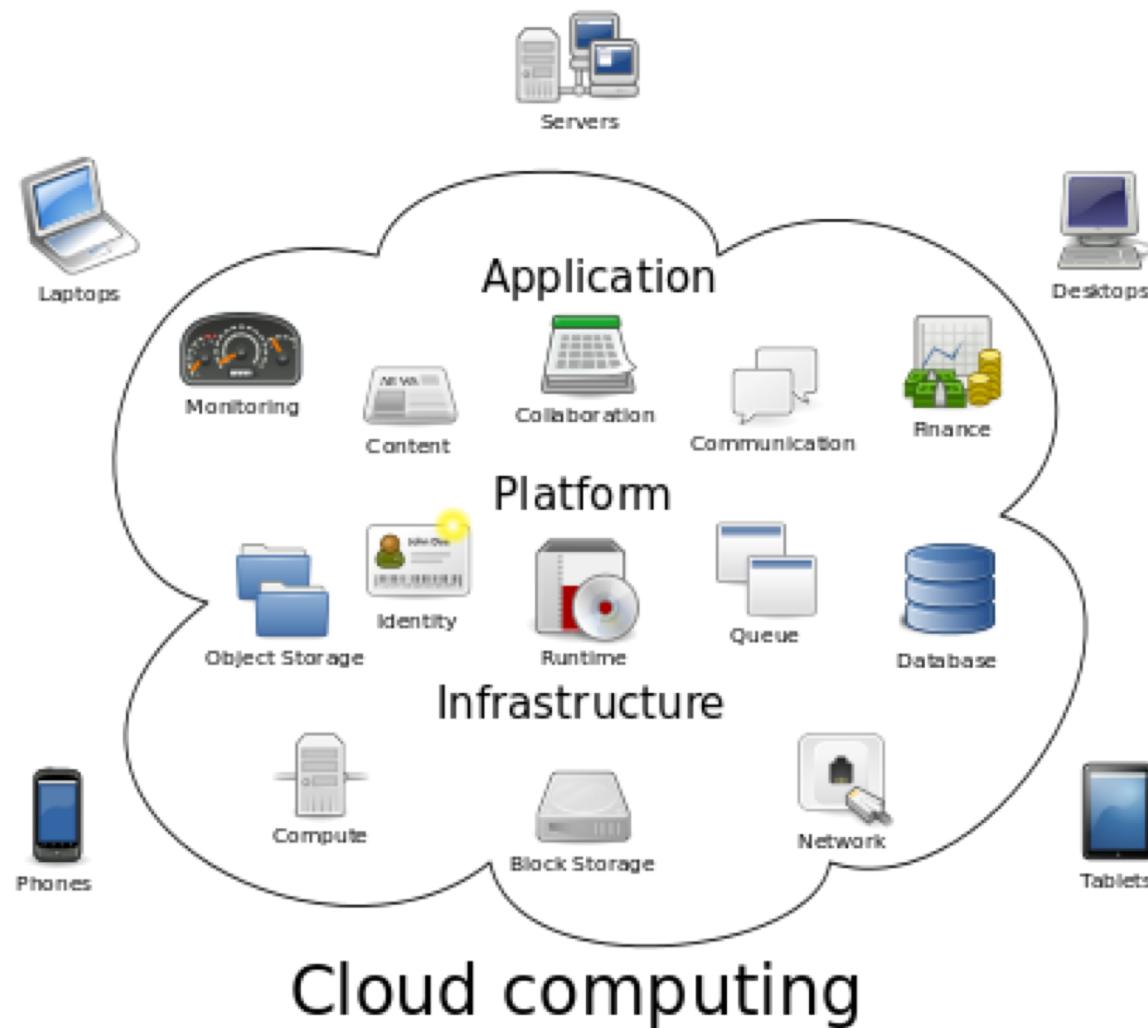


Parrot® FLOWER POWER

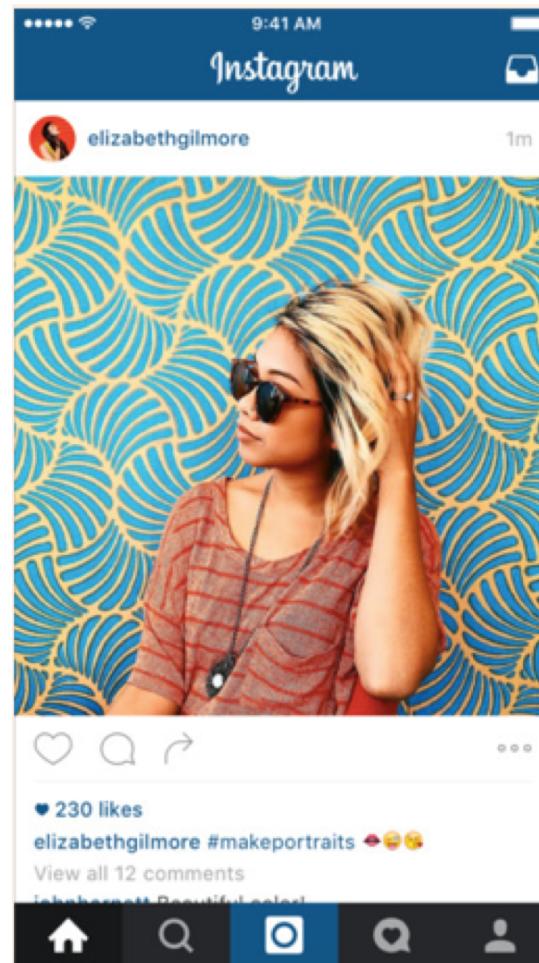
L'incredibile sensore che misura i bisogni delle tue piante
e ti avvisa sullo smartphone



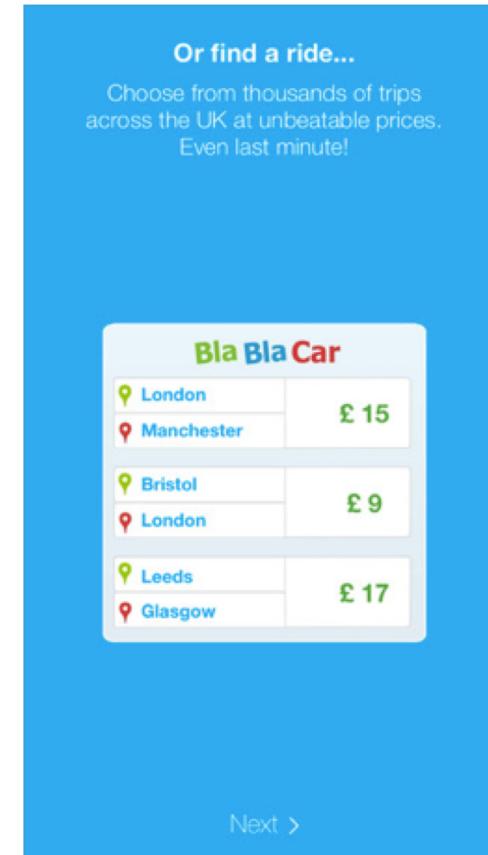
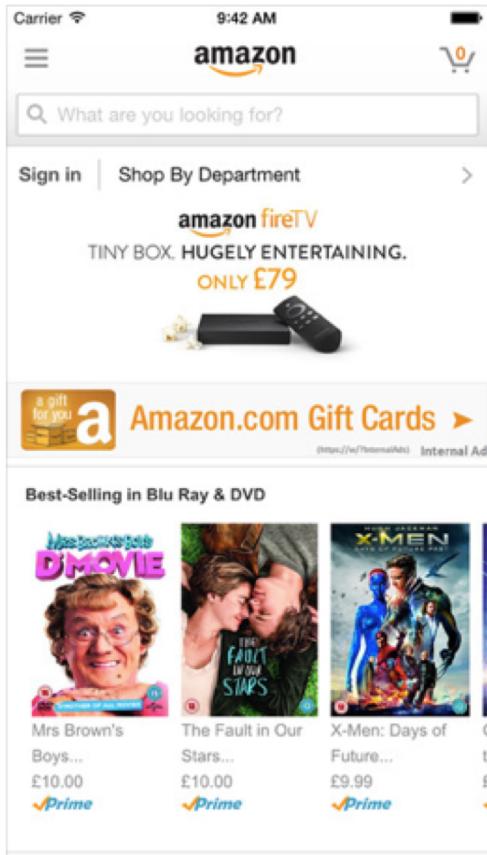
Cloud integration



It is not just this



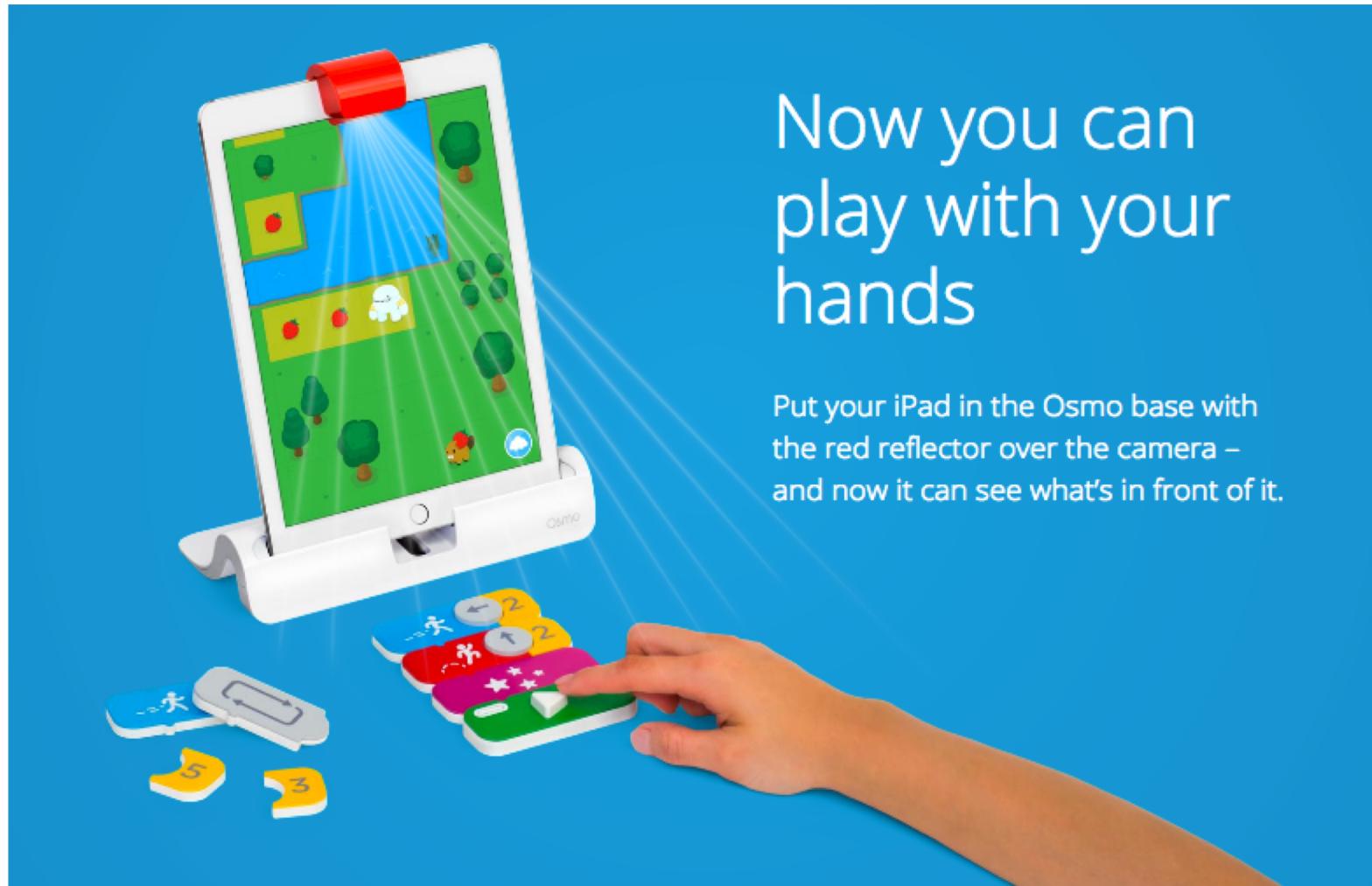
How about this?



What can we think of?

- New channel
- Nice and addicting
- Simplified through apps
- New idea?

Osmo



Now you can
play with your
hands

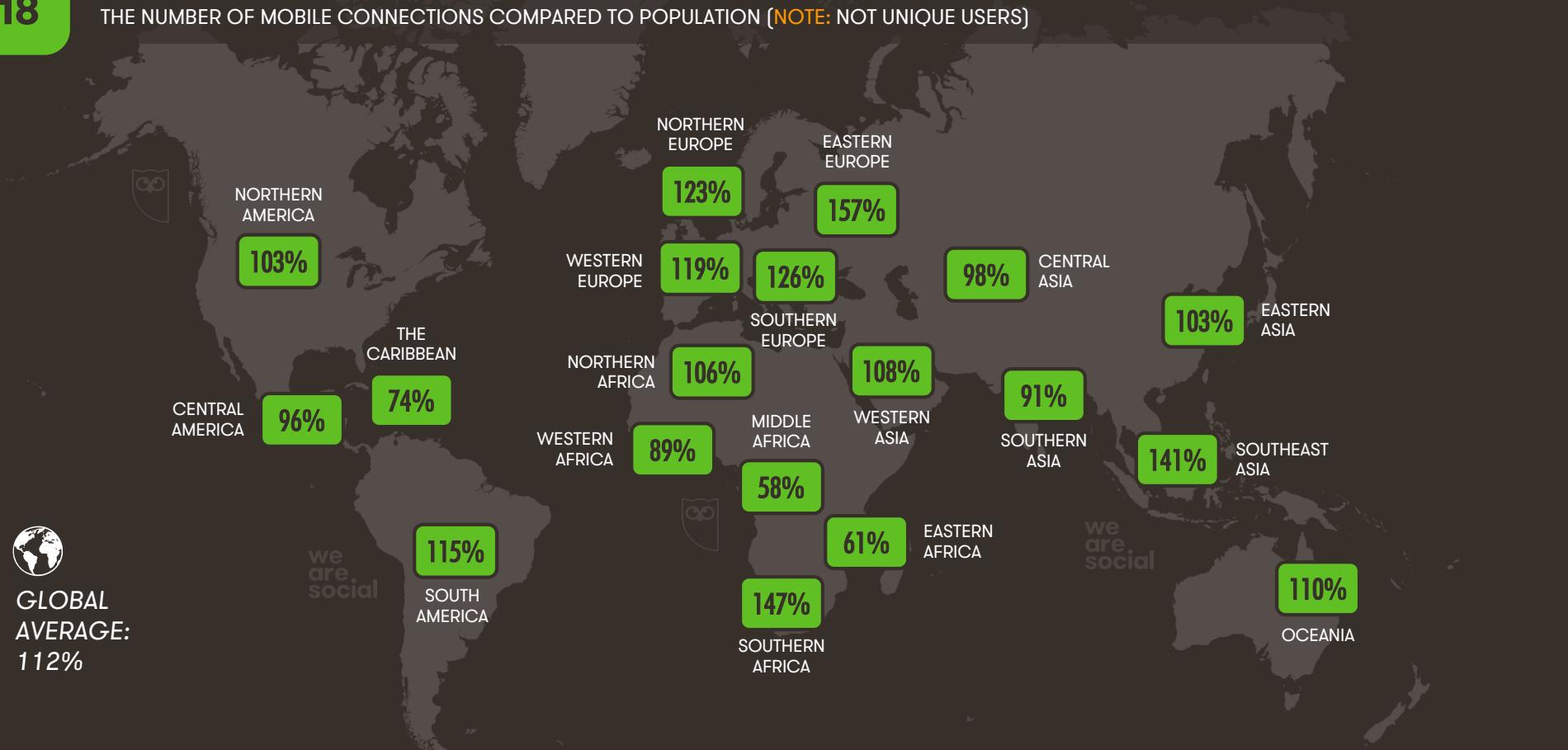
Put your iPad in the Osmo base with
the red reflector over the camera –
and now it can see what's in front of it.

... and some numbers

JAN
2018

MOBILE CONNECTIVITY BY REGION

THE NUMBER OF MOBILE CONNECTIONS COMPARED TO POPULATION (NOTE: NOT UNIQUE USERS)

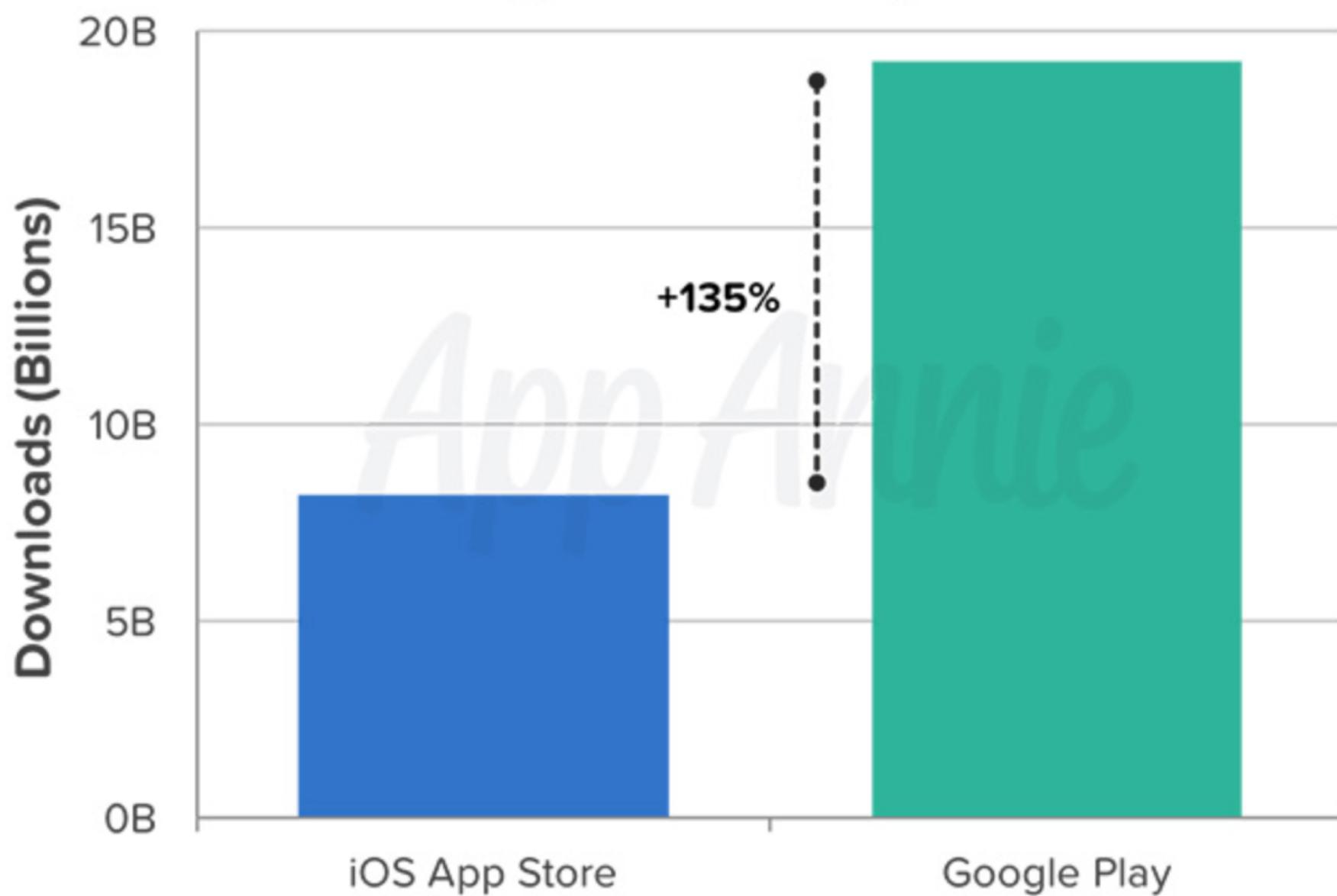


Worldwide Smartphone Sales to End Users by Operating System in 2017 (Thousands of Units)

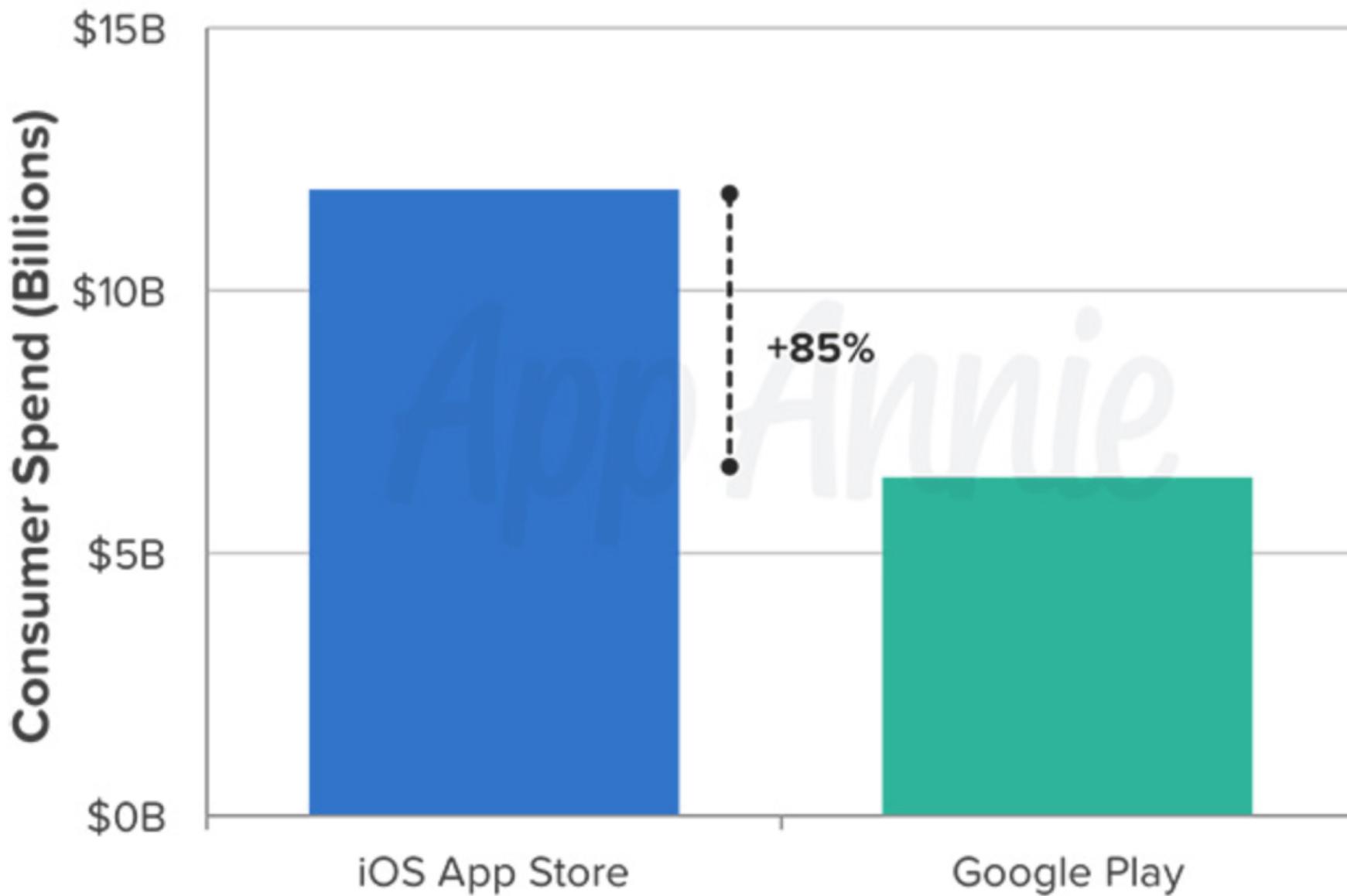
Operating System	2017 Units	2017 Market Share (%)	2016 Units	2016 Market Share (%)
Android	1,320,118.1	85.9	1,268,562.7	84.8
iOS	214,924.4	14.0	216,064.0	14.4
Other OS	1,493.0	0.1	11,332.2	0.8
Total	1,536,535.5	100.0	1,495,959.0	100.0

Source: Gartner (February 2018)

Worldwide App Downloads by Store Q1 2018

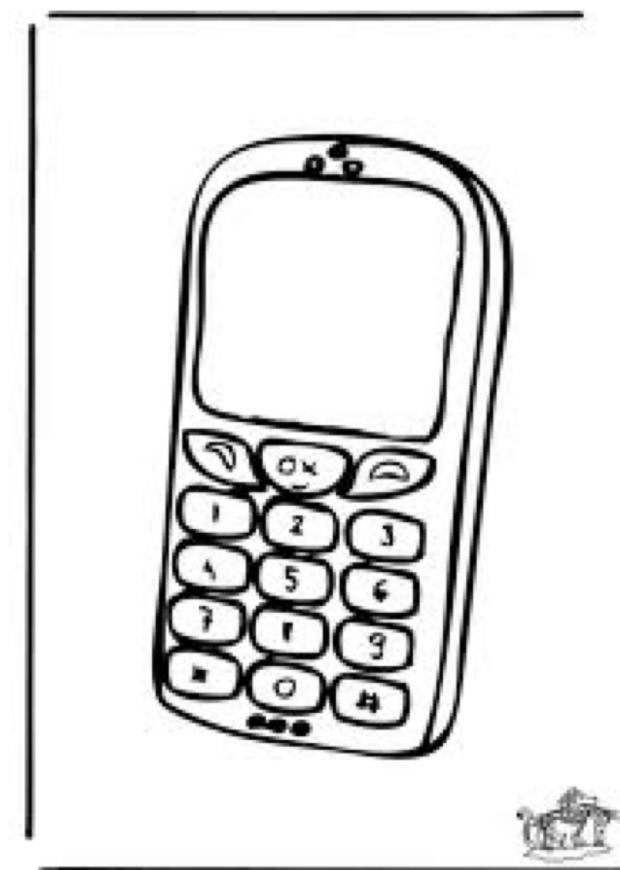


Worldwide Gross Consumer Spend by Store Q1 2018



Complex devices

- Accelerometer
- Gyroscope
- Digital compass
- Global Positioning System (GPS)
- Barometer
- Ambient light
- Proximity Sensor



Many different languages

- Objective-C/Swift (iOS)
- Java (Android)
- C# (Windows Mobile, cross-platform development)
- HTML5 (Tizen, cross-platform development)
- JavaScript (cross-platform development)
- C++ (Tizen)

Quality !!!!

[← Italy](#)

Italy

G 8 S 11 B 6 G 3 B 25

Italy has competed in every edition exce...

30
SPORTS

349
ATHLETES

295
EVENTS

[SCHEDULE & RESULTS](#)[MEDALS](#)

GOLD - 8



Fabio BASILE

Judo

Men -66 kg



Daniele GAROZZO

Fencing

Men's Foil Individual



Niccolo CAMPRIANI

Shooting

10m Air Rifle Men



Diana BACOSI

Shooting

Skeet Women



Gabriele ROSSETTI

Shooting

Skeet Men

Mobile app design

- A mobile app should do one thing and do it well
- A mobile app should be as simple as possible, but no simpler
 - No Quit button
- Different versions (families of applications)