

The **Mobile** World

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The mobile world



The mobile world



- Mature Operating System
- Designed for (multi)touch
- Open to developers

iPhone (2007)



iPhone (2007)



Nothing entirely new, but one of the most important innovations of the last 10 years.

- No keyboard, no stylus
- Multitouch
- Full internet browser
- Simple UI, one button
- Limited functionality
- No 3rd party apps
- App Store: 2008

Microsoft CEO Steve Ballmer on the iPhone

That is the most expensive phone in the world. And it doesn't appeal to business customers because it doesn't have a keyboard. Which makes it not a very good email machine.

There's no chance that the iPhone is going to get any significant market share.

If you take a look at the 1.3 billion phones sold, I'd prefer to have our software in 60-80 percent of them, than I would to have 2 percent or 3 percent, which is what Apple might get.

Smartphone OS market share

Top Smartphone Platforms

3 Month Avg. Ending Mar. 2013 vs. 3 Month Avg. Ending Dec. 2012

Total U.S. Smartphone Subscribers Age 13+

Source: comScore MobiLens

	Share (%) of Smartphone Subscribers		
	Dec-12	Mar-13	Point Change
<i>Total Smartphone Subscribers</i>	100.0%	100.0%	N/A
Google	53.4%	52.0%	-1.4
Apple	36.3%	39.0%	2.7
BlackBerry	6.4%	5.2%	-1.2
Microsoft	2.9%	3.0%	0.1
Symbian	0.6%	0.5%	-0.1

Symbian

0.6%

0.5%

-0.1

Microsoft

2.9%

3.0%

0.1

Stock market

● NASDAQ:GOOG +79.51% ● MSFT +9.58% ● AAPL +346.36%



-100%

0%

Stock market

In september 2012 Apple reached a market cap of **\$660 billion**, surpassing Microsoft's record of 1999.

Apple has a revenue of ca, **\$170 billion** per year, while Microsoft has a revenue of ca. **\$76 billion** per year.

A new start in OSs



A new start



A new start in OSs



- Entirely new interface
- No file management
- Security
- Sandboxing
- Limited user access
- Application distribution
- New standards for all OSs

2007



2008



2009



2010



2011



2012



2007

2008

2009

2010

2011

2012



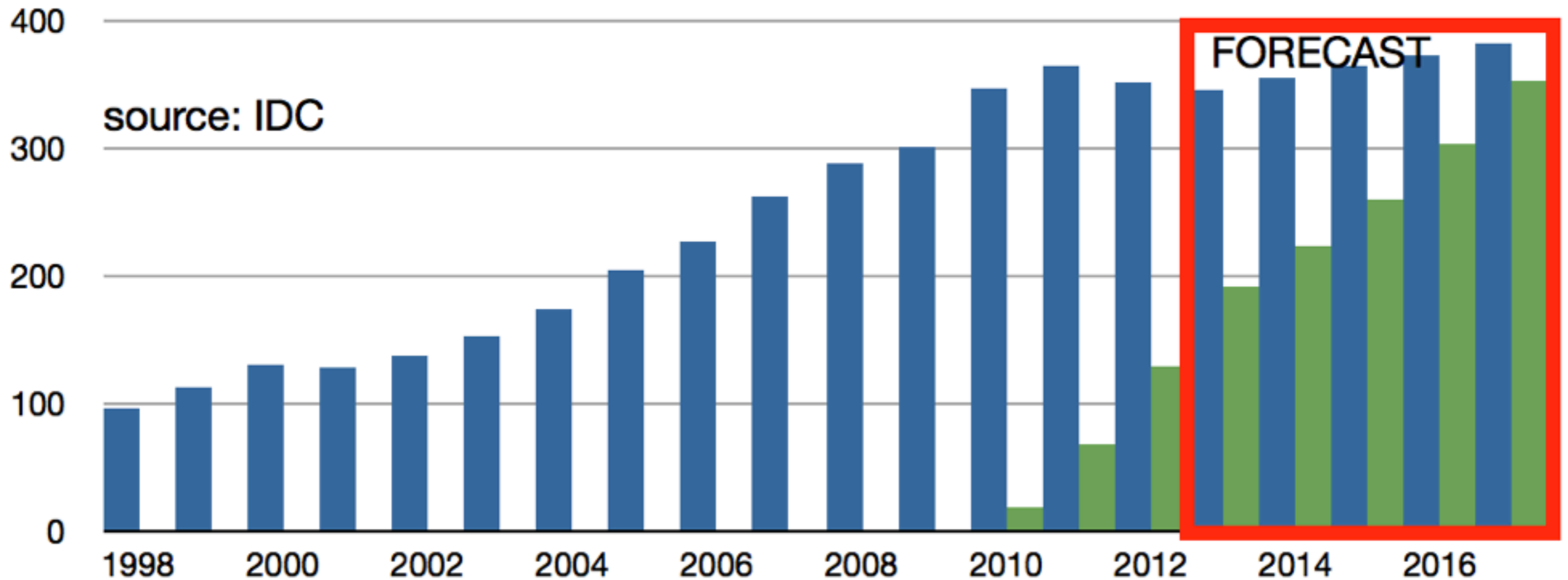
Personal Access Display Devices (PADD, Star Trek, 1966)



Star Trek Deep Space Nine: 'Image in the Sand' (1998)

The post PC era

PCs v tablets: past and forecast



1998

2000

2005

2004

2006

2008

2010

2015

2014

2016

0

The mobile world

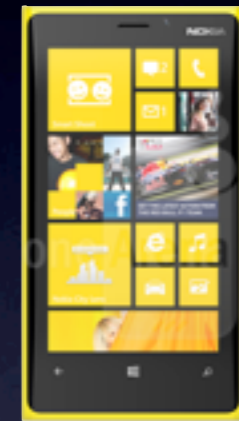
Apple iOS



Android



Windows Phone



Kindle Fire / Blackberry PlayBook Windows RT/8



Mobile OS market share

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Symbian

0.6%

0.5%

-0.1

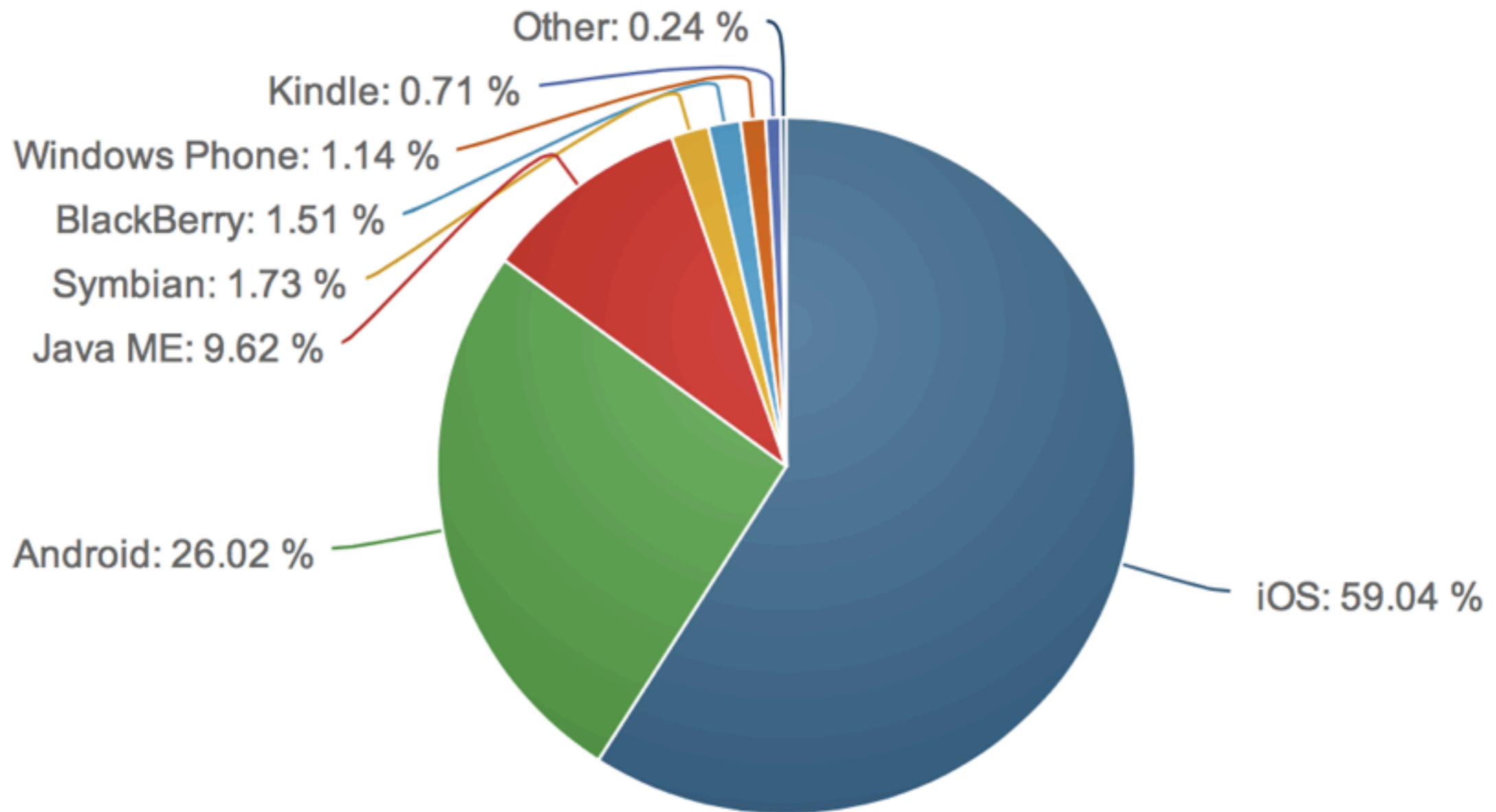
Microsoft

2.9%

3.0%

0.1

Mobile browsing



iOS app downloads

May 2013

50.000.000.000

\$10.000.000.000

March 2012

25.000.000.000

Android app downloads

May 2013

13.000.000.000

\$???

For every dollar spent by an iOS user
an Android user spends 25ct on apps.

Web vs Native

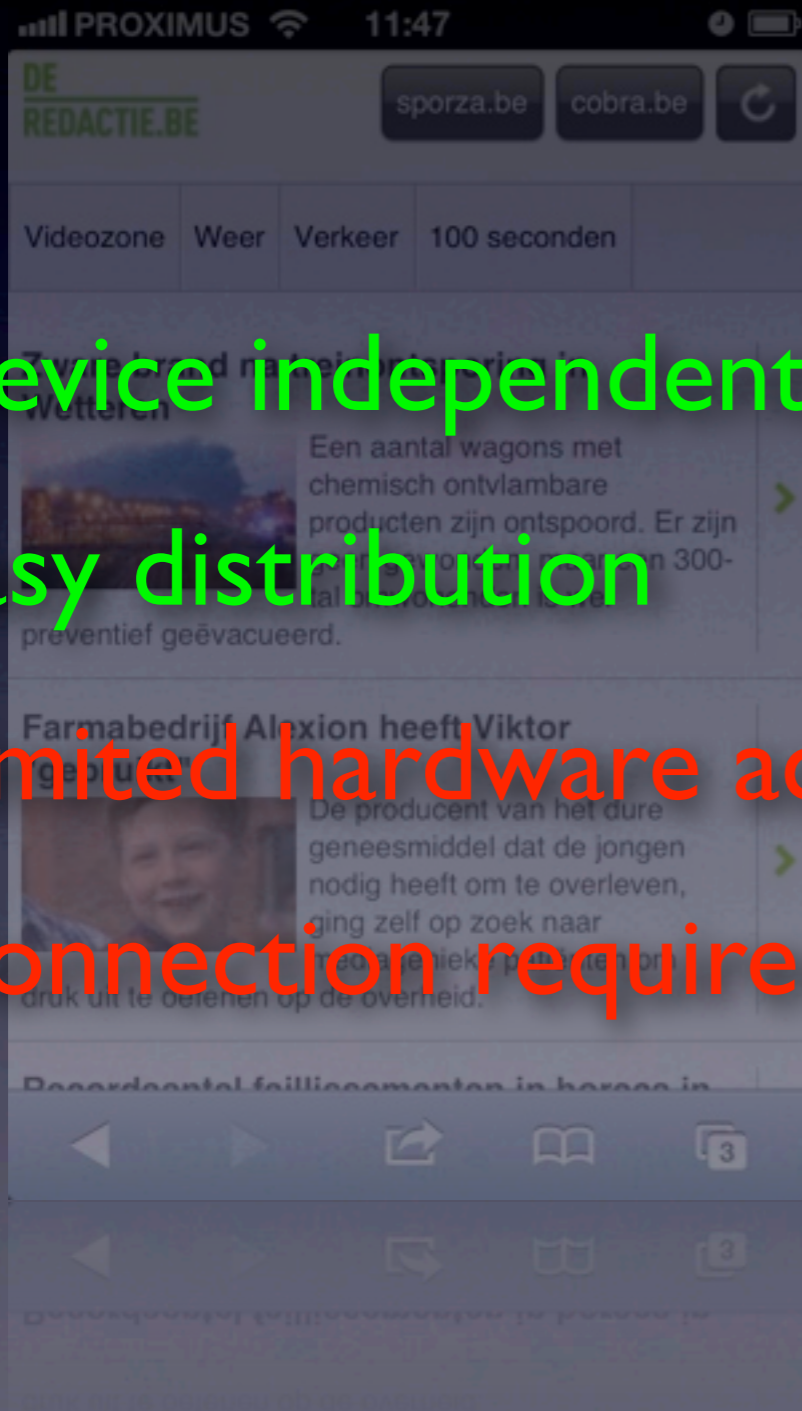
Hybrid



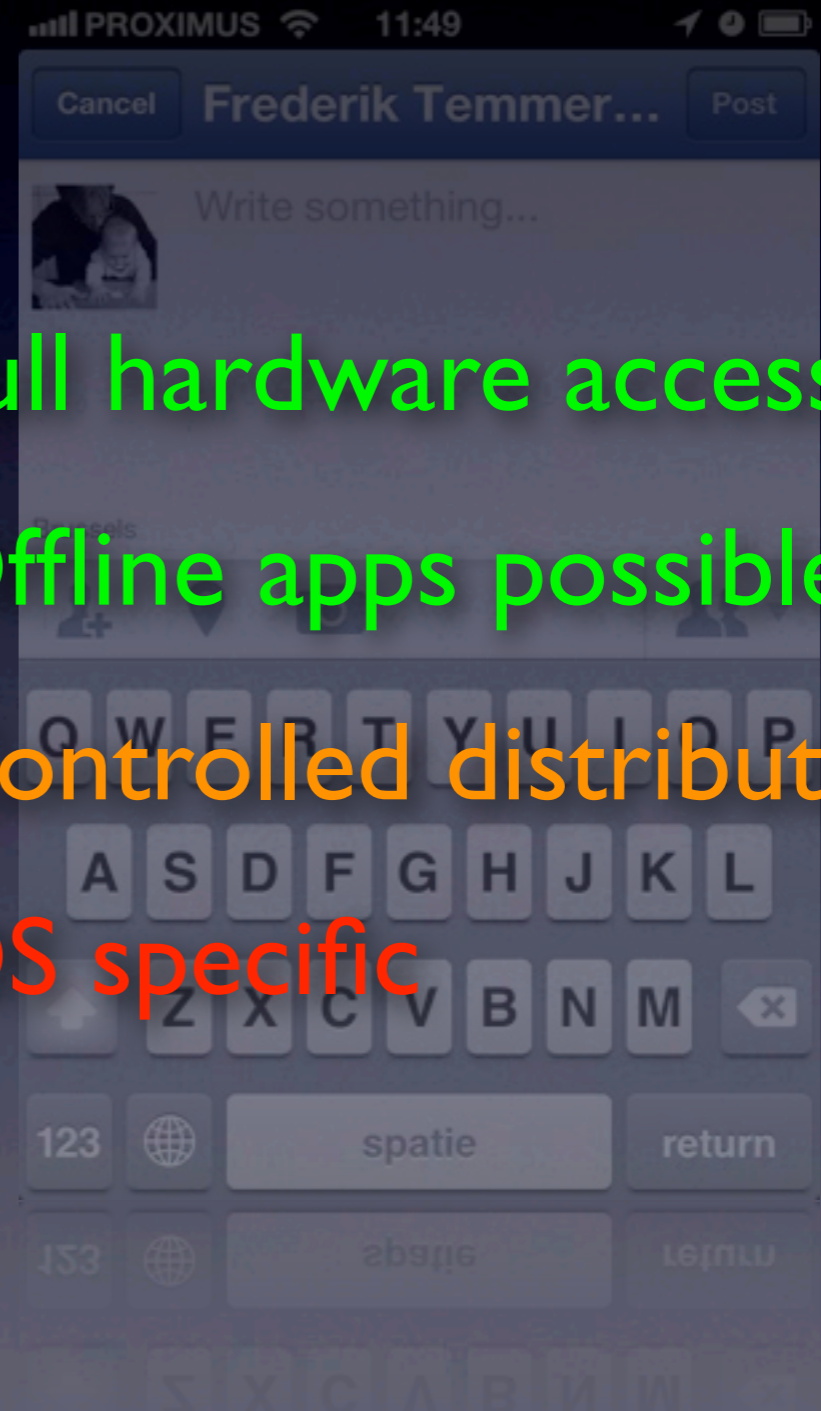
HTML/CSS/JavaScript

OS specific

Web vs Native



- Device independent
- Easy distribution
- Limited hardware access
- Connection required



- Full hardware access
- Offline apps possible
- Controlled distribution
- OS specific



Apple iOS

Google

Android



Windows Phone



Apple iOS



Android



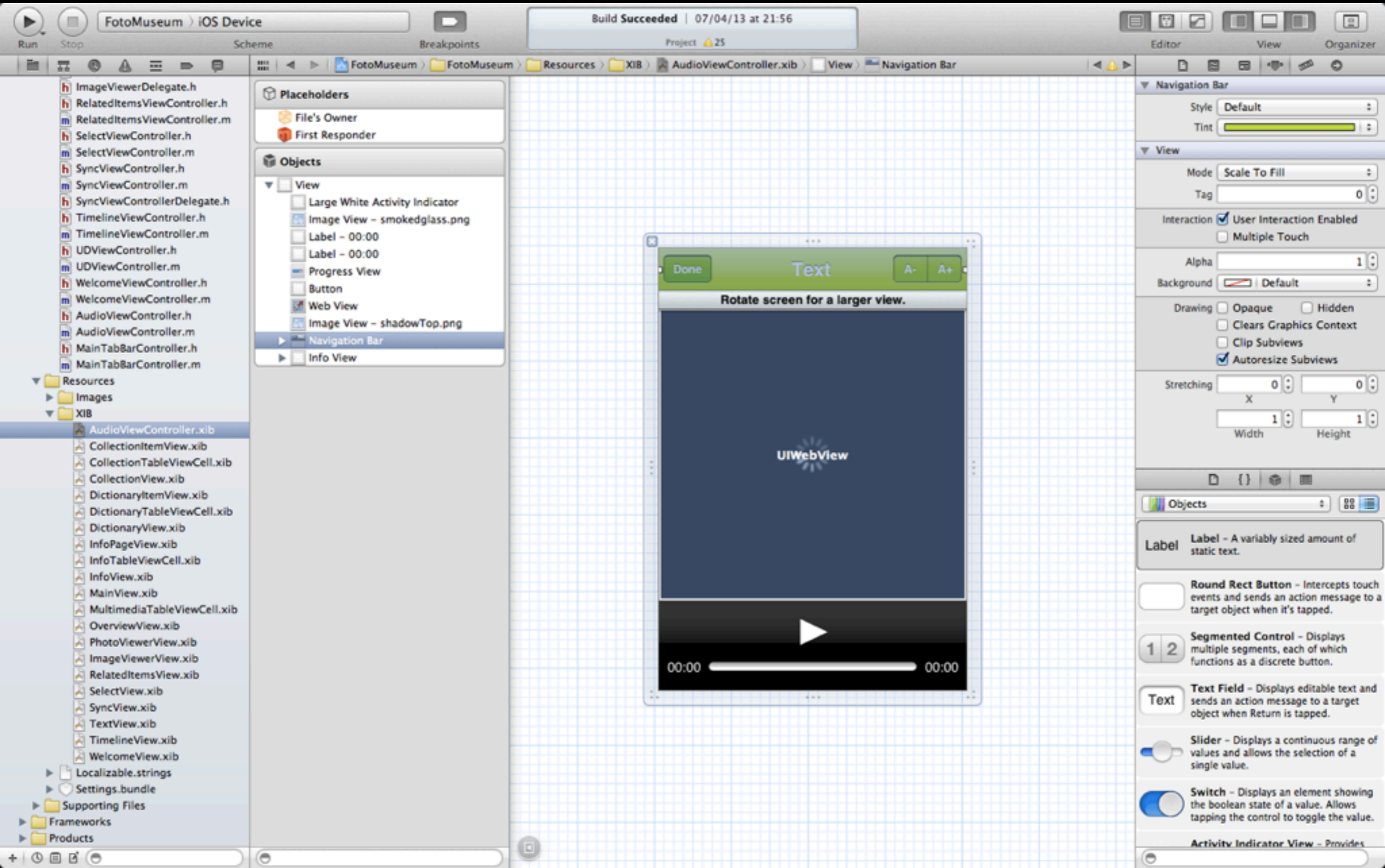
Windows Phone

Ecosystem	Closed	Open	Controlled
Language	Objective-C	Java	C#
IDE	Xcode	Eclipse	Visual Studio
Distribution	App Store	Google Play	Windows Phone Store
Dev cost	\$99/year	Free / \$25 reg.	\$99/year
Sales share	30%	Free / 30%	30%
Fragmentation	Limited	Serious	Controlled

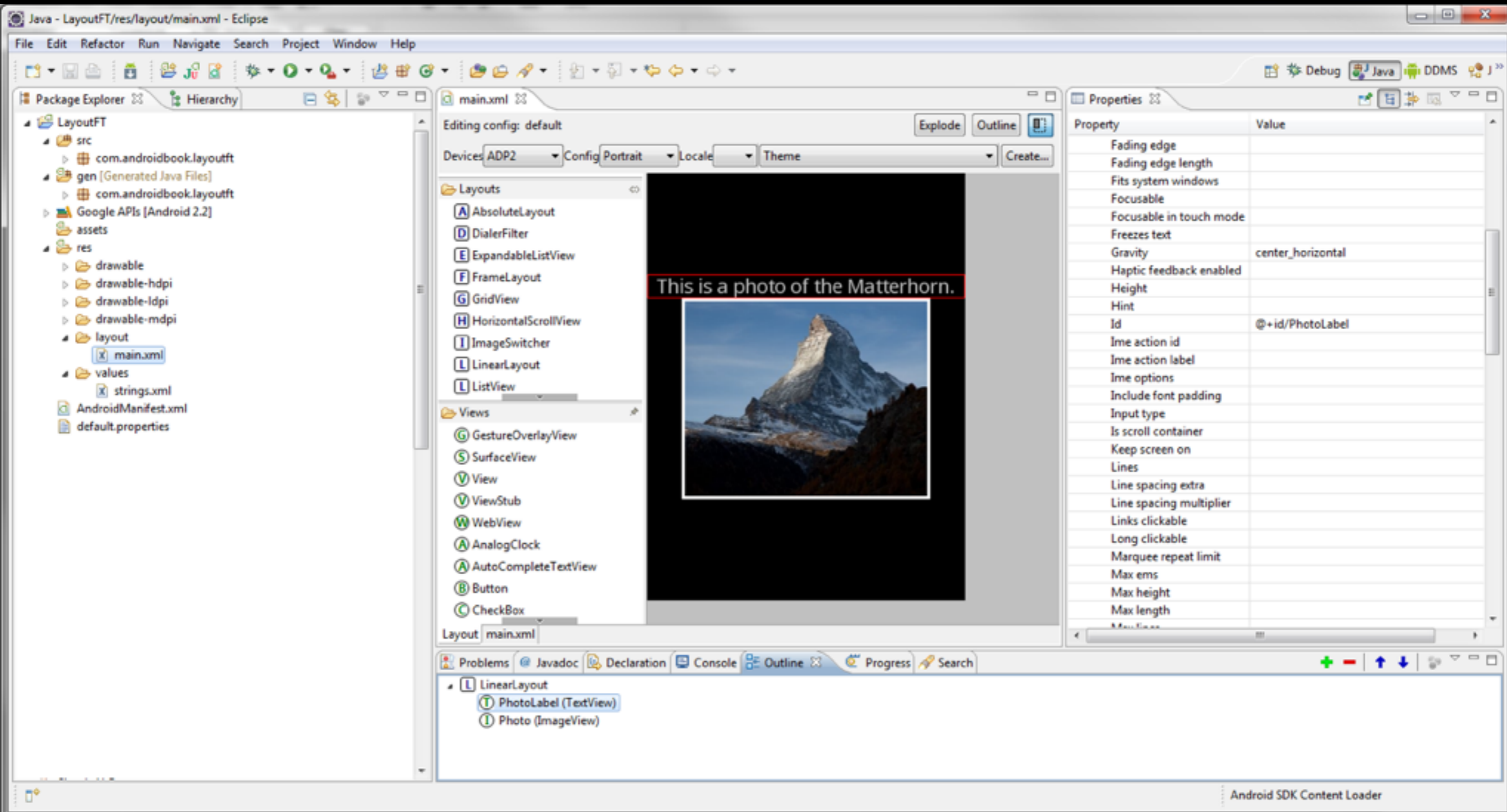
Desktop vs Mobile development differences

- Restricted environment (Language, IDE & APIs)
- Software Development Kit (SDK)
- Graphical User Interface development
- Testing: simulated vs attached hardware

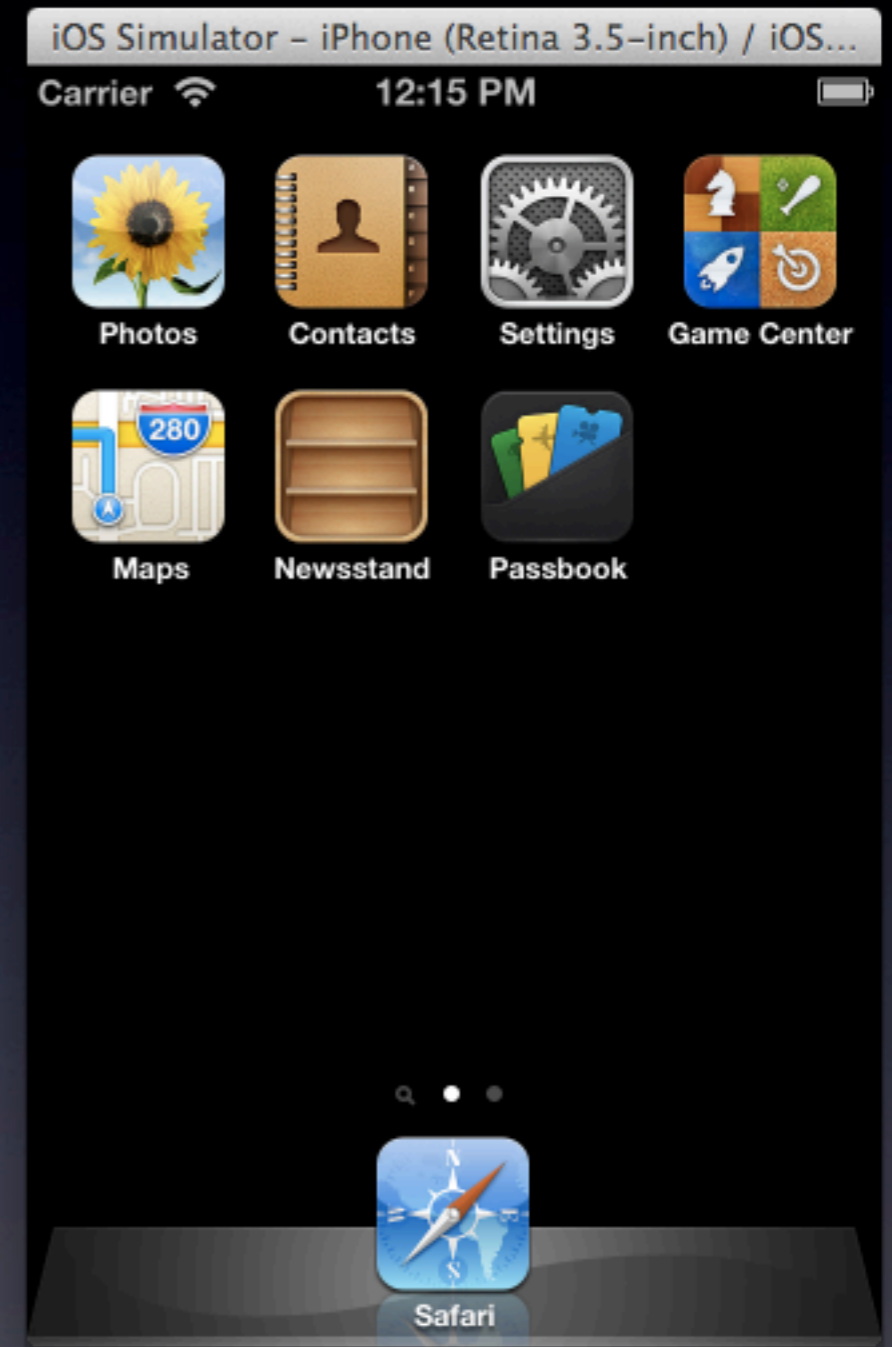
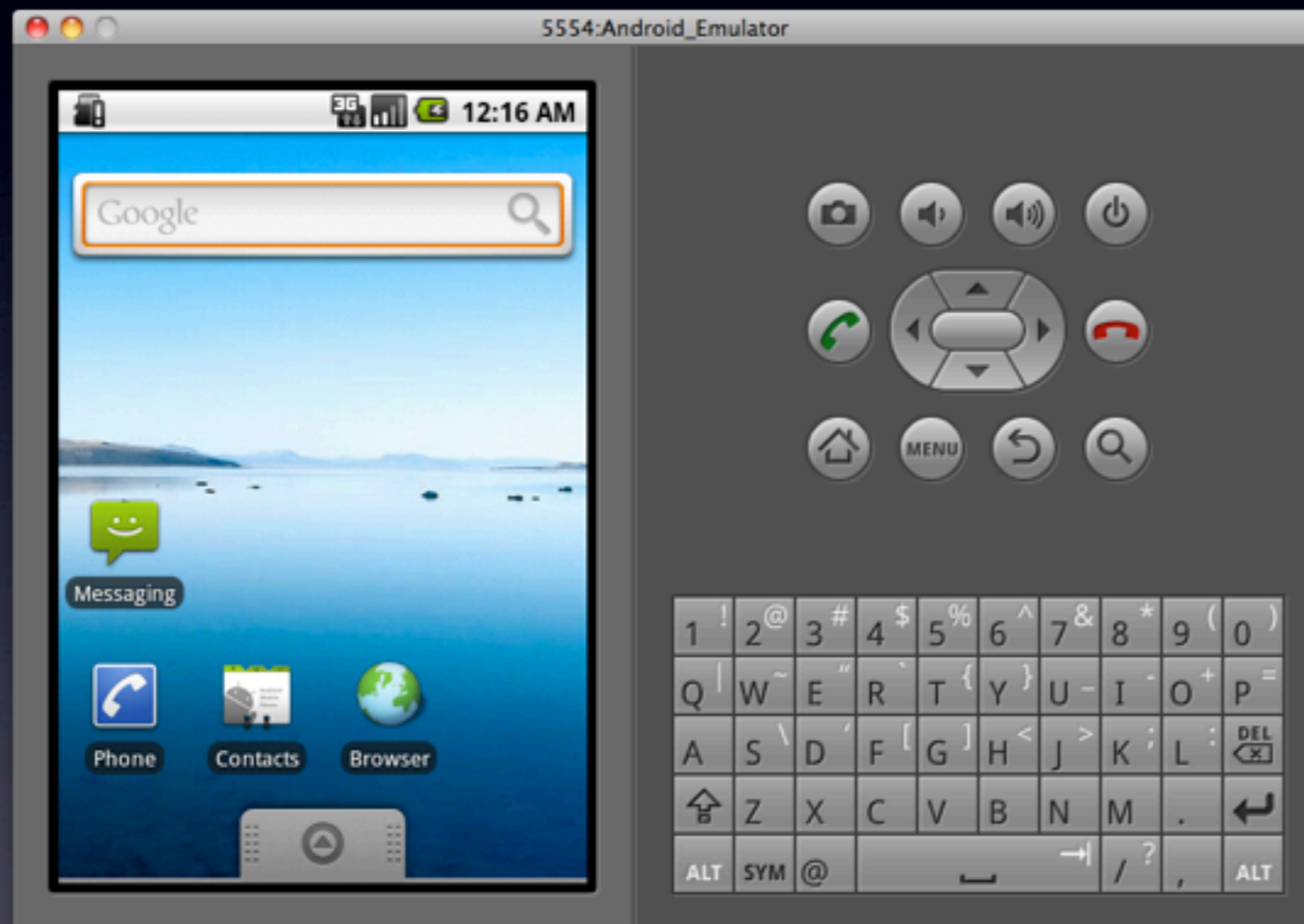
Xcode



Eclipse



Testing: simulators



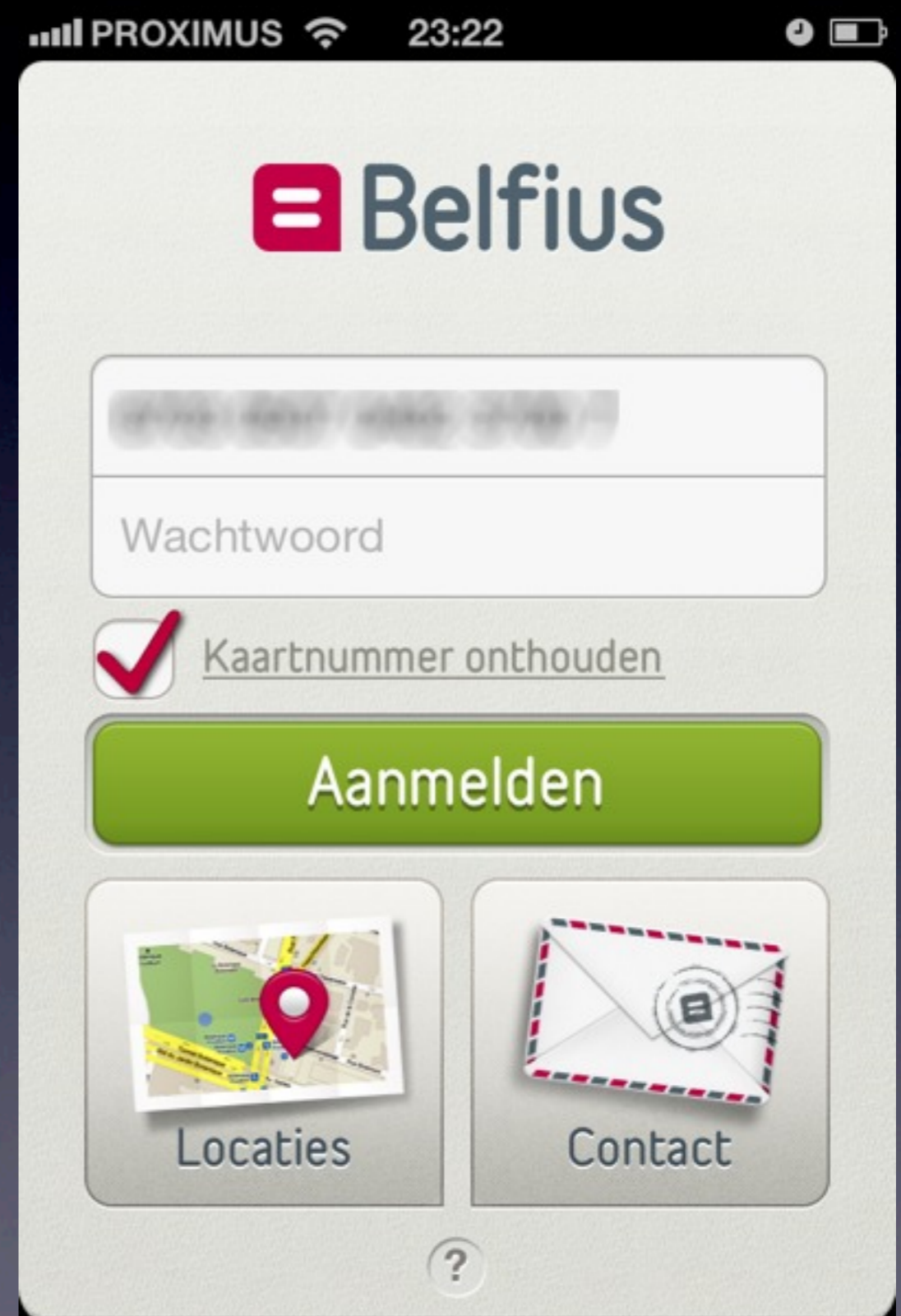
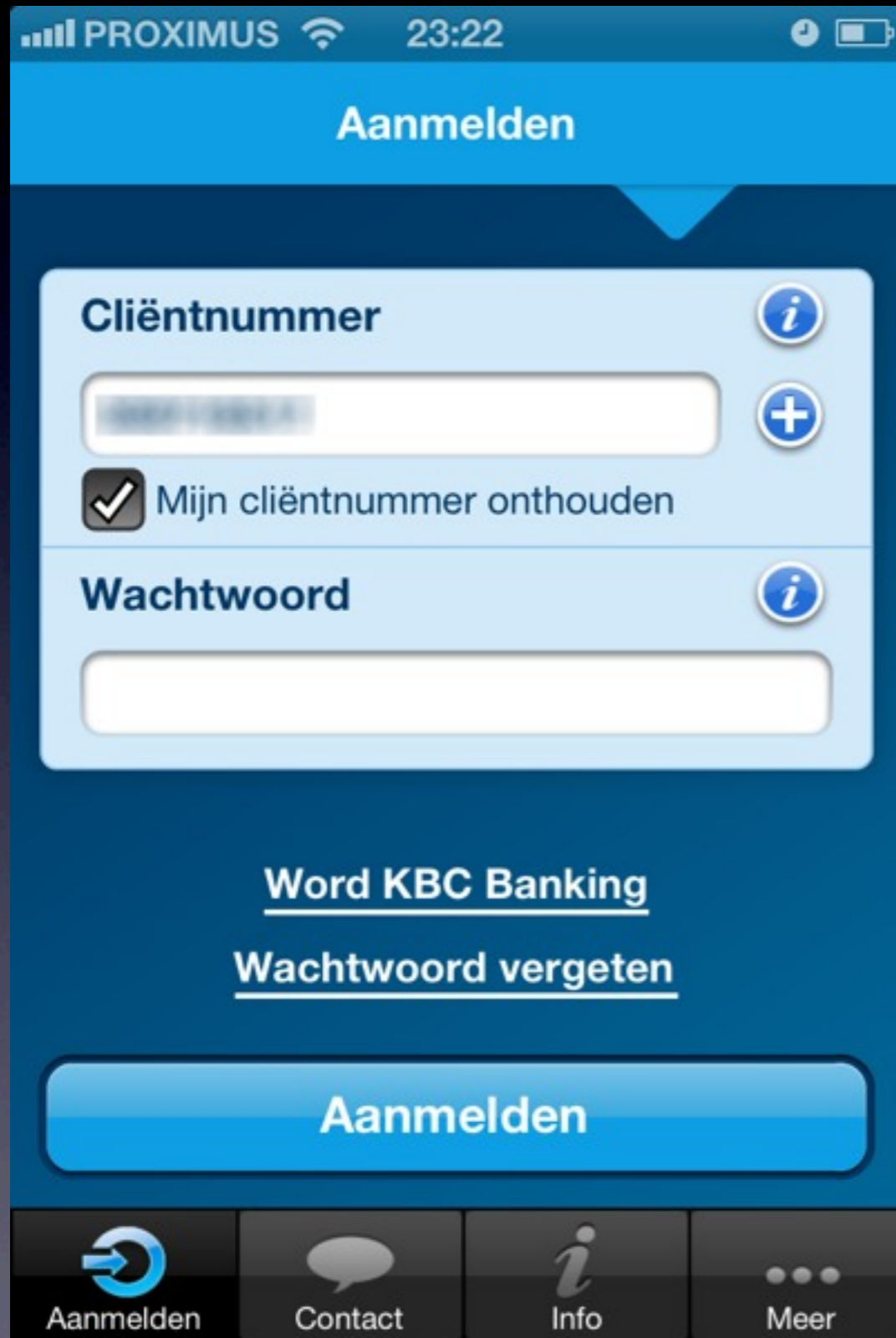
Model-View-Controller



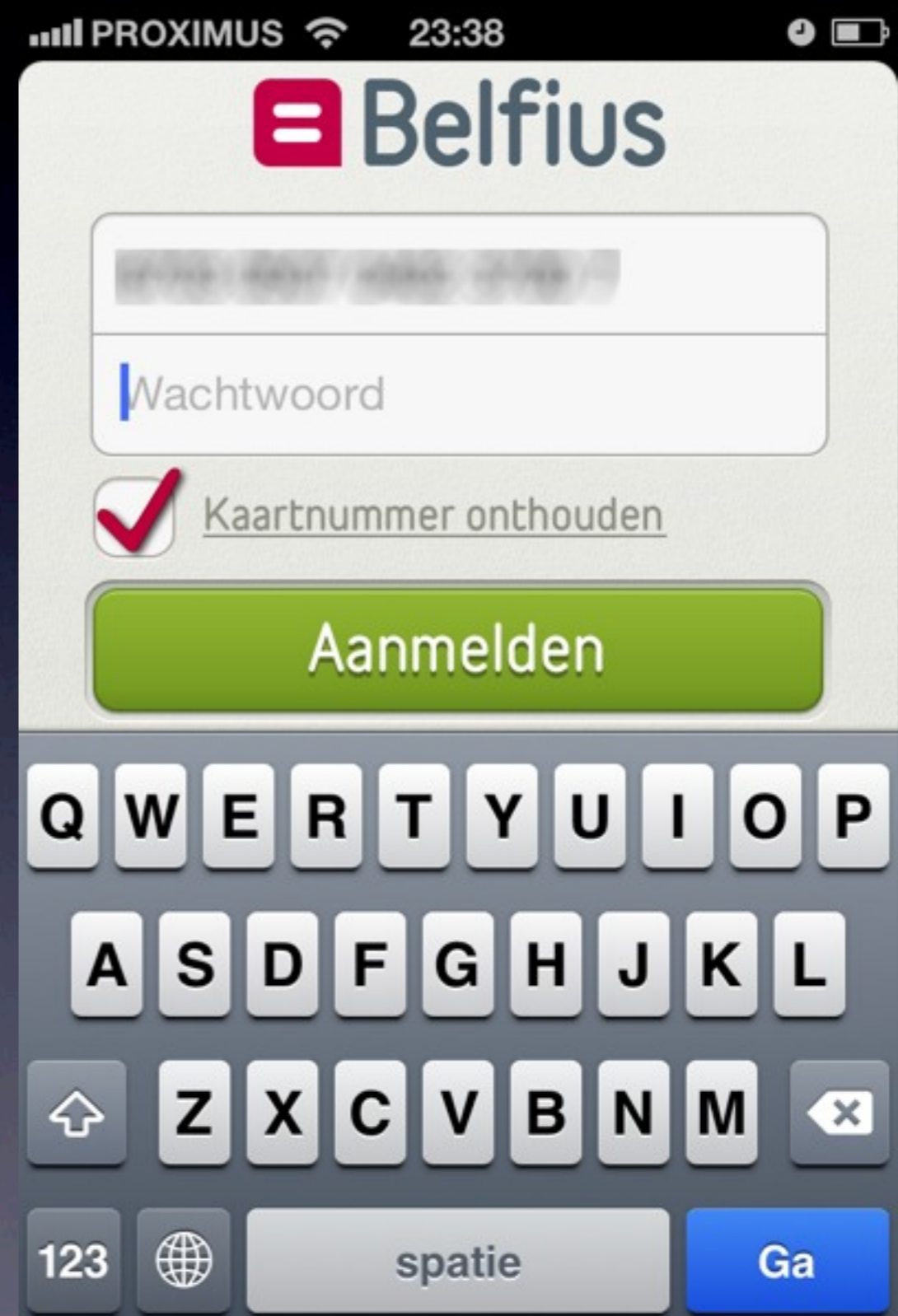
Mobile UI design

- Design for touch
- Use intuitive animations
- Use the laws of physics
- Skeuomorphism
- Start from a User Experience point of view, not from a technical point of view

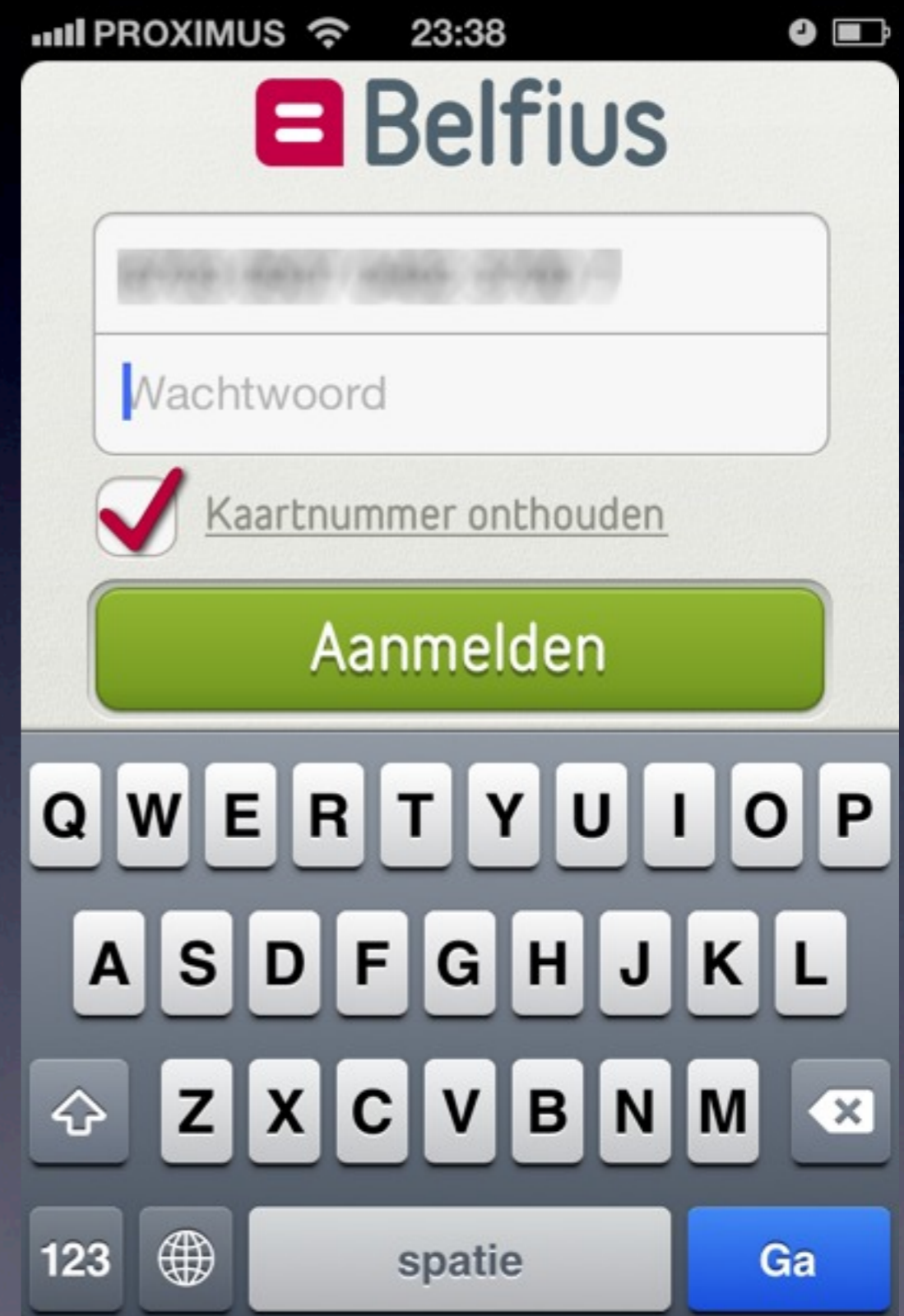
User Experience



User Experience



User Experience



User Experience



User Experience



User Experience

PROXIMUS 23:26

Terug **Overschrijving** Afmelden
Naar andere rekeningen

← **KBC-Comfortrekening**

→ **Begunstigde** 🔍

€ Bedrag

📅 14 Uitvoeringsdatum (optioneel)

💬 Mededeling (optioneel)

Volgende

Rekeningen Overschrijving Scashen Doelsparen Kredietk

PROXIMUS 23:23

Annuleer **Begunstigde** Bevestig

🗨️ 👤 € 📅 💬

Naam	Verplicht	📖
Rekening	BE	
Adres	Optioneel	

● ● ● ● ●

Gelieve uw begunstigde te selecteren of zelf in te brengen.

User Experience



Touch to Shazam



My Tags

My Tags



Discover

Discover



Friends

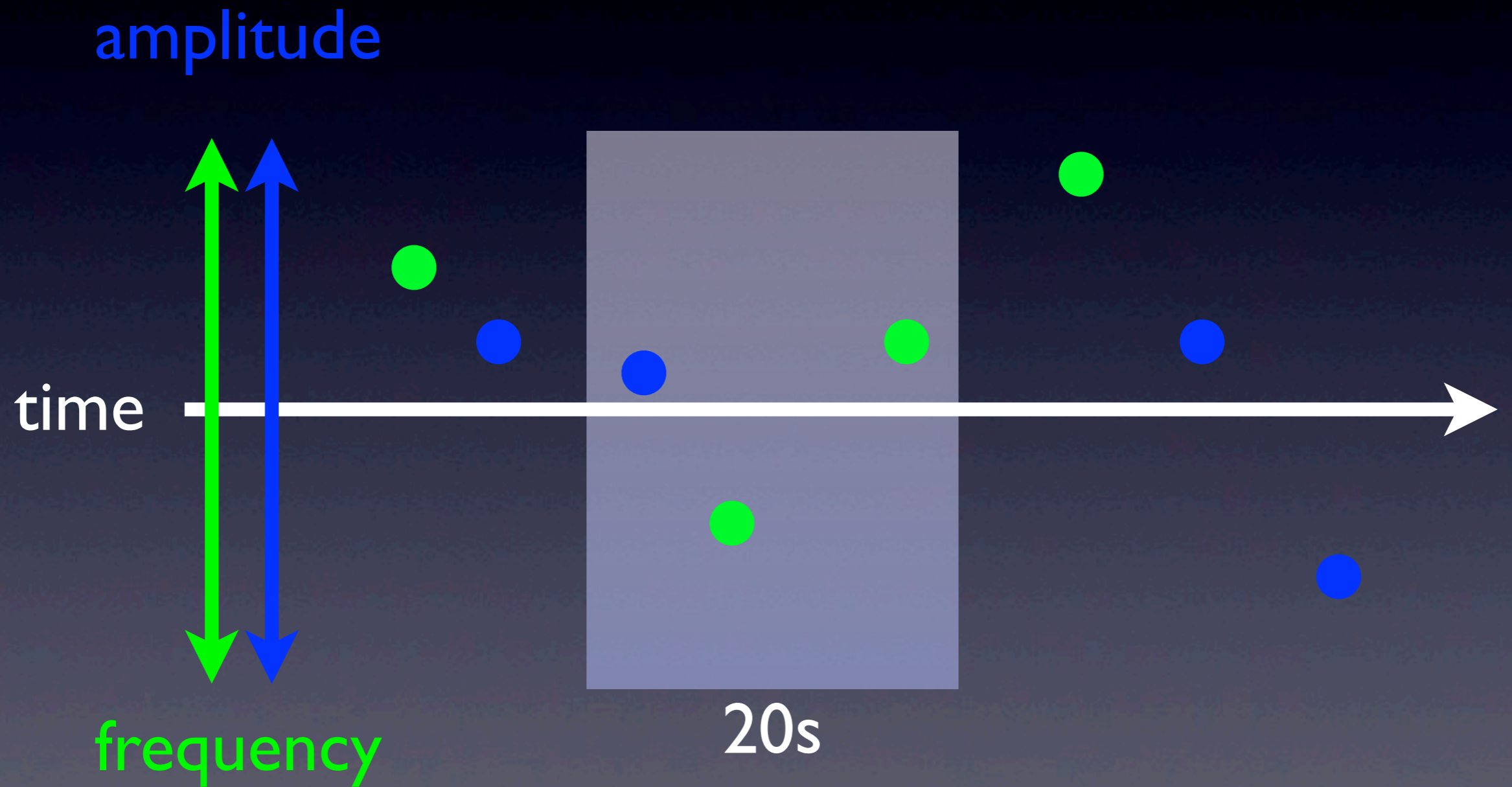
Friends



Settings

Settings

Shazam



Jan Burssens

Jan Burssens maakte als jonge man expressionistische tekeningen en schilderijen. In 1943 volgde hij les bij de laat-Vlaamse expressionist Hubert Malfait (1898-1971). Uit zijn curriculum blijkt echter dat hij het niet gemunt had op kunstscholen. Hij zocht zelf zijn meesters. Aanvankelijk heeft Frits Van Den Berghe (1883-1939) hierin een rol gespeeld met zijn mengeling van een minder landelijk expressionisme met magisch realistische droomtaferelen. De lijn naar het surrealisme, zoals Hogerop beschreven, is steeds aanwezig bij Burssens. Het is immers een van de middelen om het oude expressionisme achter zich te laten waarmee diegenen van zijn generatie, die geen Latemse nalopers wilden worden, te kampen hadden. Een andere remedie was de abstracte kunst. Burssens was er vroeg bij. De criticus Jan Emiel Daele formuleerde het als volgt: "In 1947 ontstond dan het eerste bewustzijn van materie: eens op het strand aan zee schilderde hij een marine en er woei zand in de verf. Achteraf ging hij zijn verf mengen met zand en andere materialen. Hij ging toen ook experimenteren met lakverf. Een jaar later, in 1948, dus enkele jaren vooraleer de eerste Pollocks te zien waren, raakte hij onder de indruk van de schoonheid en de betekenis van verf die langs de buitenwanden van potten naar beneden droop: hier vond hij de inspiratie van zijn eerste drippingeffecten".

Jan Burssens



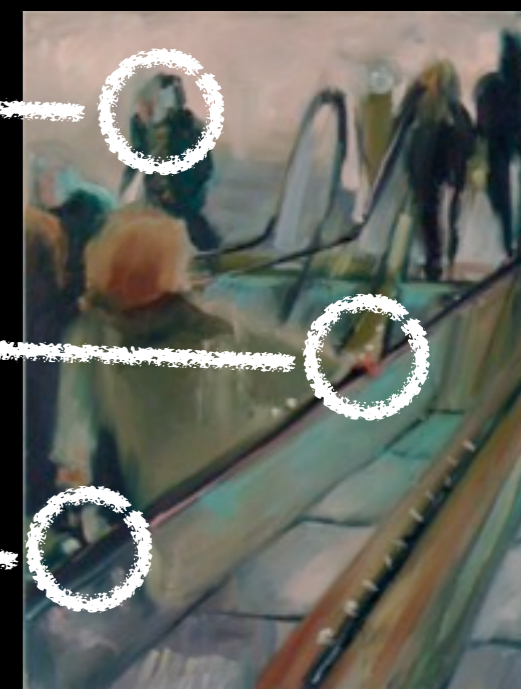




Global

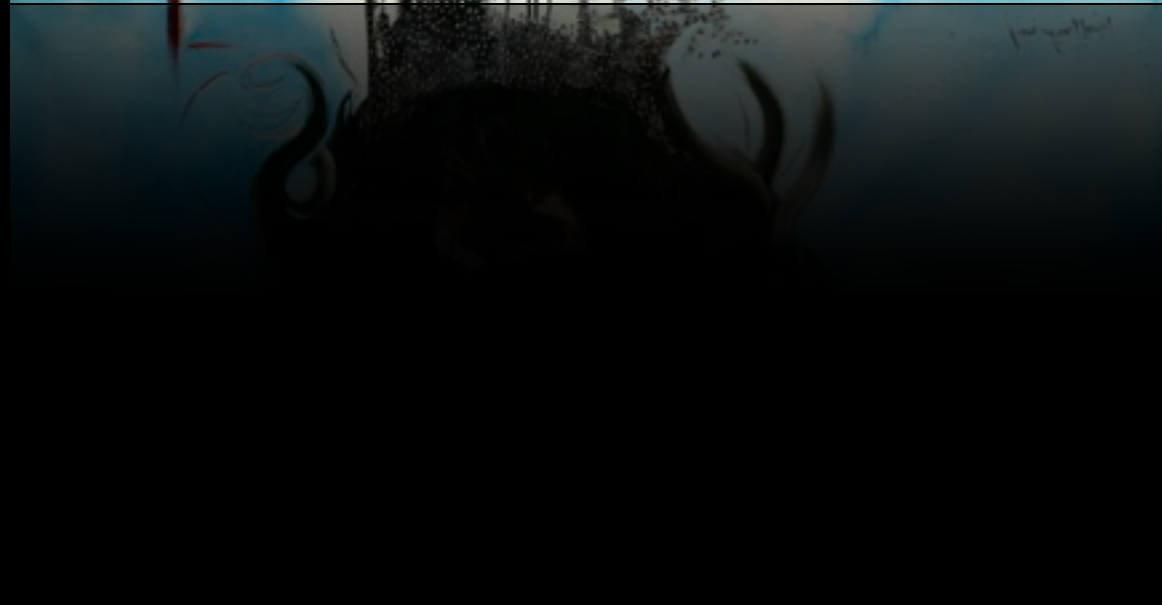


Local









0.72
0.29
0.63
0.15
0.31
0.94

0.71
0.29
0.62
0.13
0.31
0.97



0.38
0.39
0.23
0.85
0.11
0.54



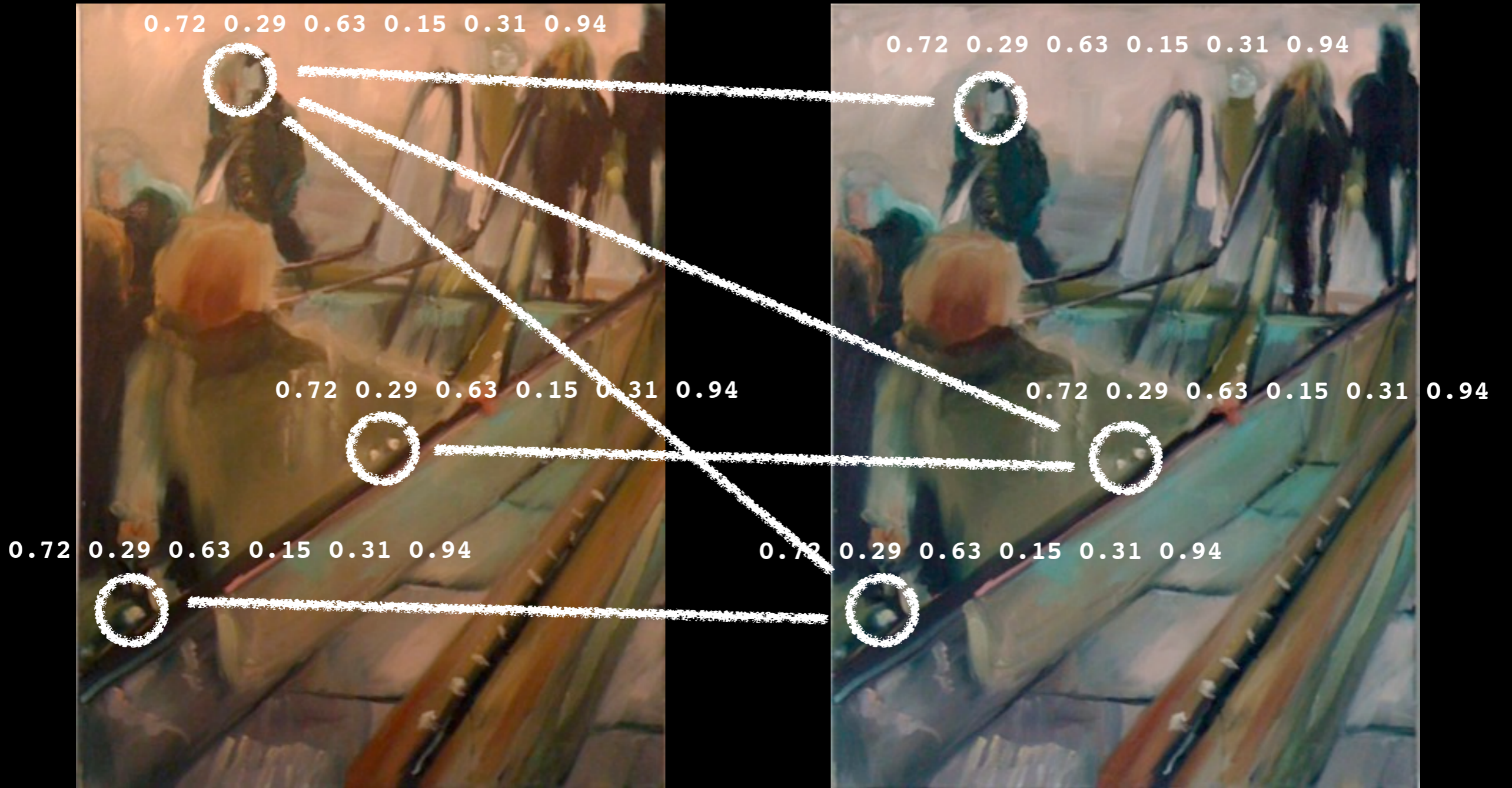
0.12
0.59
0.33
0.55
0.61
0.24

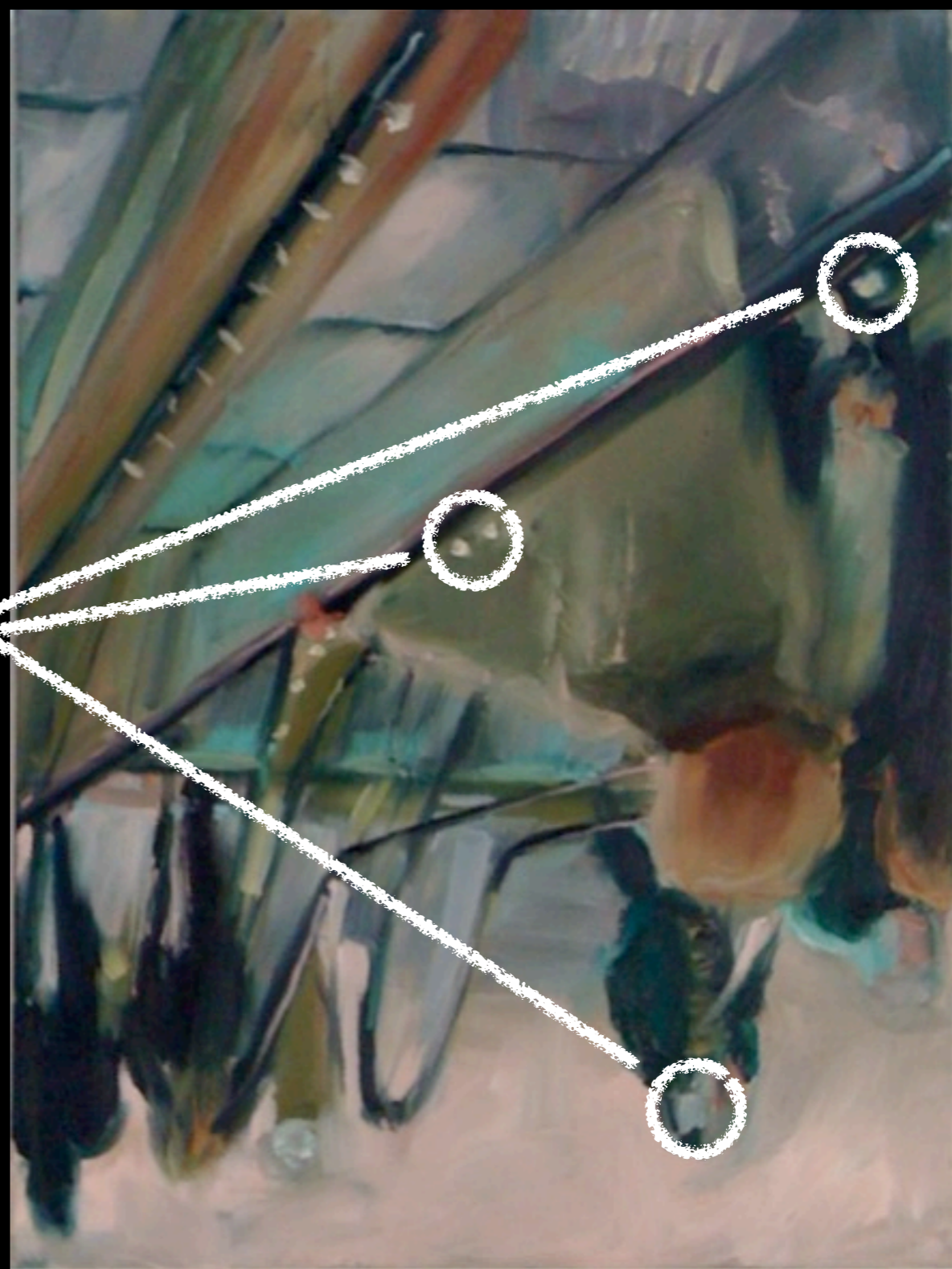
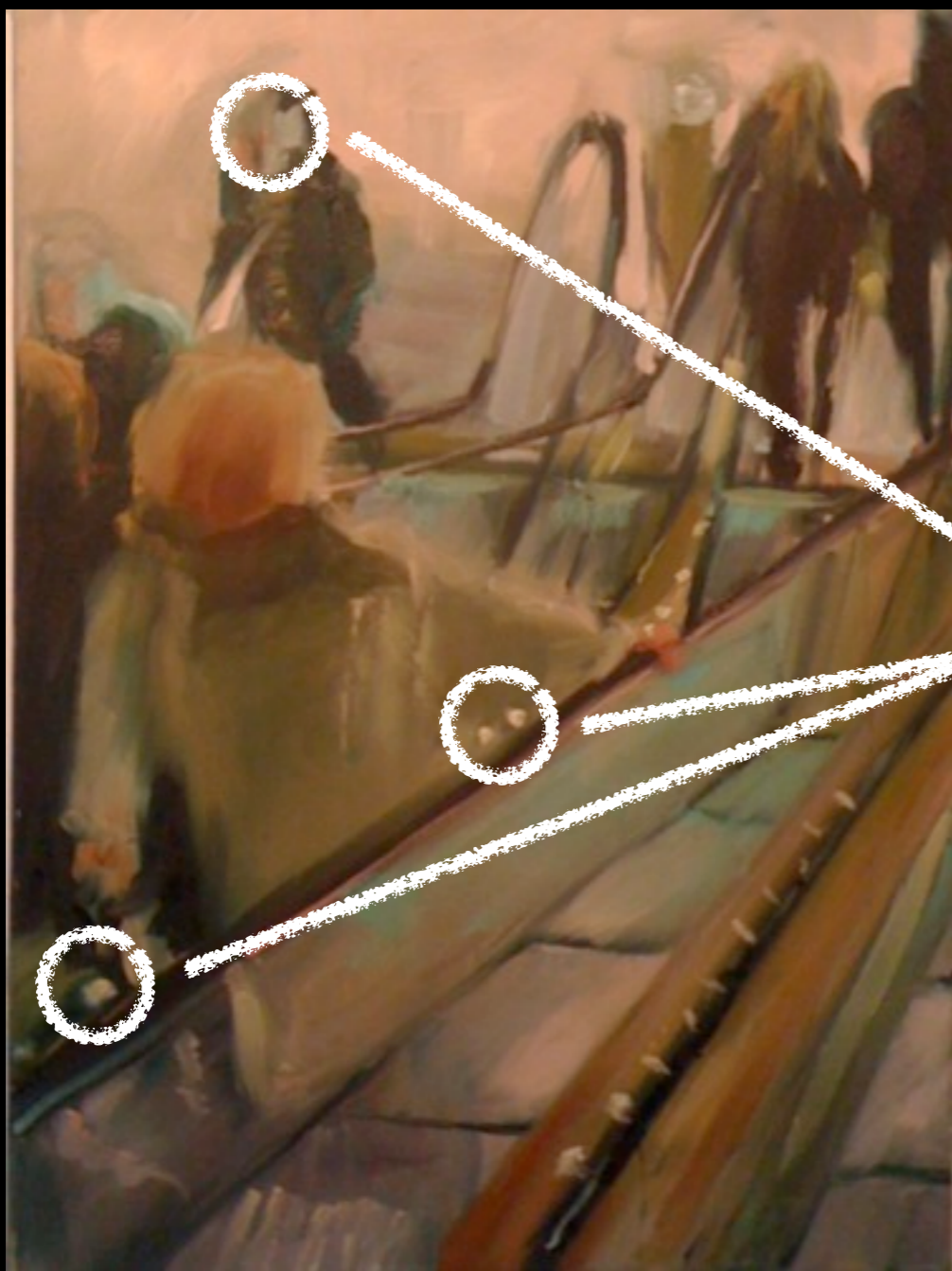


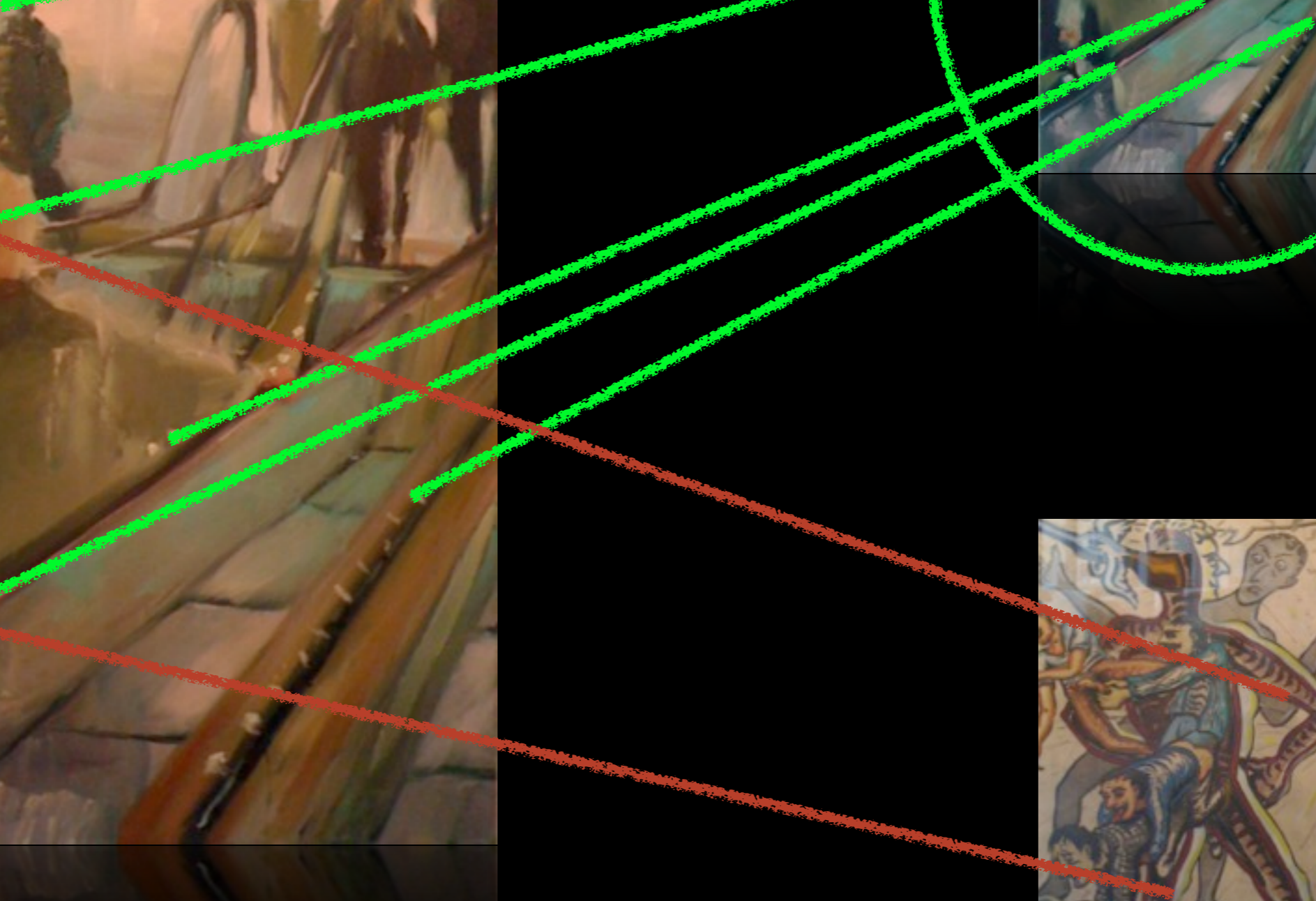
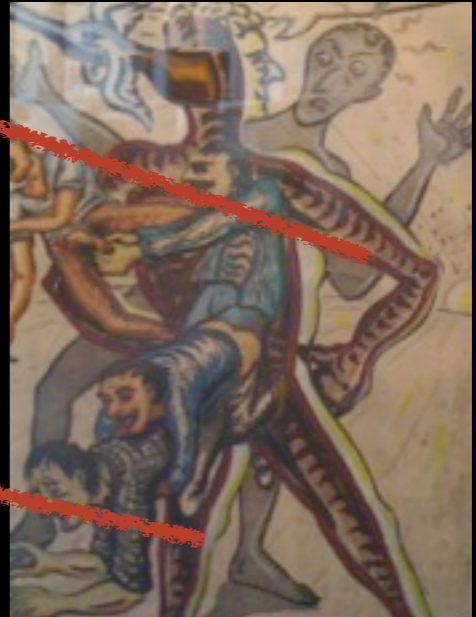
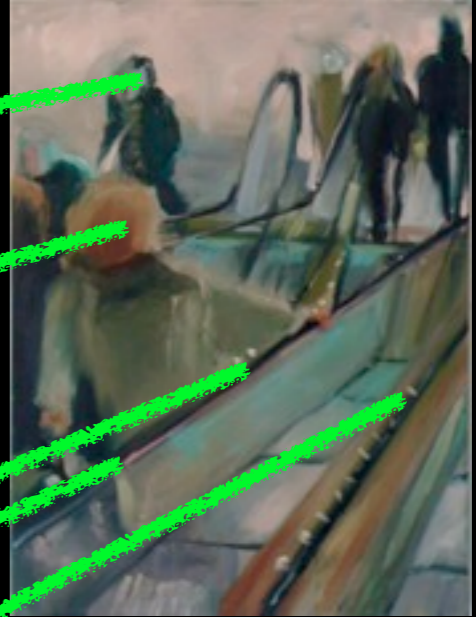
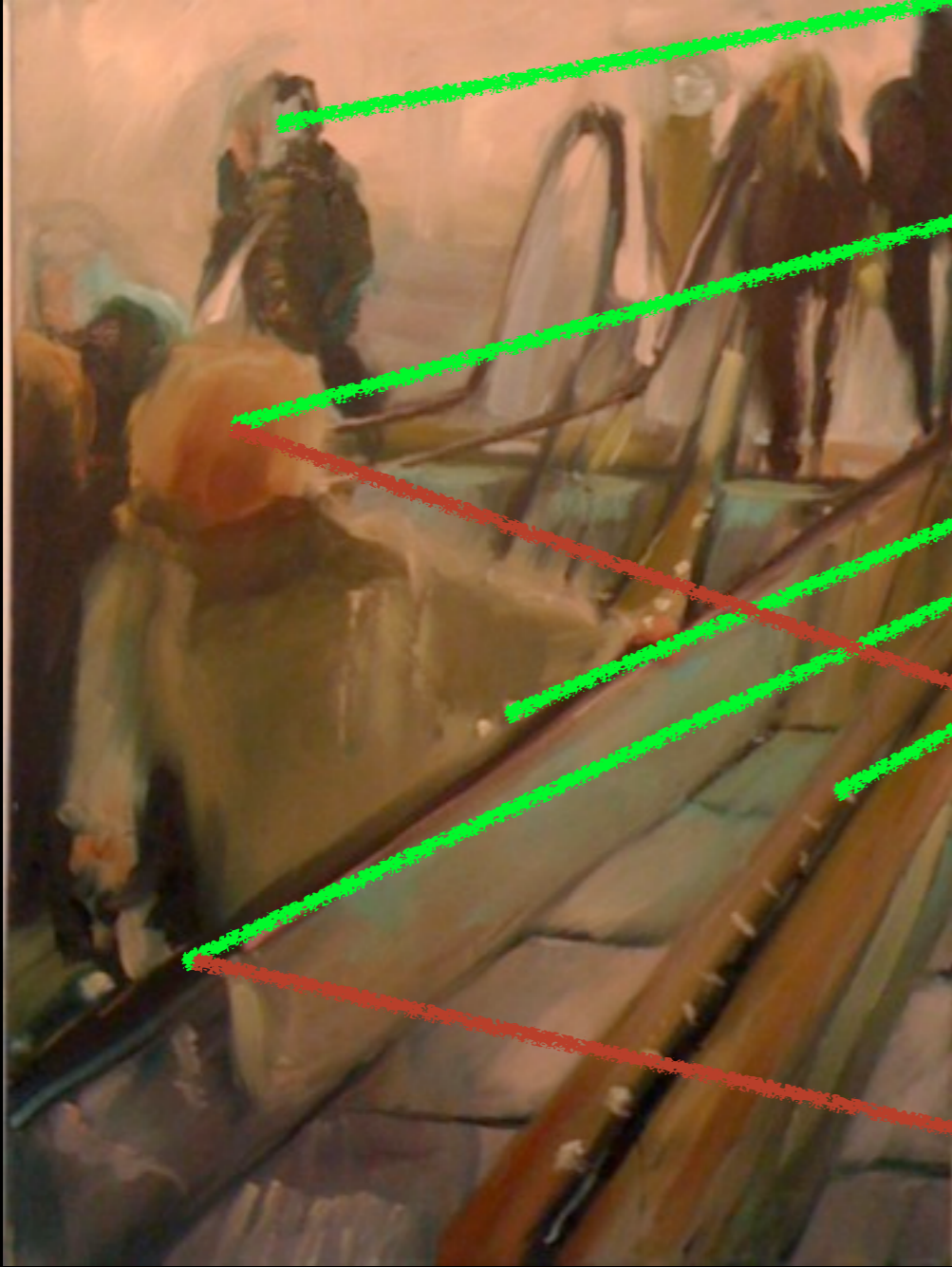
0.22
0.59
0.63
0.75
0.31
0.84

Query

Reference









location, orientation, season

What's next?







Where to go from here?

- developer.android.com
- developer.apple.com/ios
- ftemmerm@etro.vub.ac.be