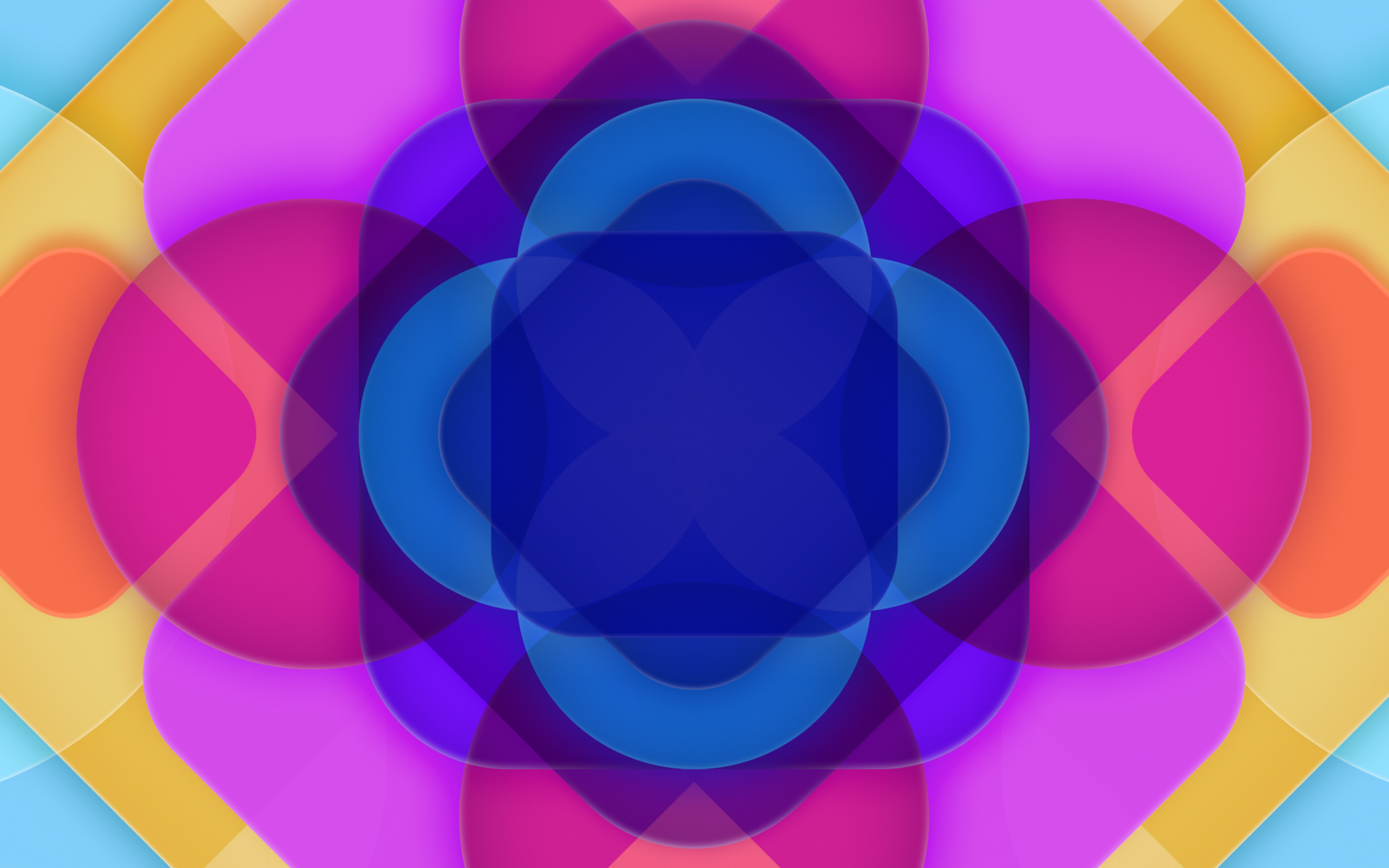
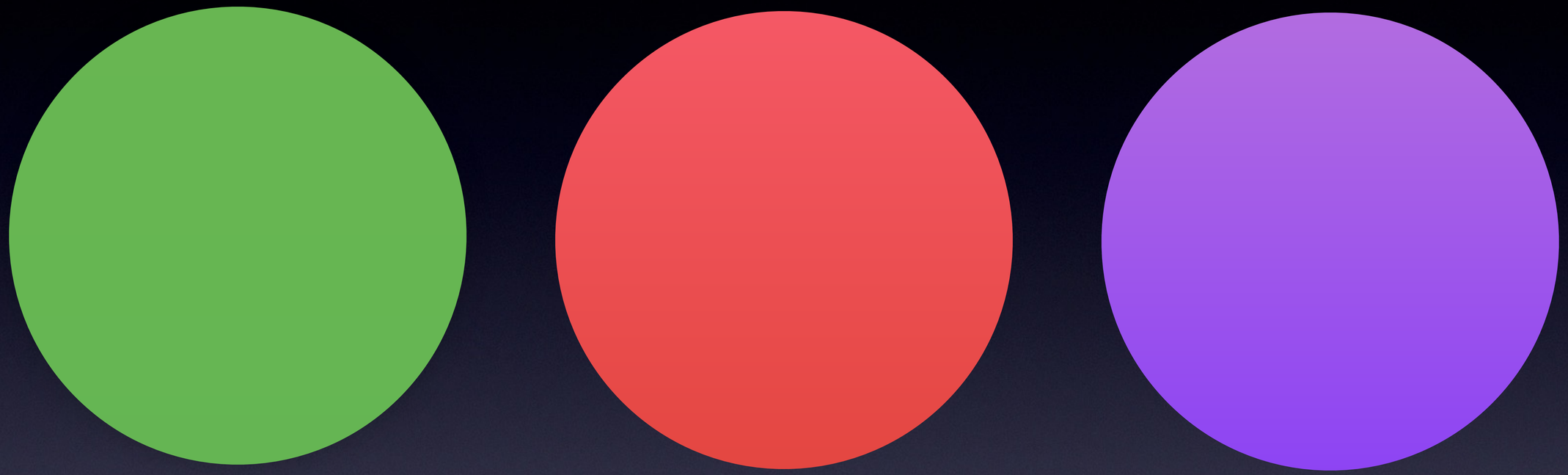
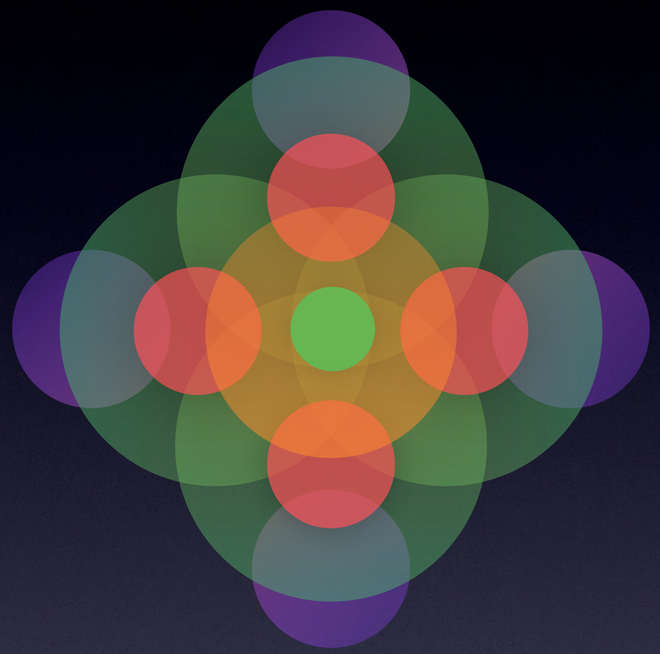
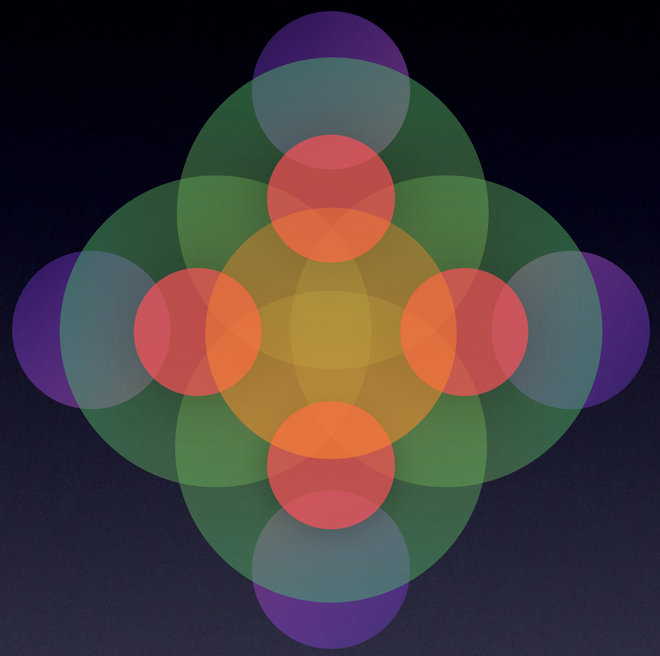
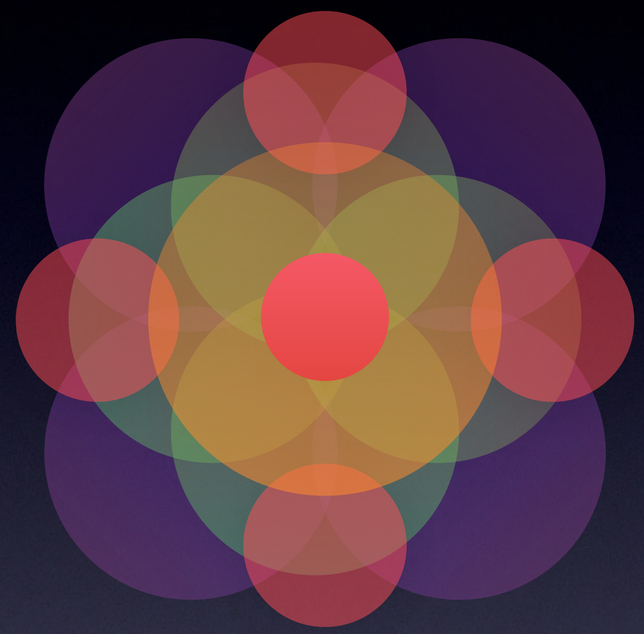
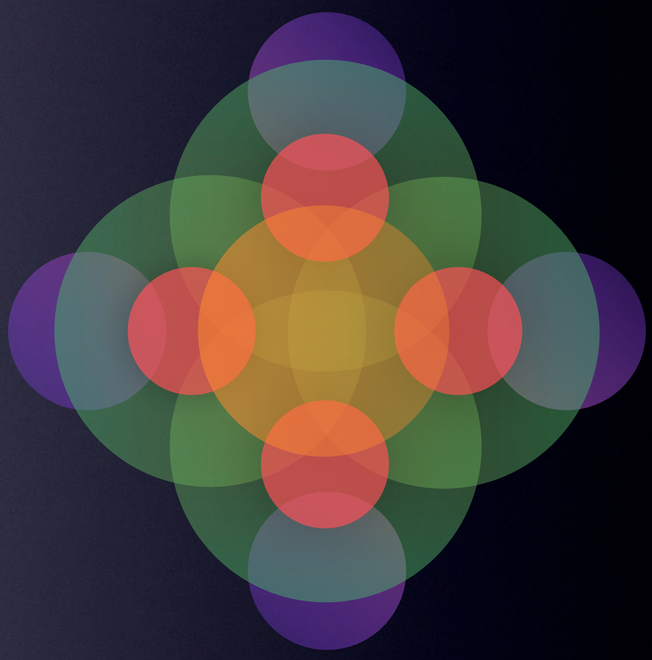
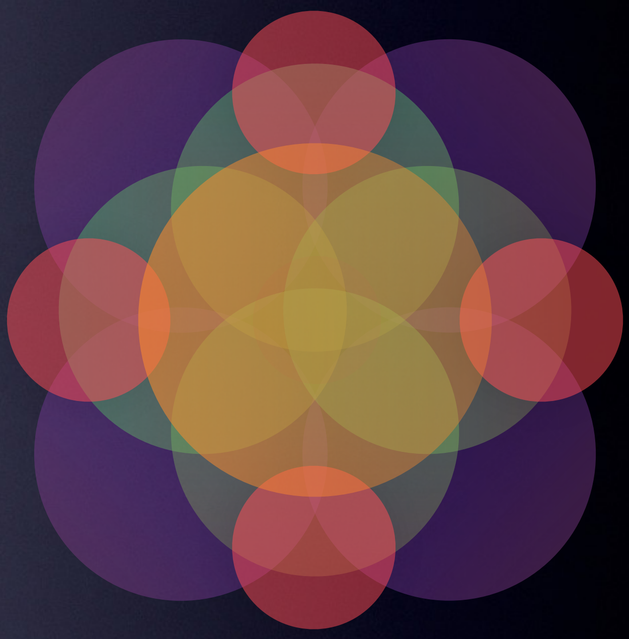


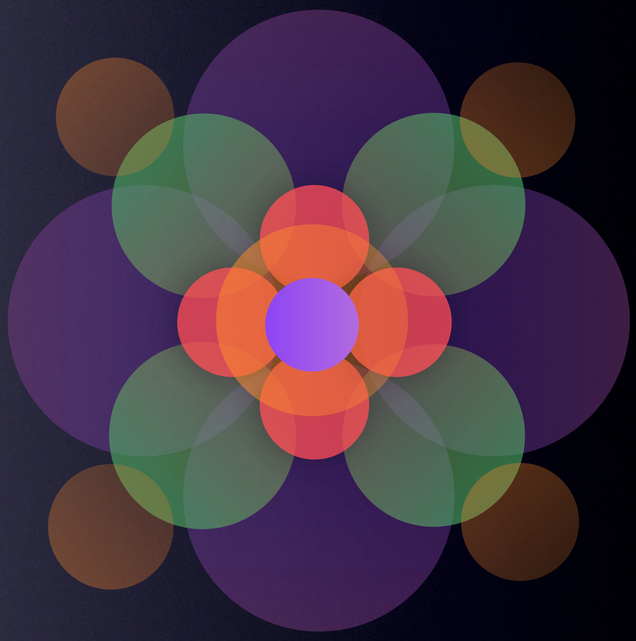








Xcode 7

Free Native Development

13 and older


DiFY

Pre-release Software

Documentation & Resources

Developer Forums

Test on Device

Apple Services

Analytics & Crash Reporting

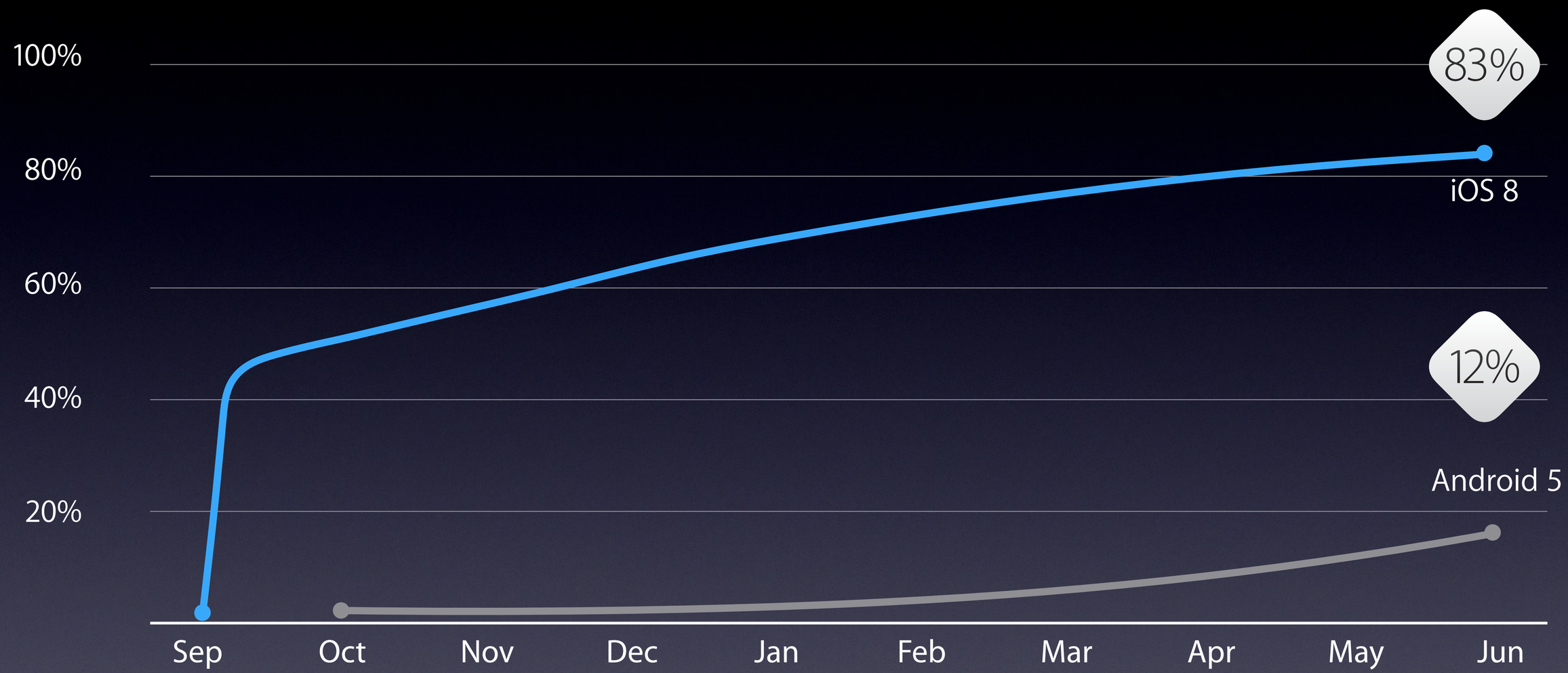
Team Development

Technical Support

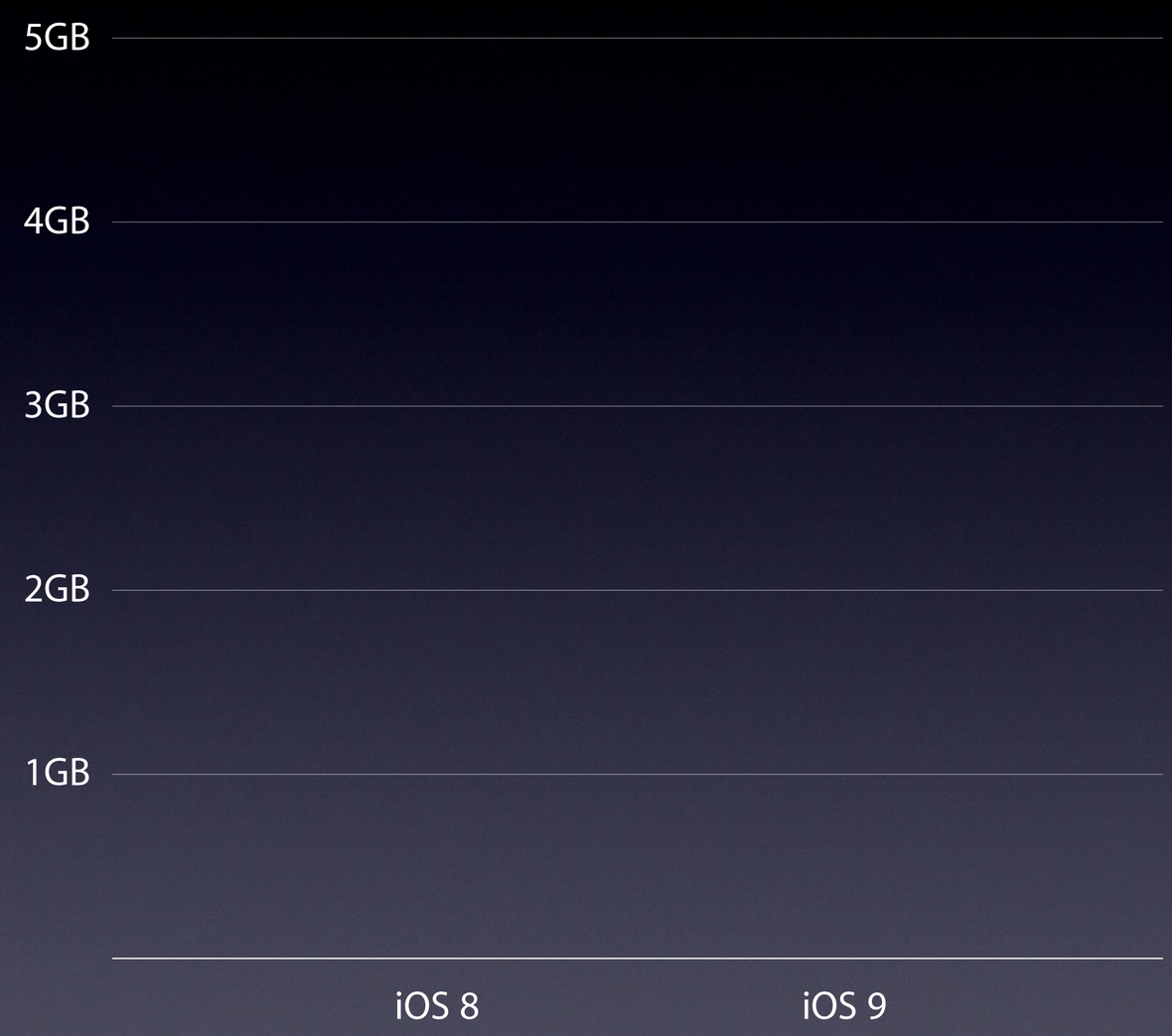
Distribution on all App Stores

Software Update

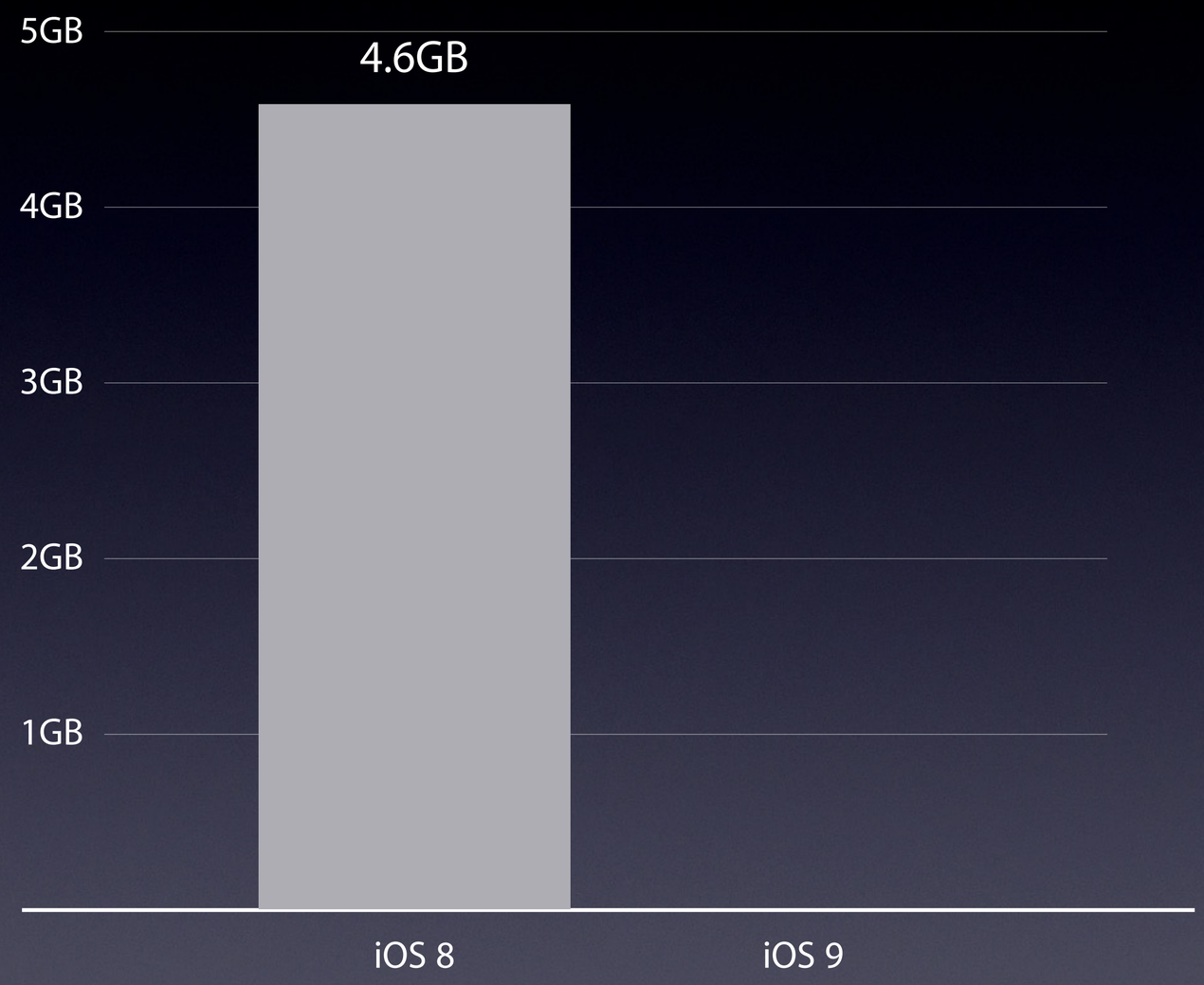
Adoption Rate



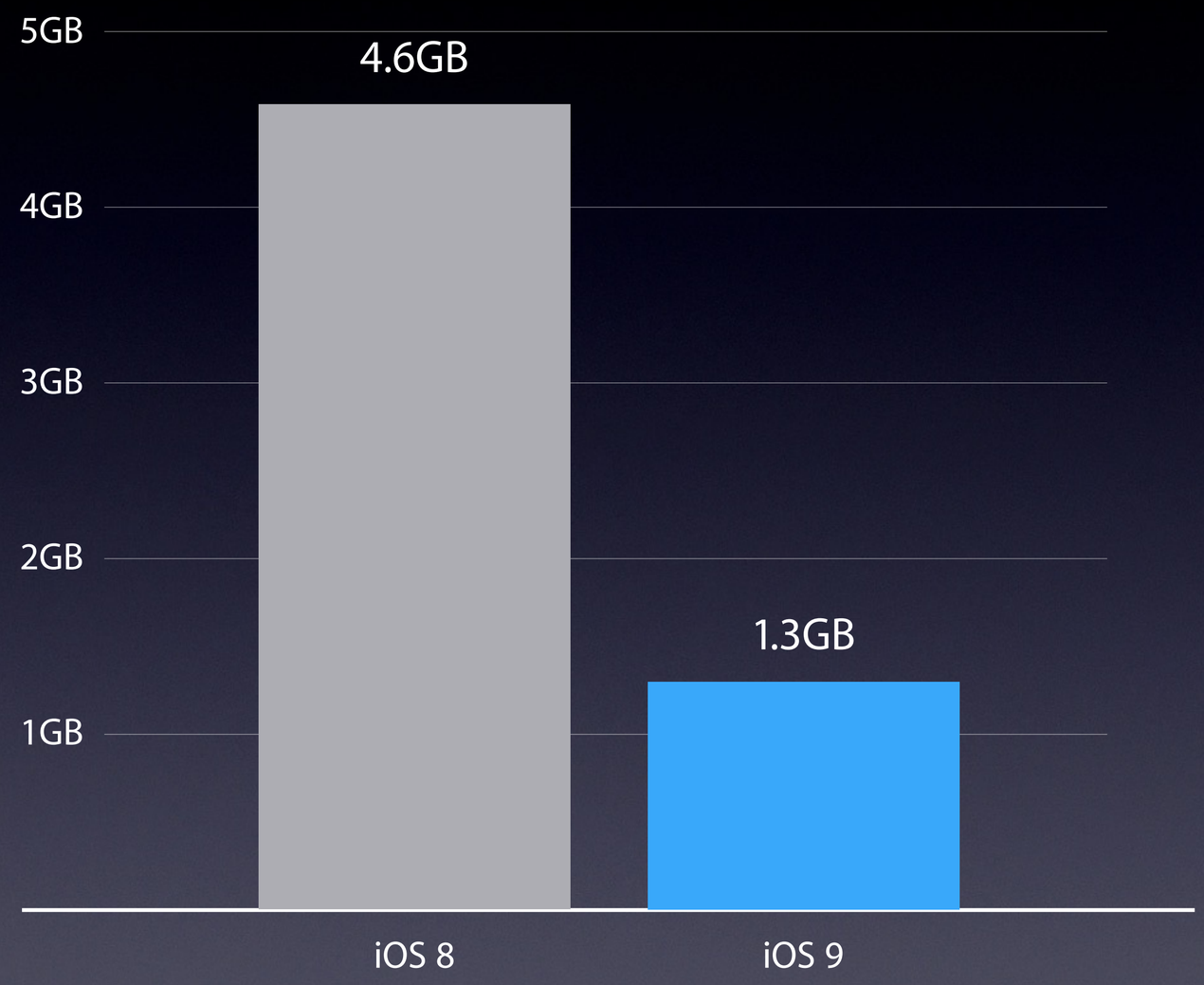
Free Space Required to Install

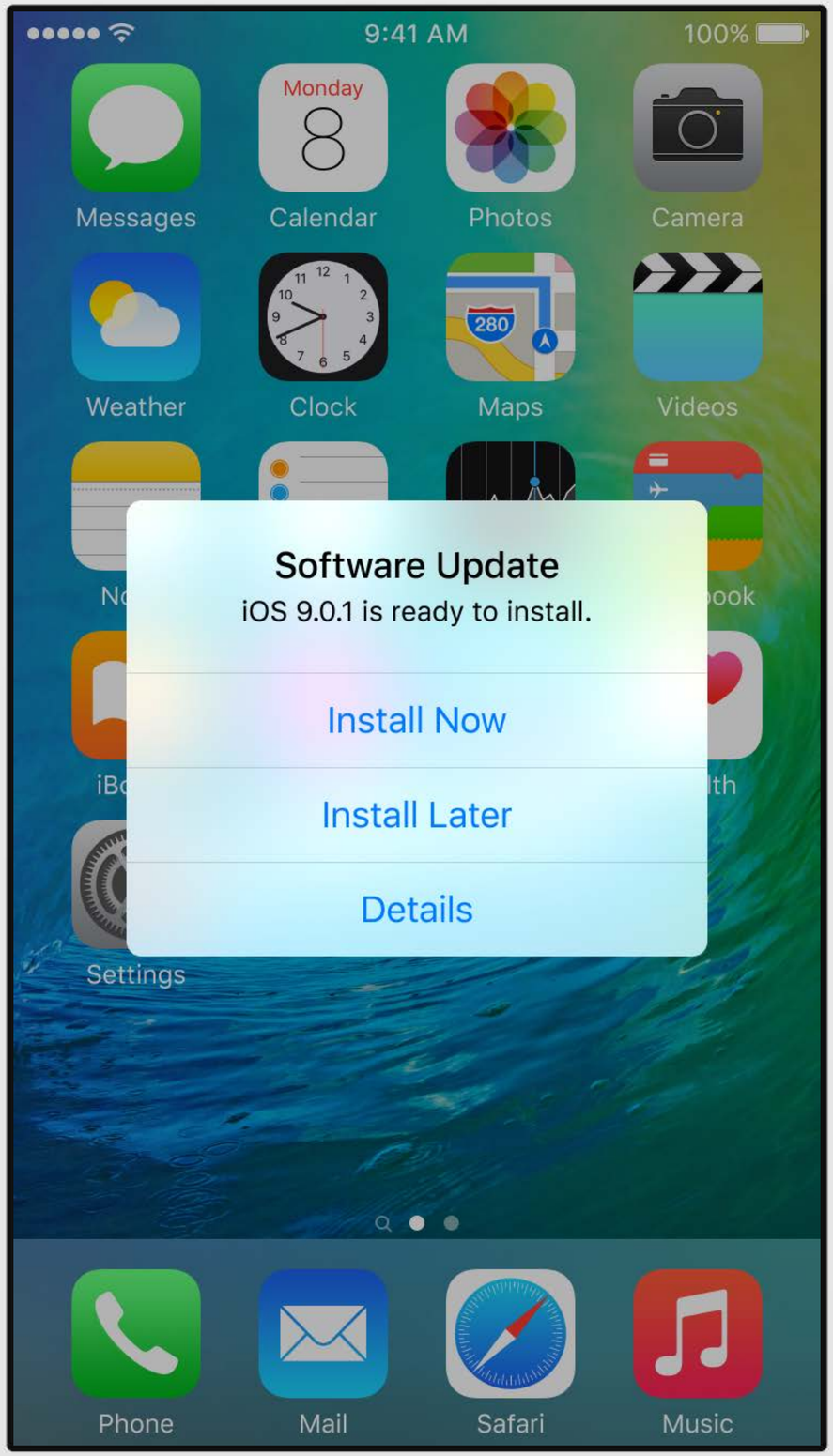


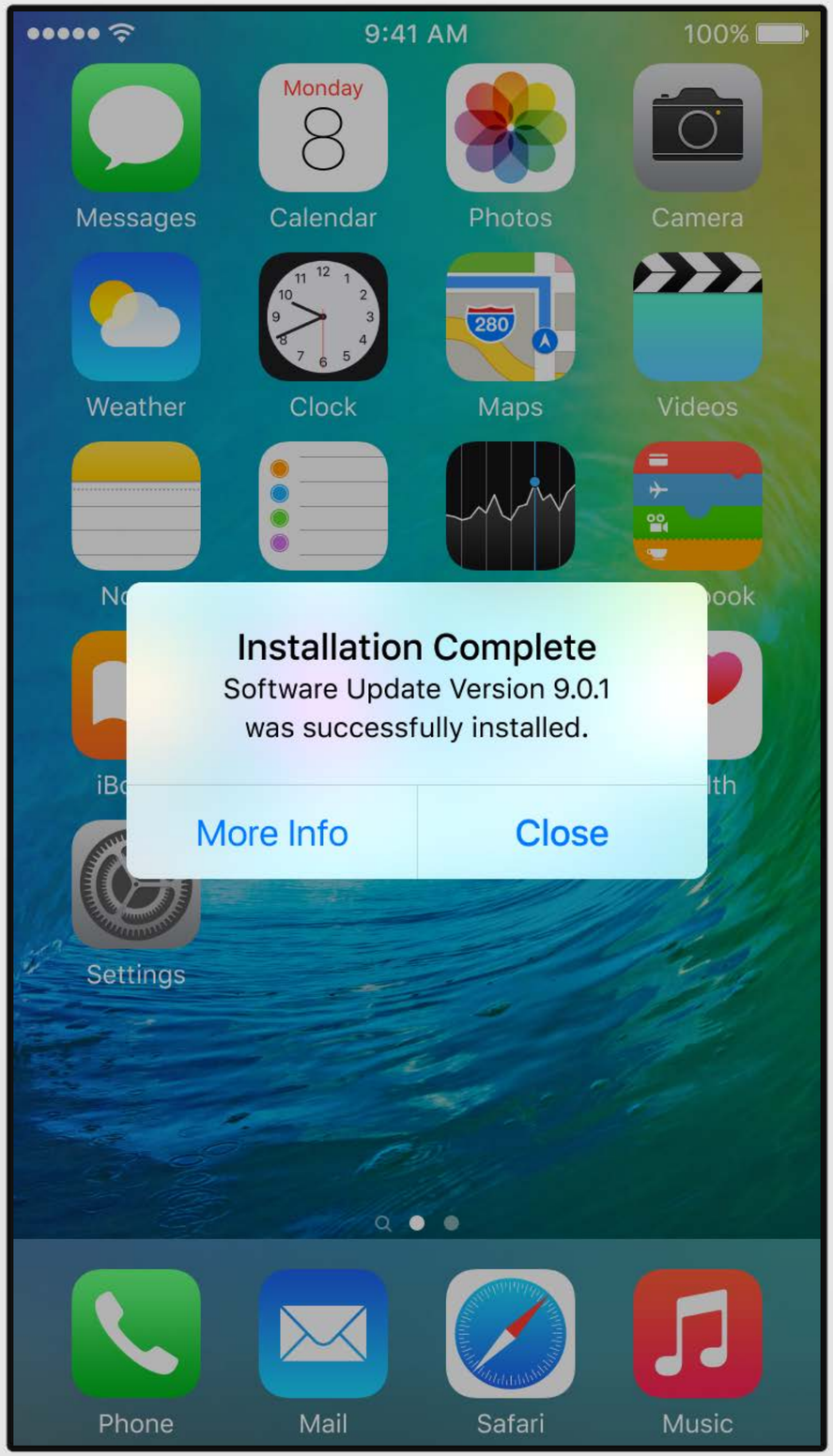
Free Space Required to Install



Free Space Required to Install

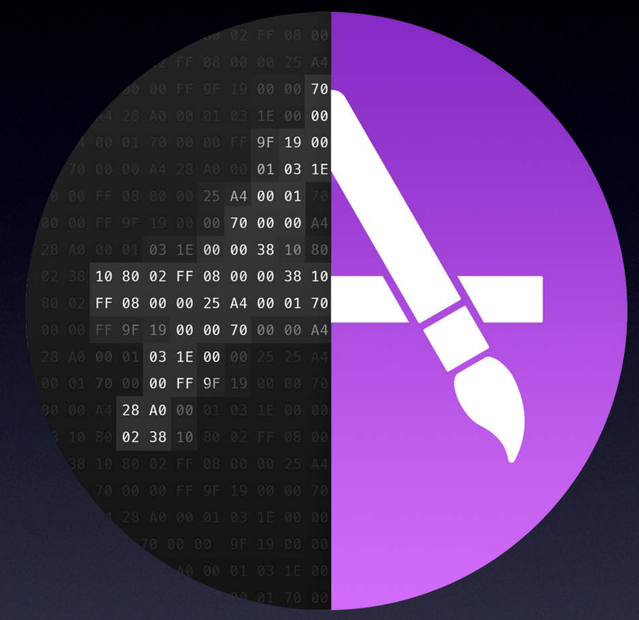



9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Software Update
iOS 9.0.1 is ready to install.
Install Now
Install Later
Details
Settings
Phone
Mail
Safari
Music


9:41 AM
100%
Monday
8
Messages
Calendar
Photos
Camera
Weather
Clock
Maps
Videos
Installation Complete
Software Update Version 9.0.1
was successfully installed.
More Info
Close
Settings
Phone
Mail
Safari
Music

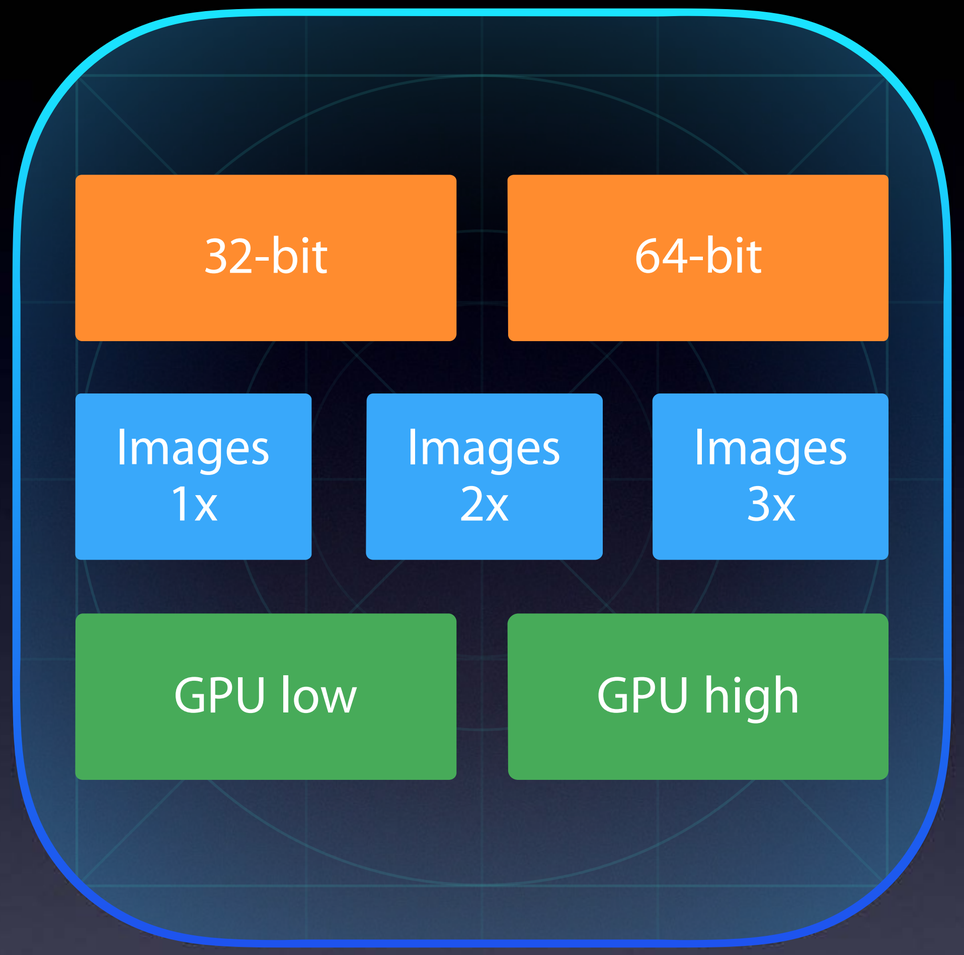
App Slicing

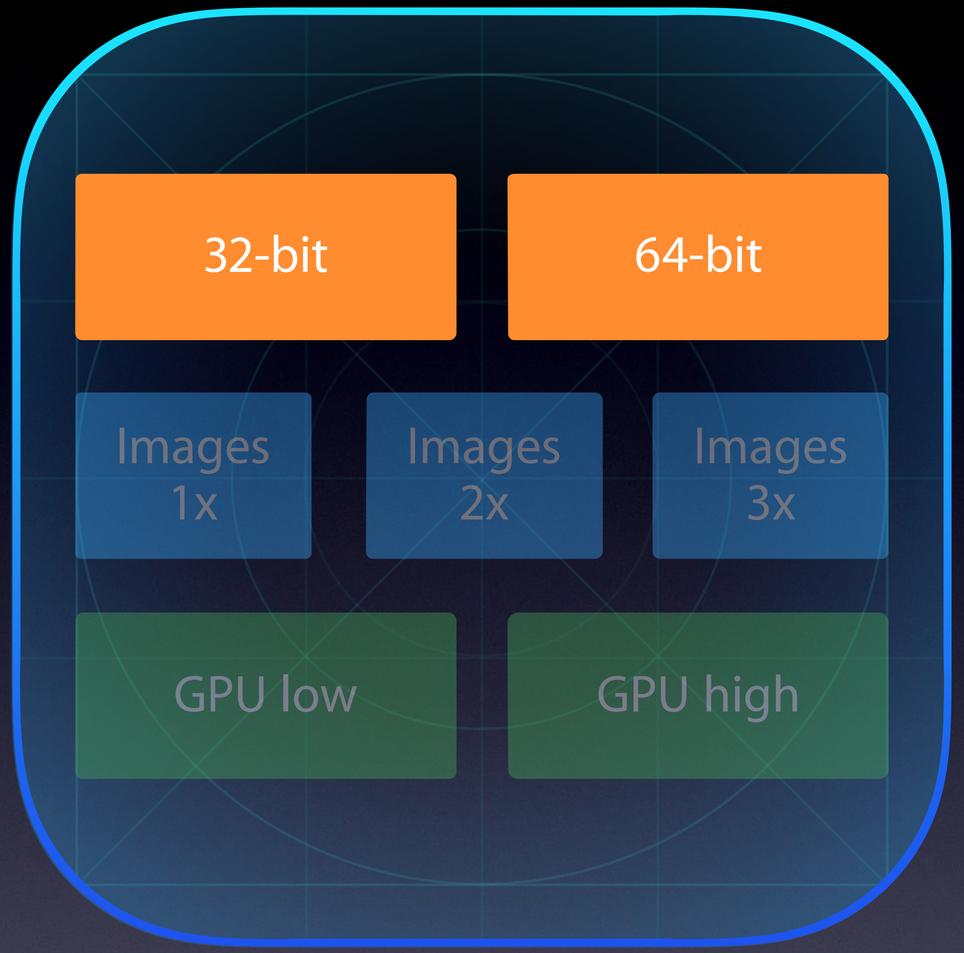
On Demand Resources

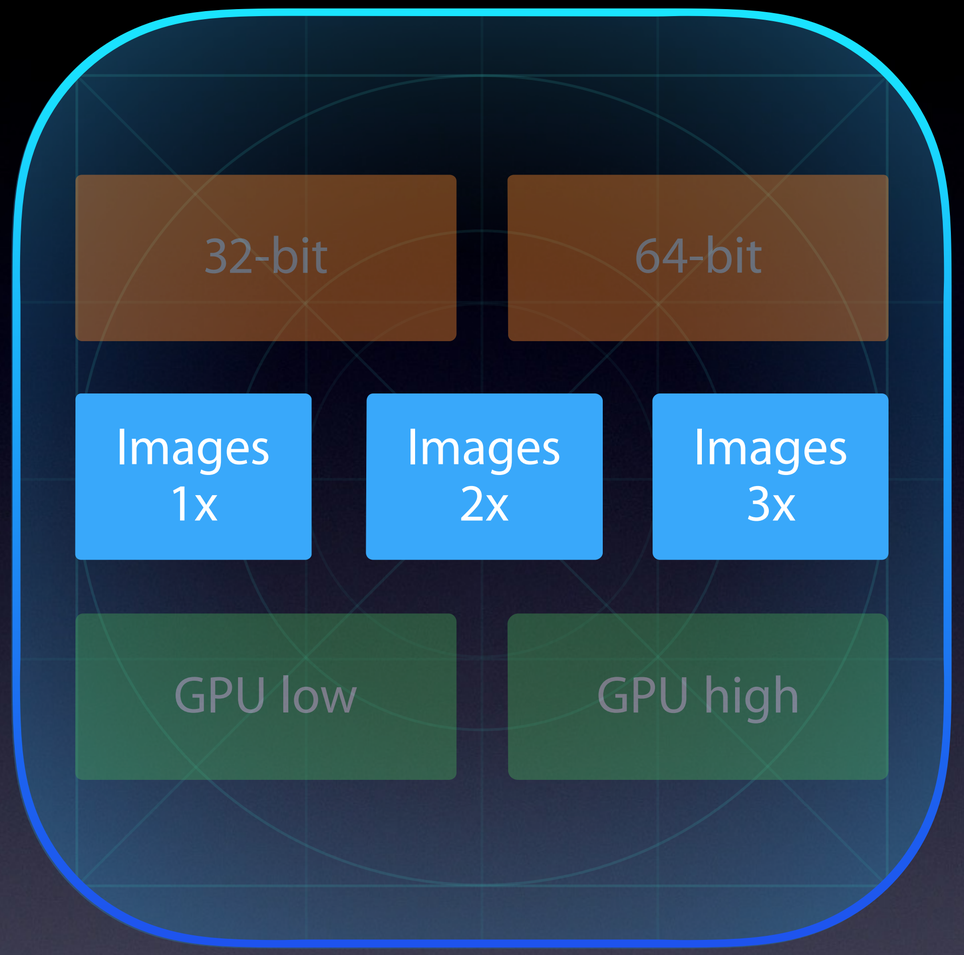


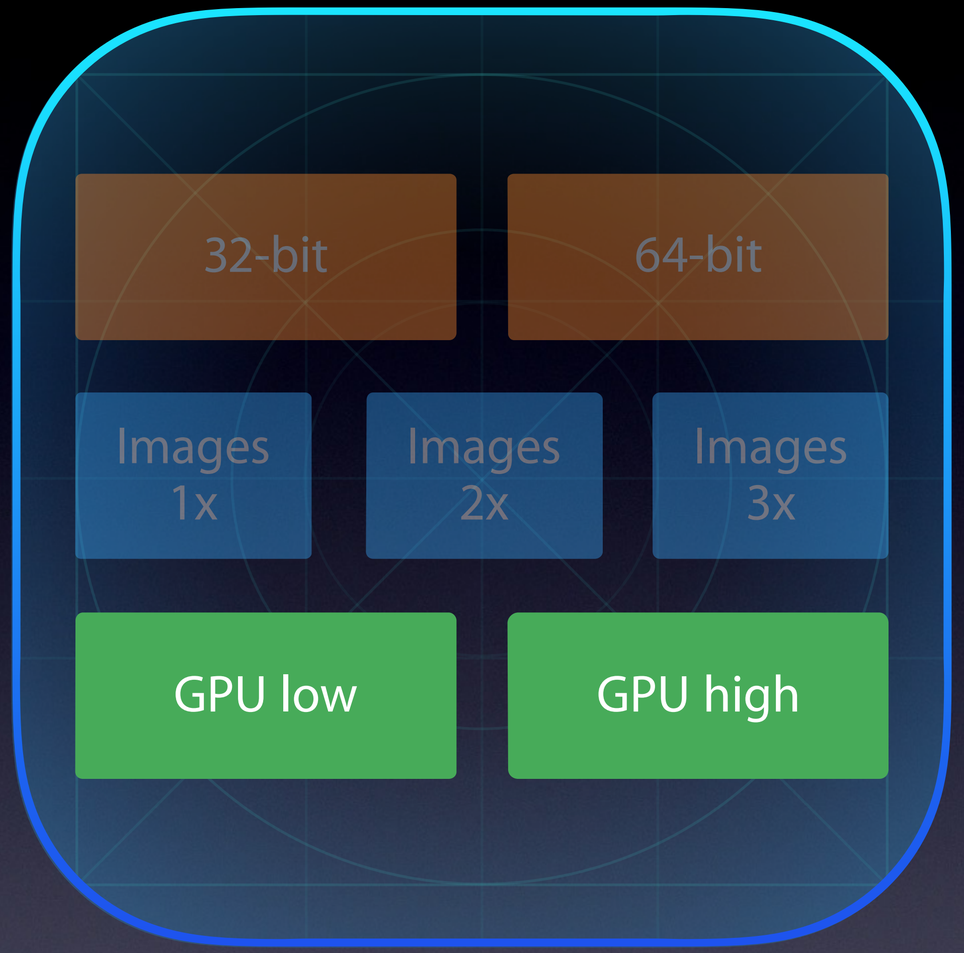
Bitcode

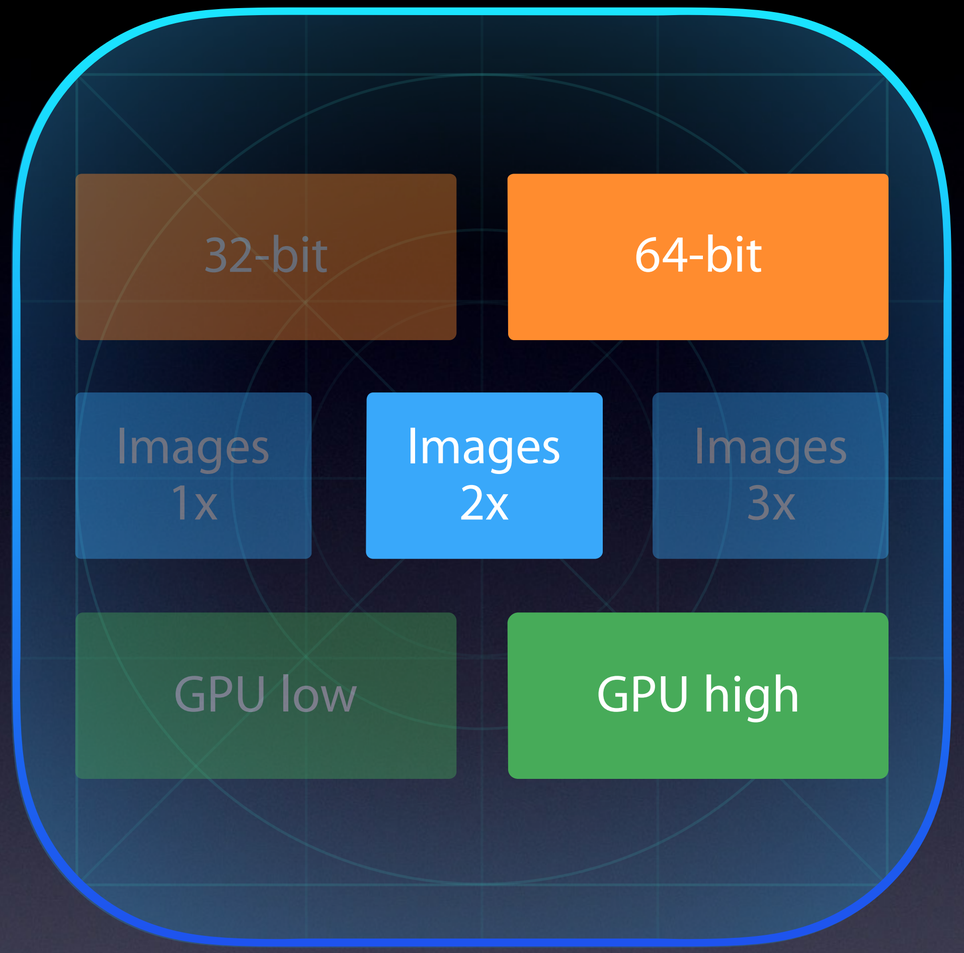
App Slicing

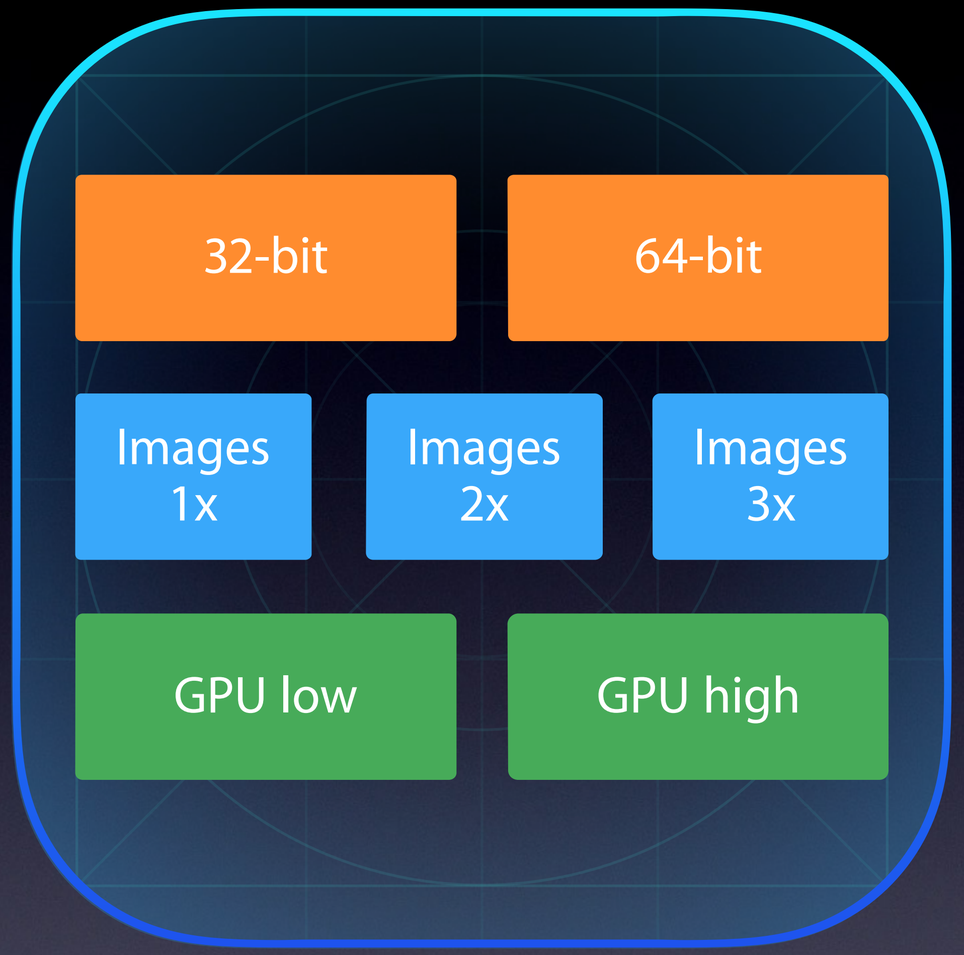

32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high

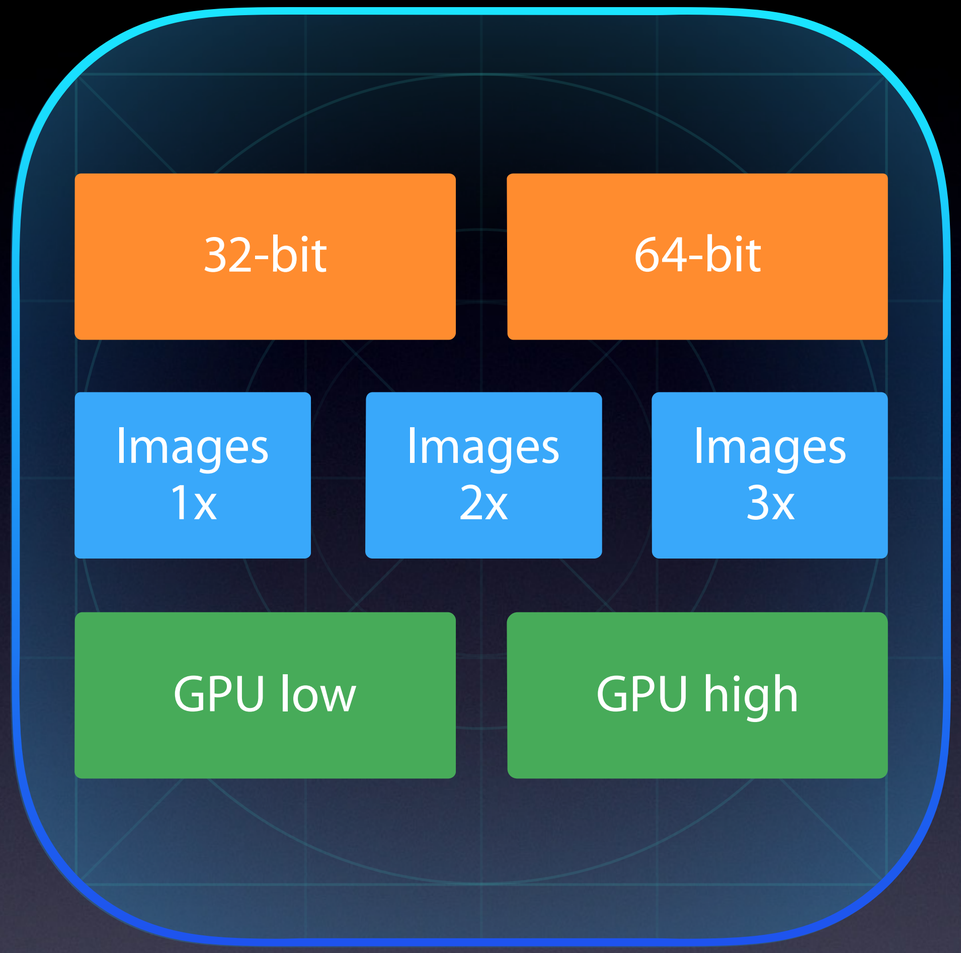

32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high

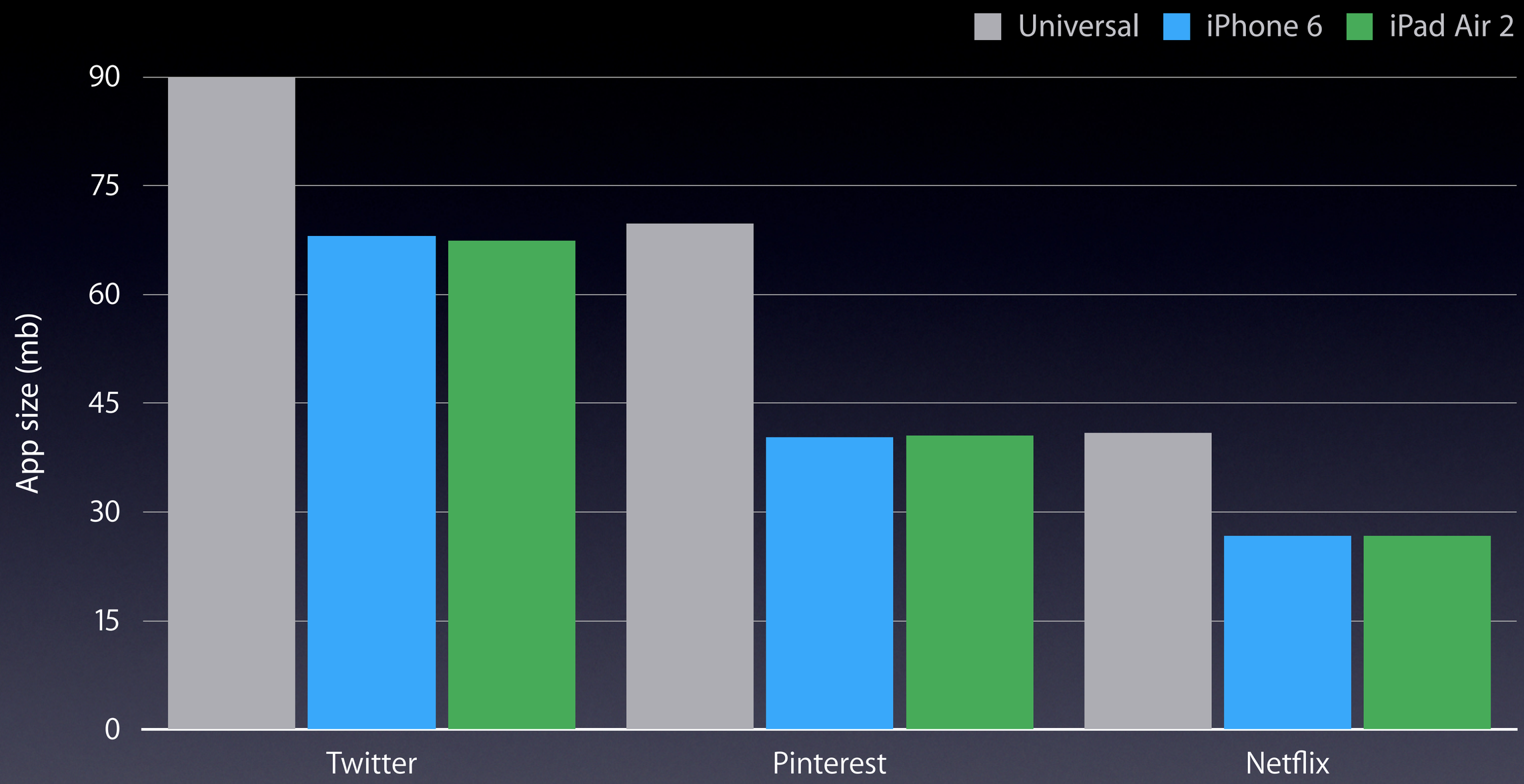

32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high

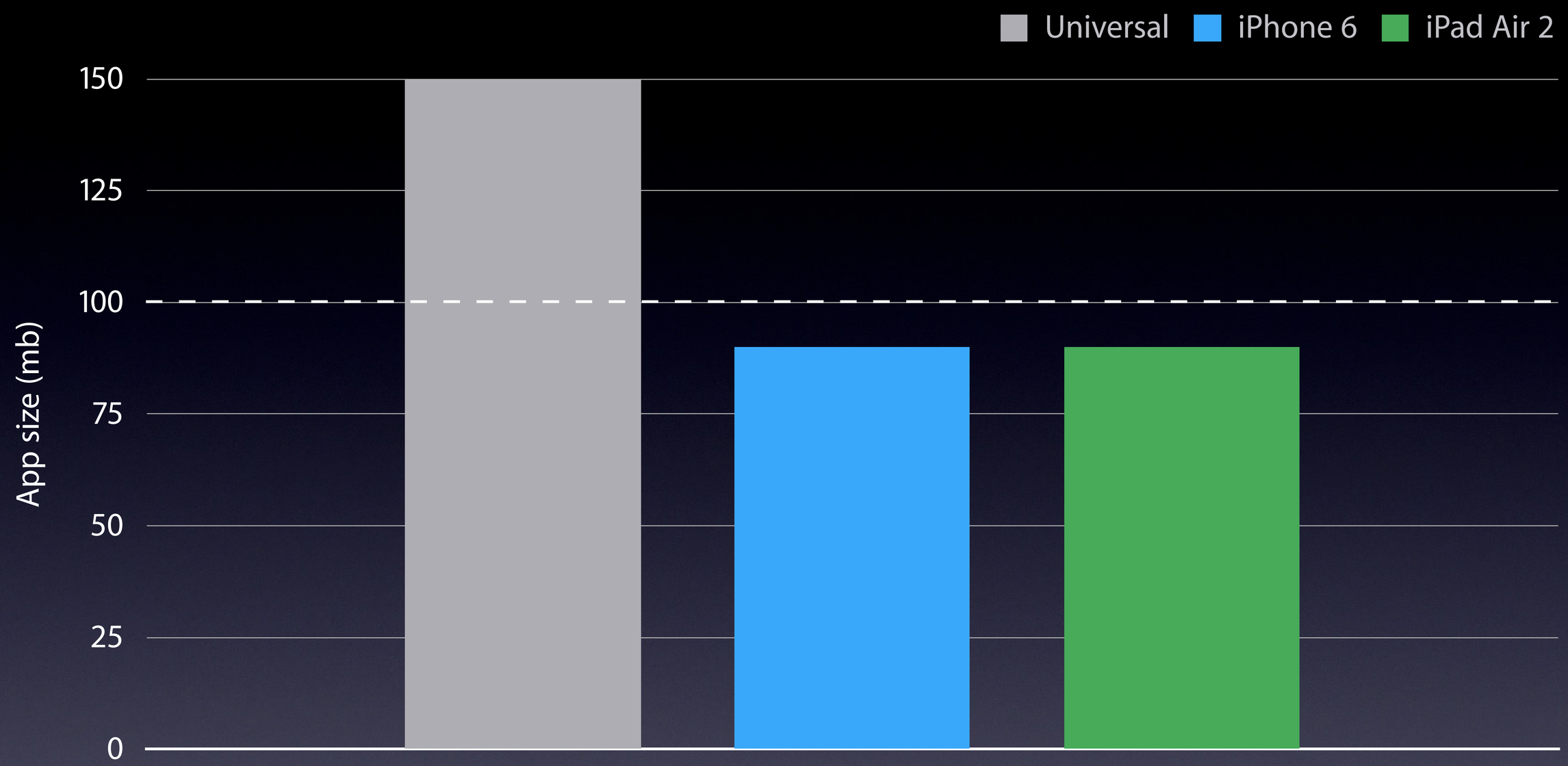

32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high

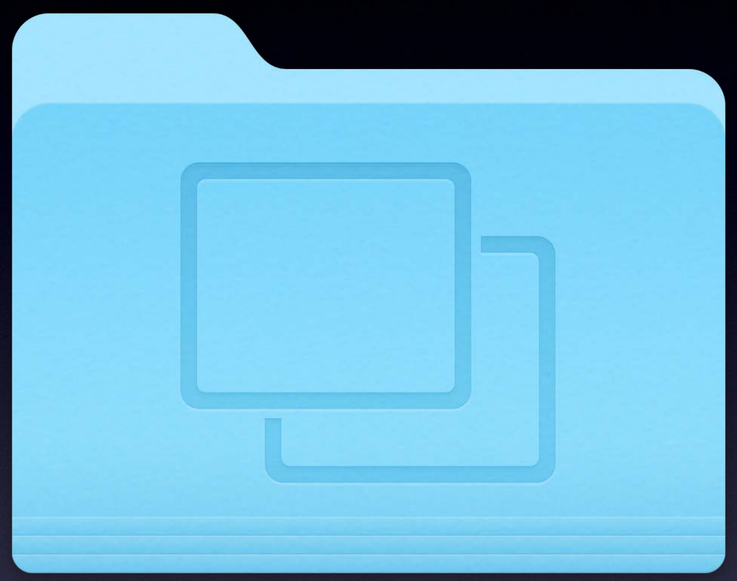

32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high


32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high


32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high


Universal
iPhone 6
iPad Air 2
App size (mb)
90
75
60
45
30
15
0
Twitter
Pinterest
Netflix


Universal
iPhone 6
iPad Air 2
App size (mb)
150
125
100
75
50
25
0

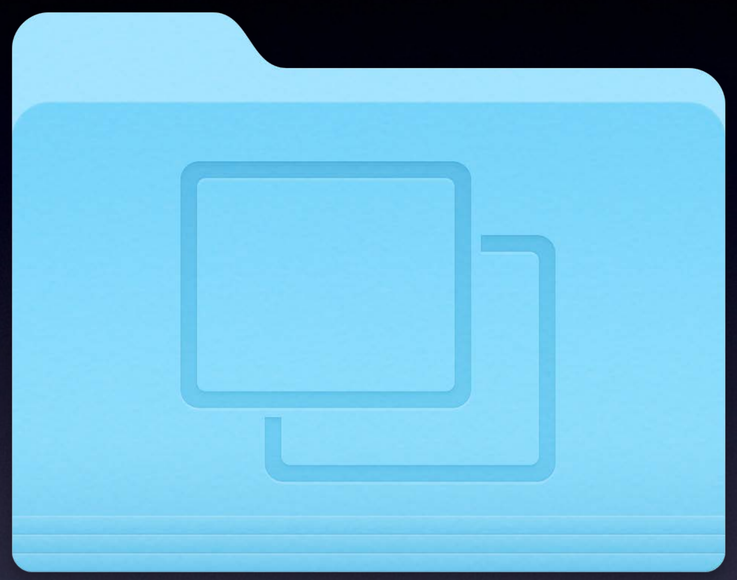


App Icon

Launch Image

Image Set

Sprite Atlas



App Icon

Launch Image

Image Set

Sprite Atlas

Data

On Demand Resources

Sliced for device

Hosted by Apple

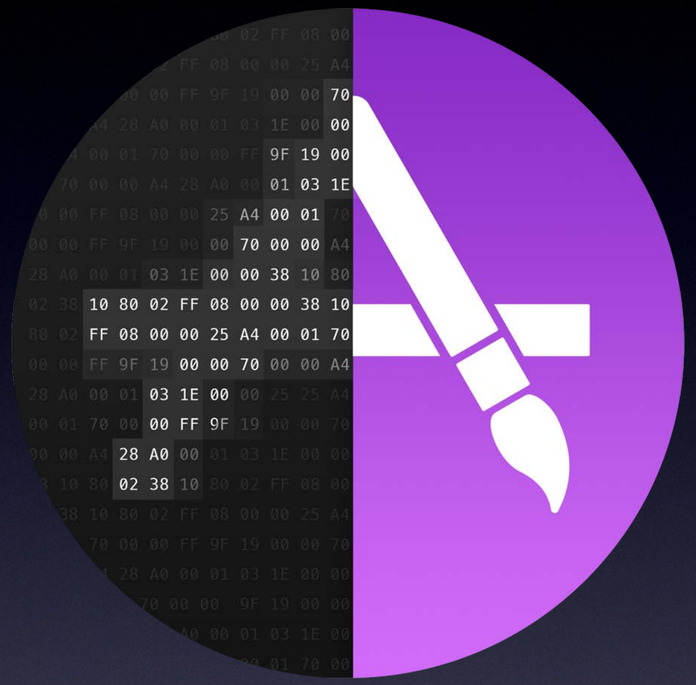
Downloaded when needed

Reclaimed as appropriate


32-bit
64-bit
Level 1
Level 2
Level n

Sliced Sizes

	Regular	ODR
App Size	4 GB	2 GB
Max Resources In-Use	N/A	2 GB
Max Resources Total	N/A	>> 4GB



Bitcode

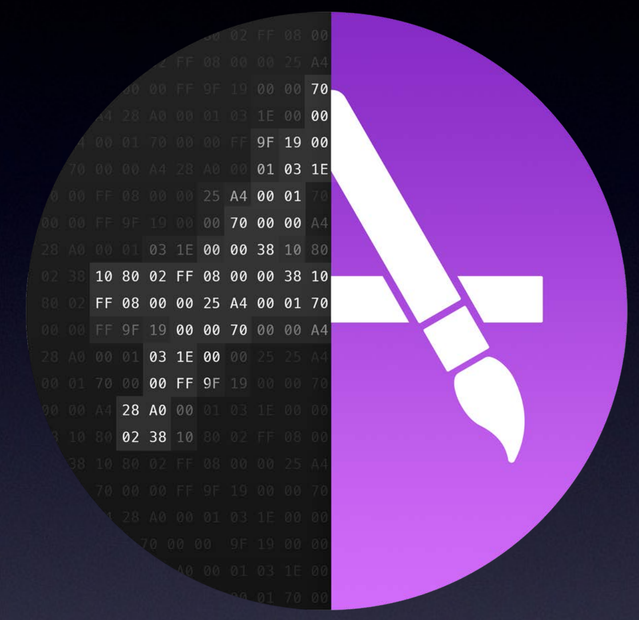

XCODE
9:41 AM
100%
Games
Monument Valley 4+
ustwo™ >
Offers In-App Purchases
Editors' Choice
(1,208)
$3.99
Details
Reviews
Related
Editors' Notes
Mesmerizing from start to finish, Monument Valley offers a world of uncanny beauty and constant wonder. To help a princess proceed on her mysterious quest, you'll face ingenious puzzles that involve lifting and spinning the environment i ... more
MONUMENT VALLEY
Featured
Top Charts
Explore
Search
Updates

Default

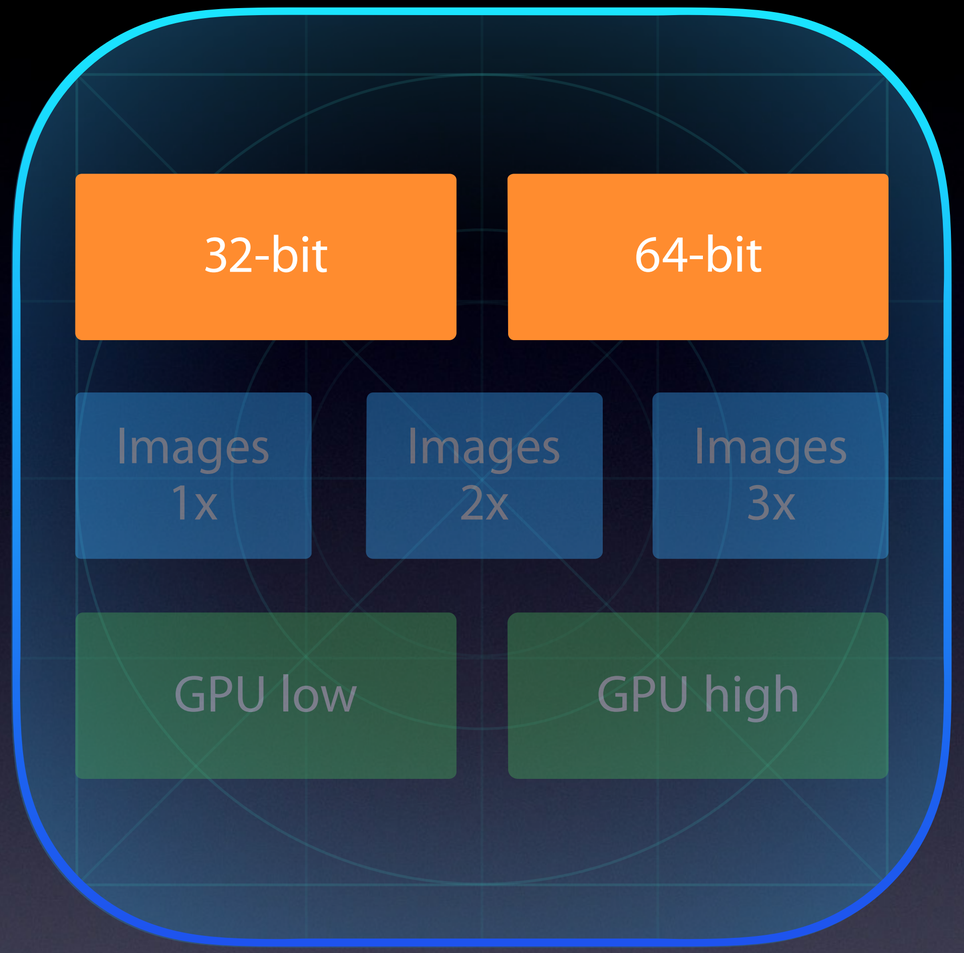
Mandatory

App Slicing

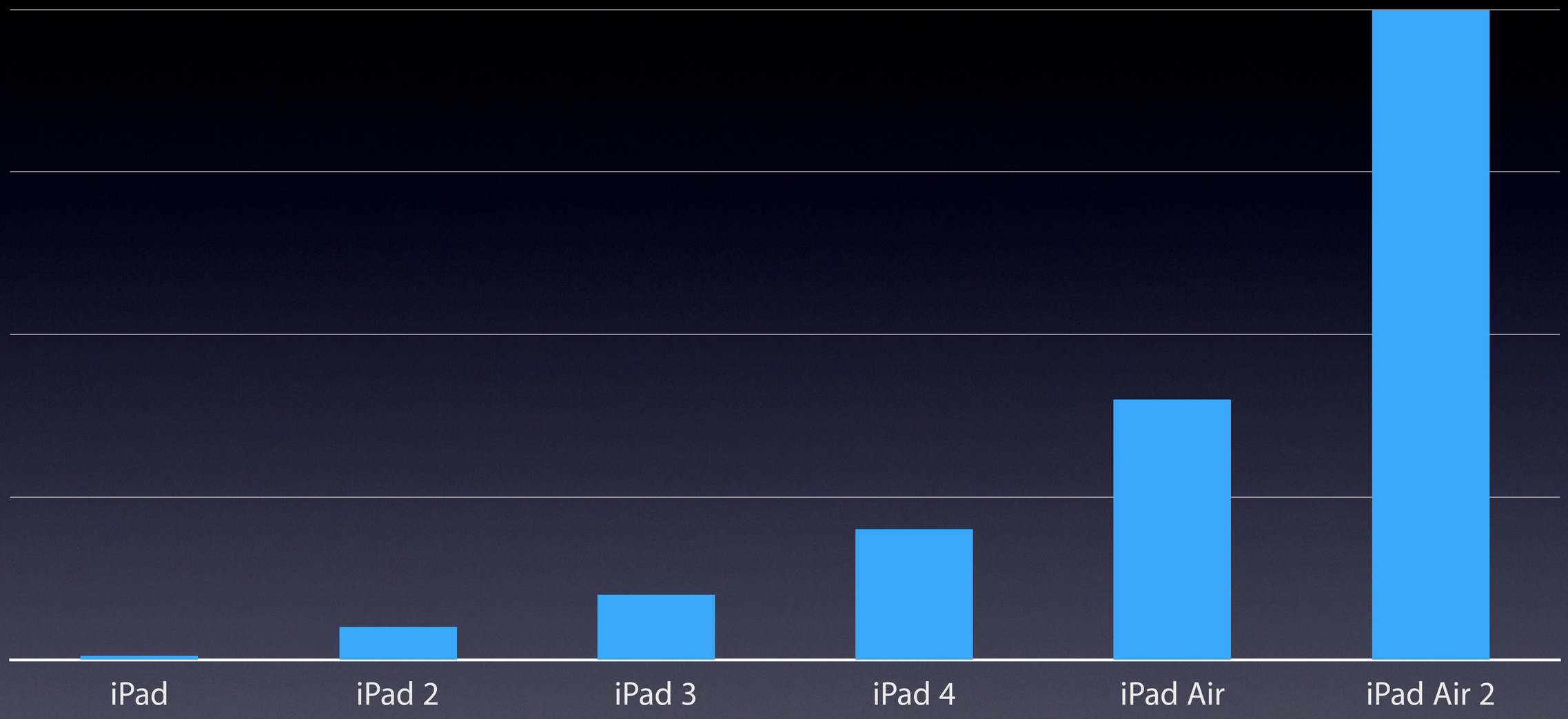
On Demand Resources



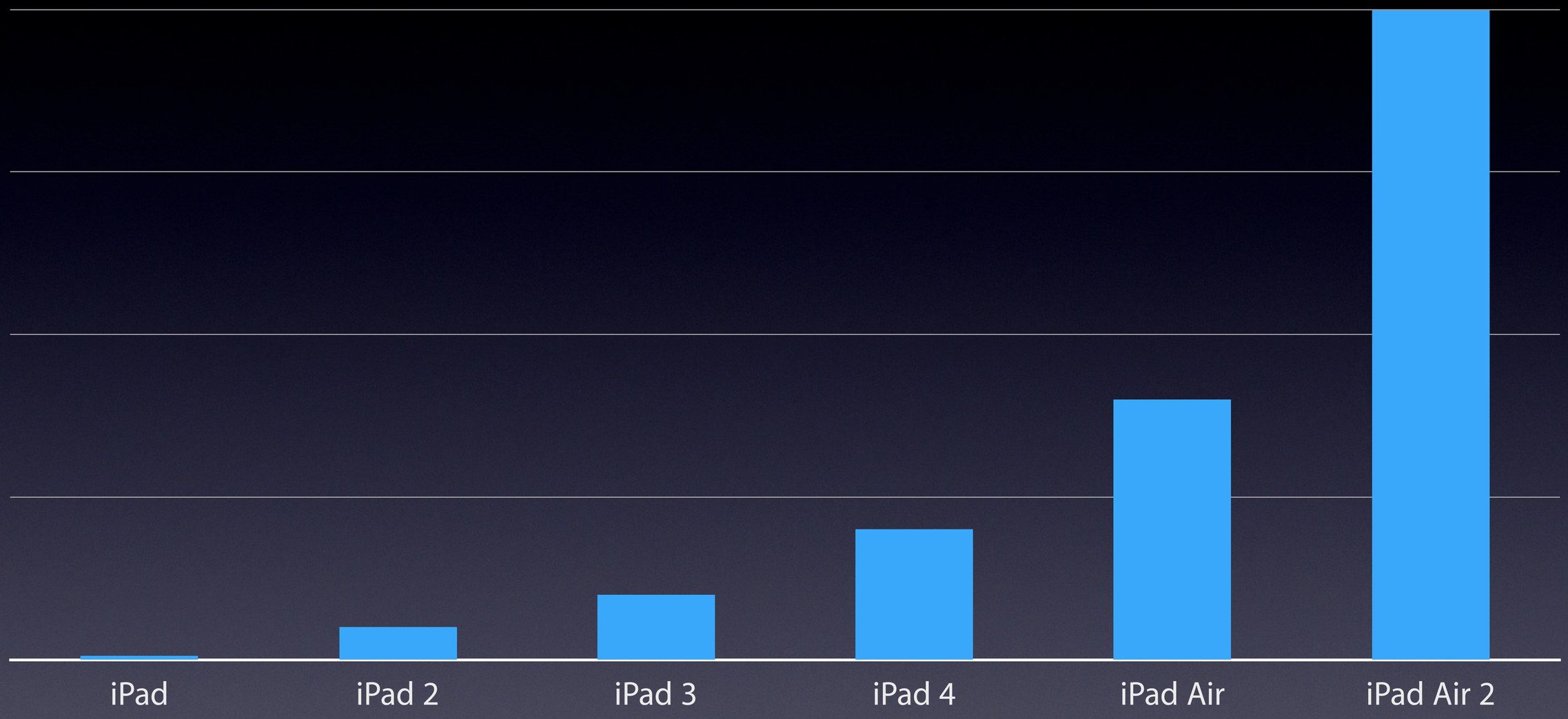
Bitcode


32-bit
64-bit
Images 1x
Images 2x
Images 3x
GPU low
GPU high

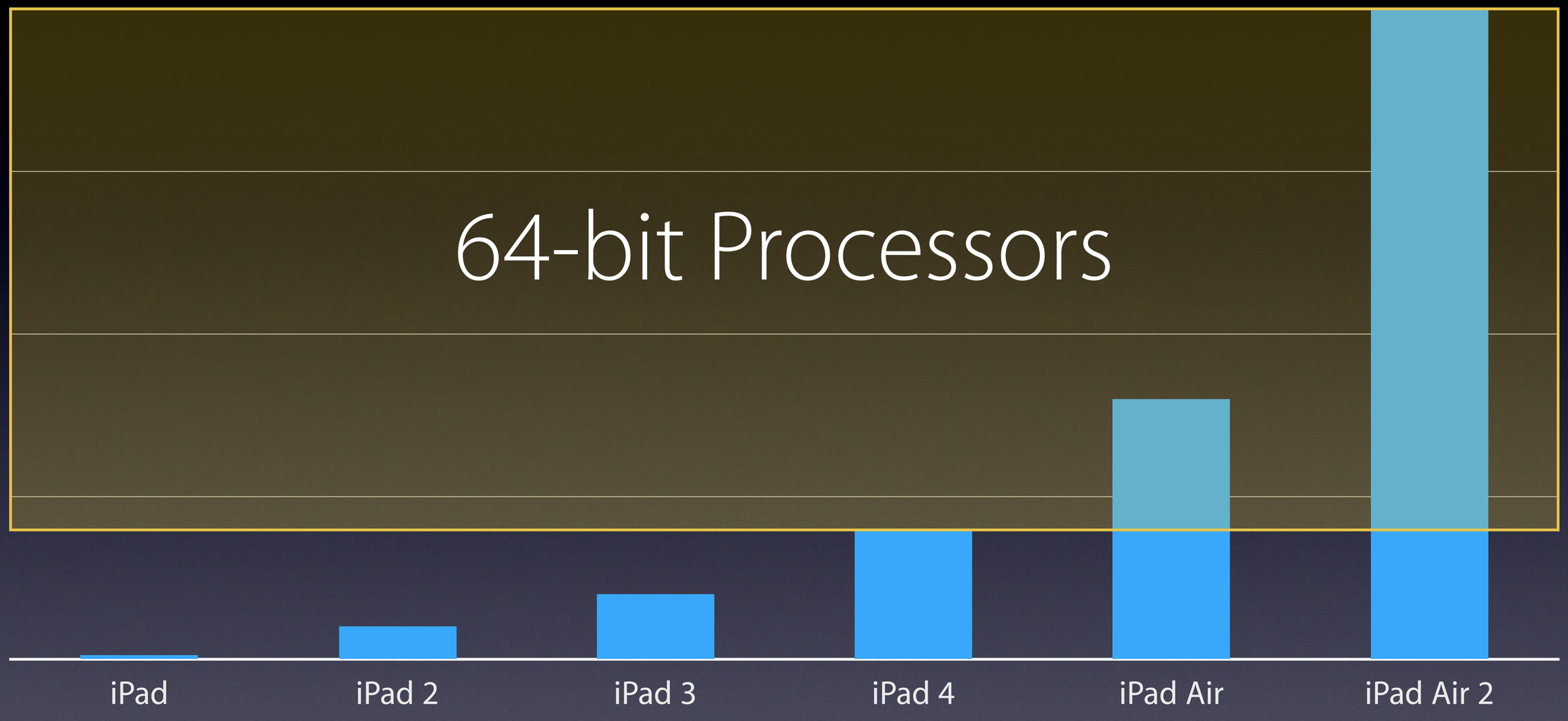
Relative GPU Performance



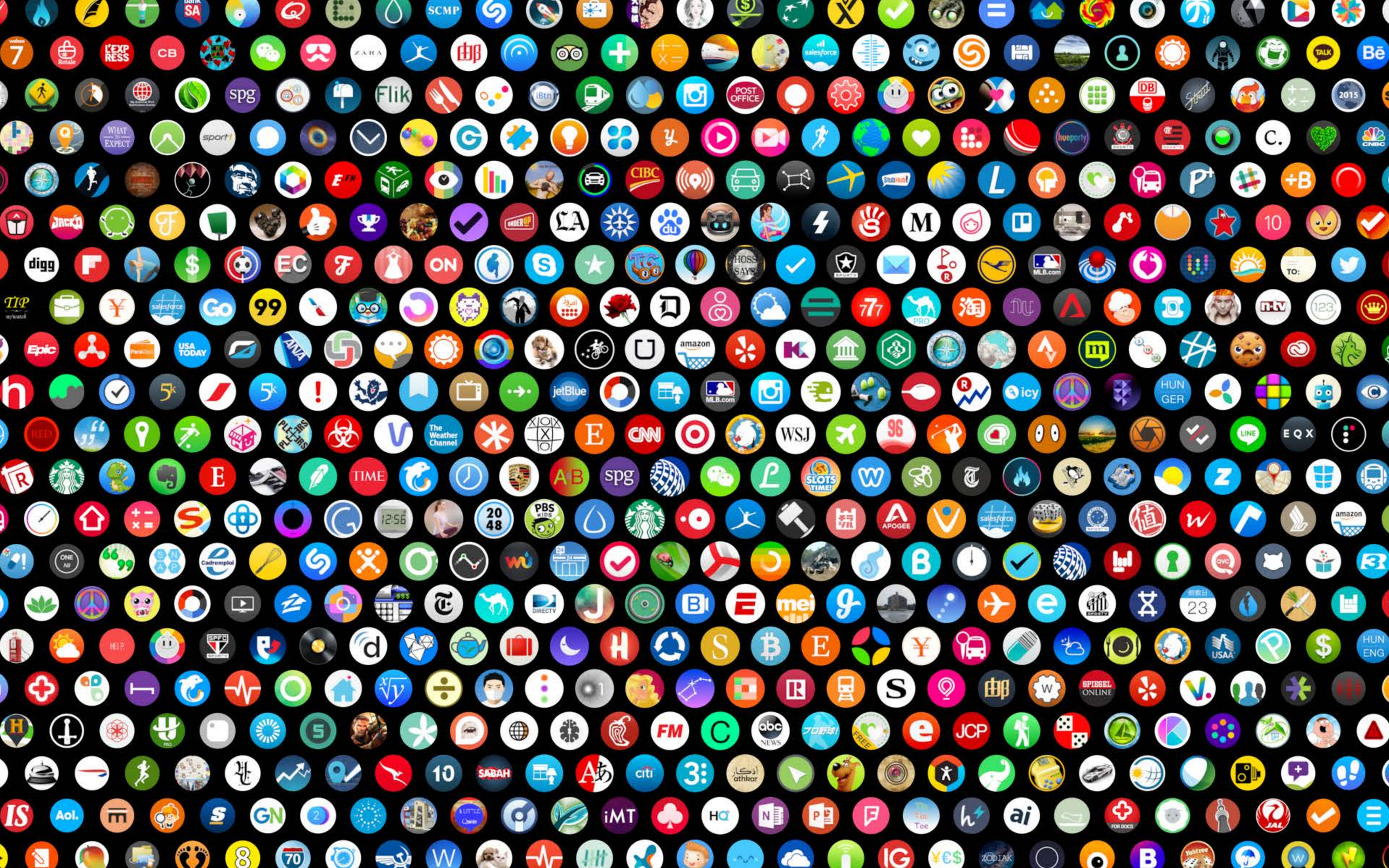
Relative GPU Performance

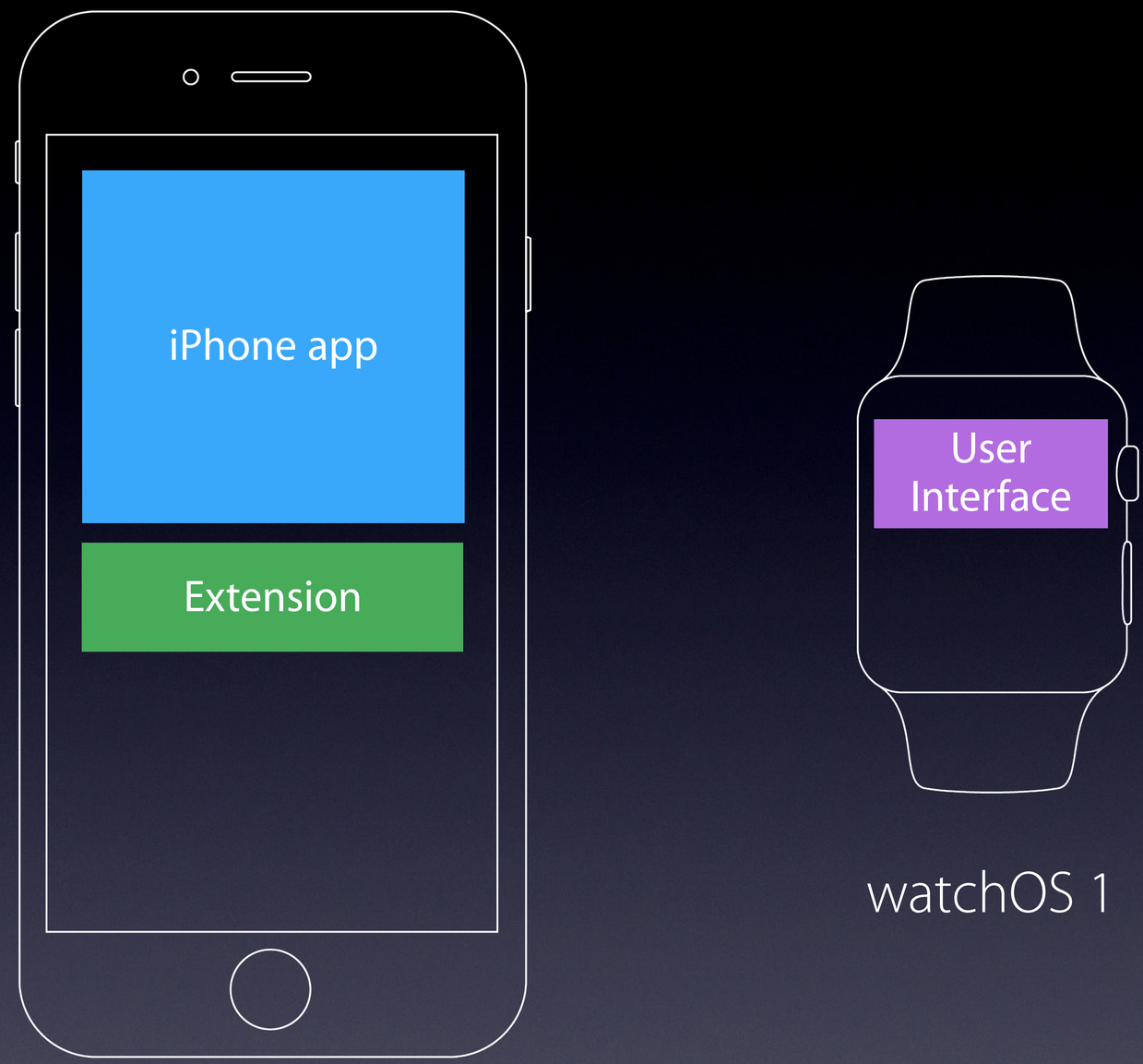


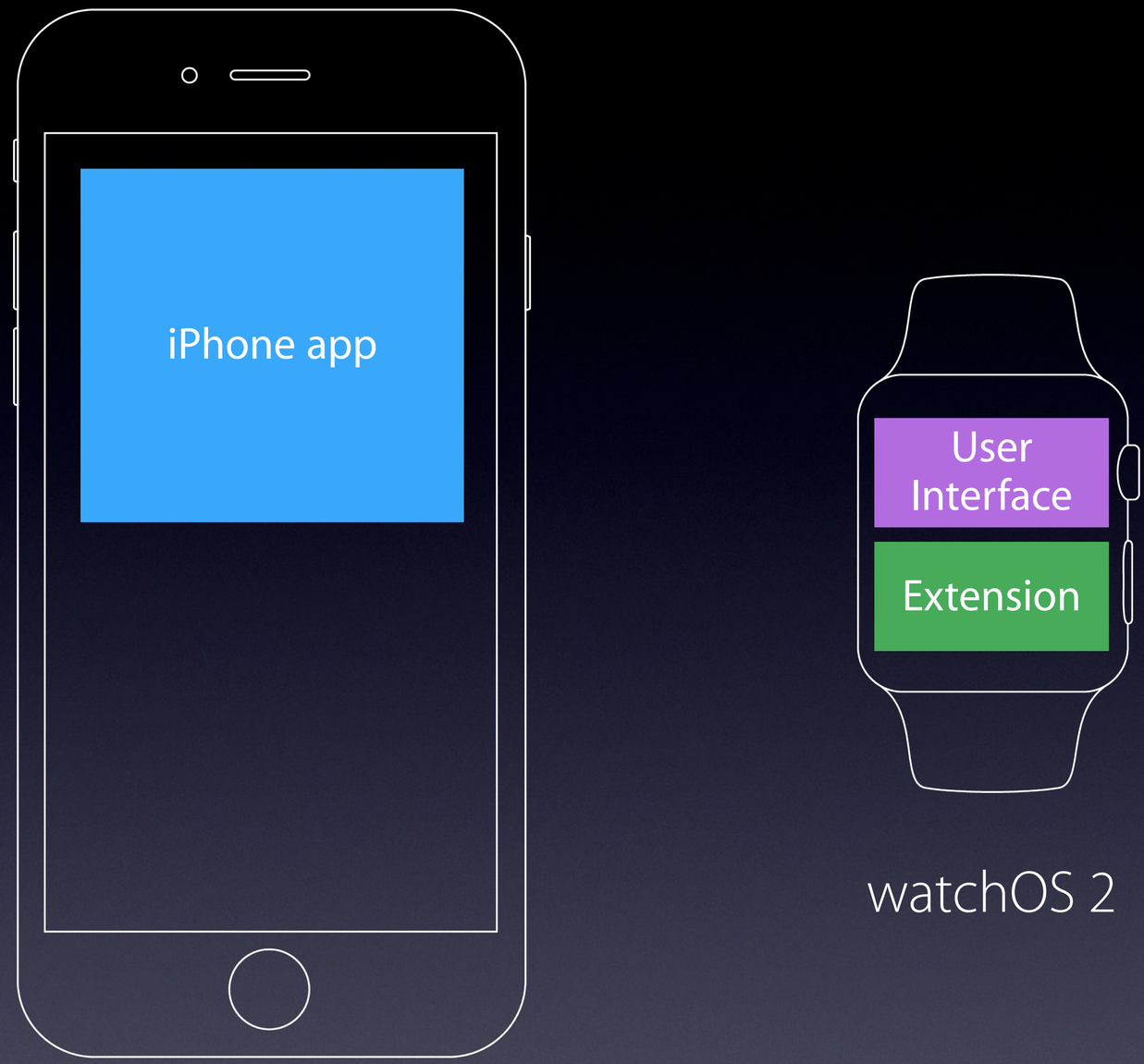
Relative GPU Performance




64



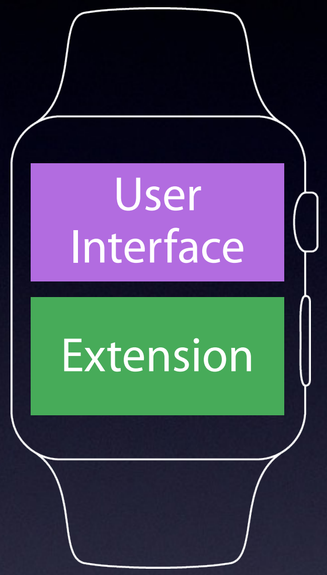

iPhone app
Extension
User Interface
watchOS 1


iPhone app
User Interface
Extension
watchOS 2

Speed and responsiveness

Standalone functionality

Access to Watch hardware


User
Interface
Extension

WatchKit

Foundation

CoreFoundation

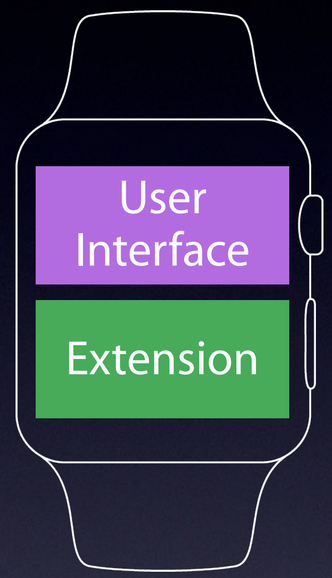
CoreGraphics

Image I/O

CoreLocation

CoreMotion

CoreData



Contacts

EventKit

PassKit

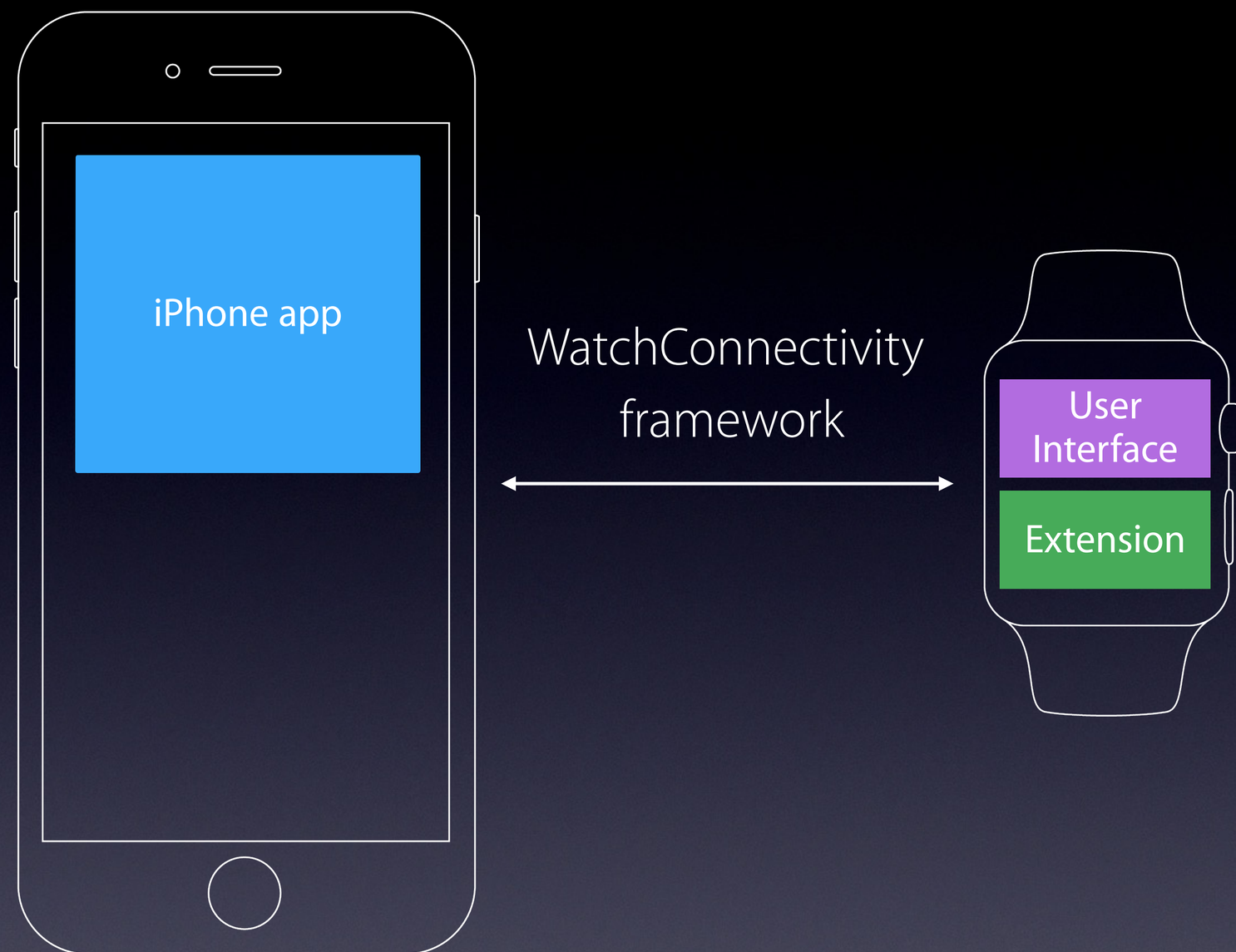
HomeKit

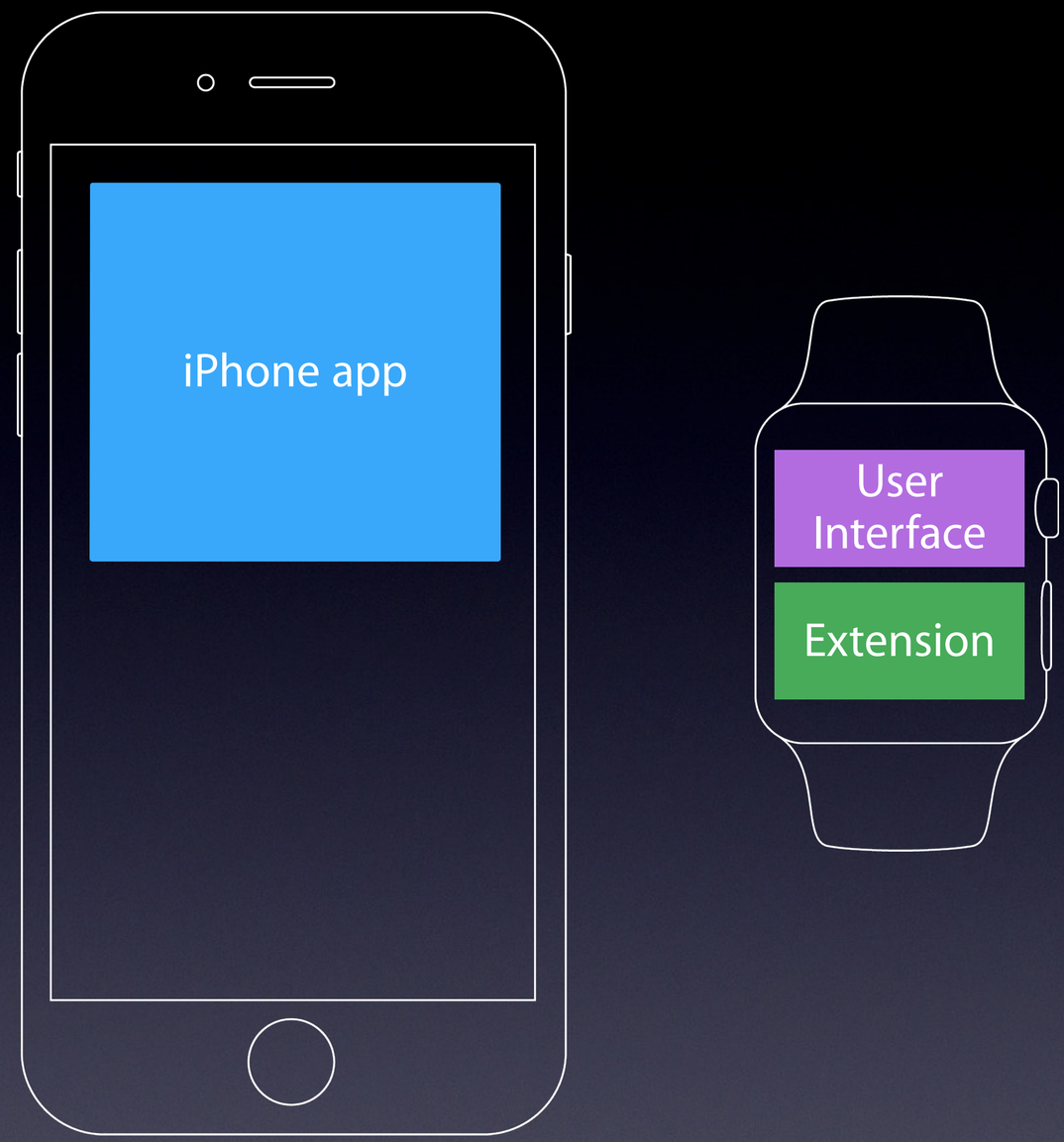
HealthKit

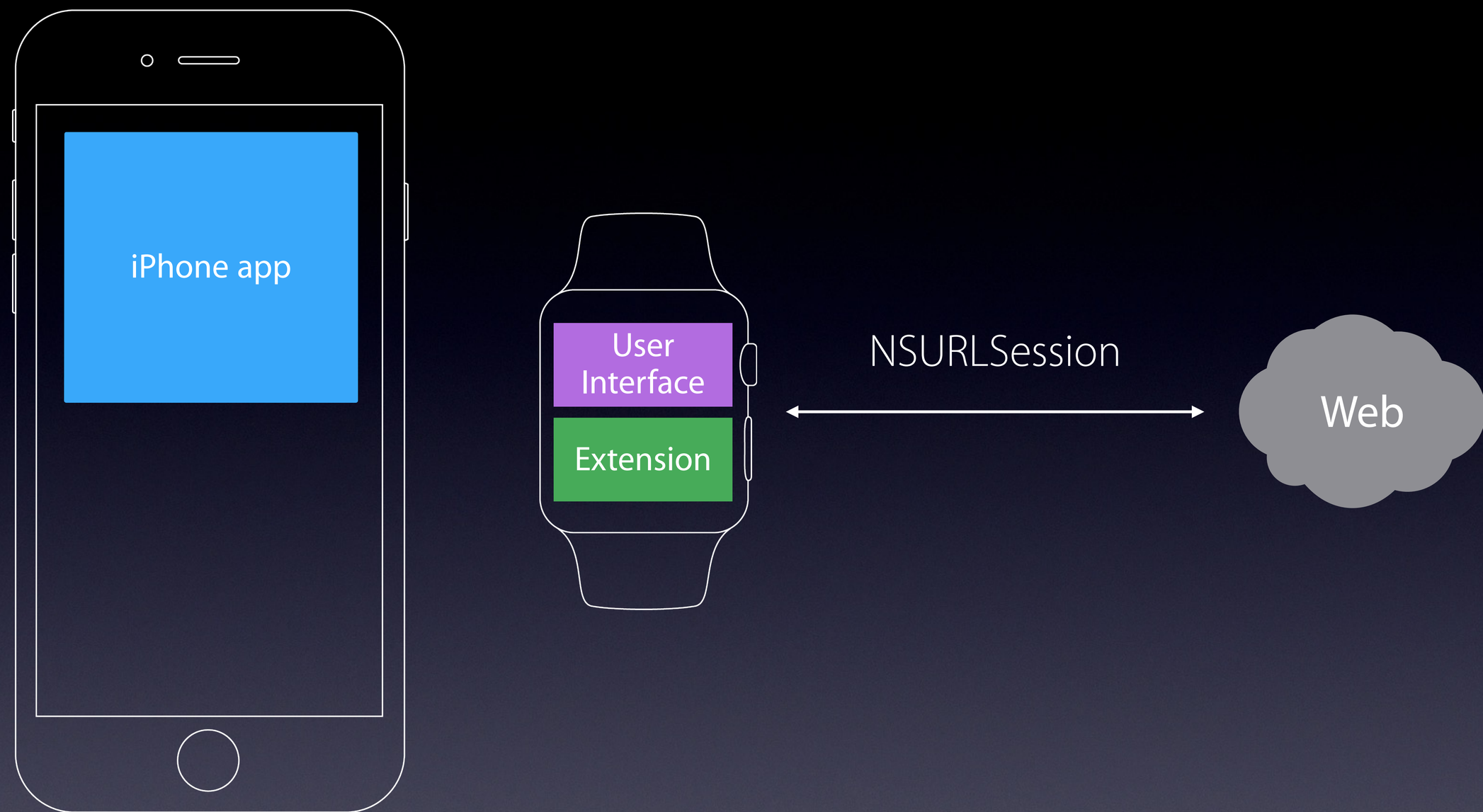
CFNetwork

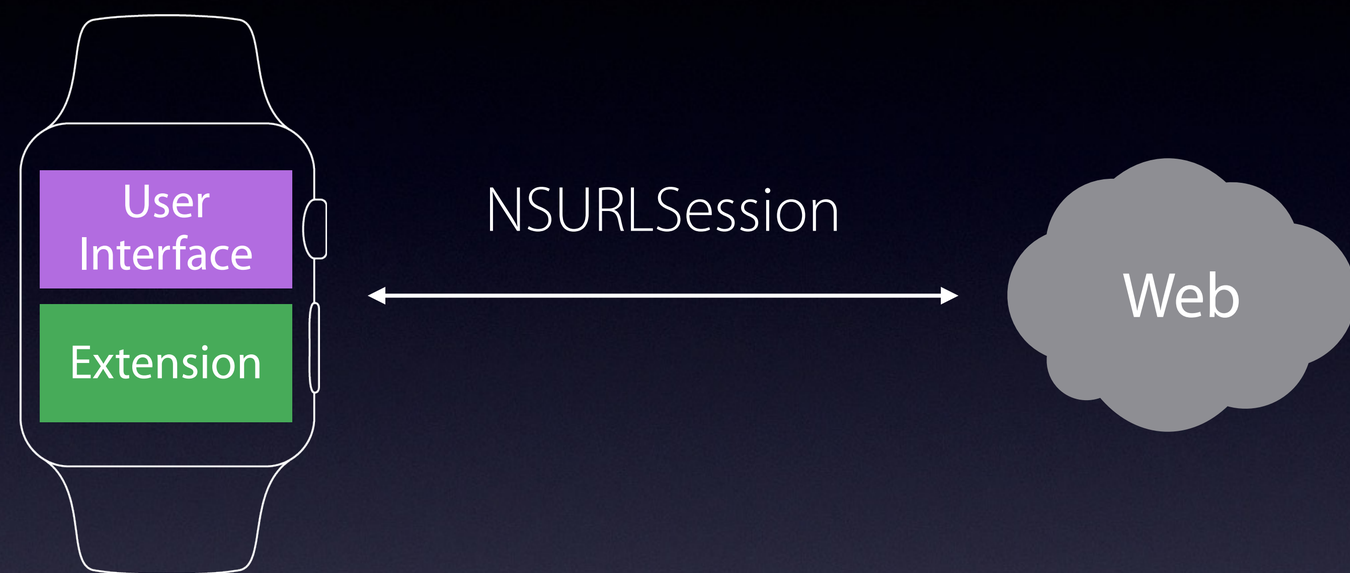
Security

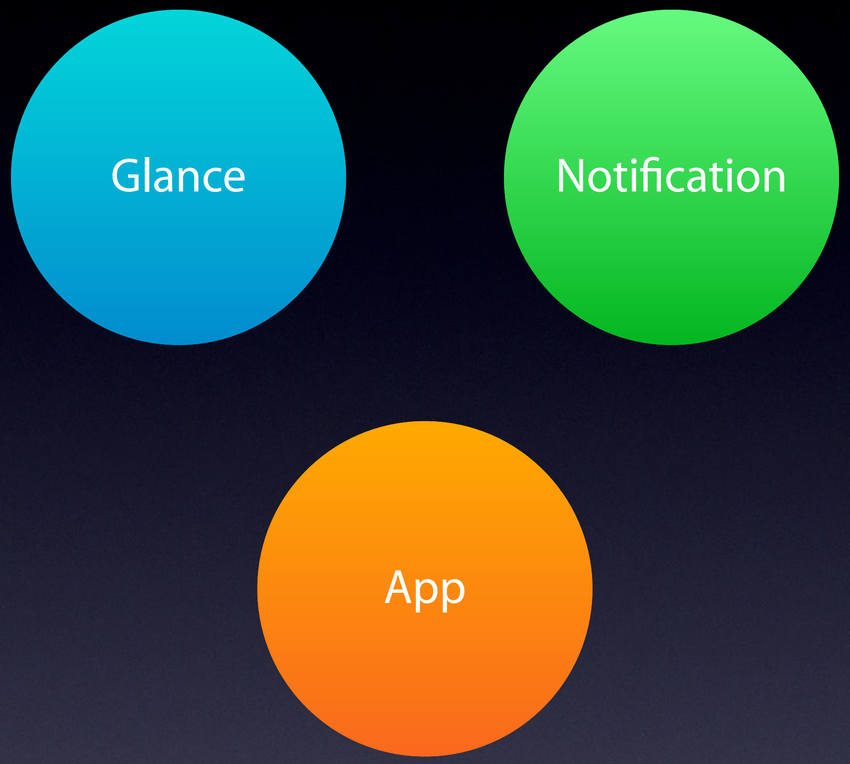
MobileCoreServices

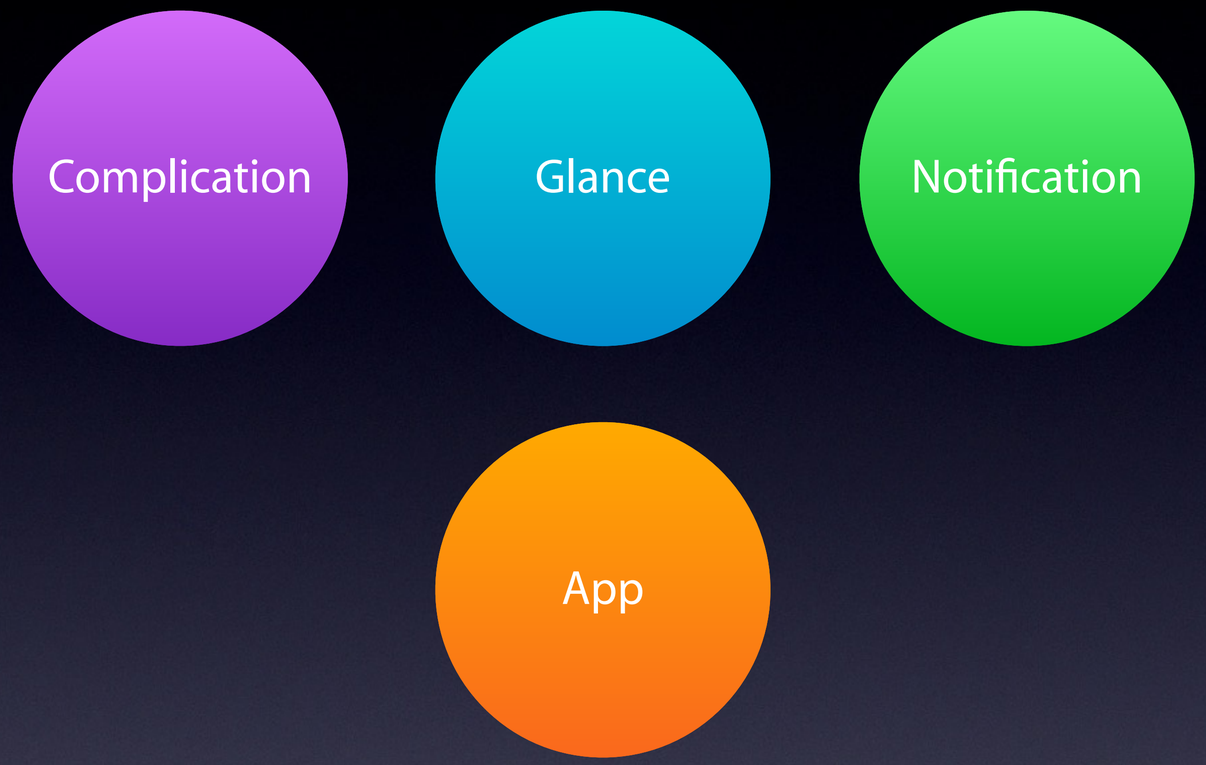

iPhone app
WatchConnectivity
framework
User
Interface
Extension


iPhone app
User Interface
Extension


iPhone app
User Interface
Extension
NSURLSession
Web


User Interface
Extension
NSURLSession
Web


Glance
Notification
App


Complication
Glance
Notification
App


10:09
Alarm
7:30AM
7:10
00:00


65°
8:26


LON 5:09
15:00
12PM LUNCH WITH KEN


10:09
Alarm
7:30AM
7:10
00:00


65°
8:26


LON 5:09
15:00
12PM LUNCH WITH KEN


10:09
Alarm
7:30AM
7:10
00:00


65°
8:26


LON 5:09
15:00
12PM LUNCH WITH KEN


10:09
Alarm
7:30AM
7:10
00:00


10:09
10:30AM
Castro – Nob Hill
Group A
7:10
00:00

10:30AM
Castro — Nob Hill
Group A

⚽ 10:30AM
Castro — Nob Hill
Group A

⚽ 2:00PM
Marina — Noe Valley
Group B

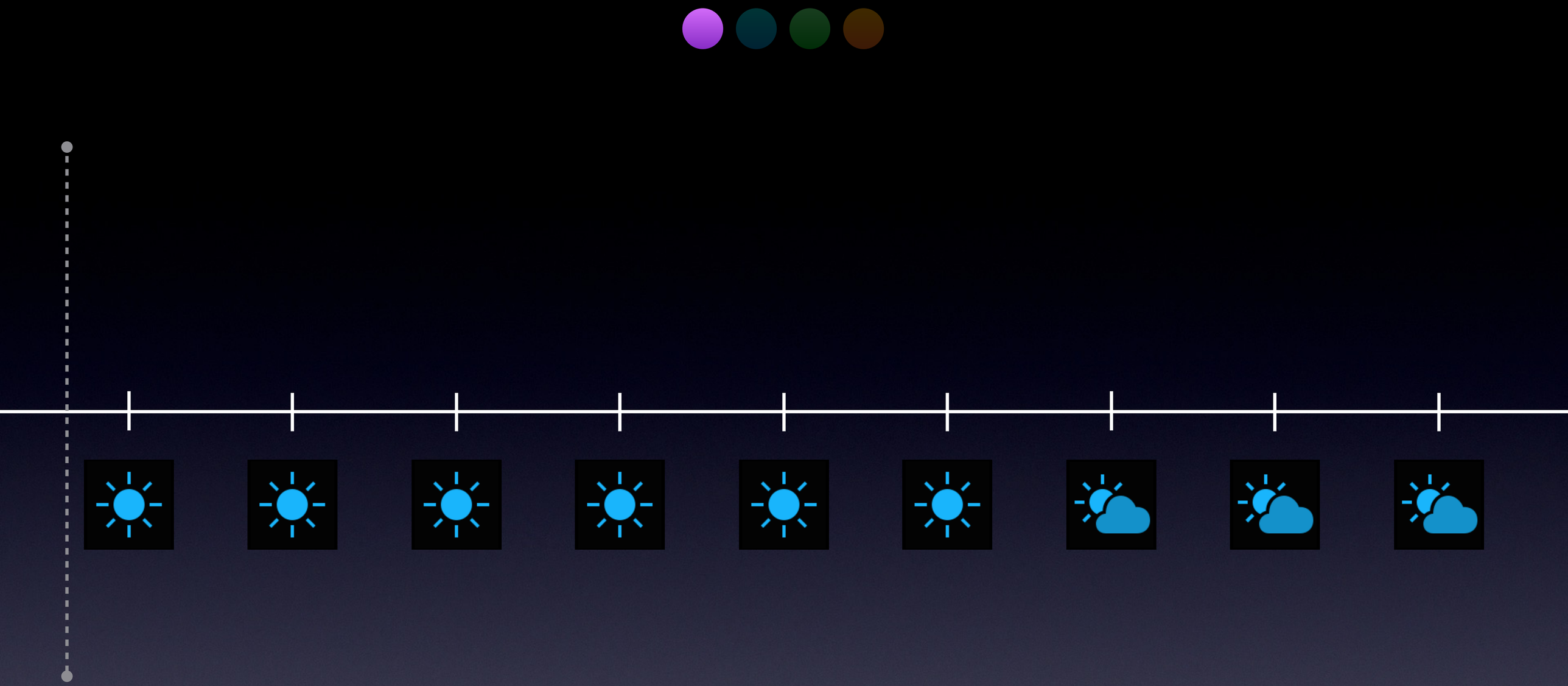
⚽ 4:30PM
SOMA — Cow Hollow
Group A

⚽ 7:30PM
Sunset — Dogpatch
Group B

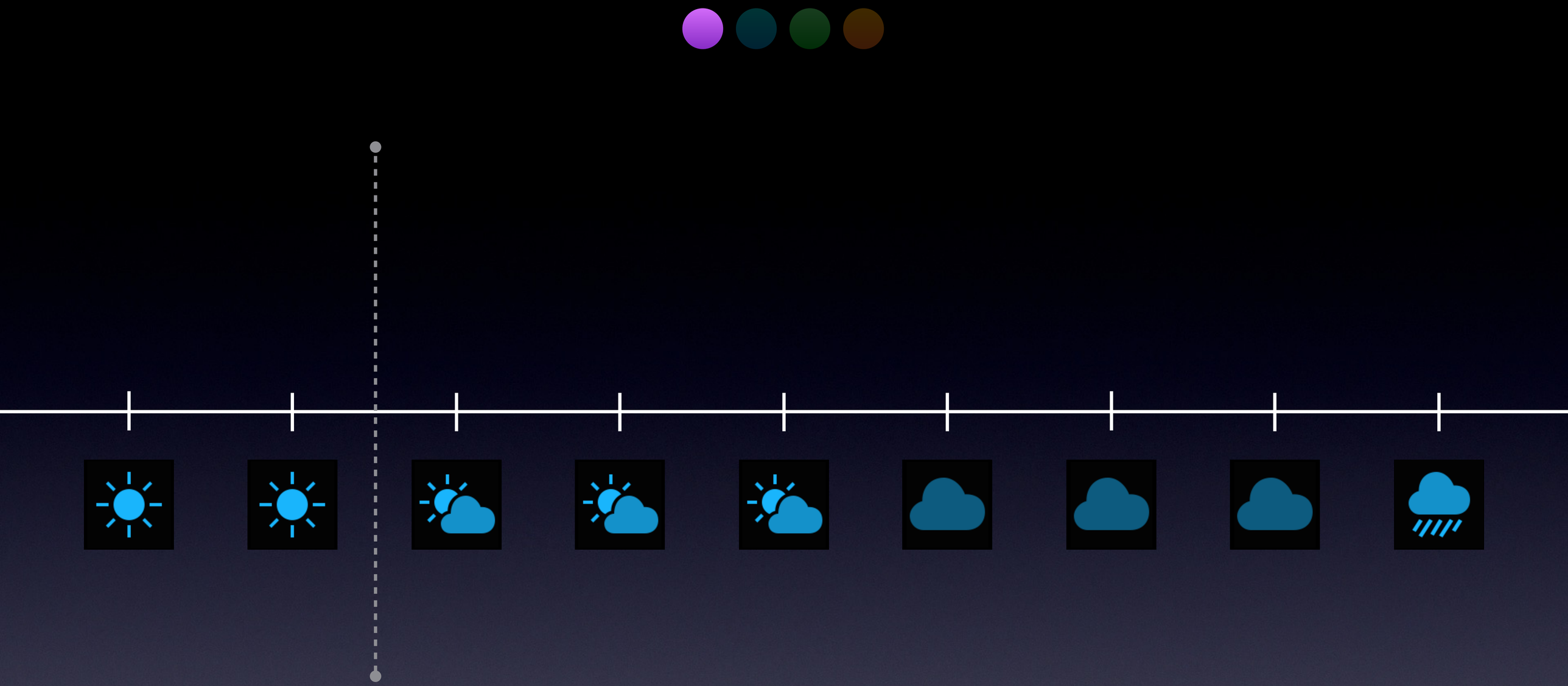

10:30AM
Castro – Nob Hill
Group A
2:40
2:00PM
Marina – Noe Valley
Group B
7:10
00:00
4:30PM
SOMA – Cow Hollow
Group A
7:30PM
Sunset – Dogpatch
Group B


2:00PM
Marina – Noe Valley
Group B
4:15
4:30PM
SOMA – Cow Hollow
Group A
7:10
00:00
7:30PM
Sunset – Dogpatch
Group B

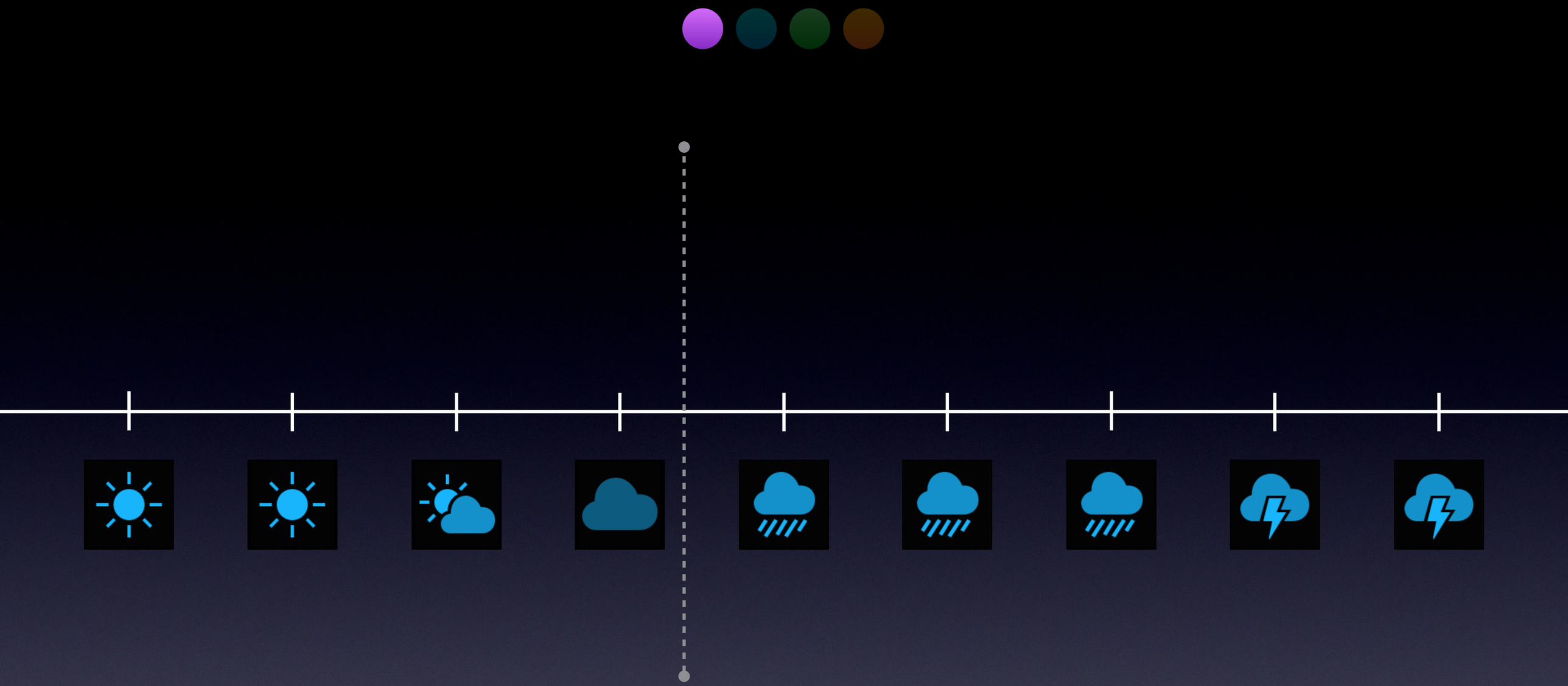
4:30PM
SOMA – Cow Hollow
Group A



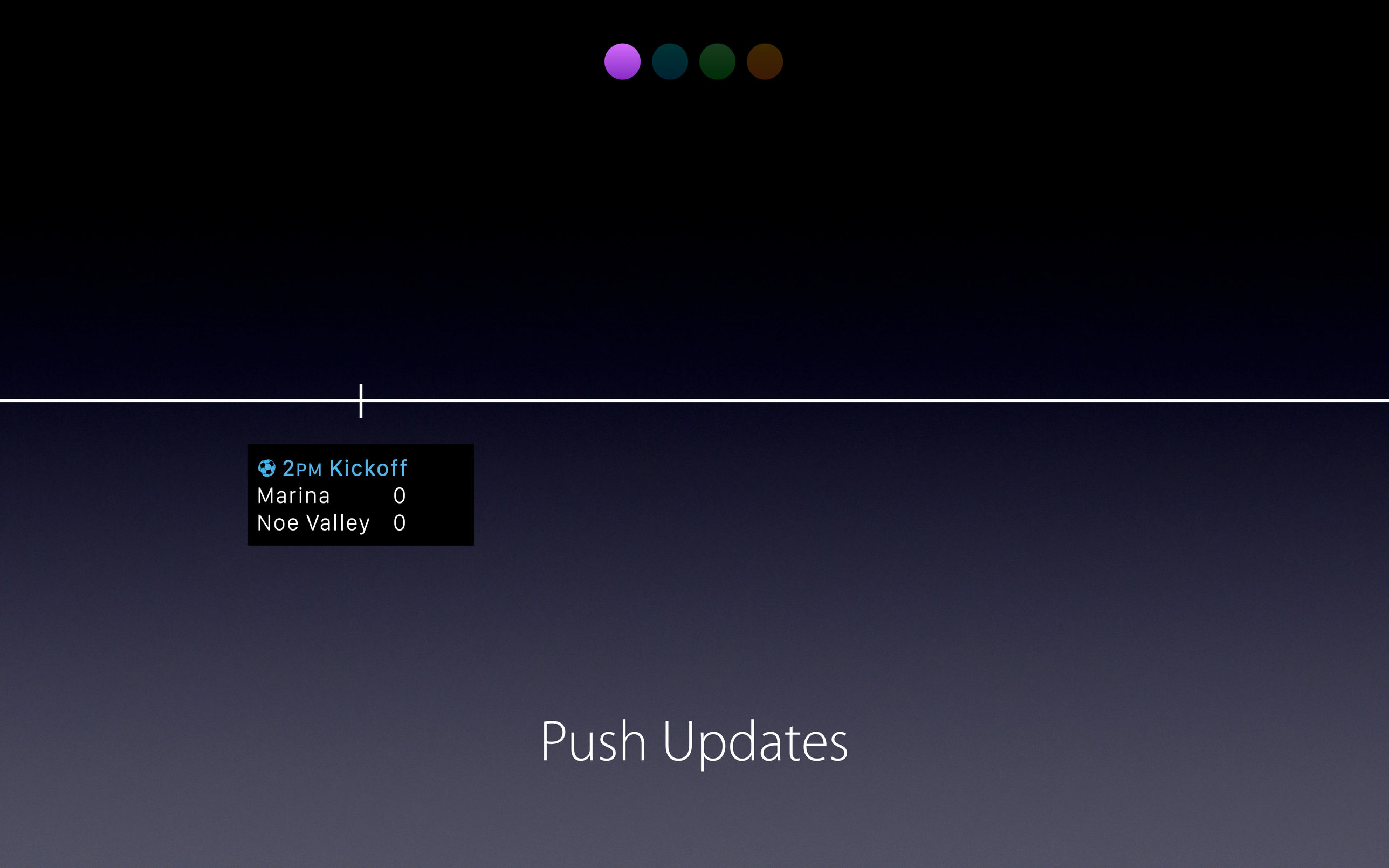
Scheduled Updates

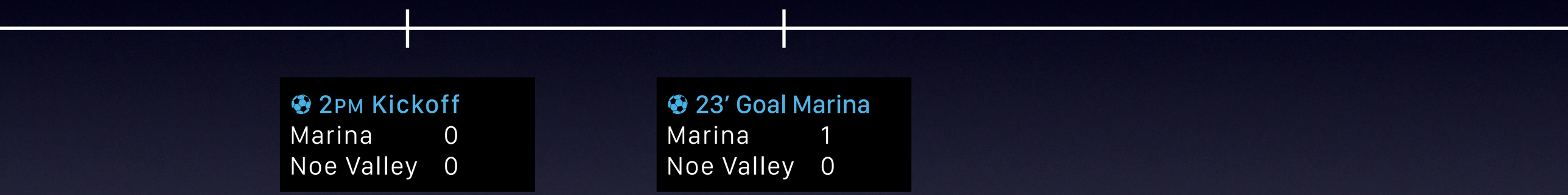


Scheduled Updates

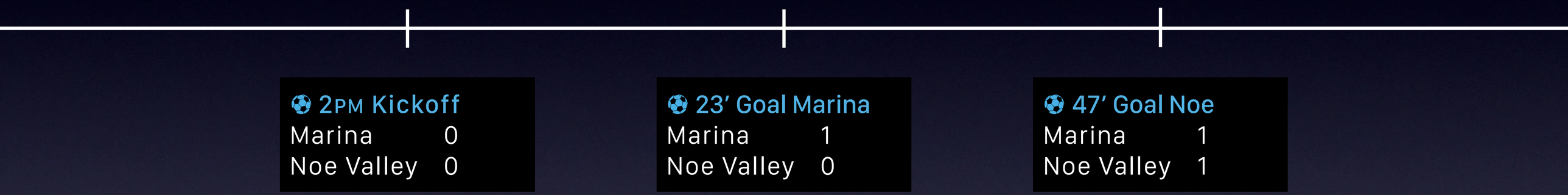


Scheduled Updates


2PM Kickoff
Marina 0
Noe Valley 0
Push Updates



Push Updates



Push Updates


MON
8
3:55
Final Score
Marina 1
Noe Valley 2
8:26
57°


MON
8
3:55
Final Score
Marina 1
Noe Valley 2
8:26
57°


MON
8
3:55
Final Score
Marina 1
Noe Valley 2
8:28
57°


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
56°


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
56°


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
56°


Group A
Standings
Castro – 2 GP
1W 1D 0L
4
Nob Hill – 2GP
1W 0D 1L
3
Cow Hollow – 3GP
0W 1D 0L
1
SOMA – 1GP
0W 0D 1L
1


Group A
Standings
Castro – 2 GP
1W 1D 0L
4
Nob Hill – 2GP
1W 0D 1L
3
Cow Hollow – 3GP
0W 1D 0L
1
SOMA – 1GP
0W 0D 1L
1


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
56°


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
56°


Game Starting
SF SOCCER CLUB


04:15
The SOMA–Cow Hollow game is starting at 4:30PM. This is your last chance to pick the winner!


04:15
The SOMA–Cow Hollow game is starting at 4:30PM. This is your last chance to pick the winner!


pick the winner!
SOMA
Cow Hollow
Dismiss


SOMA
Cow Hollow
Trash Talk
Dismiss


Cancel
OK
Thank you.
Thanks!


MON
8
4:15
4:30PM
SOMA – Cow Hollow
Group A
8:28
60°

Mon
9

Mon
9


04:15
Group A
SOMA
Nob Hill
Castro
Cow Hollow


04:15
Group A
SOMA
Nob Hill
Castro
Cow Hollow


04:15
Group B
Sunset
Noe Valley
Dogpatch
Marina

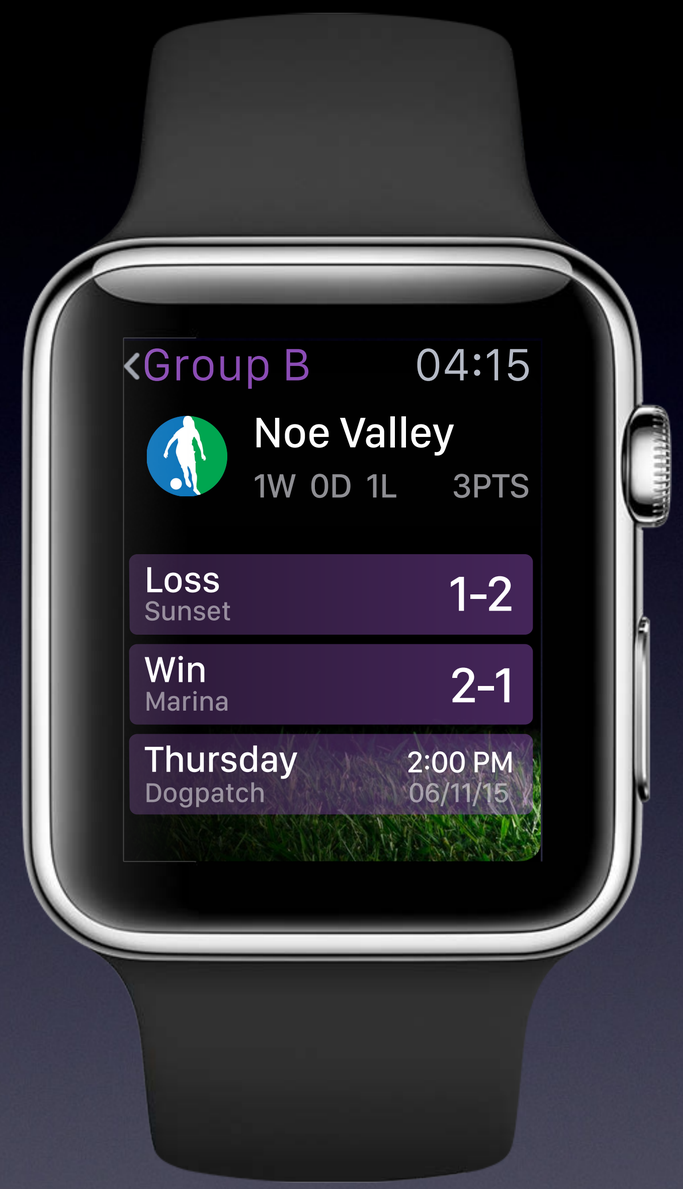

04:15
Group C
Potrero
Presidio
Bernal Heights
Glen Park


04:15
Group B
Sunset
Noe Valley
Dogpatch
Marina


04:15
Group B
Sunset
Noe Valley
Dogpatch
Marina


04:15
Group B
Sunset
Noe Valley
Dogpatch
Marina


04:15
Group B
Sunset
Noe Valley
Dogpatch
Marina


Group B
04:15
Noe Valley
1W 0D 1L
3PTS
Loss
Sunset
1-2
Win
Marina
2-1
Thursday
Dogpatch
2:00 PM
06/11/15

PassKit integration

Make phone calls

Digital crown

Taptic engine

Animations

Live health sensor data

Audio recording

Start directions

Display alerts

Video playback

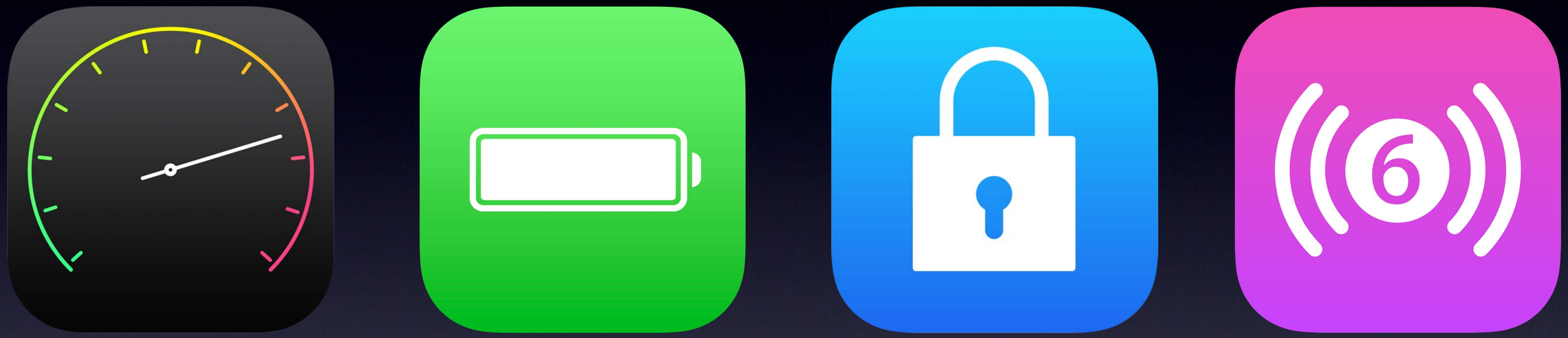
Live accelerometer data

Audio playback

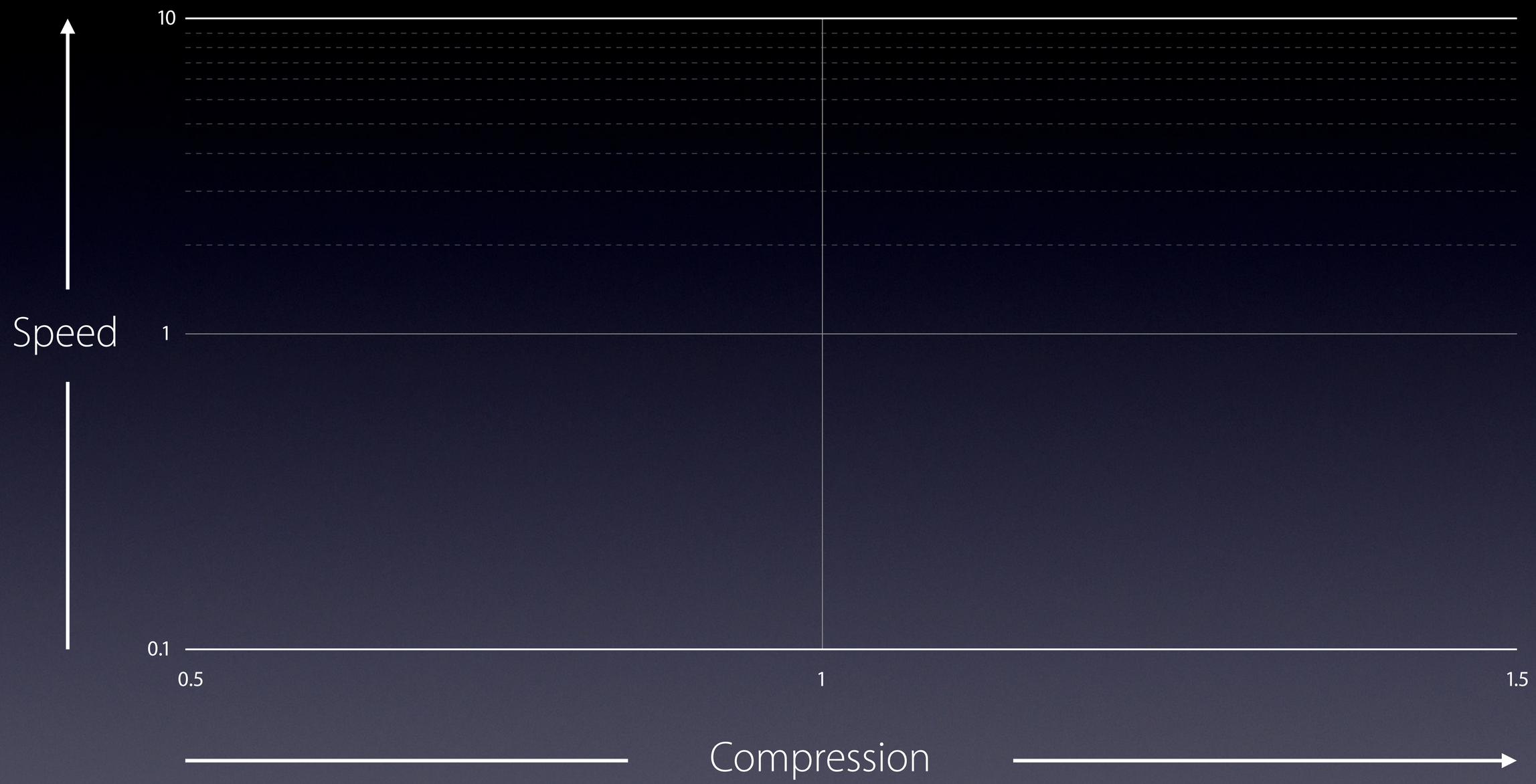
Demo

Transitioning to a native app

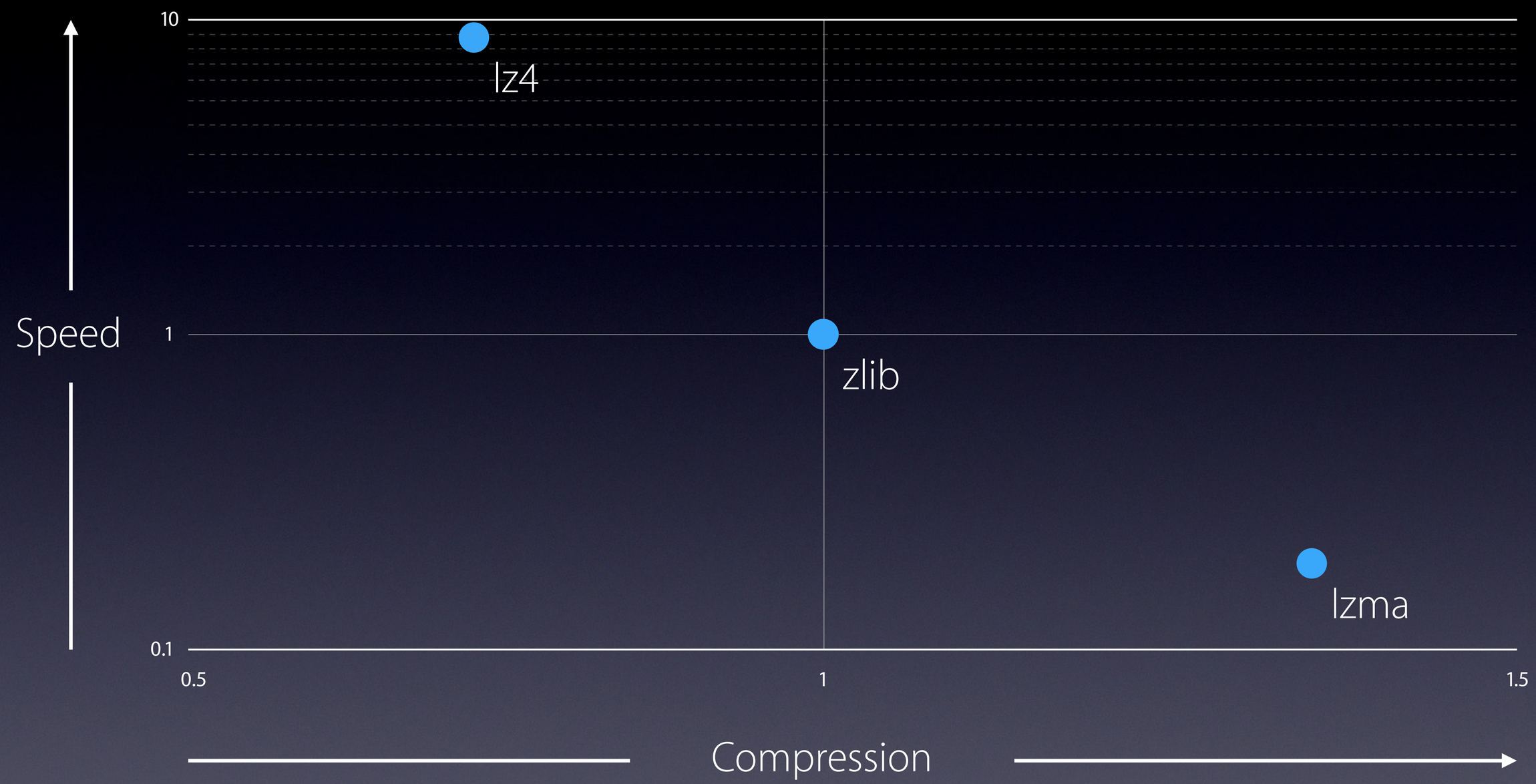
Foundation Technologies



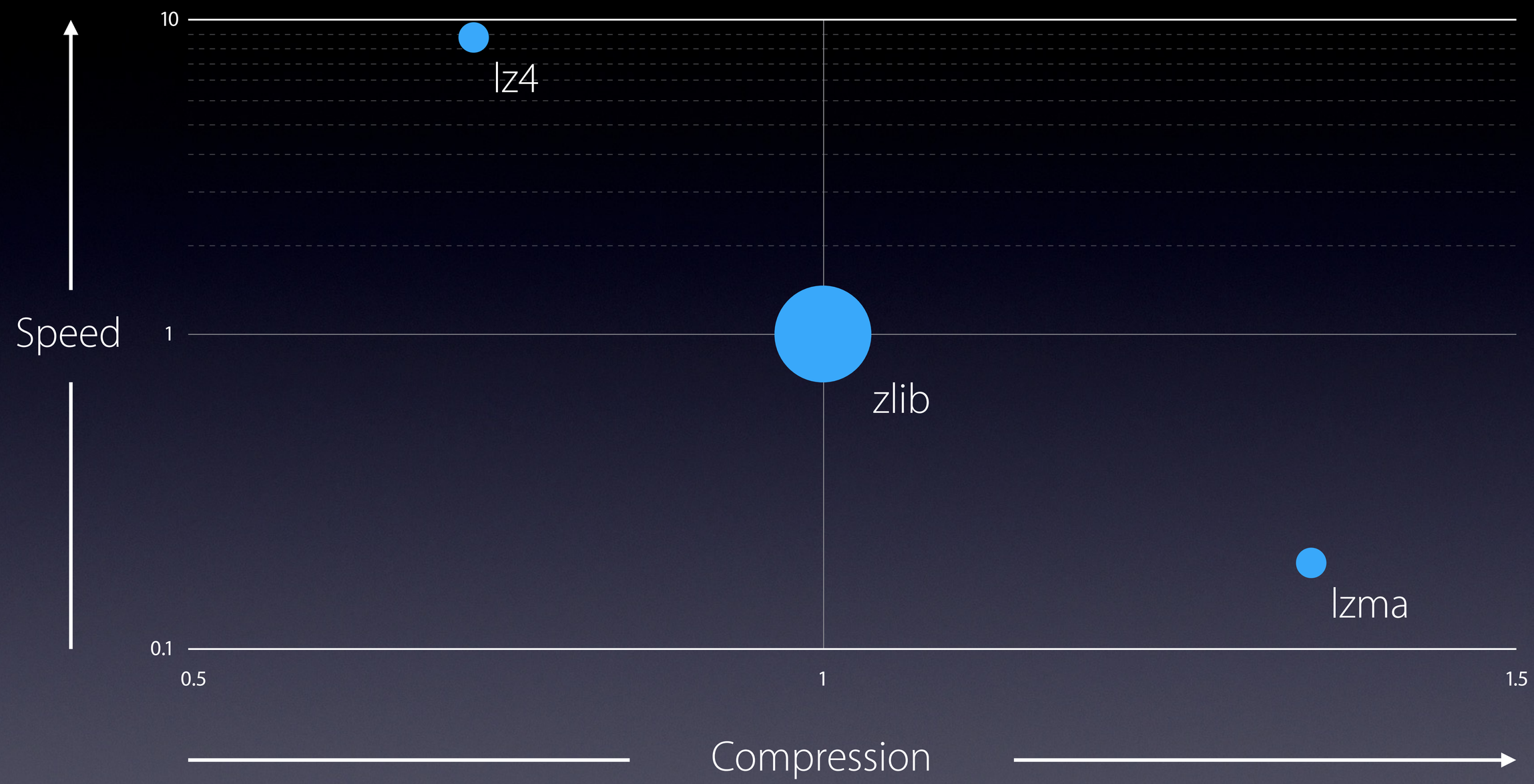
Compression Algorithms



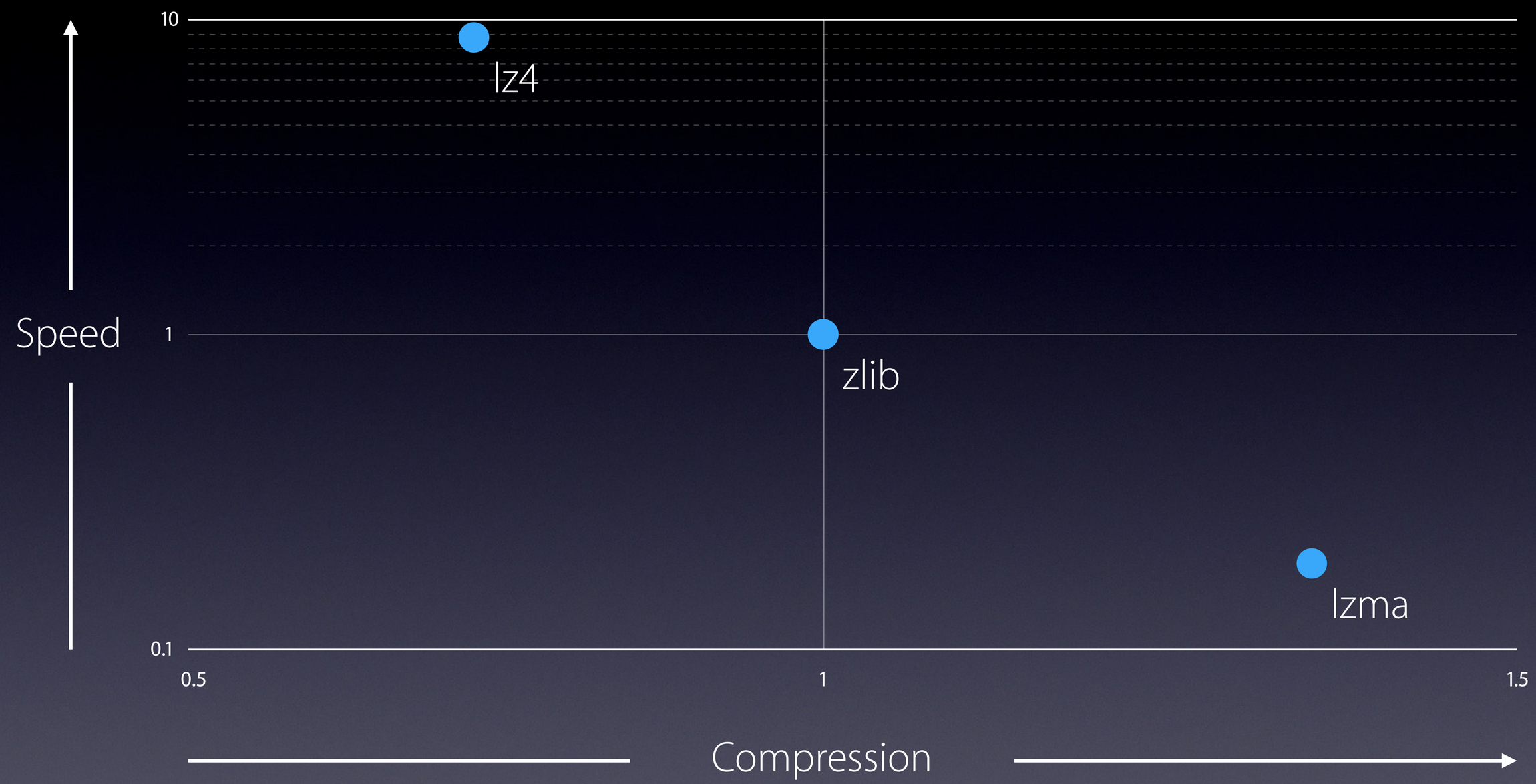
Compression Algorithms



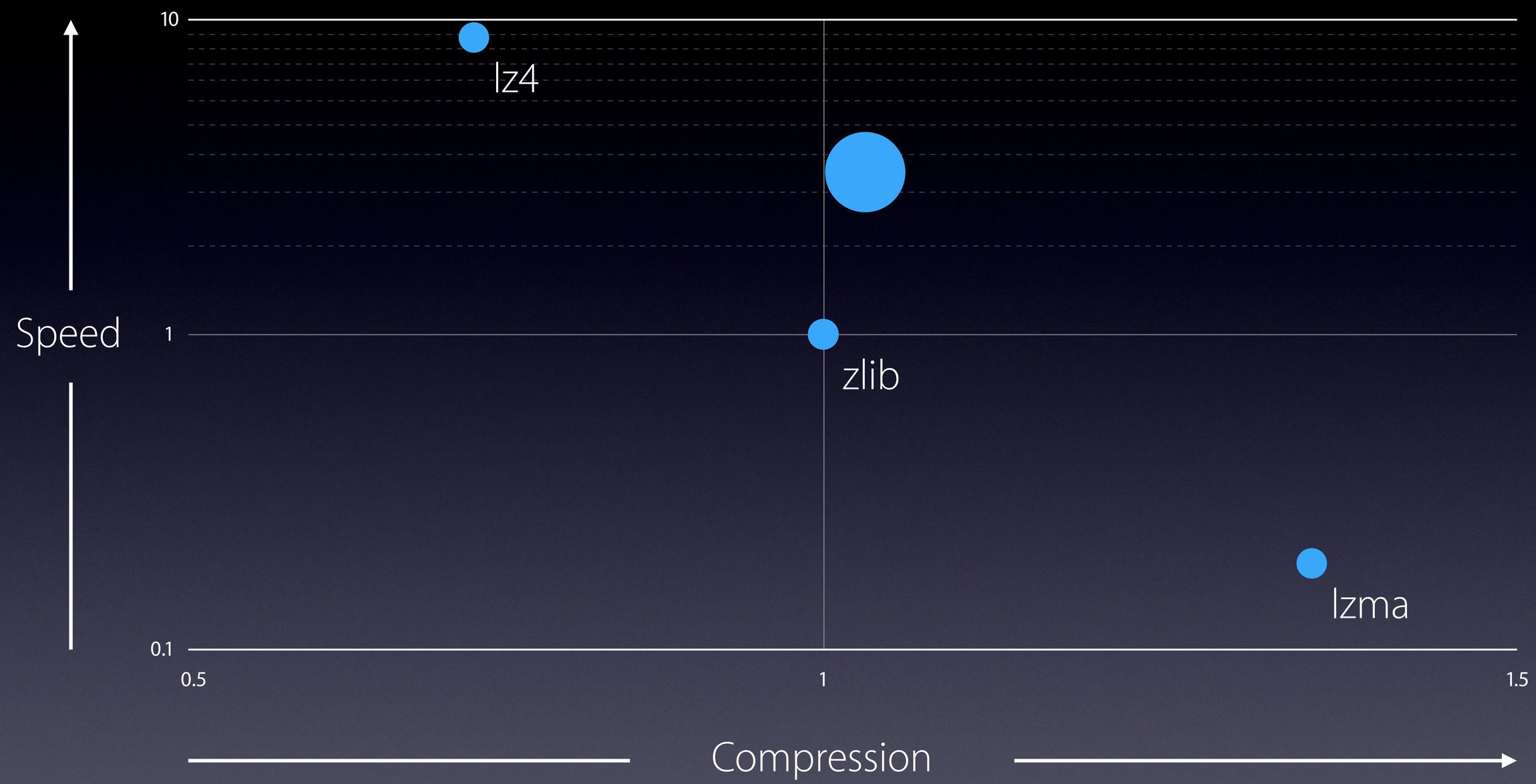
Compression Algorithms



Compression Algorithms

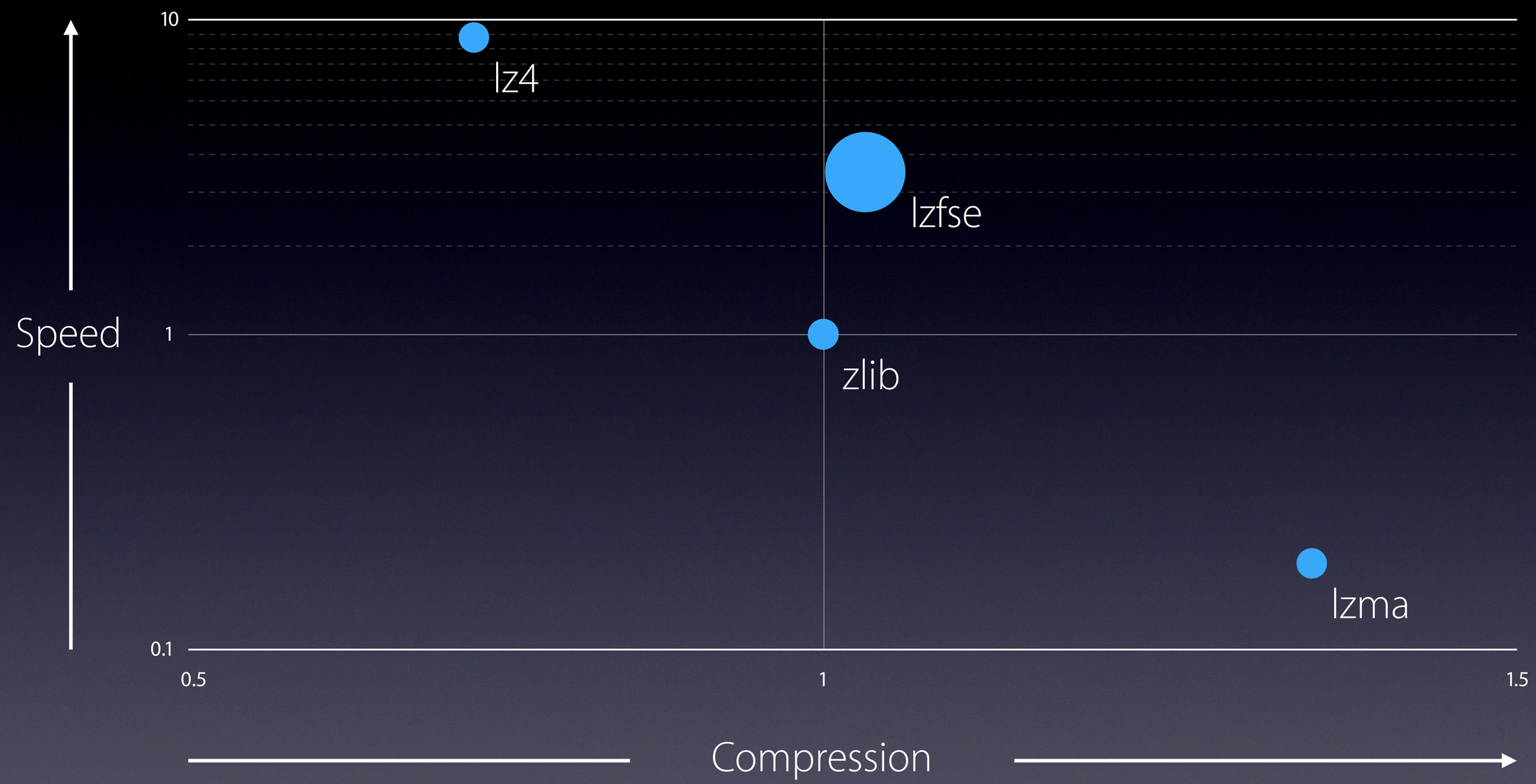


Compression Algorithms

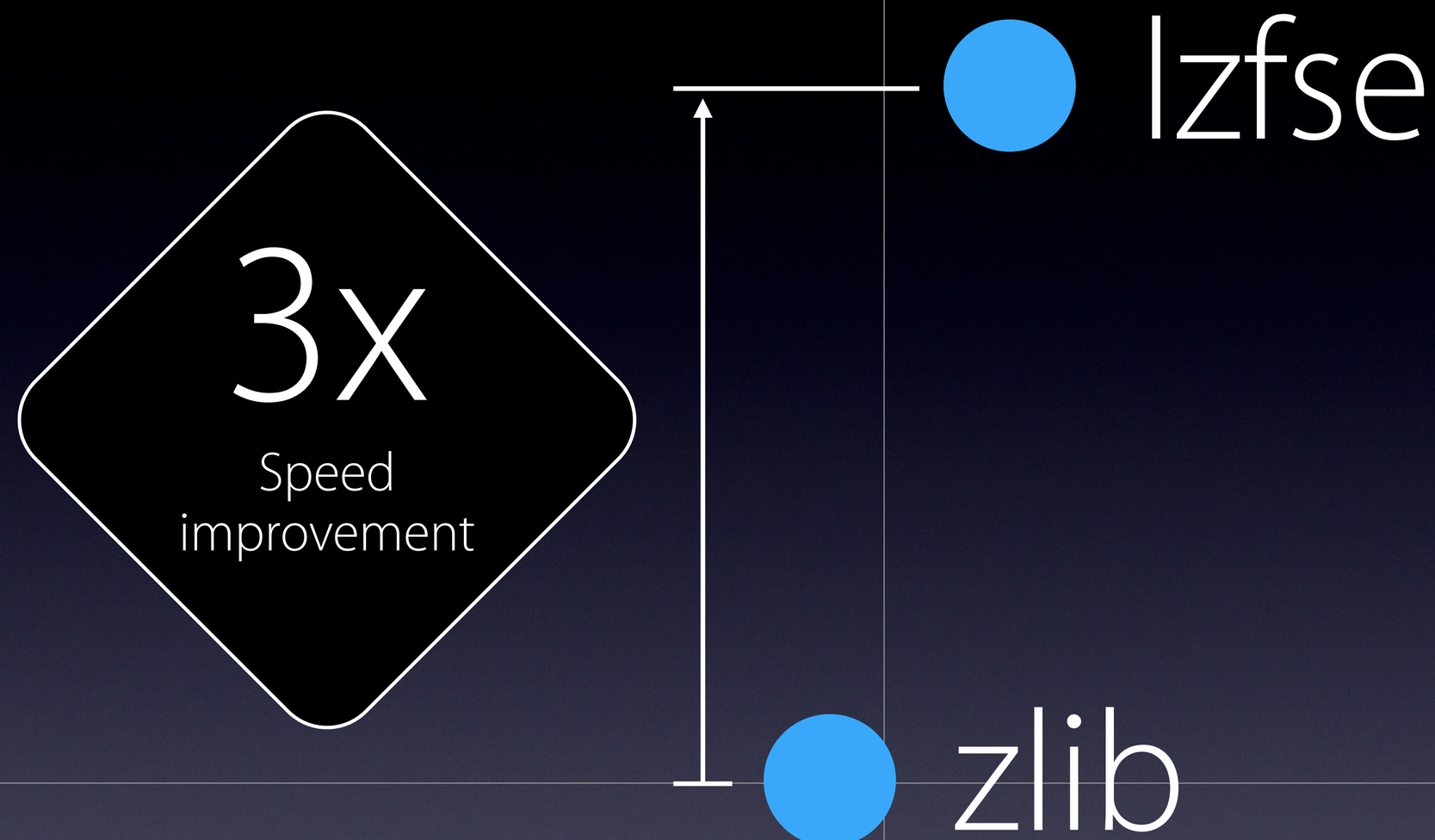


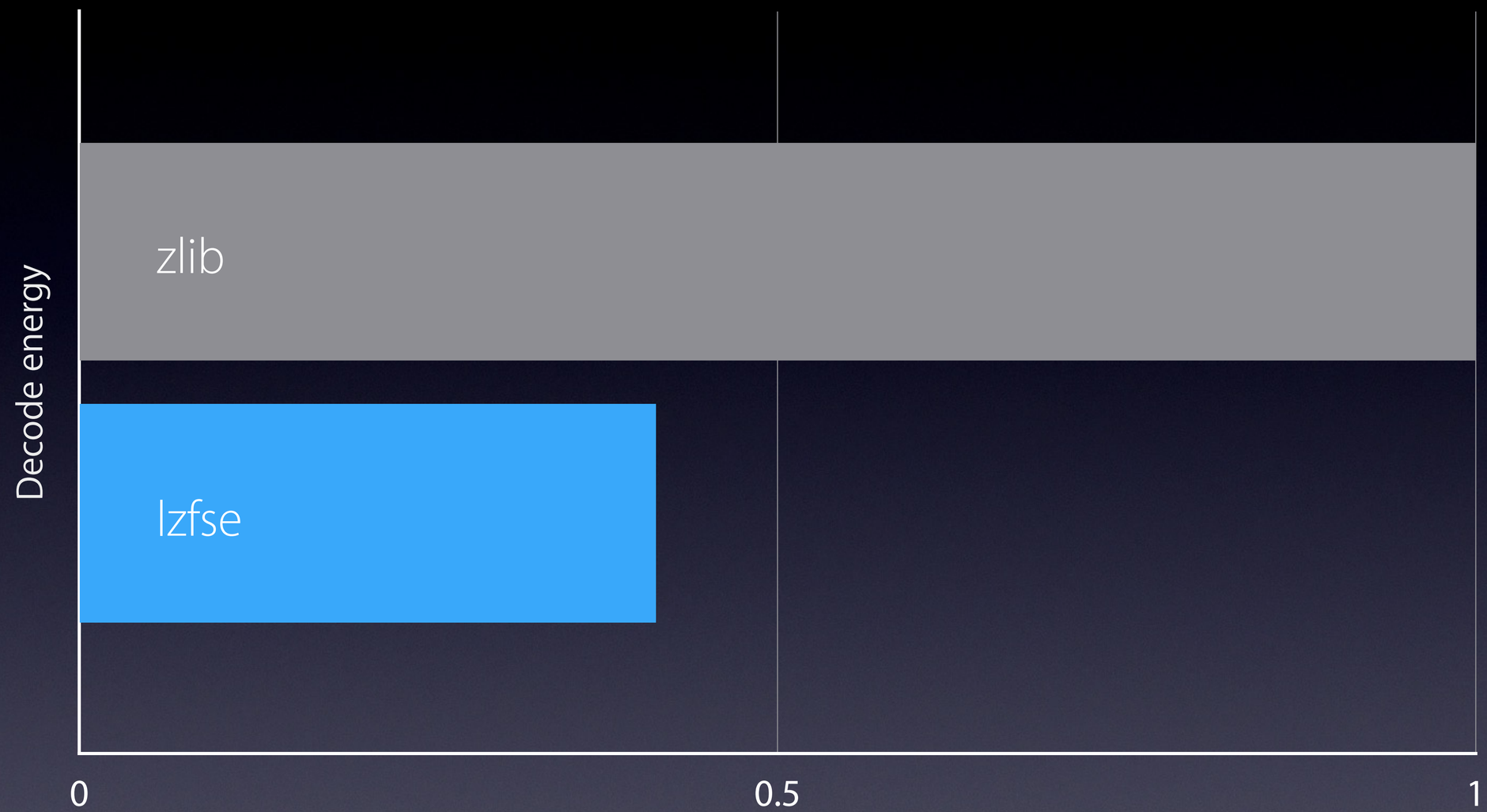
LEMPEL ZIV FINITE STATE ENTROPY

Compression Algorithms



- lzfse
- zlib


lzfse
3x
Speed
improvement
zlib


Decode energy
zlib
lzfse
0
0.5
1

Easy Adoption

```
let len = compression_decode_buffer(dst, dlen,
          src, slen, nil,
          COMPRESSION_ZLIB)
```

Easy Adoption

```
let len = compression_decode_buffer(dst, dlen,
          src, slen, nil,
         COMPRESSION_LZFSE)
```


NATIONAL GEOGRAPHIC
Your China Photos
China is the world's most populous country with more than 1.3 billion people—20 percent of the Earth's population.
Sudden City
A feverish dream of the future springs from the sands in Dubai.


9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Notes
Reminders
Stocks
Passbook
iBooks
iTunes Store
App Store
Health
Settings
Phone
Mail
Safari
Music


9:41 AM
Monday
8
Messages
Calendar
Photos
Weather
Clock
Maps
Notes
Reminders
Stocks
iBooks
iTunes Store
App Store
Settings
Phone
Mail
Safari
9:41 AM
Mailboxes
Inbox
Search
Lauren Bosak
Rooftop party
Hi Eden, I really wish you could have
Eric's housewarming party. His plac
Ailish Kimber
The Three Amigas
Here's a great photo from the weeke
even remember the last time we got
Sarah Castelblanco
Not the same without you
I just walked by your old cube and lo
see if you were in there. Not sure wh
Sean Reilly
You were right
We finally got around to watching th
night. It was so good. Thanks for su
Paul Hikiji
Volleyball
I won't be able to make it tomorrow
Which means our team might actua
Cory Quinn
Updated Just Now
9:41 AM
Messages
Jeanne
Glad you guys could make it to the park on Saturday.
It was great to see you. too long.
I know. We had so much fun. Here we are playing cards.
I don't think I won a sing
Probably because we could see your cards reflected in your sunglasses.
iMessage
9:41 AM
100%
rapha.cc
MENU
Sign in/Register
My Account
0
PERFORMANCE ROADWEAR
The finest cycling clothing and accessories in the world.
Performance • Pro Team
Women's 100 • Team Sky
FEATURED PRODUCTS
TRAVEL
THERMAL
WOMEN'S
CYCLE

Backlight algorithms

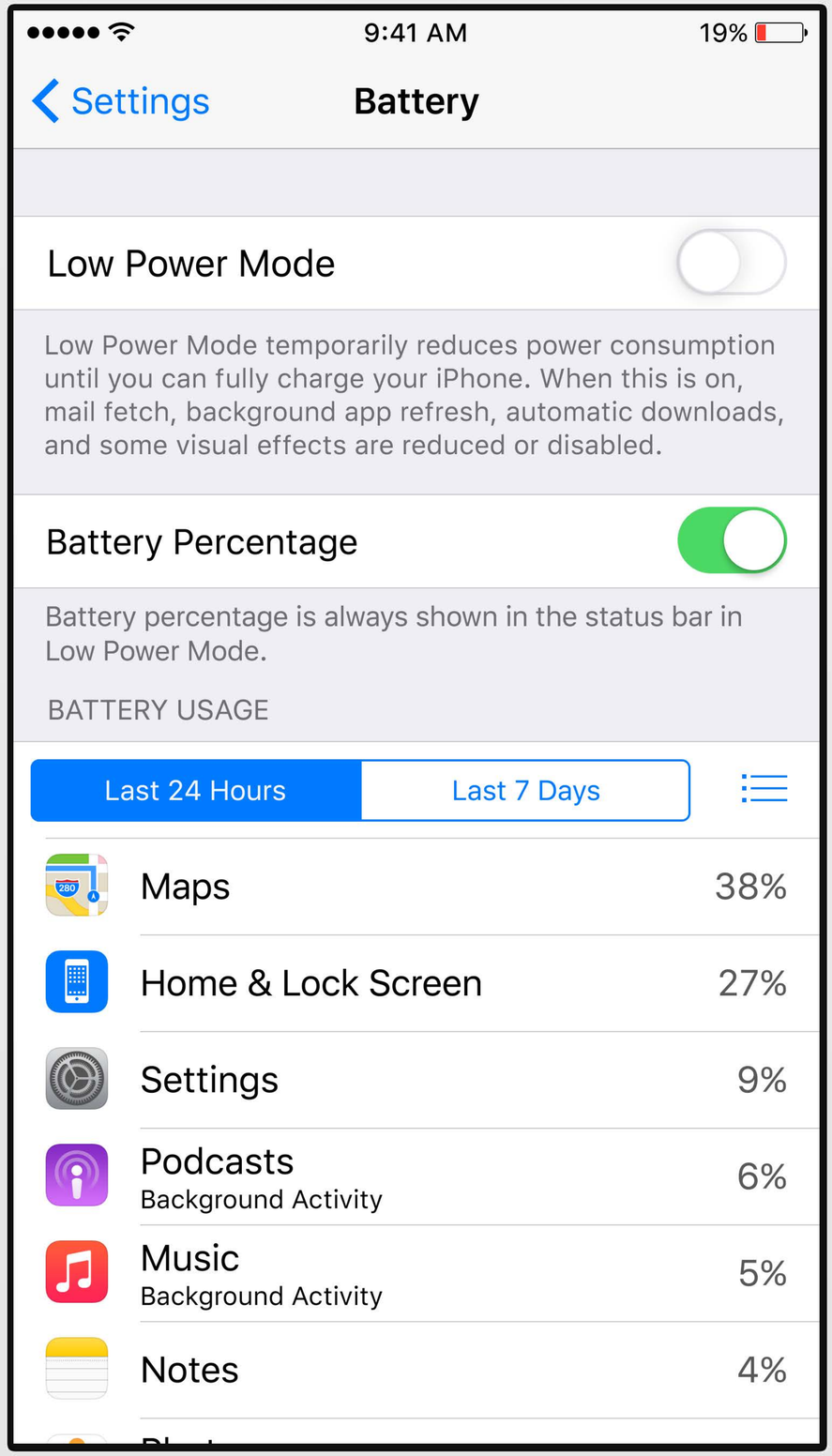
Facedown detection

Adaptive sleep delays

Low power idle

1 hour

Additional time before charging

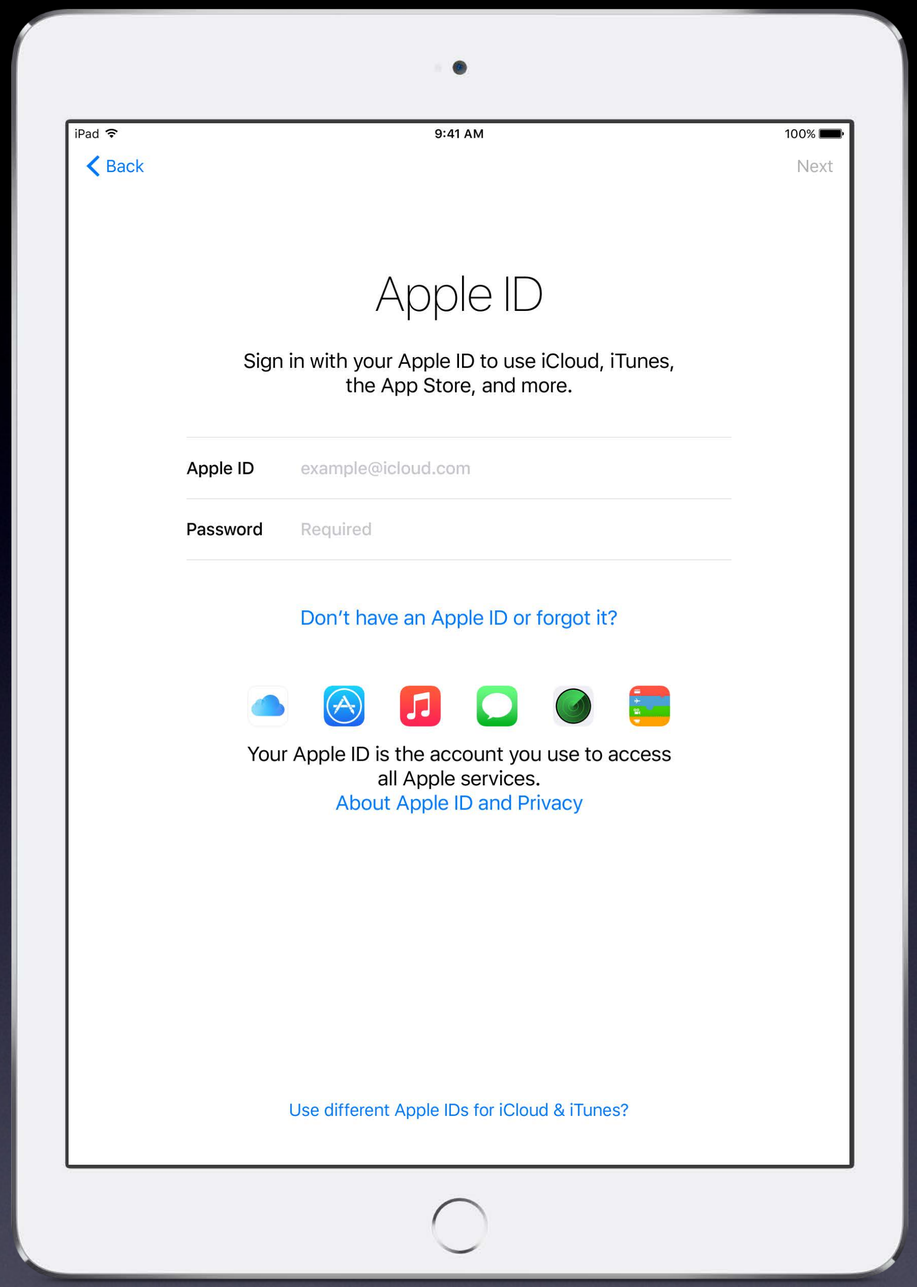

9:41 AM
19%
Settings
Battery
Low Power Mode
Low Power Mode temporarily reduces power consumption until you can fully charge your iPhone. When this is on, mail fetch, background app refresh, automatic downloads, and some visual effects are reduced or disabled.
Battery Percentage
Battery percentage is always shown in the status bar in Low Power Mode.
BATTERY USAGE
Last 24 Hours
Last 7 Days
Maps 38%
Home & Lock Screen 27%
Settings 9%
Podcasts
Background Activity
6%
Music
Background Activity
5%
Notes 4%


9:41 AM
19%
Settings
Battery
Low Power Mode
Low Power Mode temporarily reduces power consumption until you can fully charge your iPhone. When this is on, mail fetch, background app refresh, automatic downloads, and some visual effects are reduced or disabled.
Battery Percentage
Battery percentage is always shown in the status bar in


9:41 AM
19%
Settings
Battery
Low Power Mode
Low Power Mode temporarily reduces power consumption until you can fully charge your iPhone. When this is on, mail fetch, background app refresh, automatic downloads, and some visual effects are reduced or disabled.
Battery Percentage
Battery percentage is always shown in the status bar in

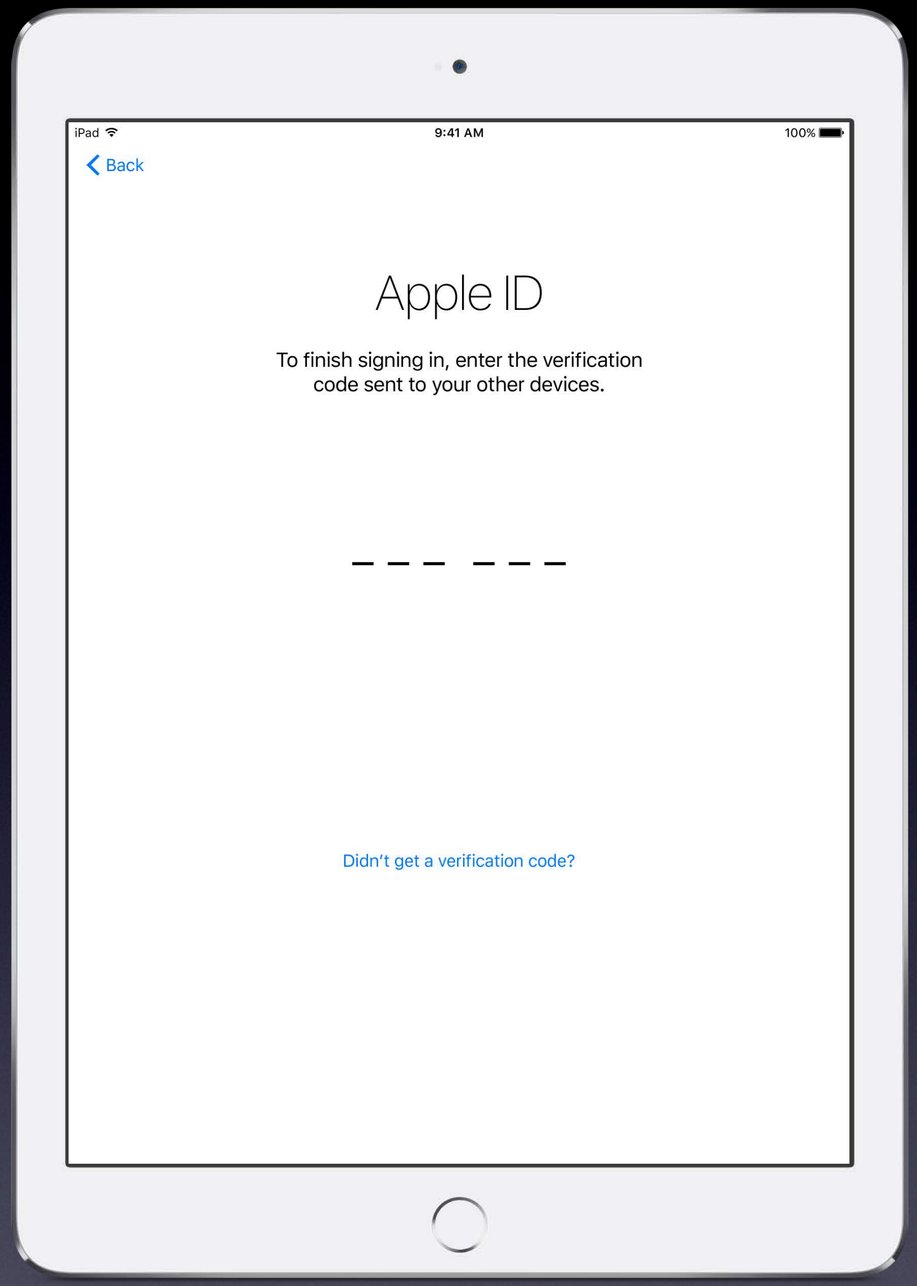
Apple ID

Two-factor authentication



Apple ID

Password



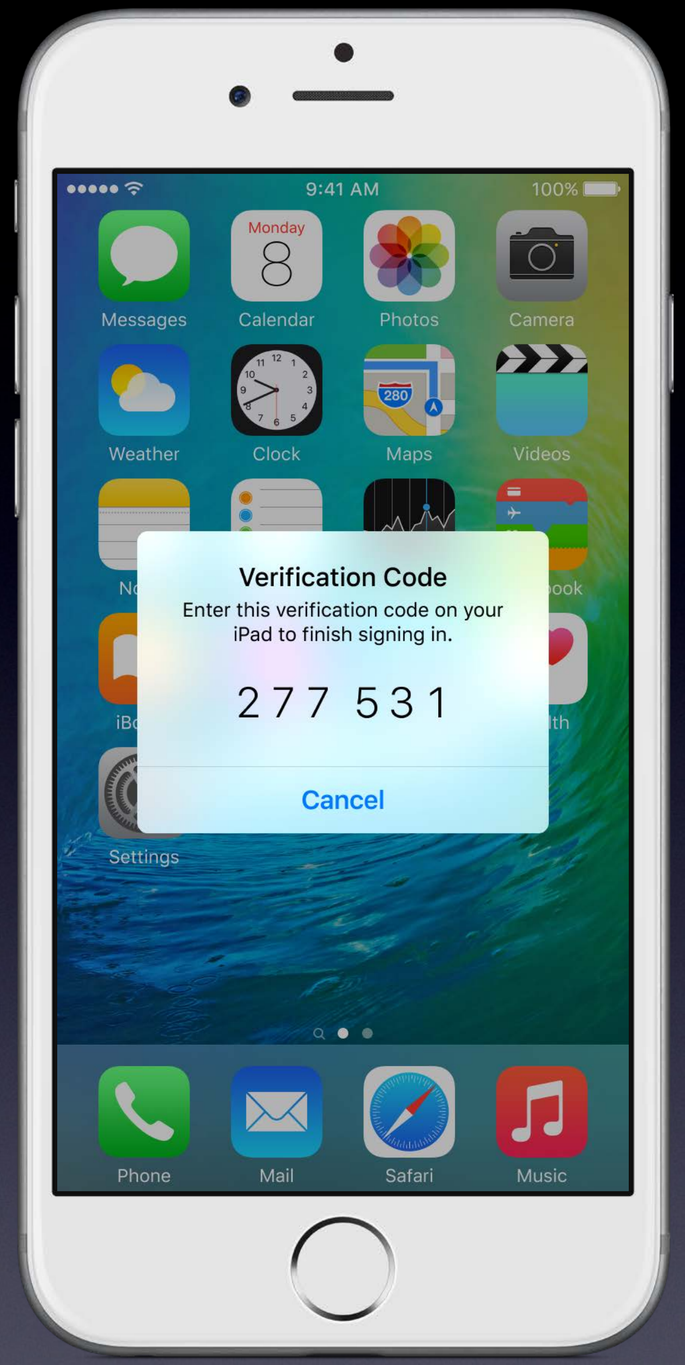
Apple ID

Password

Verification code


9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Notes
Reminders
Stocks
Passbook
iBooks
iTunes Store
App Store
Health
Settings
Phone
Mail
Safari
Music


9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Apple ID
parker_emily@icloud.com
Your Apple ID is being used to sign in
to an iPad near San Francisco, CA.
Albany
Berkeley
Tiburon
Sausalito
Headlands
Piedmont
OAKLAND
SAN FRANCISCO
Alameda
Don't Allow
Allow
Phone
Mail
Safari
Music


9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Verification Code
Enter this verification code on your iPad to finish signing in.
277 531
Cancel
Settings
Phone
Mail
Safari
Music


100%
Touch ID or Enter Passcode
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0
Emergency
Cancel


100%
Touch ID or Enter Passcode
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0
Emergency
Cancel


100%
Touch ID or Enter Passcode
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0
Emergency
Cancel

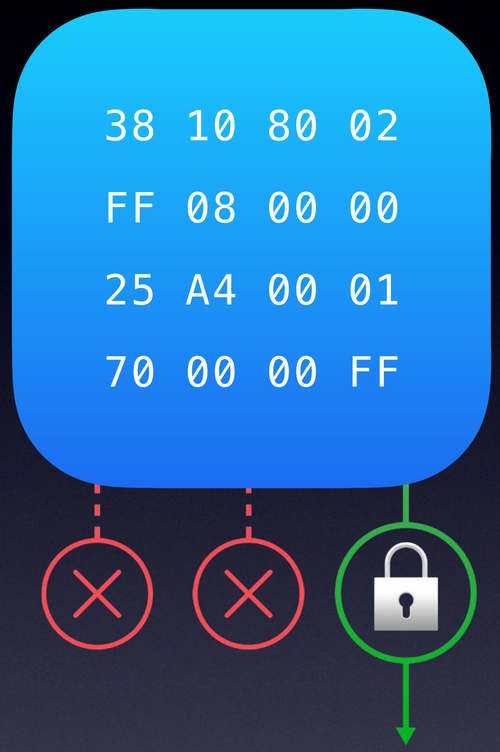
10,000 combinations

Touch ID or Enter Passcode

10,000 combinations

Touch ID or Enter Passcode

1 million combinations



App Transport Security

```
38 10 80 02
FF 08 00 00
25 A4 00 01
70 00 00 FF
```

38 10 80 02

FF 08 00 00

25 A4 00 01

70 00 00 FF

~~HTTP~~

Downgrade attacks

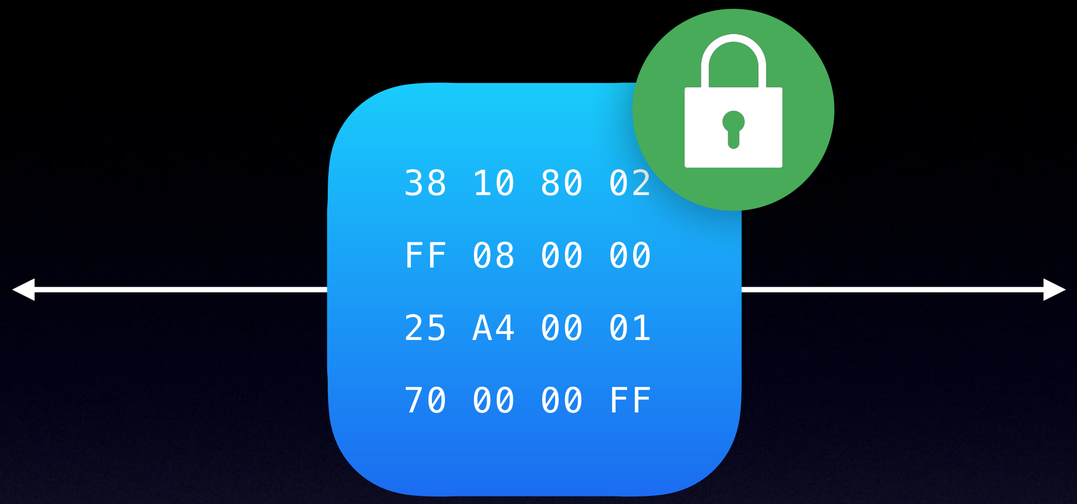
Weak encryption

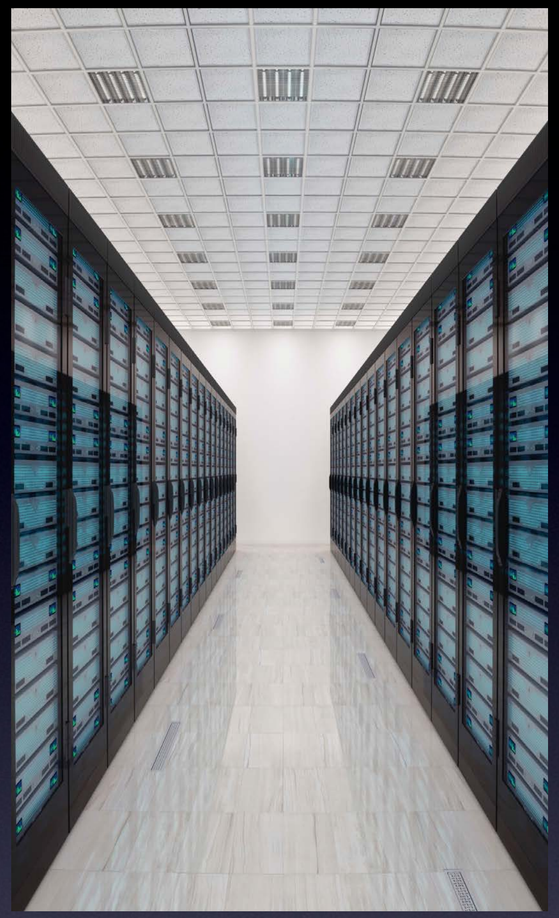
38 10 80 02

FF 08 00 00

25 A4 00 01

70 00 00 FF





Best practices

TLS 1.2

Forward secrecy

Use `NSURLSession`

On by default with iOS 9/OS X 10.11

Can declare exception domains in Info.plist

Admin = Kernel

Admin ≠ Kernel

Protects system files

No installing in system locations

Protects system processes

Streamlined developer workflow

Recovery partition utility

IPv6

IPv4 addresses exhausted

Key carriers deploying IPv6-only

Critical to support IPv6

OS X since 10.1

iOS since iOS 4.0

Mature and field-proven

- ✓ Use the networking frameworks
- ✓ Avoid use IPv4-specific APIs
- ✓ Avoid hard-coded addresses

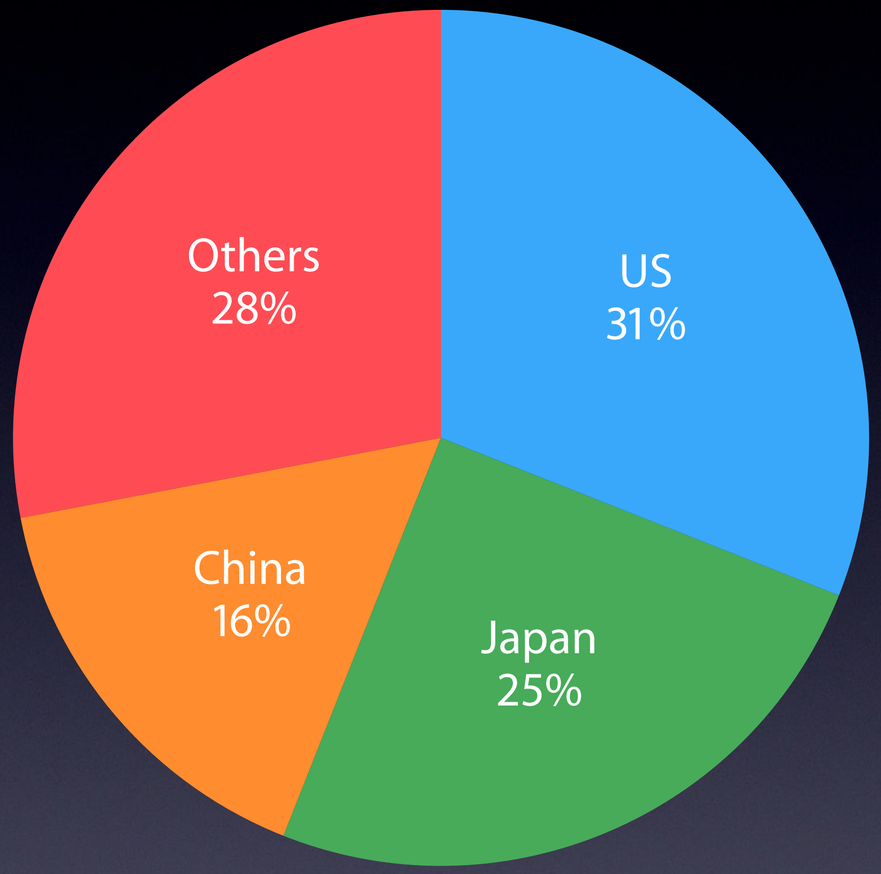

IPv6 only WiFi LAN
IPv4 WAN

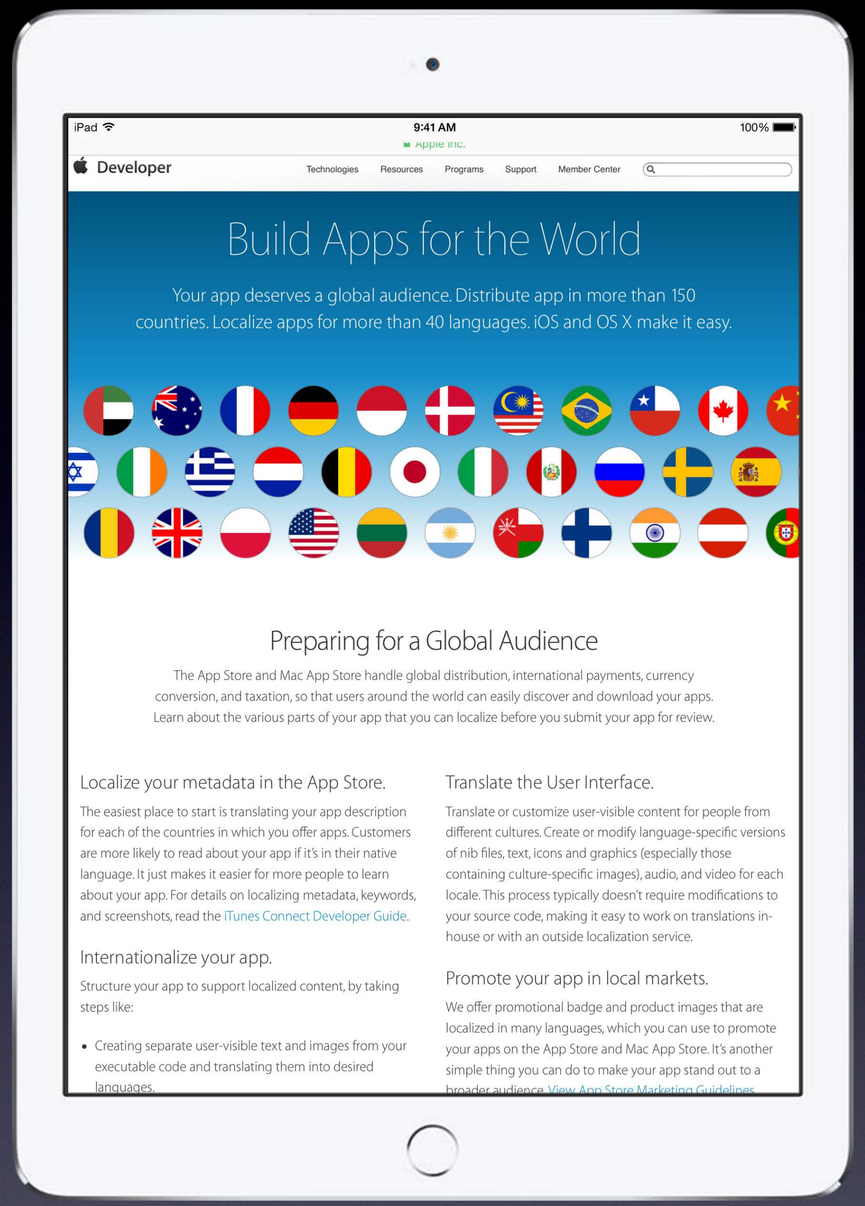



Internationalization

World-Wide App Store Sales

World-Wide App Store Sales





Localization Guide

https://developer.apple.com/internationalization

Grace Murray Hopper

王冬龄

Grace	Murray	Hopper
first	middle	last

王		冬龄
"last"	"middle"	"first"

Grace Murray Hopper

王冬龄

NSPersonNameComponentsFormatter

Right to Left Languages


9:41 AM
100%
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Notes
Reminders
Stocks
Wallet
iBooks
iTunes Store
App Store
Health
Settings
Phone
Mail
Safari
Music

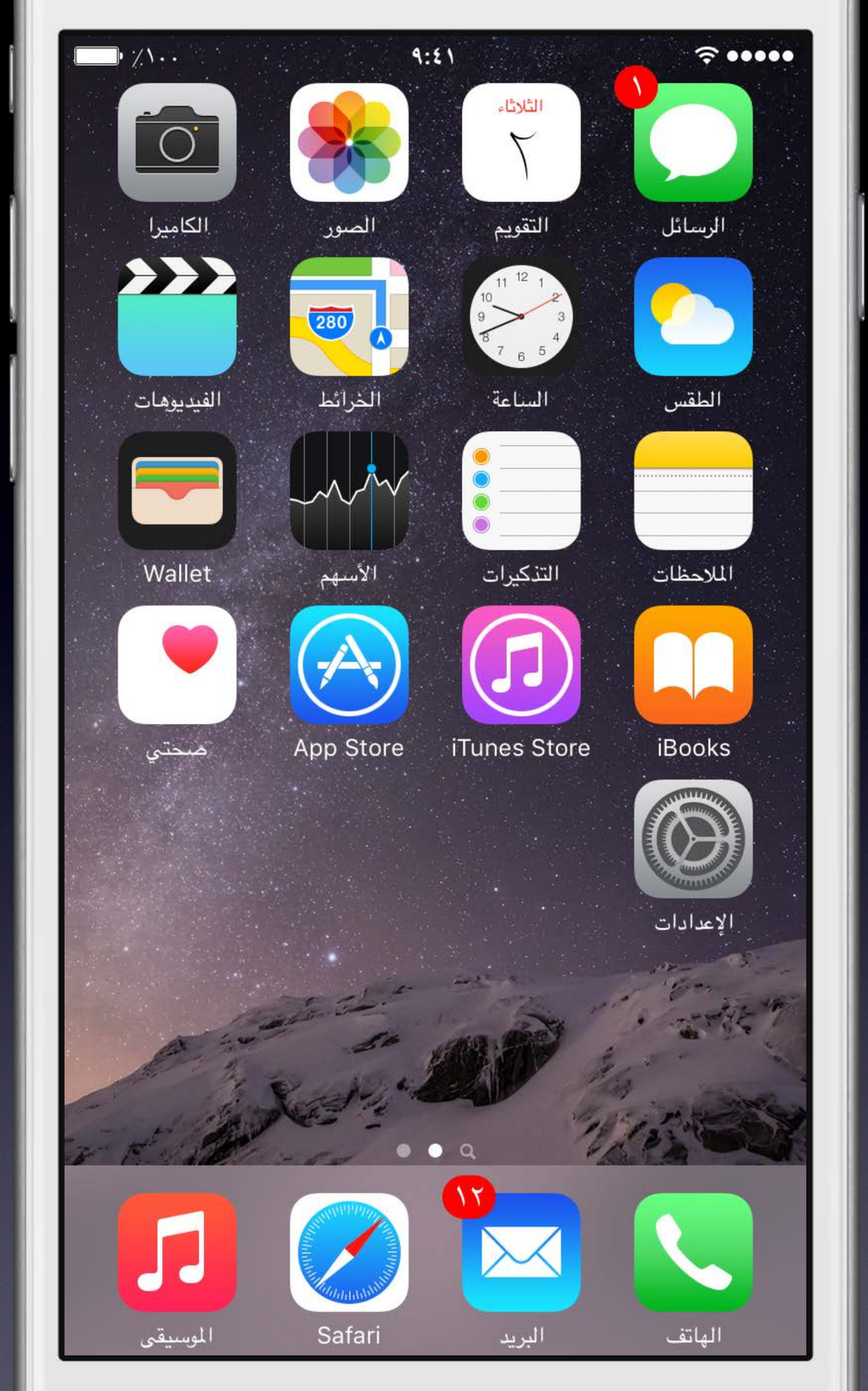

٪١٠٠
٩:٤١
الثلاثاء
٢
١
الكاميرا
الصور
التقويم
الرسائل
الفيديوهات
الخرائط
280
الساعة
الطقس
Wallet
الأسهم
التذكيرات
الملاحظات
صحتي
App Store
iTunes Store
iBooks
الإعدادات
الموسيقى
Safari
١٢
البريد
الهاتف

Demo

Right to Left

Sara Radi


٪١٠٠
٩:٤١
الثلاثاء
٢
١
الكاميرا
الصور
التقويم
الرسائل
الفيديوهات
الخرائط
280
الساعة
الطقس
Wallet
الأسهم
التذكيرات
الملاحظات
صحتي
App Store
iTunes Store
iBooks
الإعدادات
الموسيقى
Safari
١٢
البريد
الهاتف



UIView.
userInterfaceLayoutDirectionForSemantic
ContentAttribute()

Universal links

Bella Wines on Twitter

Lauren Bostok
To: Derek Parker
Bella Wines on Twitter

Today at 10:50 AM

LB

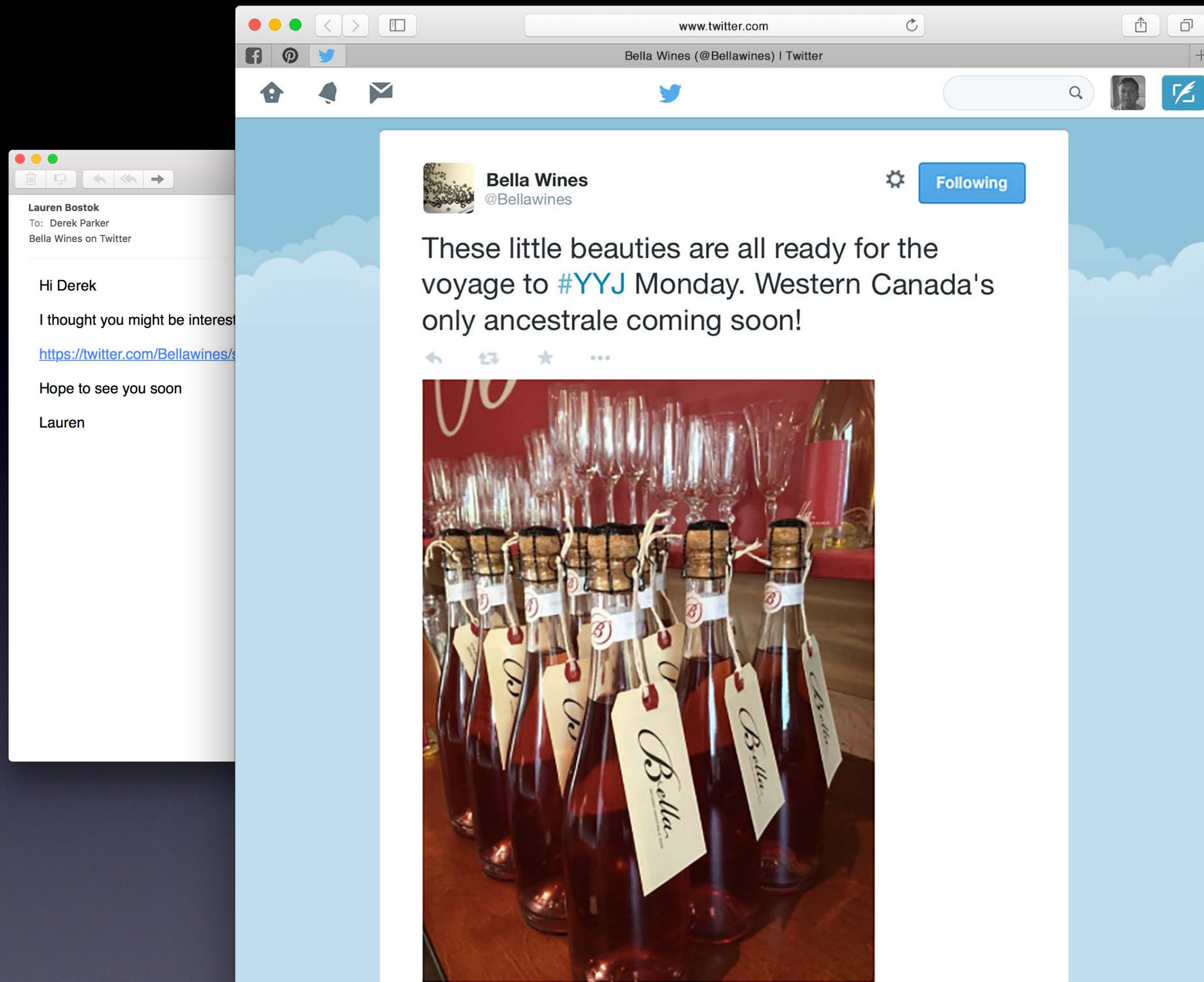
Hi Derek

I thought you might be interested in these guys, up in the Okanagan.

https://twitter.com/Bellawines/status/604404018547302400

Hope to see you soon

Lauren


Lauren Bostok
To: Derek Parker
Bella Wines on Twitter
Hi Derek
I thought you might be interest
https://twitter.com/Bellawines/
Hope to see you soon
Lauren
www.twitter.com
Bella Wines (@Bellawines) | Twitter
Bella Wines
@Bellawines
Following
These little beauties are all ready for the voyage to #YYJ Monday. Western Canada's only ancestrale coming soon!
Bella

9:41 AM 100%

Inbox (1481)

Lauren Bosak
To: Derek Parker more...

LB

Bella WInes on Twitter
Today at 8:27 PM

Hi Derek

I thought you might be interested in these guys, up in the Okanagan.

https://twitter.com/Bellawines/status/604404018547302400

Hope to see you soon

Lauren

Return to Mail 9:41 AM 100%

Tweet

Bella Wines
@Bellawines

These little beauties are all ready for the voyage to #YYJ Monday. Western Canada's only ancestrale coming soon!

5/29/15, 2:48 PM

Reply to Bella Wines

Home Notifications Messages Me

www.twitter.com

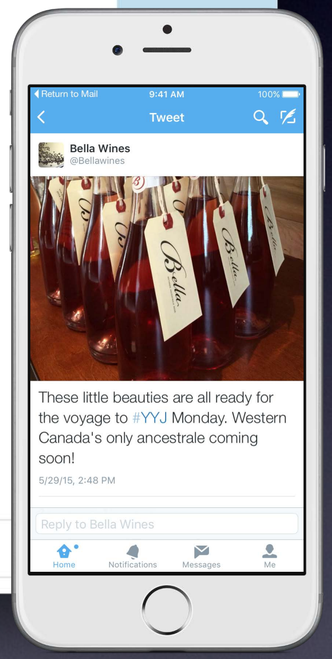
Bella Wines (@Bellawines) | Twitter

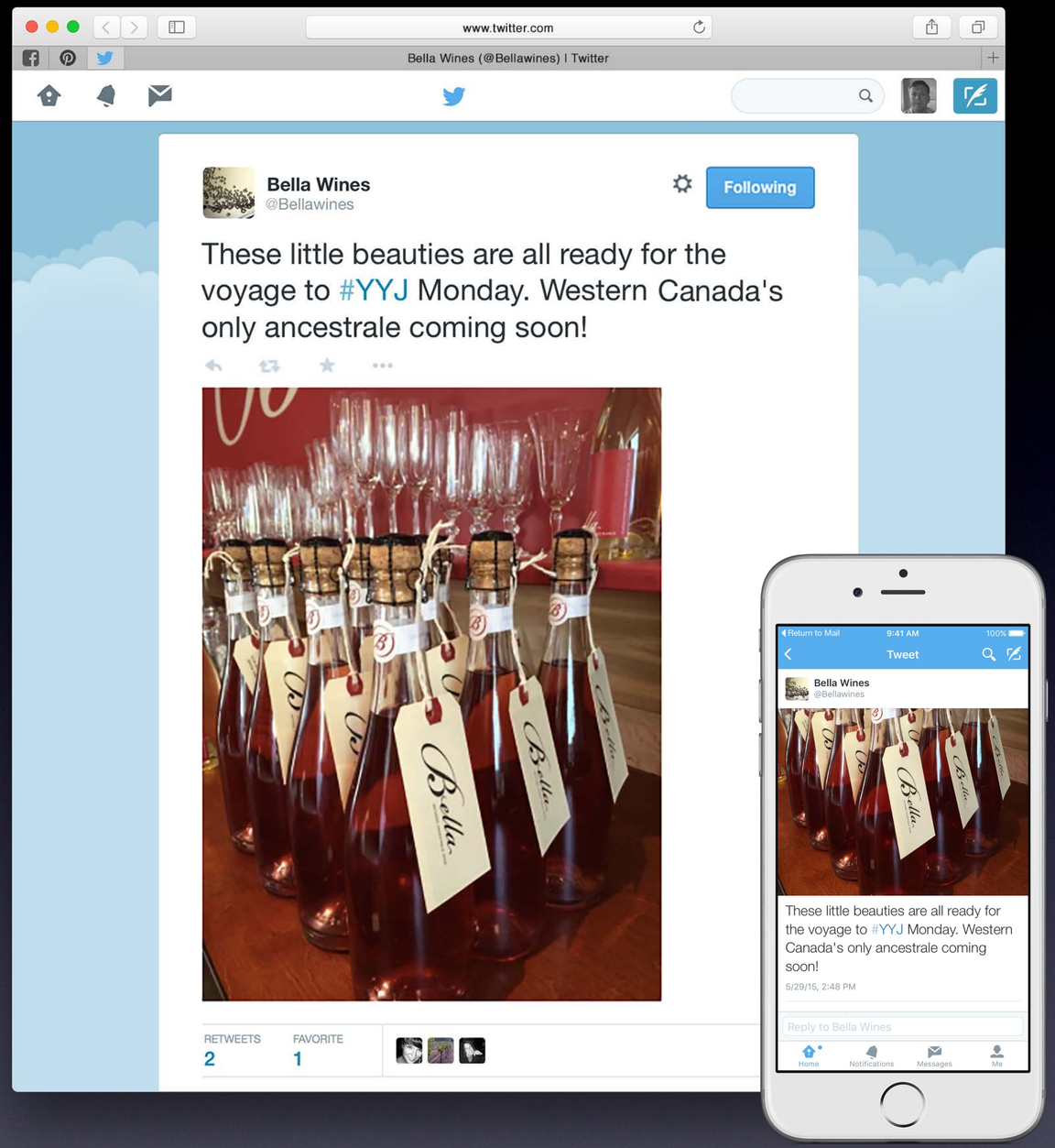
Bella Wines
@Bellawines

Following

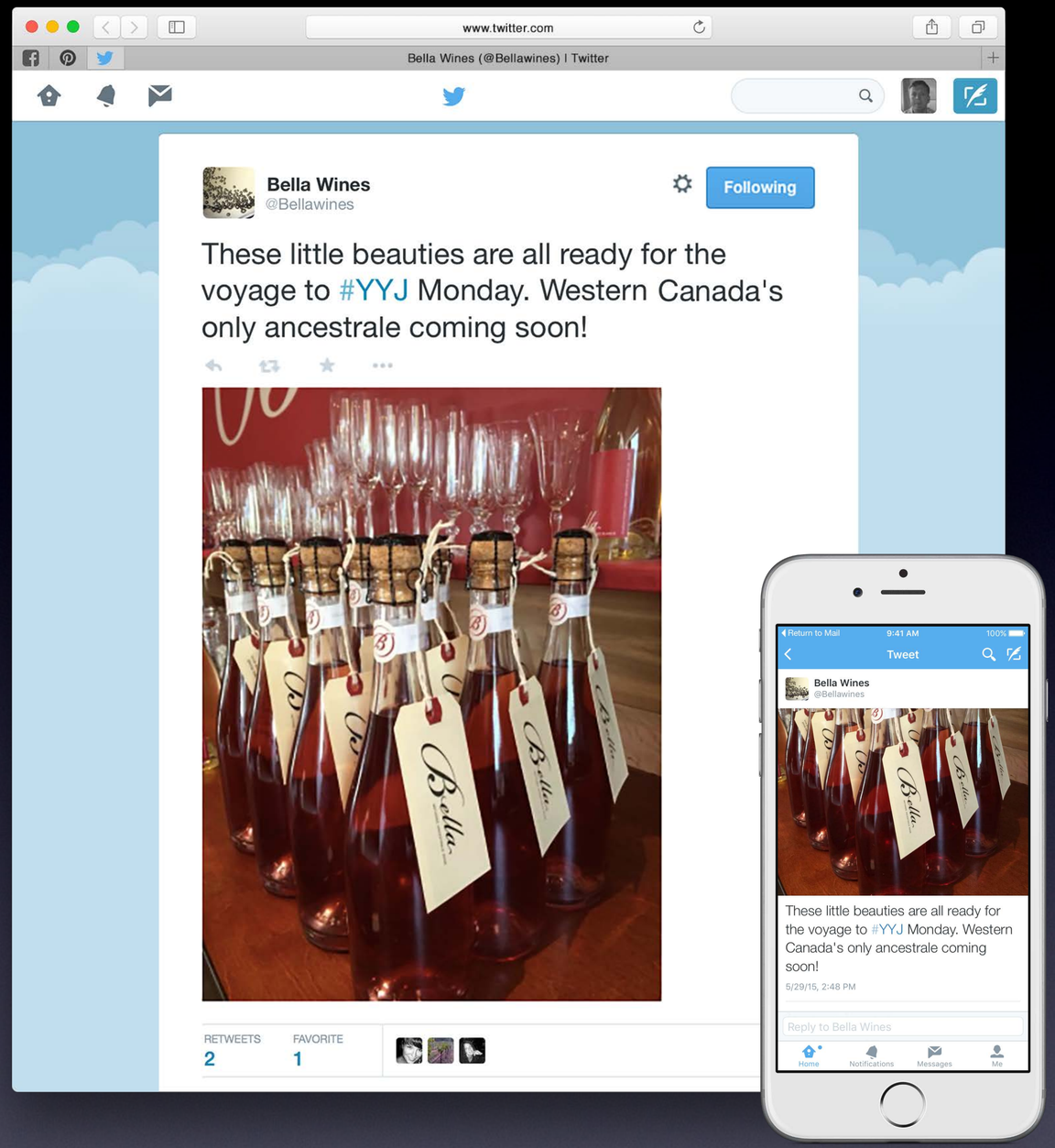
These little beauties are all ready for the voyage to #YYJ Monday. Western Canada's only ancestrale coming soon!

RETWEETS 2 FAVORITE 1

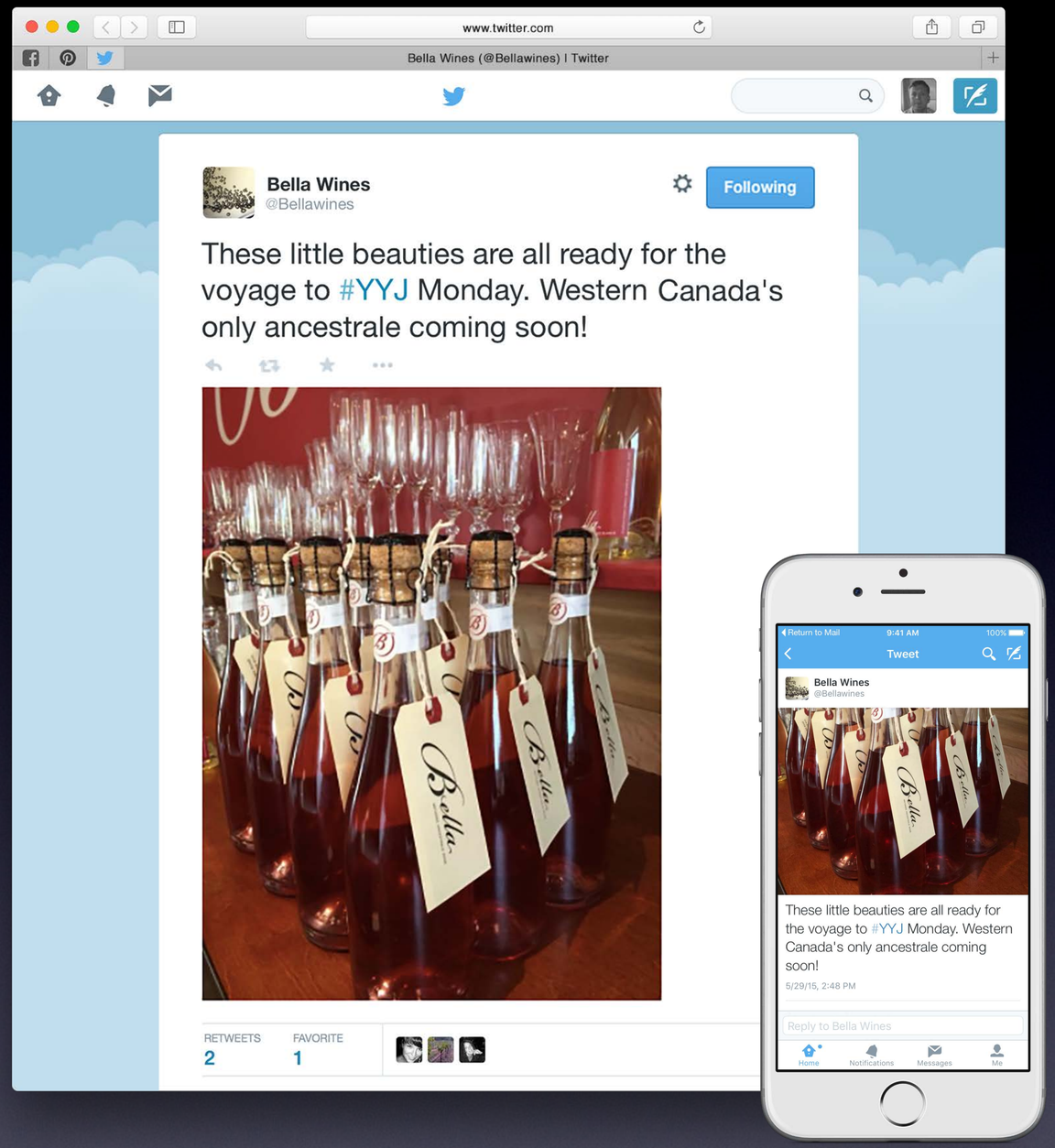



www.twitter.com
Bella Wines (@Bellawines) | Twitter
Bella Wines
@Bellawines
Following
These little beauties are all ready for the voyage to #YYJ Monday. Western Canada's only ancestrale coming soon!
RETWEETS
2
FAVORITE
1

Return to Mail
9:41 AM
100%
Tweet
Bella Wines
@Bellawines
These little beauties are all ready for the voyage to #YYJ Monday. Western Canada's only ancestrale coming soon!
5/29/15, 2:48 PM
Reply to Bella Wines
Home
Notifications
Messages
Me



Register app links



Register app links

NSUserActivity

application:continueUserActivity:restoration Handler:

HomeKit

iCloud remote access

Setup accessory with camera

Motorized window shades

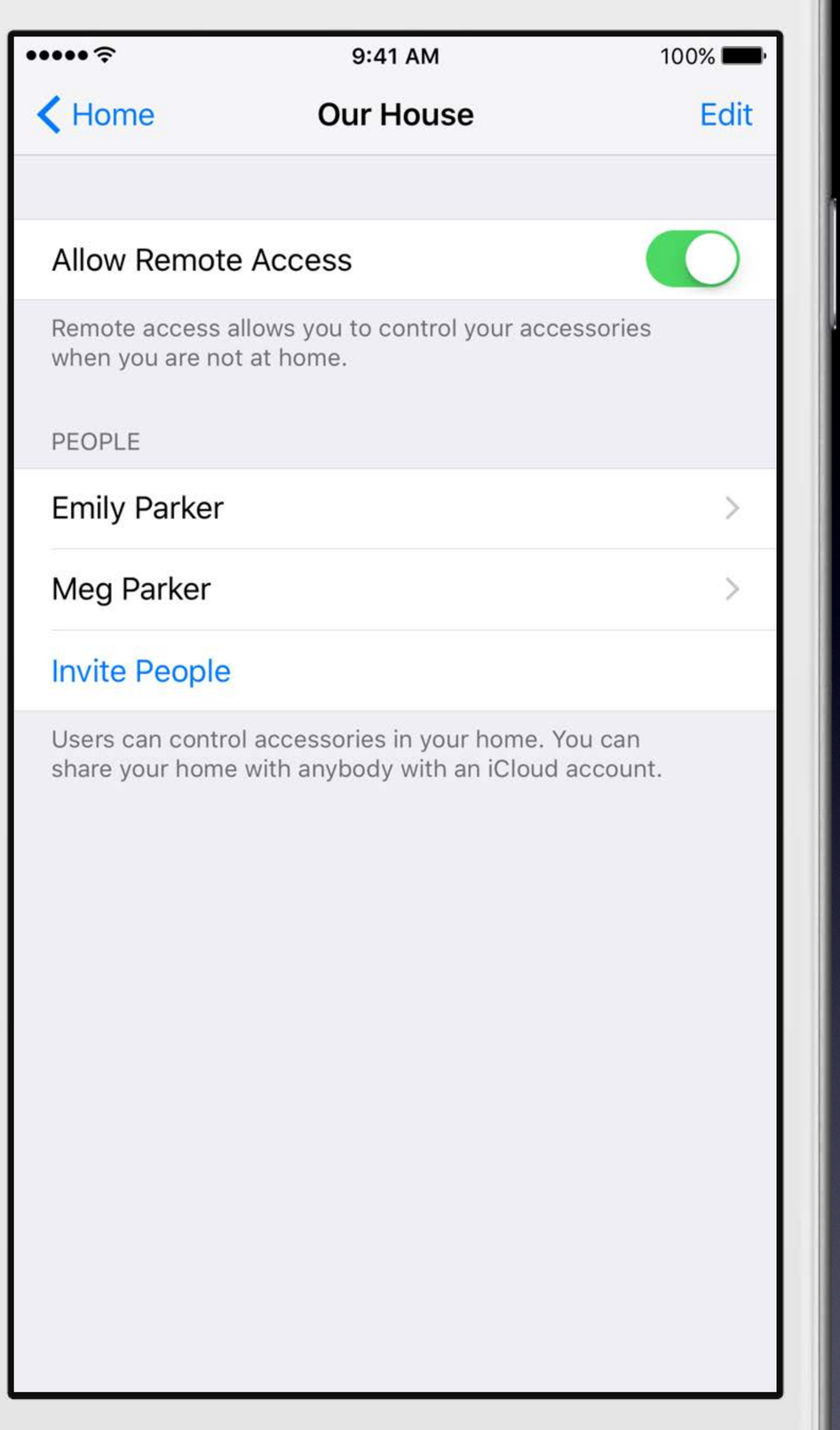
Home security systems

Sensors

Programmable switches

Notifications

Notifications



Notifications

User Management

HMHome
manageUsersWithCompletionHandler

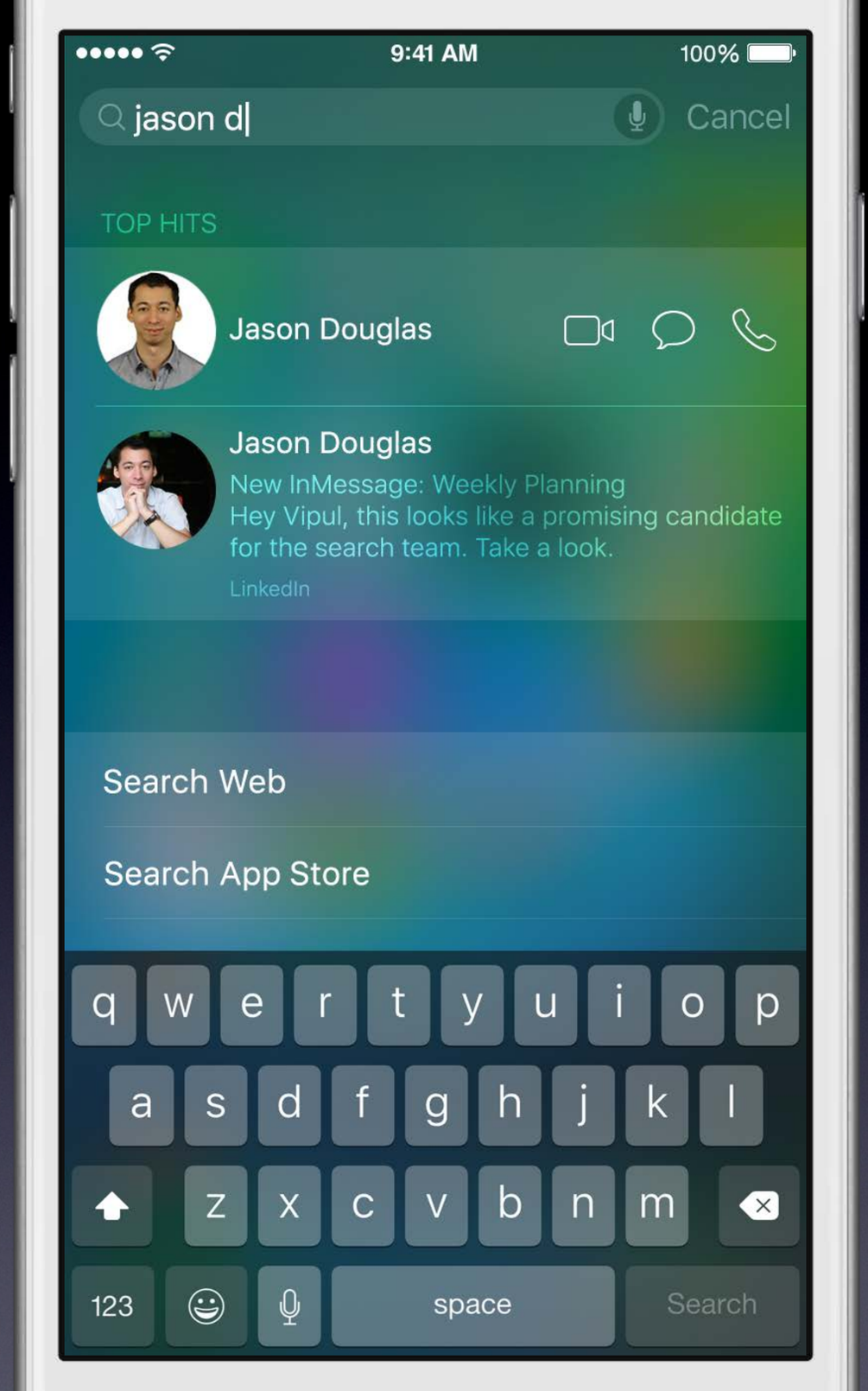
Notifications

User Management

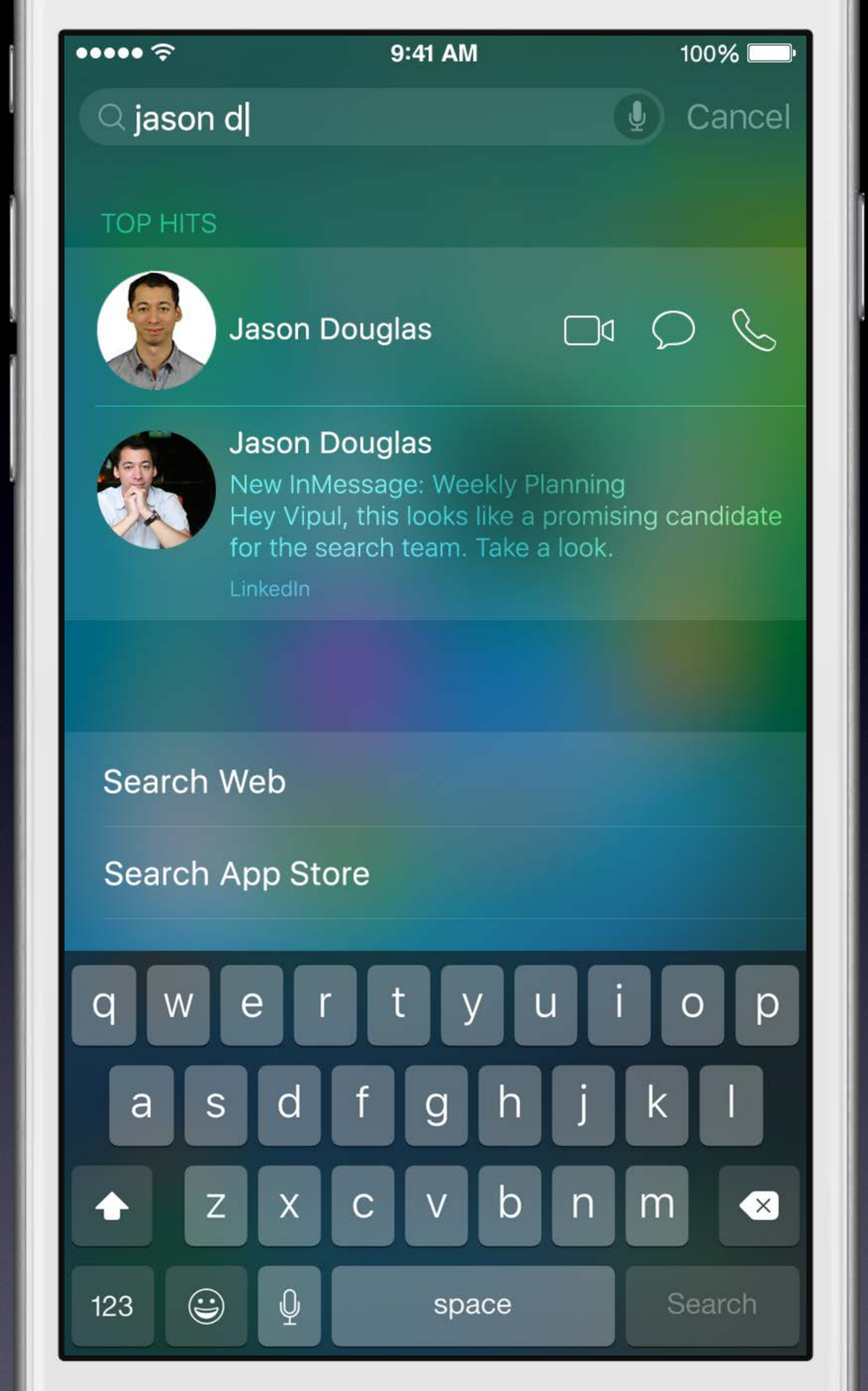
Event Triggers

HMEventTrigger

Search

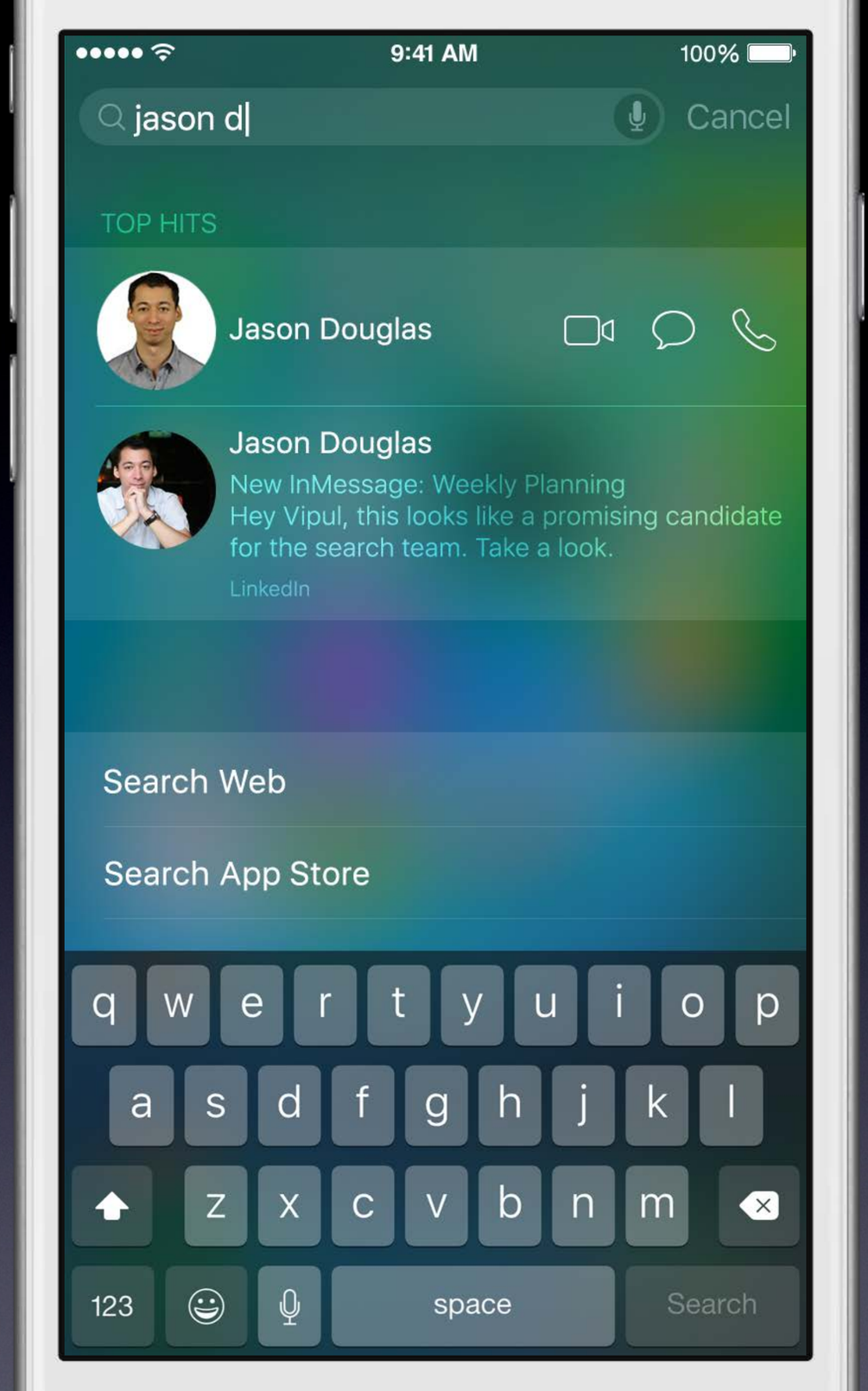

9:41 AM
100%
jason d
Cancel
TOP HITS
Jason Douglas
Jason Douglas
New InMessage: Weekly Planning
Hey Vipul, this looks like a promising candidate for the search team. Take a look.
LinkedIn
Search Web
Search App Store
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
Search

App Search



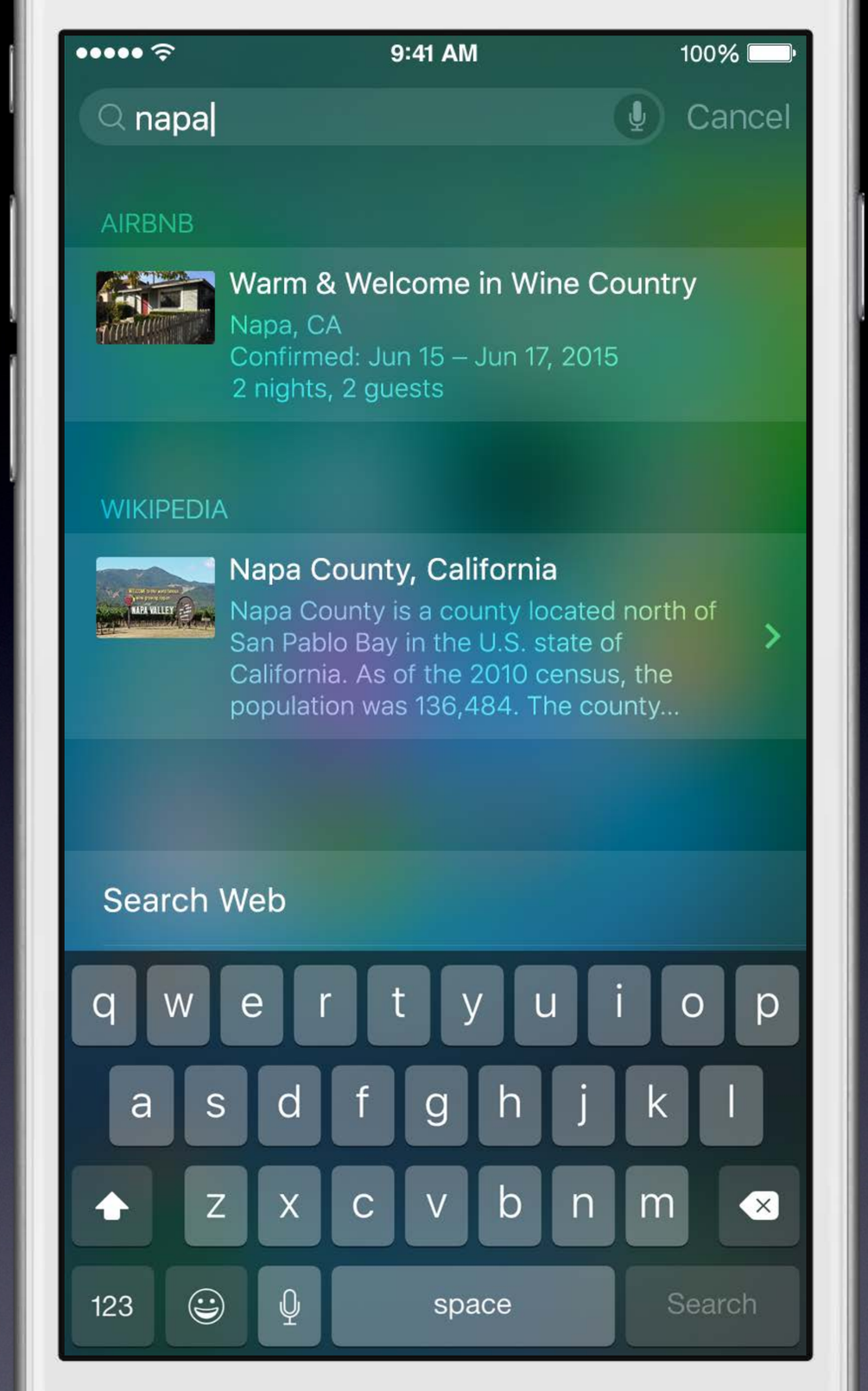
App Search

CoreSpotlight



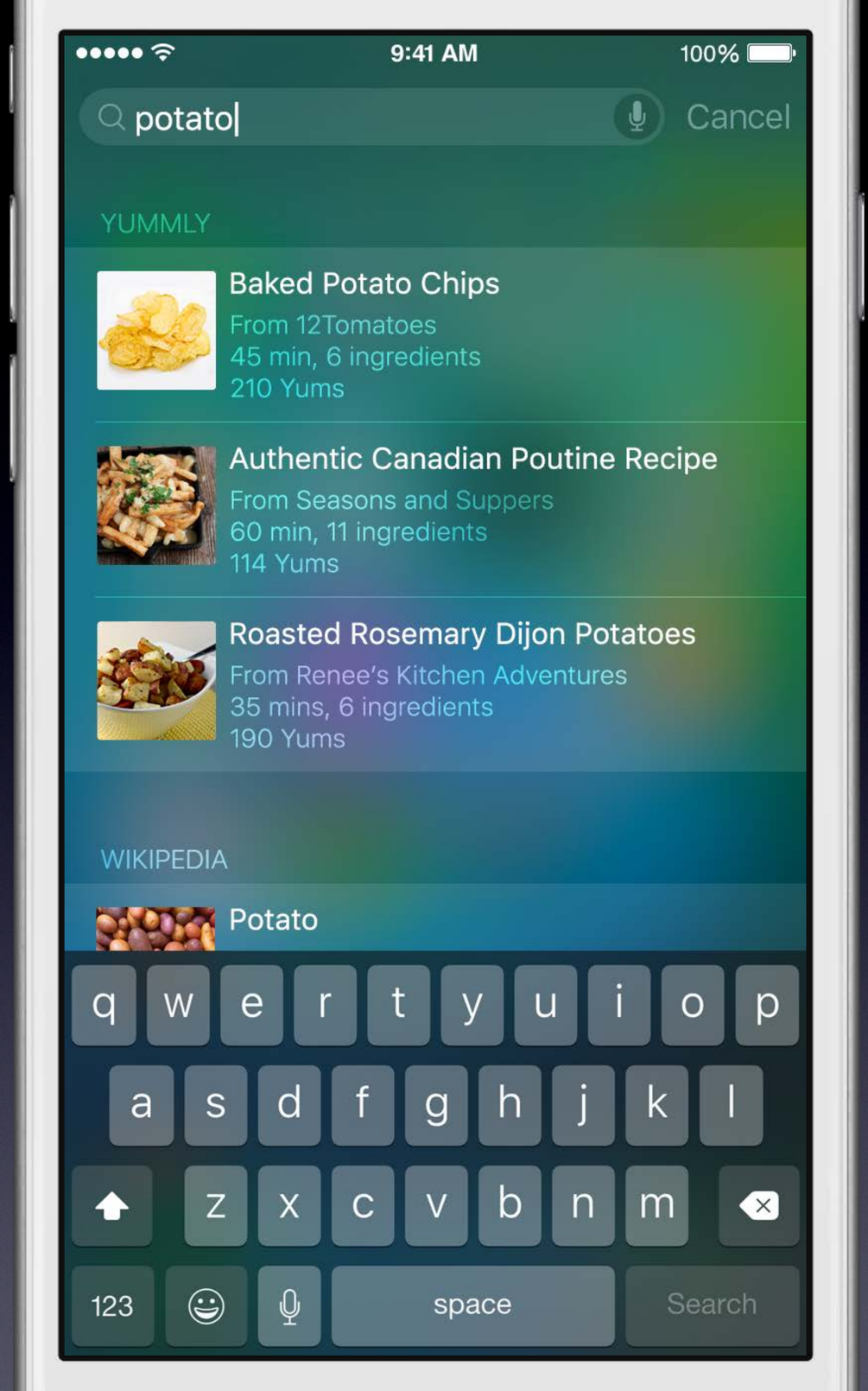
App Search

CoreSpotlight
App indexing extension



App Search

CoreSpotlight
App indexing extension
NSUserActivity



App Search

CoreSpotlight
App indexing extension
NSUserActivity
Web markup

App Search

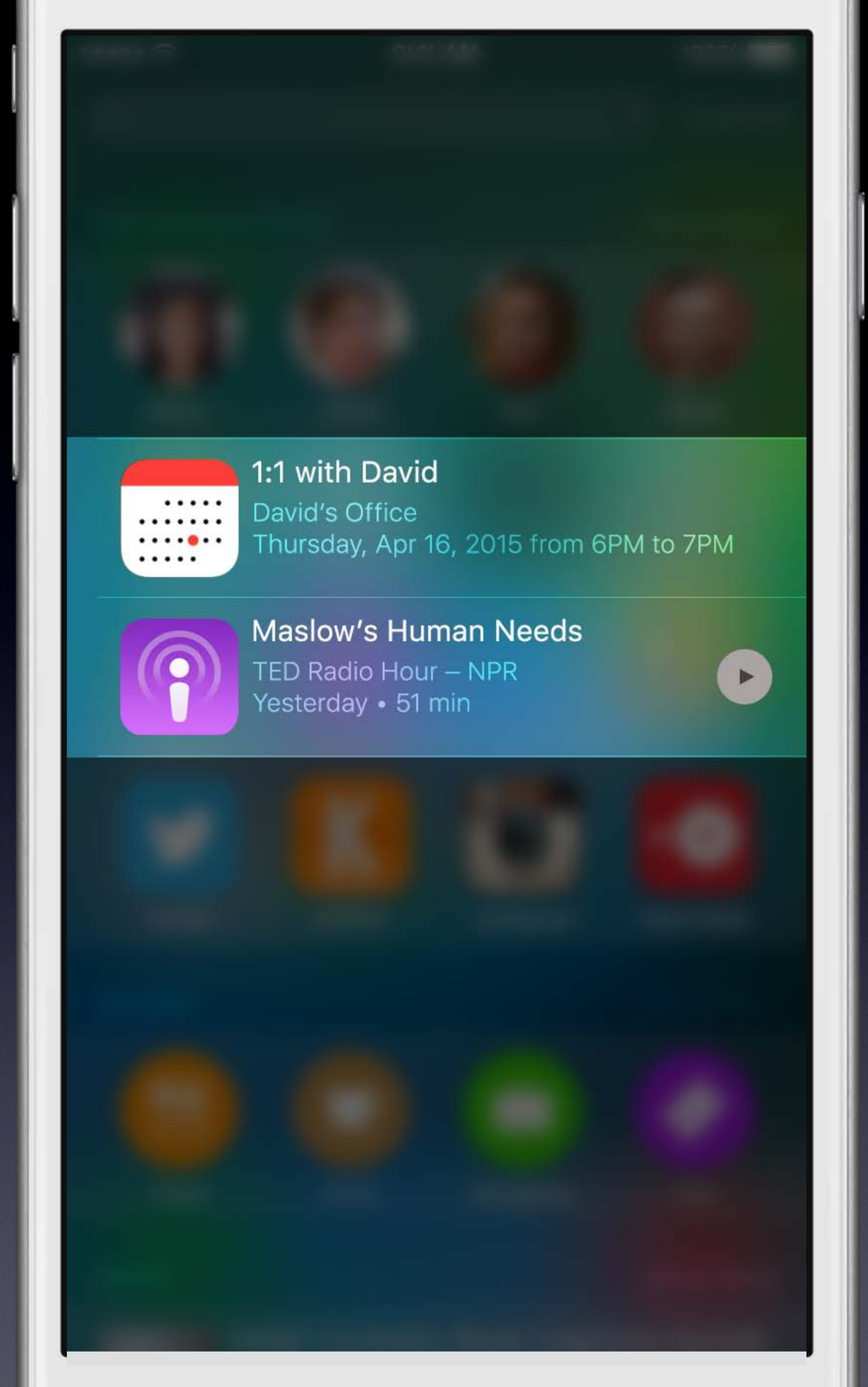
App Suggestions

App Search

App Suggestions

App Search

App Suggestions

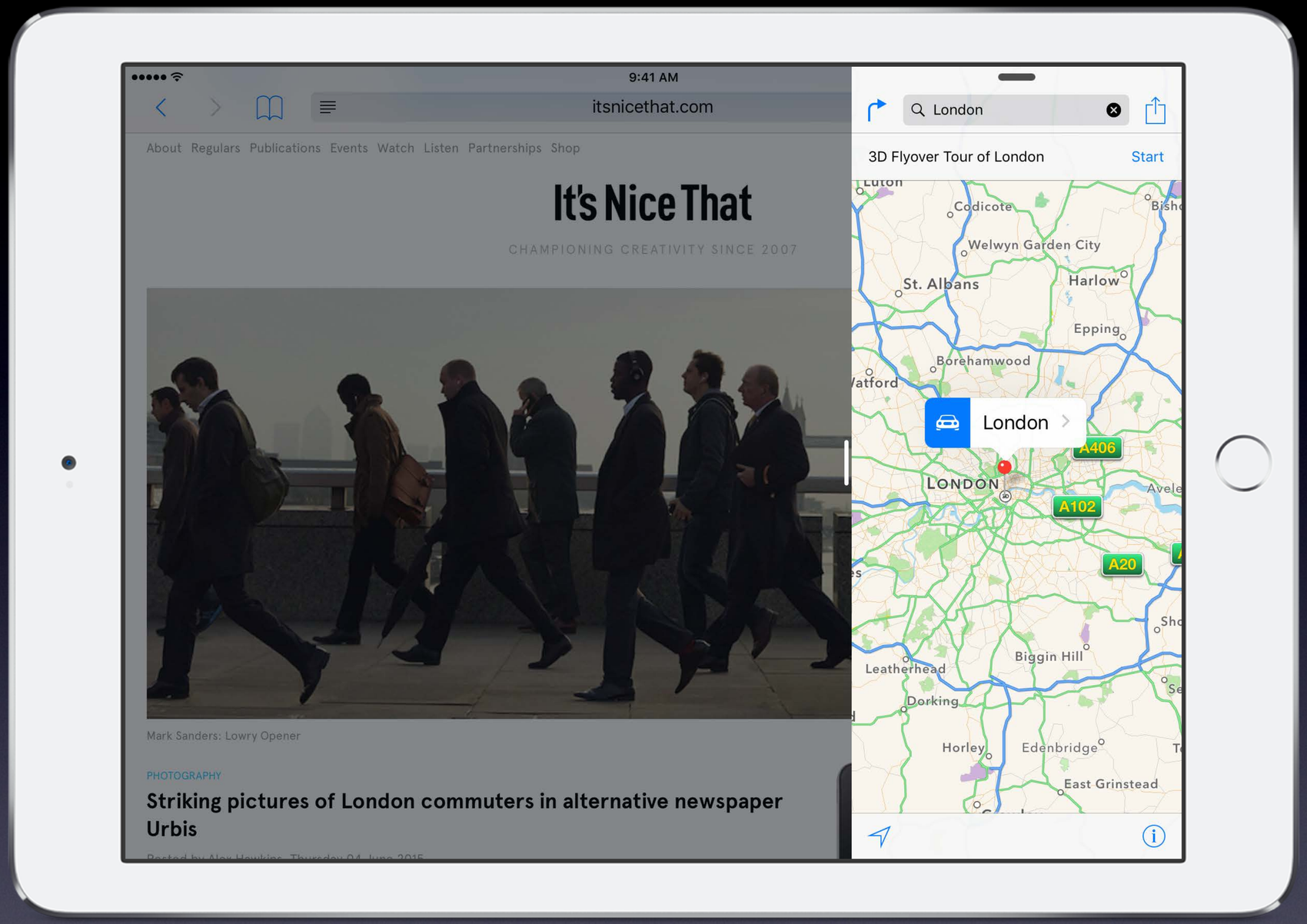


App Search

App Suggestions

NSUserActivity

Multitasking


9:41 AM
itsnicethat.com
About Regulars Publications Events Watch Listen Partnerships Shop
It's Nice That
CHAMPIONING CREATIVITY SINCE 2007
Mark Sanders: Lowry Opener
PHOTOGRAPHY
Striking pictures of London commuters in alternative newspaper Urbis
London
3D Flyover Tour of London
Start
Codicote
Welwyn Garden City
St. Albans
Harlow
Epping
Borehamwood
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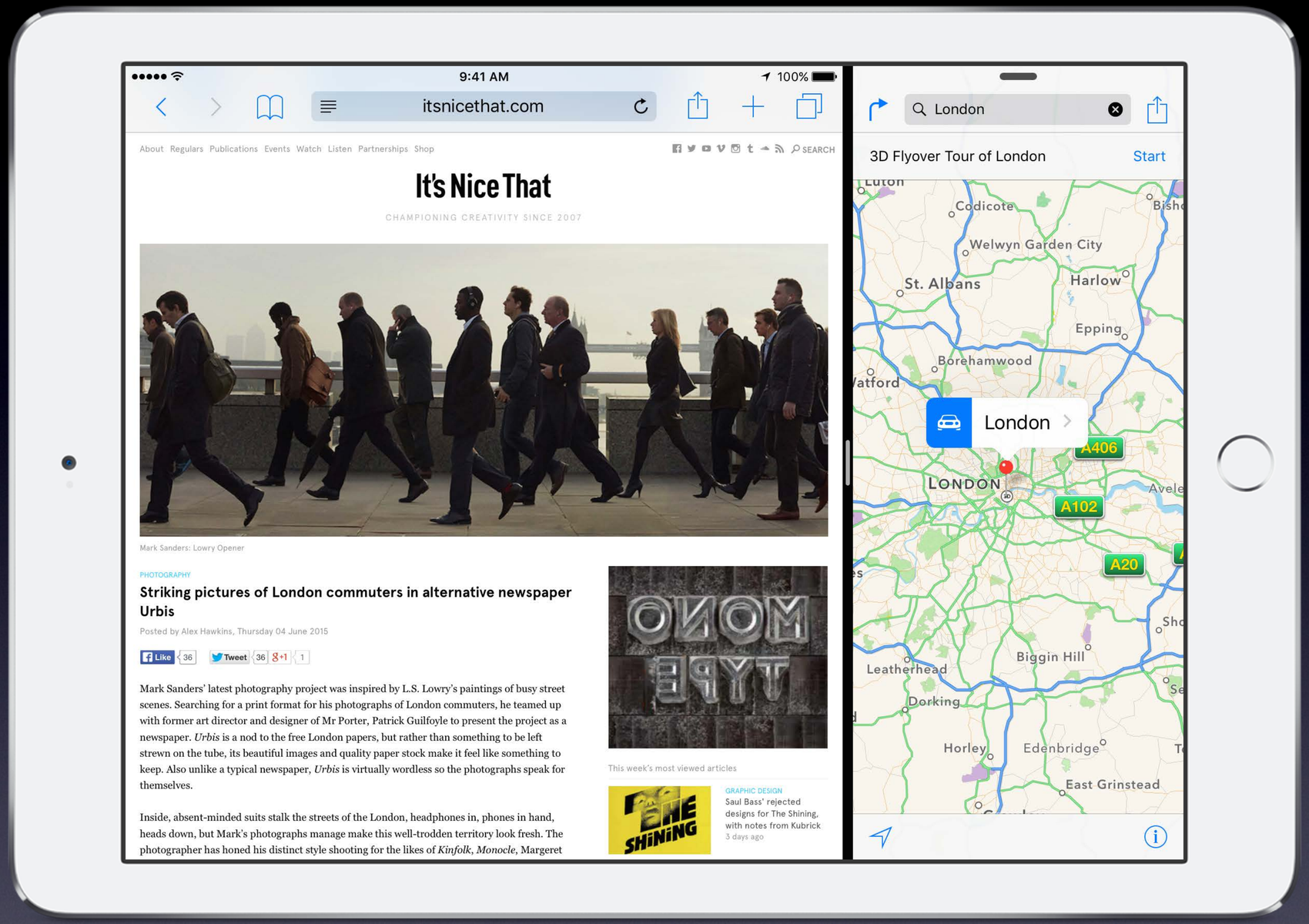
A406
LONDON
A102
A20
Biggin Hill
Leatherhead
Dorking
Horley
Edenbridge
East Grinstead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CHAMPIONING CREATIVITY SINCE 2007
Mark Sanders: Lowry Opener
PHOTOGRAPHY
Striking pictures of London commuters in alternative newspaper Urbis
Posted by Alex Hawkins, Thursday 04 June 2015
Like 36
Tweet 36
+1 1
Mark Sanders' latest photography project was inspired by L.S. Lowry's paintings of busy street scenes. Searching for a print format for his photographs of London commuters, he teamed up with former art director and designer of Mr Porter, Patrick Guilfoyle to present the project as a newspaper. Urbis is a nod to the free London papers, but rather than something to be left strewn on the tube, its beautiful images and quality paper stock make it feel like something to keep. Also unlike a typical newspaper, Urbis is virtually wordless so the photographs speak for themselves.
Inside, absent-minded suits stalk the streets of the London, headphones in, phones in hand, heads down, but Mark's photographs manage make this well-trodden territory look fresh. The photographer has honed his distinct style shooting for the likes of Kinfolk, Monocle, Margeret
MONO TYPE
This week's most viewed articles
THE SHINING
GRAPHIC DESIGN
Saul Bass' rejected designs for The Shining, with notes from Kubrick
3 days ago
London
3D Flyover Tour of London
Start
Codicote
Welwyn Garden City
St. Albans
Harlow
Epping
Borehamwood
London
A406
LONDON
A102
A20
Leatherhead
Biggin Hill
Dorking
Horley
Edenbridge
East Grinstead


iPad
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Notifications
Discover
Me
Pitchfork @pitchfork
8m
Watch @theweeknd's full @coachella performance p4k.co/Lv0T8
199
348
Pitchfork @pitchfork
"I just desperately wanted to be happy again
forced"—@passionpit's path through the dar
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.@Drake announces tour with @1future p4k.c
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"I just desperately wanted to be
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"I just desperately wanted to be happy
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@passionpit's path through the darkness
p4k.co/KKRdQ
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Pitchfork @pitchfork
52m
.@Drake announces tour with @1future
p4k.co/Lys9P
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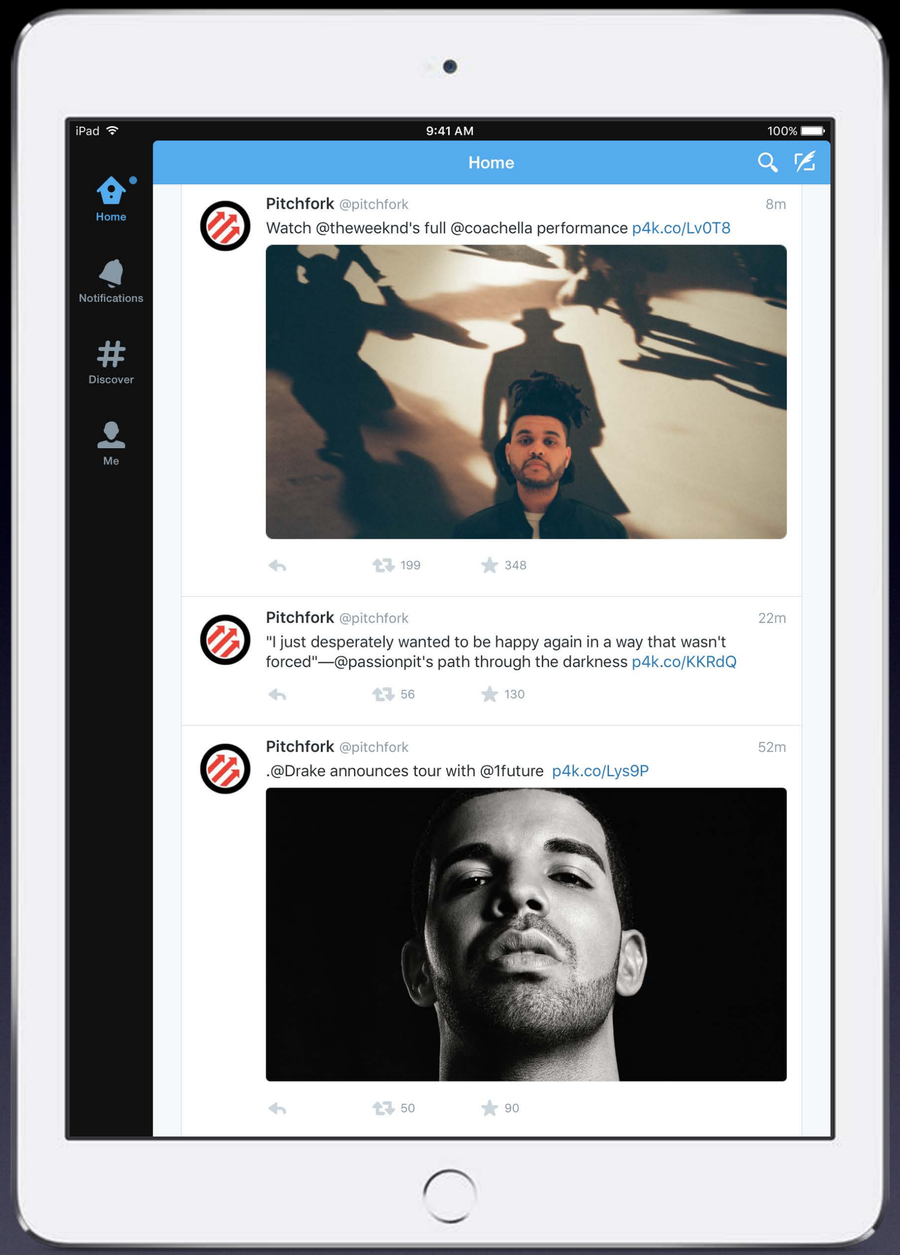
Messages
Me

Adaptive UI

Dynamic Type

Auto layout

Size Classes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"I just desperately wanted to be happy again in a way that wasn't forced"—@passionpit's path through the darkness p4k.co/KKRdQ
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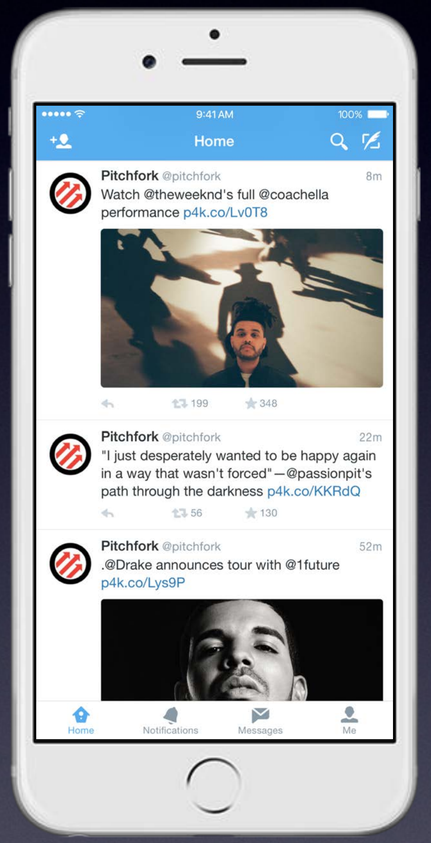
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Watch @theweeknd's full @coachella performance p4k.co/Lv0T8
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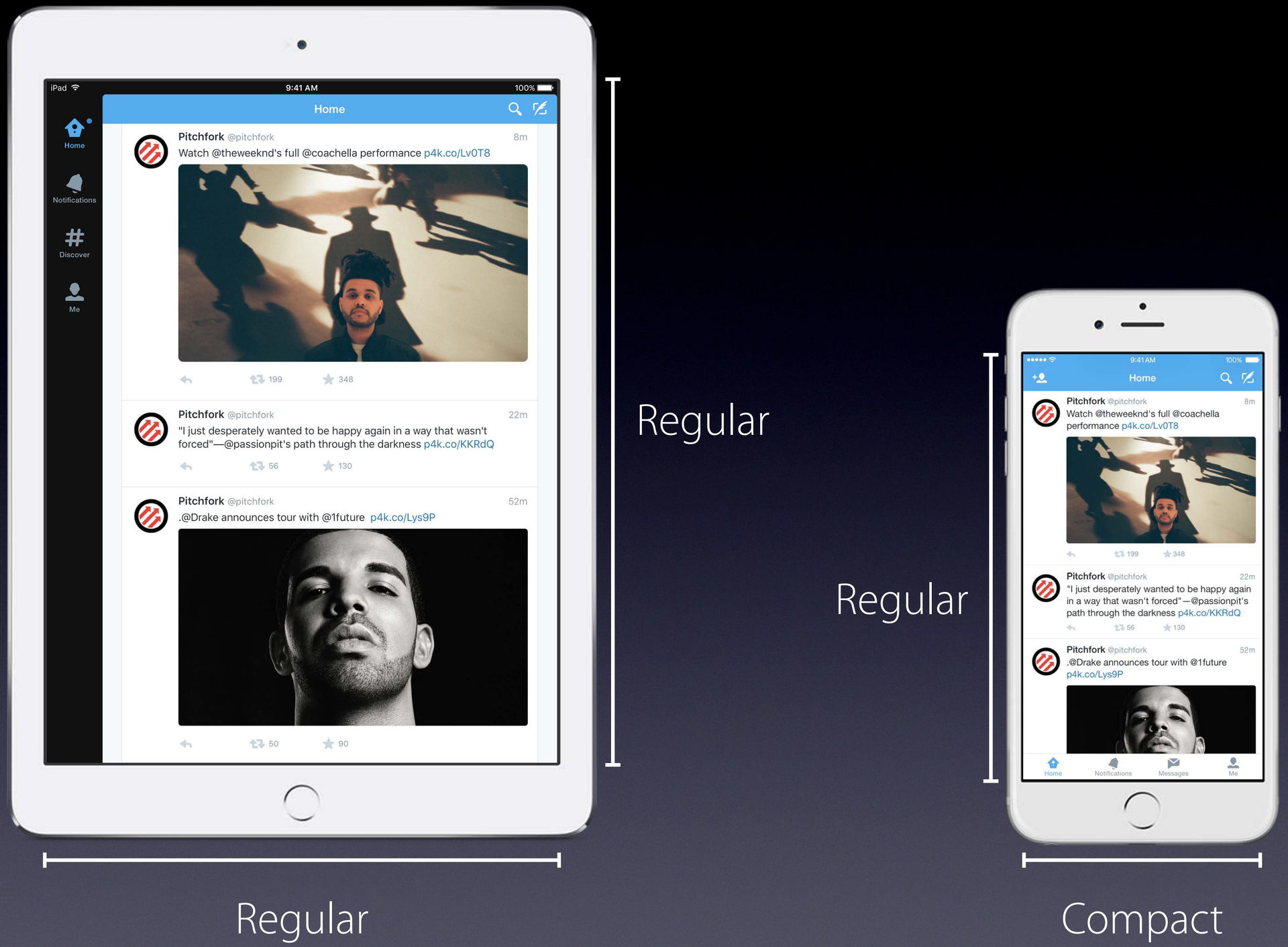
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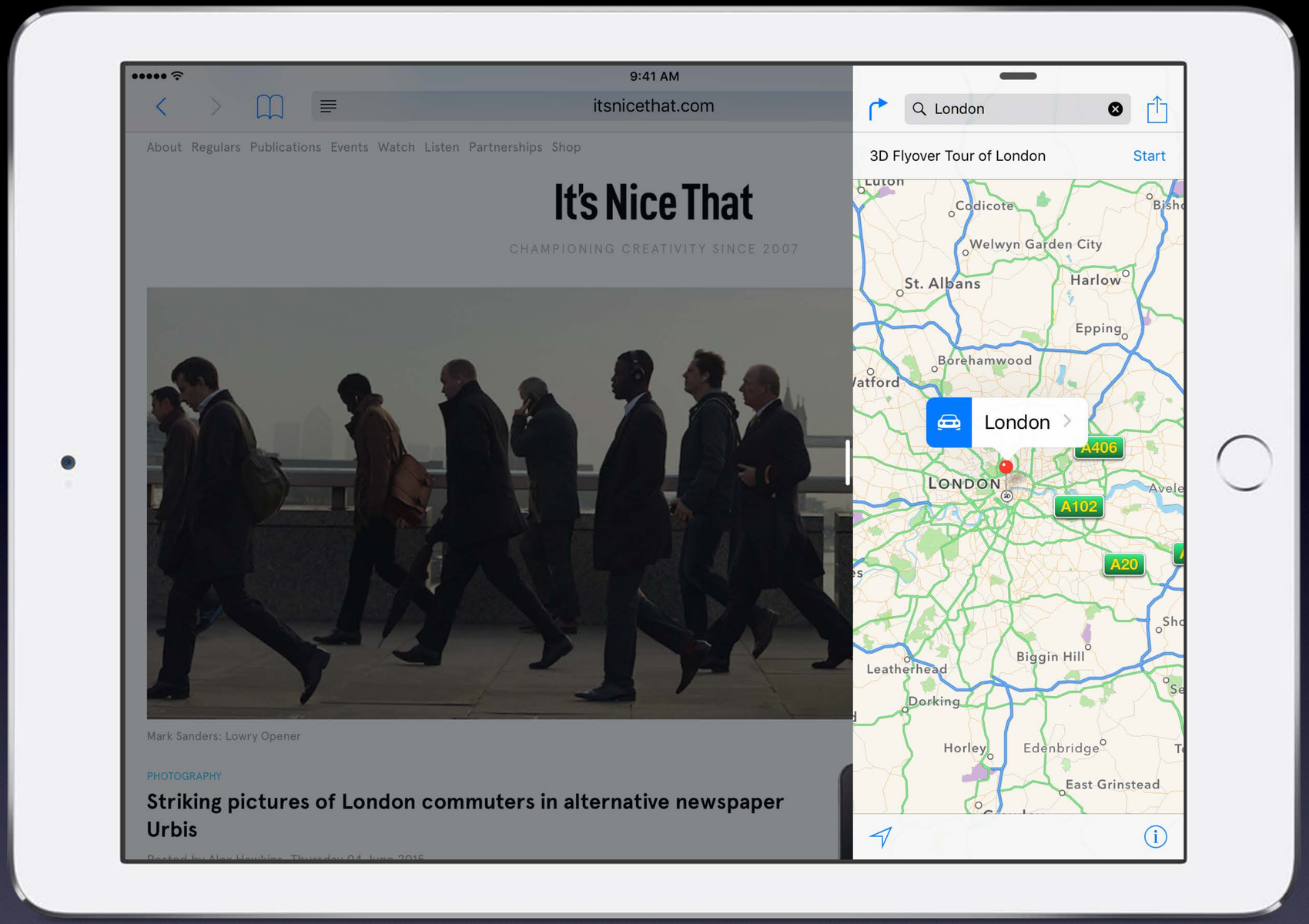
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Mark Sanders: Lowry Opener
PHOTOGRAPHY
Striking pictures of London commuters in alternative newspaper Urbis
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St. Albans
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Borehamwood
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A406
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Biggin Hill
Leatherhead
Dorking
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Edenbridge
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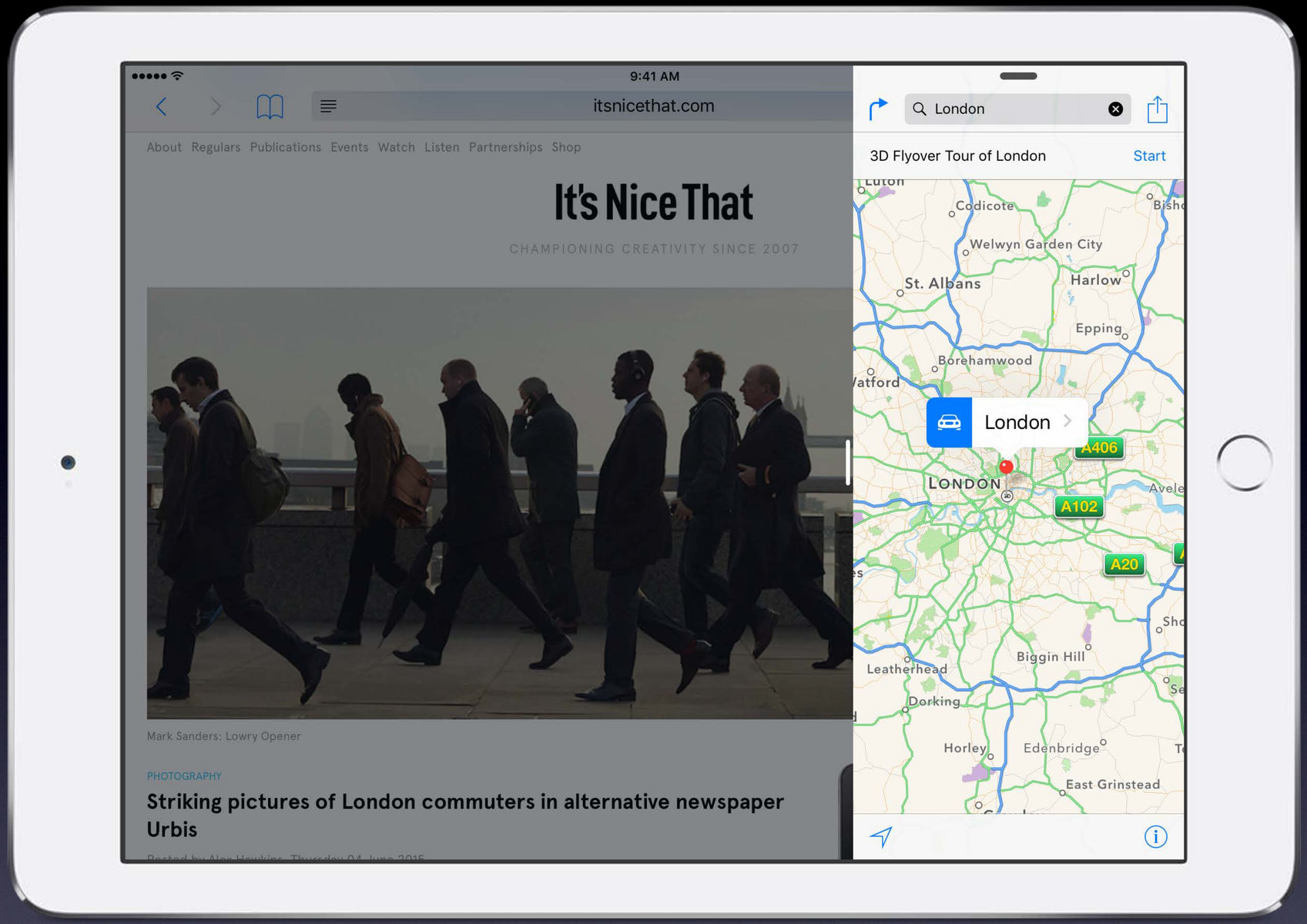
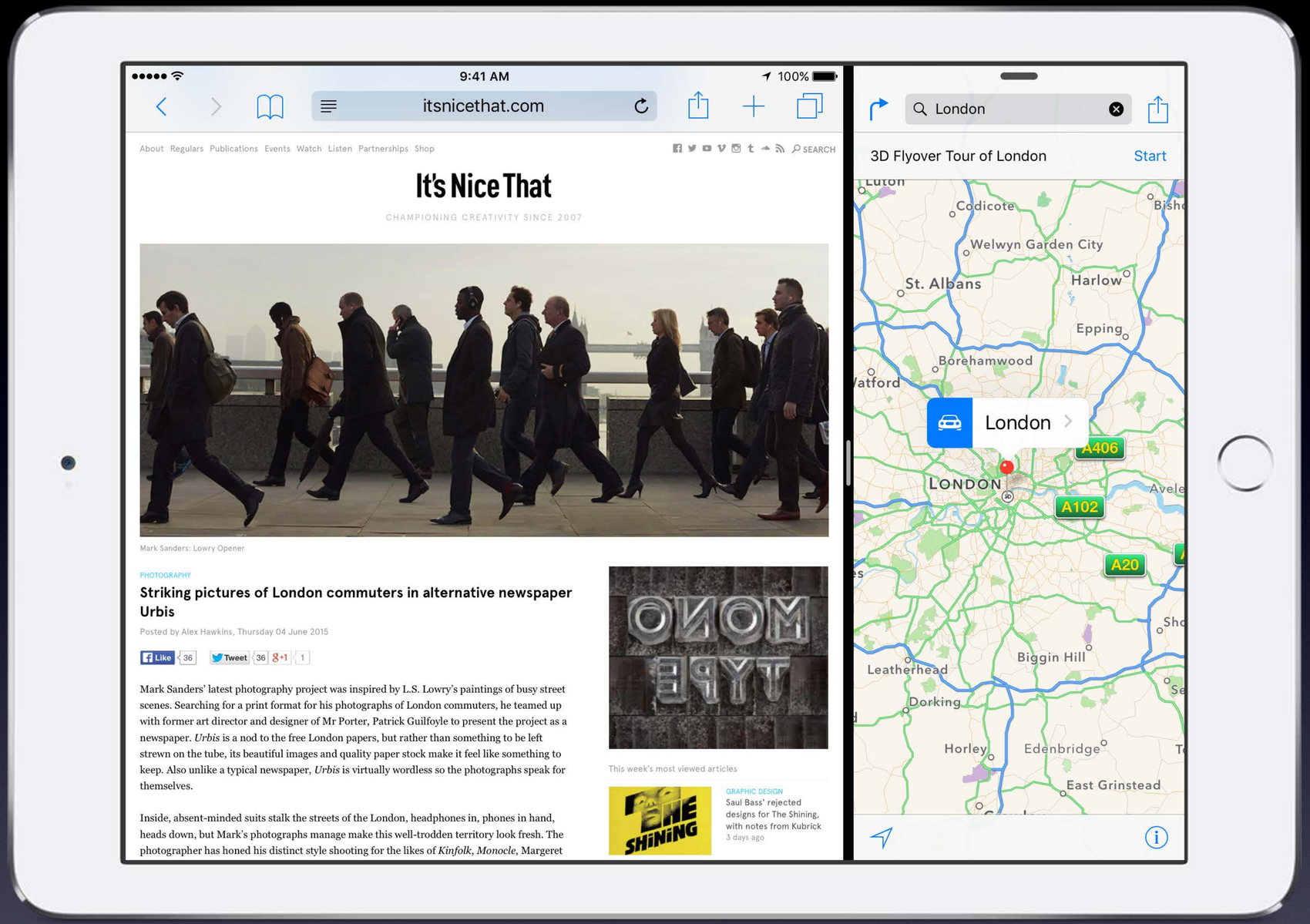


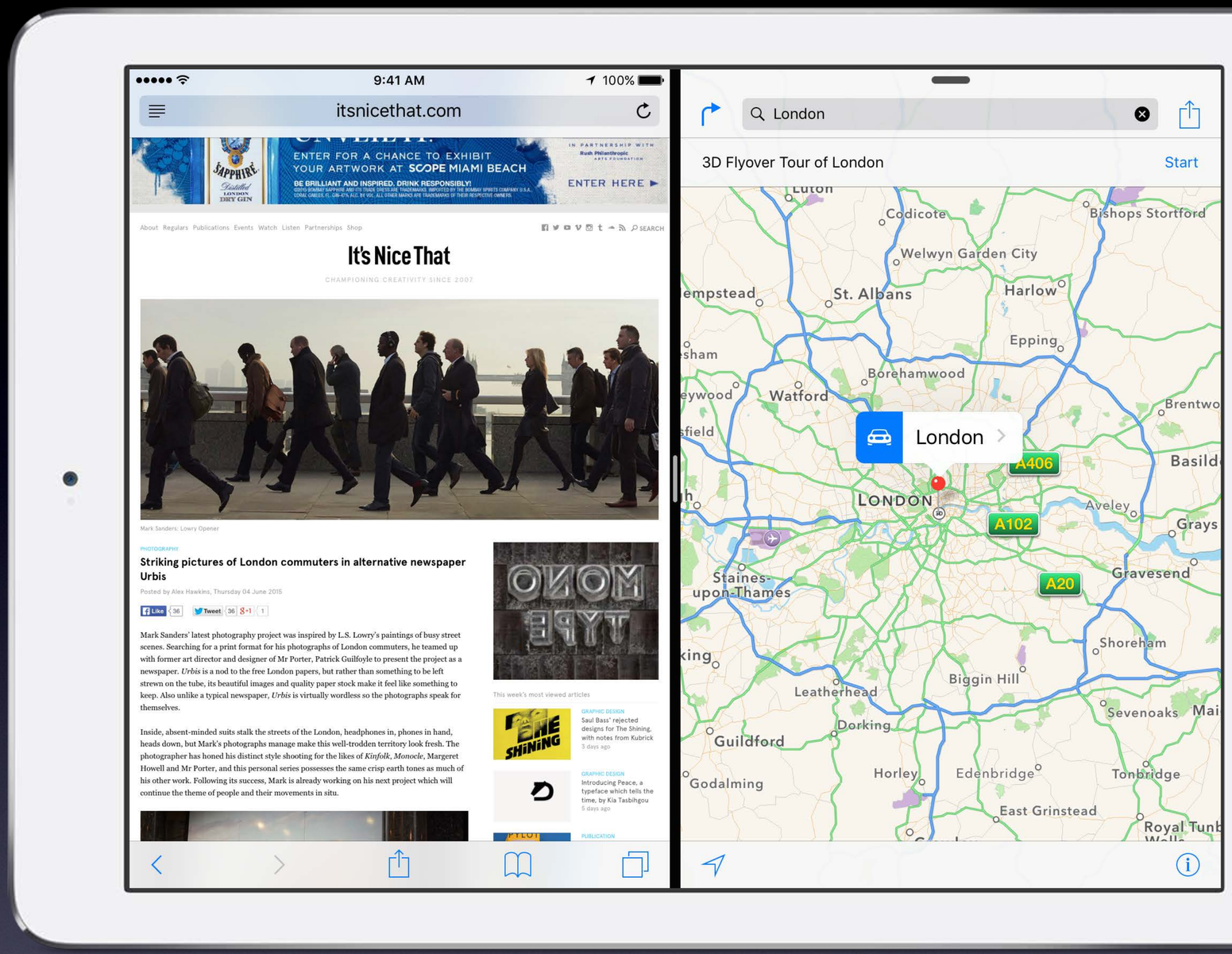
Regular

Compact



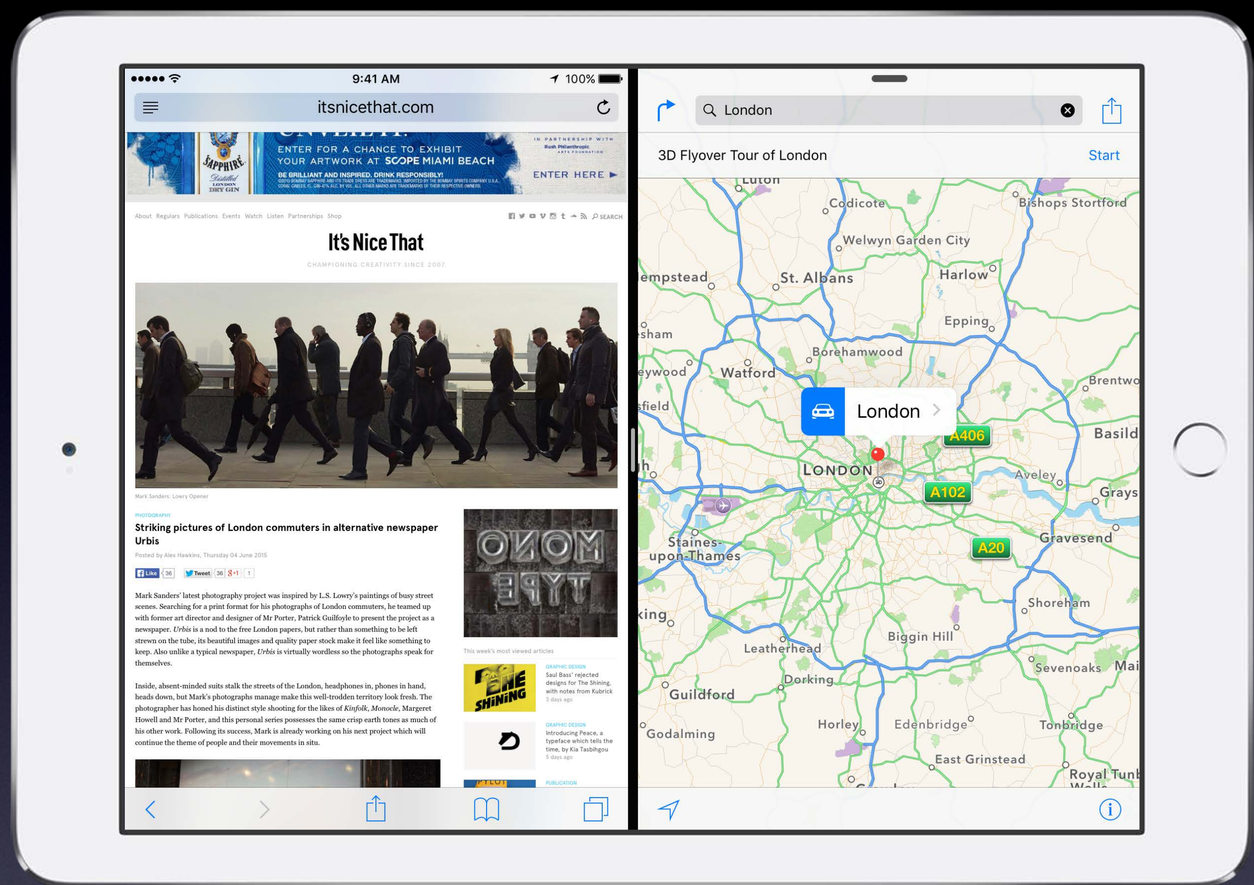
Regular

Compact

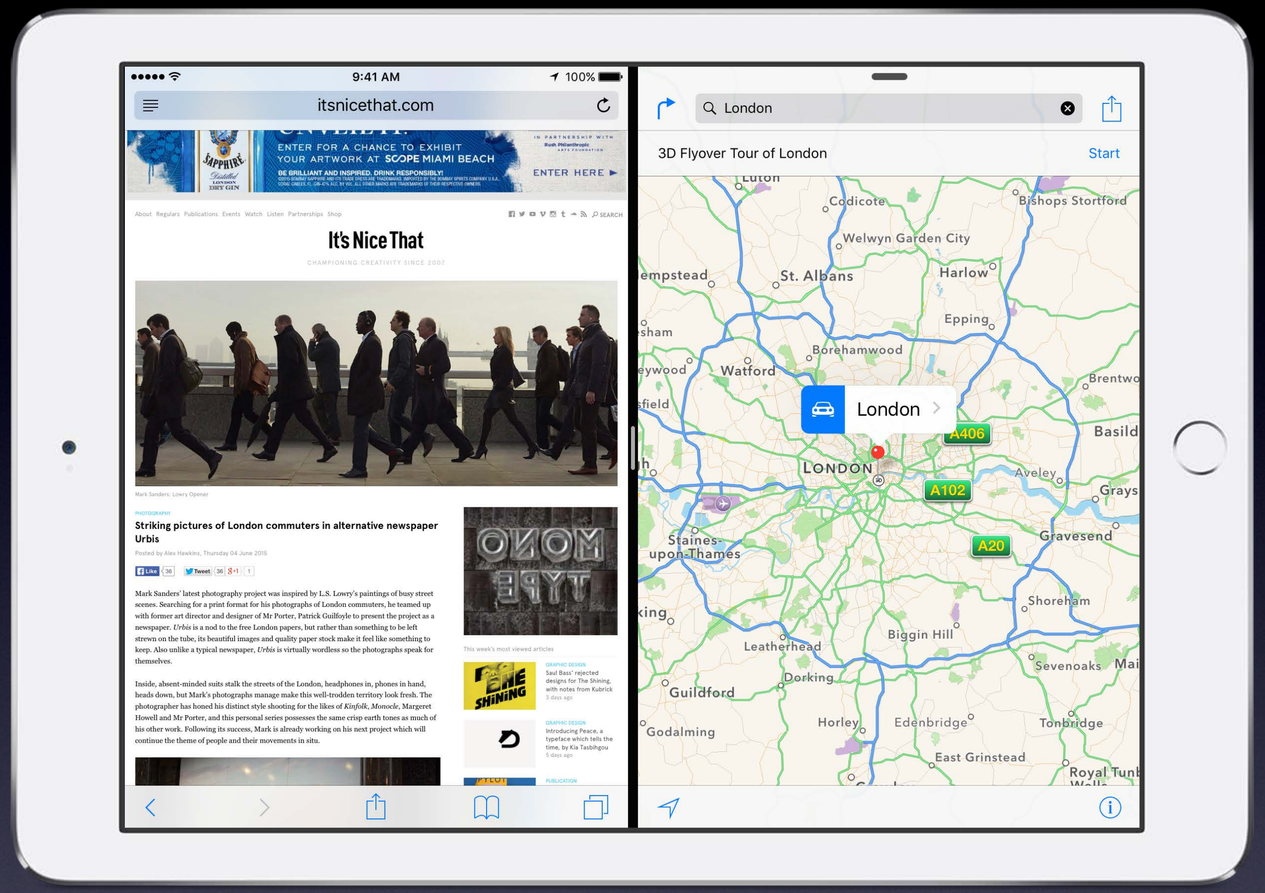


Compact

Compact

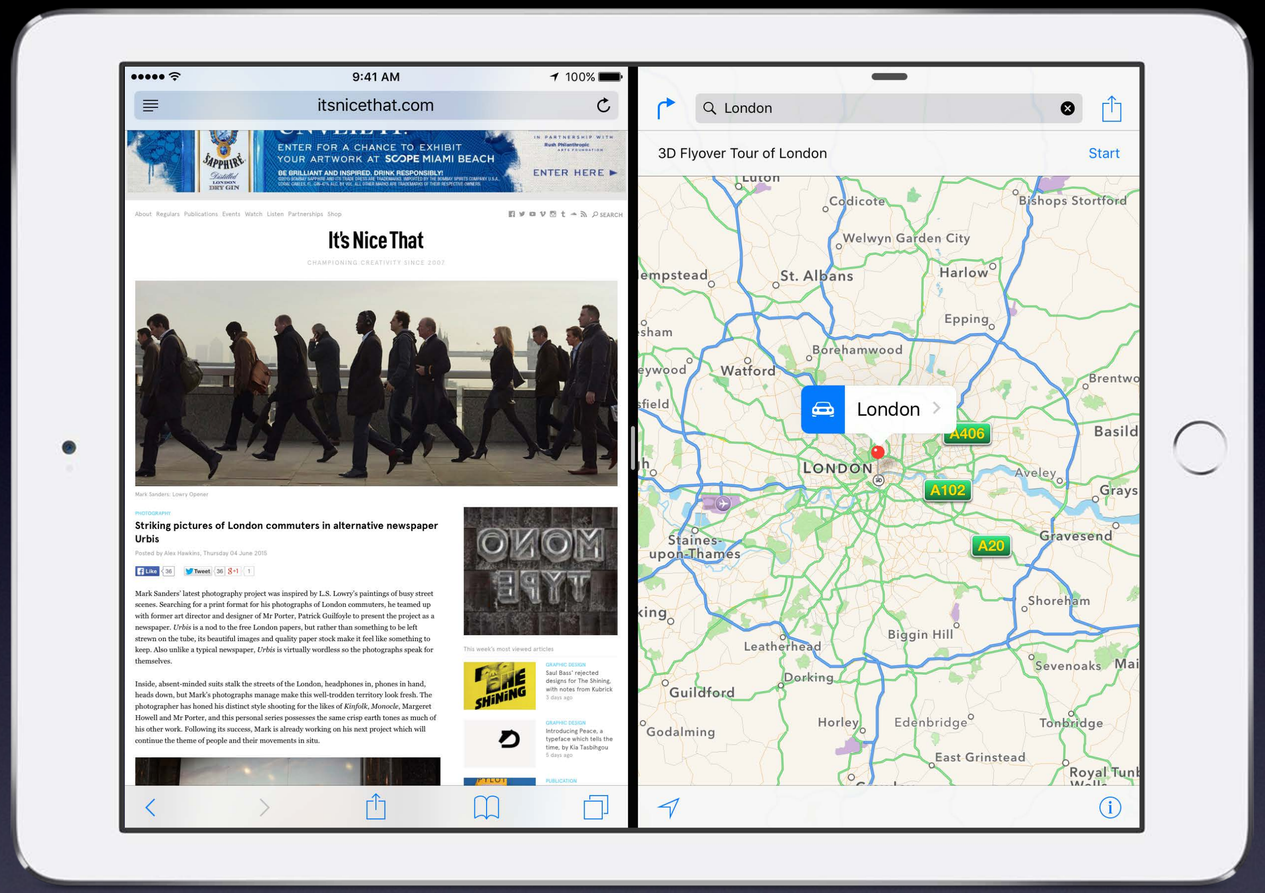


Adopt adaptive UI



Adopt adaptive UI

Use a launch storyboard



Adopt adaptive UI

Use a launch storyboard

Support all orientations

iPad 9:41 AM 100%

Mailboxes **Inbox** Edit

Search

Lauren Bosak 9:32 AM
Rooftop party
Hi Eden, I really wish you could have been at Eric's housewarming party. His place...

Ailish Kimber 9:27 AM
The Three Amigas
Here's a great photo from the weekend. I can't even remember the last time we...

Sarah Castelblanco 9:14 AM
Not the same without you
I just walked by your old cube and looked to see if you were in there. Not...

Sean Reilly 9:00 AM
You were right
We finally got around to watching the movie last night. It was so good. Thanks...

Paul Hikiji 8:31 AM
Volleyball
I won't be able to make it tomorrow night. Which means our team might actually...

Cory Quinn 8:17 AM
Vacation photos
It looks like you guys had an amazing time. I can't believe Jane got you out on...

Kelly Robinson 8:06 AM
Lost and found

Updated Just Now

Sarah Castelblanco
To: Eden Sears

Not the same without you
Today at 9:14 AM

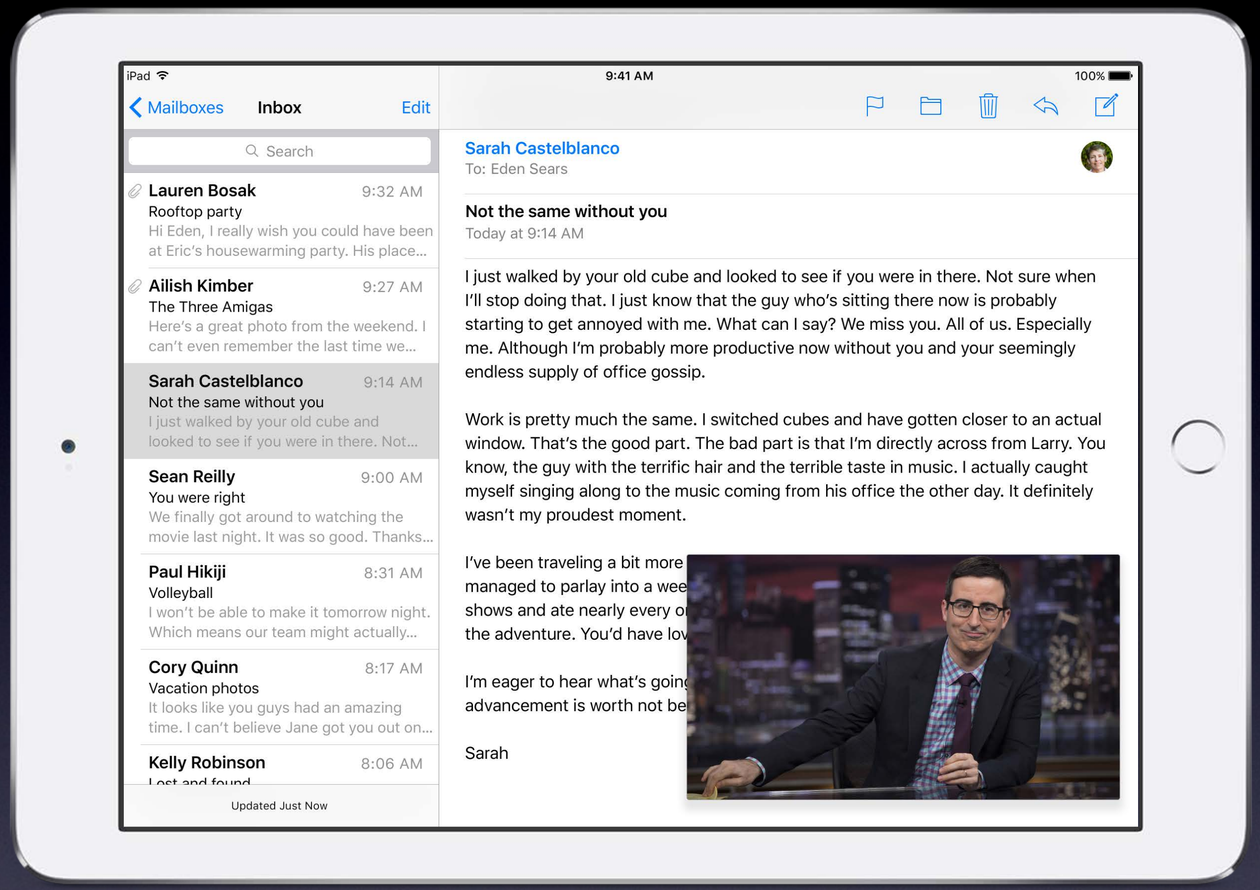
I just walked by your old cube and looked to see if you were in there. Not sure when I'll stop doing that. I just know that the guy who's sitting there now is probably starting to get annoyed with me. What can I say? We miss you. All of us. Especially me. Although I'm probably more productive now without you and your seemingly endless supply of office gossip.

Work is pretty much the same. I switched cubes and have gotten closer to an actual window. That's the good part. The bad part is that I'm directly across from Larry. You know, the guy with the terrific hair and the terrible taste in music. I actually caught myself singing along to the music coming from his office the other day. It definitely wasn't my proudest moment.

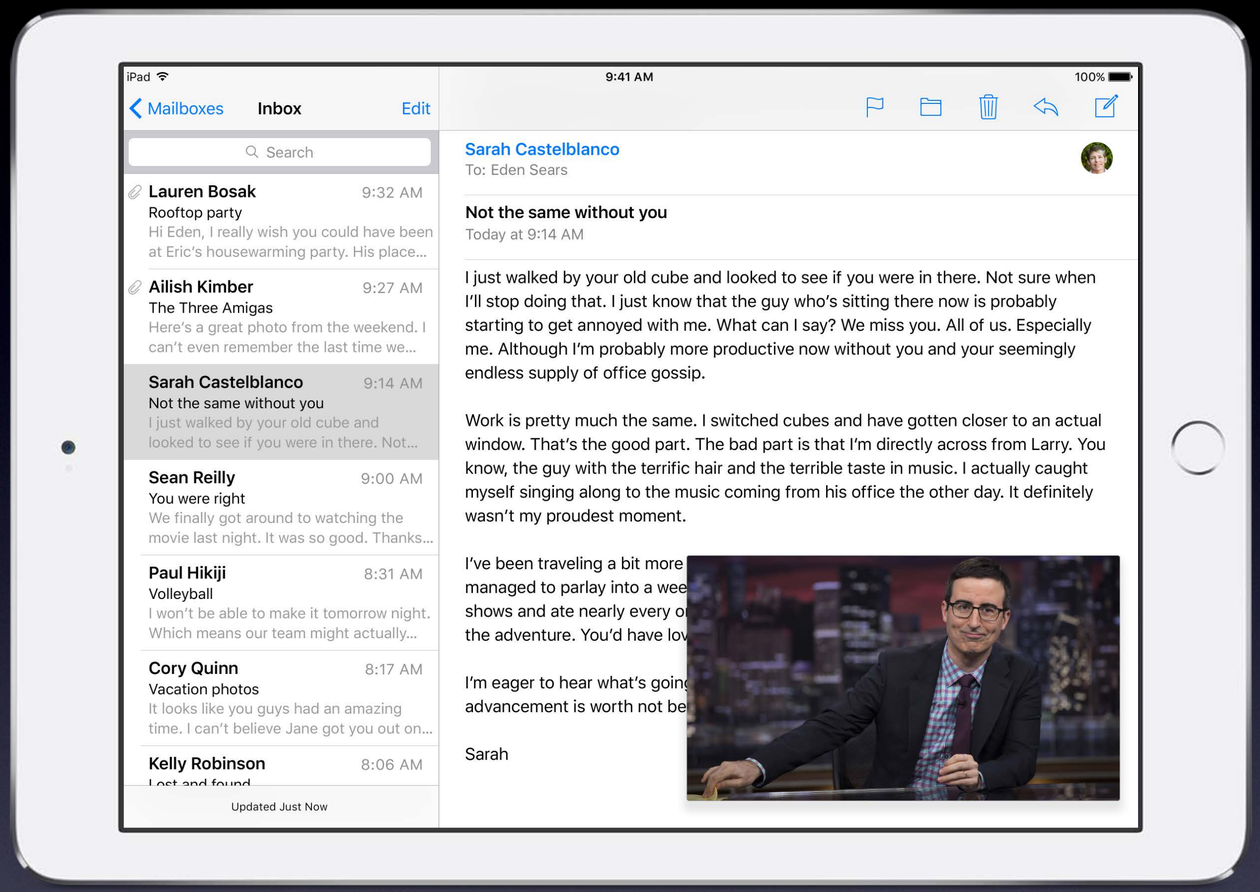
I've been traveling a bit more
managed to parlay into a wee
shows and ate nearly every o
the adventure. You'd have lov

I'm eager to hear what's goin
advancement is worth not be

Sarah



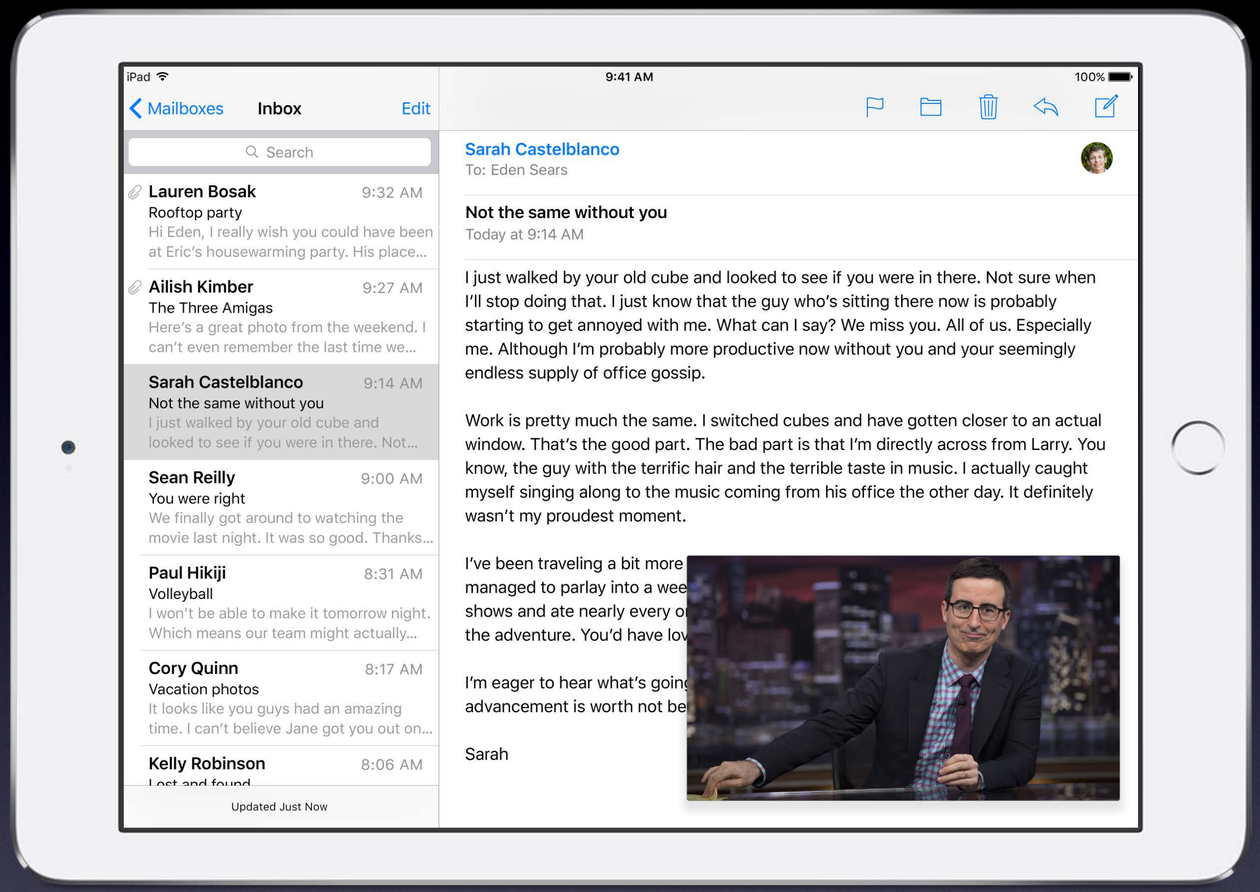
Background media playback



Background media playback

Enable picture in picture

AVPlayerViewController
WKWebView



Background media playback

Enable picture in picture

AVPlayerViewController
WKWebView
AVPictureInPictureController

Window Management

jetsetter.com

11 Hot Beach Escapes - Jetsetter

JETSETTER

Type a Destination or Hotel

Book a Trip | Today's Deals | Top Destinations | Editors' Picks | Magazine | Register | Login

11 HOT BEACH ESCAPES

SUN + SAND

11 Hot Beach Escapes

This past winter will go down in history as one of the snowiest ever, which means you've more than earned a summer getaway to the beach. So kick back, sink your toes in the sand and open a cold one. At these 11 places, the heat index is so high you'll never want to leave.

1

Santa Barbara

Where to Stay

Macakizi Hotel
Mugla, Turkey

One&Only Hayman Island
Queensland, Australia

New Note | Aa | Search

Kitchen remodel...
9:41 AM Modern...

Carson's birth...
9:40 AM Call party...

Reference for Lee
9:02 AM Worked on the same...

Contractor meeting
8:37 AM Gary says the inspec...

Tropical vacation...
Sunday Na Pali Prop...

Miami conference notes
Sunday Sales in emerging...

Landscaping
Saturday Look into flag...

NYC dining great...
Thursday Get res...

Team-building activities
Thursday Paintball tournament

Story idea
Wednesday Circus clowns rob...

Local ramen joints
Wednesday Three ramen...

Guitar specs
Tuesday Scale length: 25.5...

Things to do before I'm 40
Tuesday Complete a marathon

Potential dog names
Monday Rover

Baking soda volcano
5/29/15 6 cups flour

June 7, 2015 at 4:53 PM

Tropical vacation ideas

Na Pali Properties Kauai—talk to Jane
3-bedroom Airbnb house on Boipeba Island, Bahia
Look into Lamai Beach, Thailand
Ask Christy about Italian villas
Check with Grandma about time-share

11 Hot Beach Escapes - Jetsetter
www.jetsetter.com

Any resizable window

Narrow and wide geometries

New APIs to optimize experience

Force Touch

Text look up

Playback controls

Preview and Markup drawing

Haptic feedback

NSPressureConfiguration

NSGestureRecognizer

NSView.pressureChangeWithEvent()

NSEventType.EventTypePressure

iCloud Drive

9:41 AM 100%

Pages Edit

Create New

Proposal Centro Summer 14

Robert Letter 1

Centro May Brochure - Final

Report For Centro

School Report

Letter

Robert Jennings May 2014


9:41 AM
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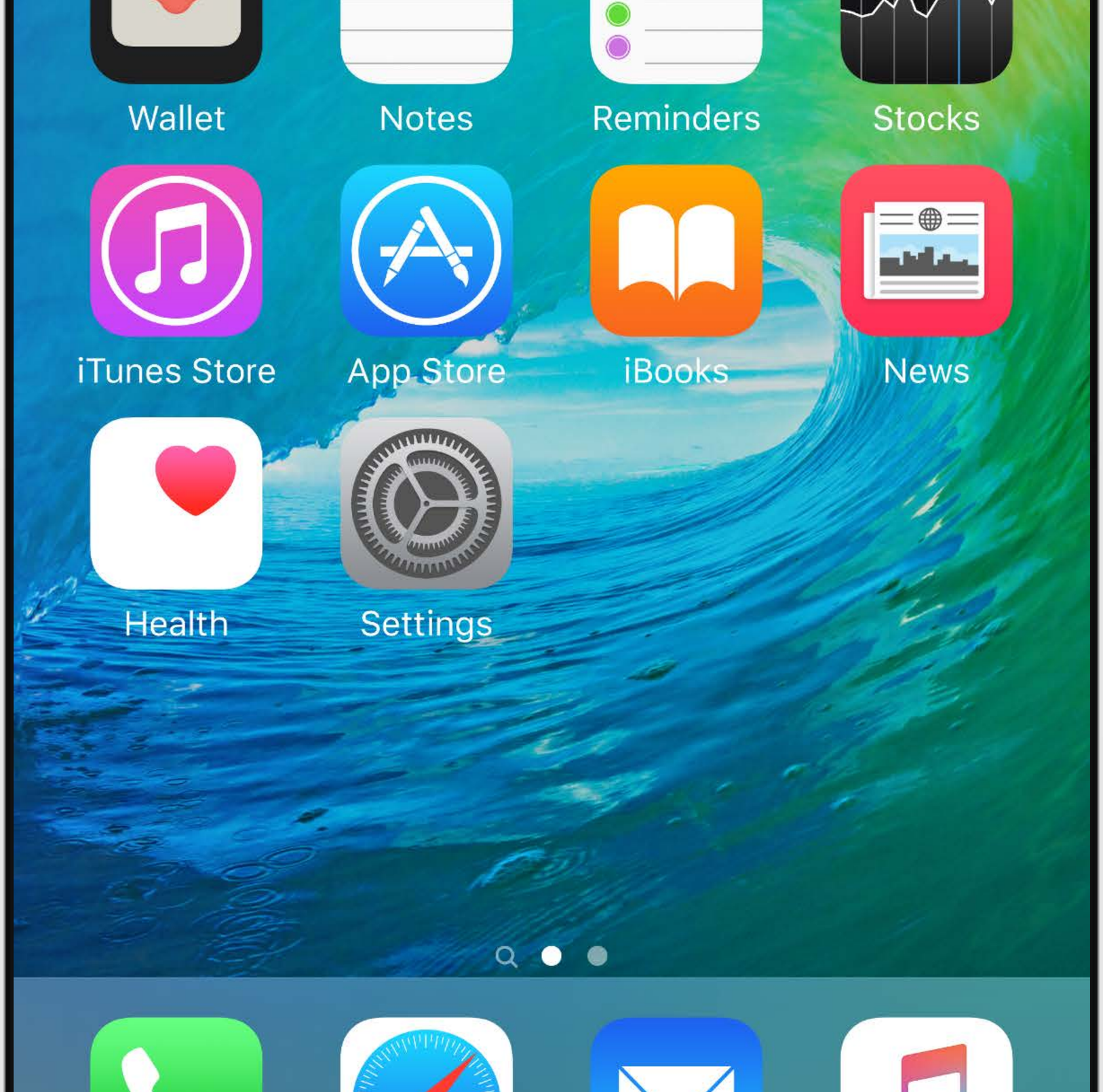
Messages
Monday
8
Calendar
Photos
Camera
Weather
Clock
280
Maps
Videos
Wallet
Notes
Reminders
Stocks
iTunes Store
App Store
iBooks
News
Health
Settings
Phone
Safari
Mail
Music


Wallet
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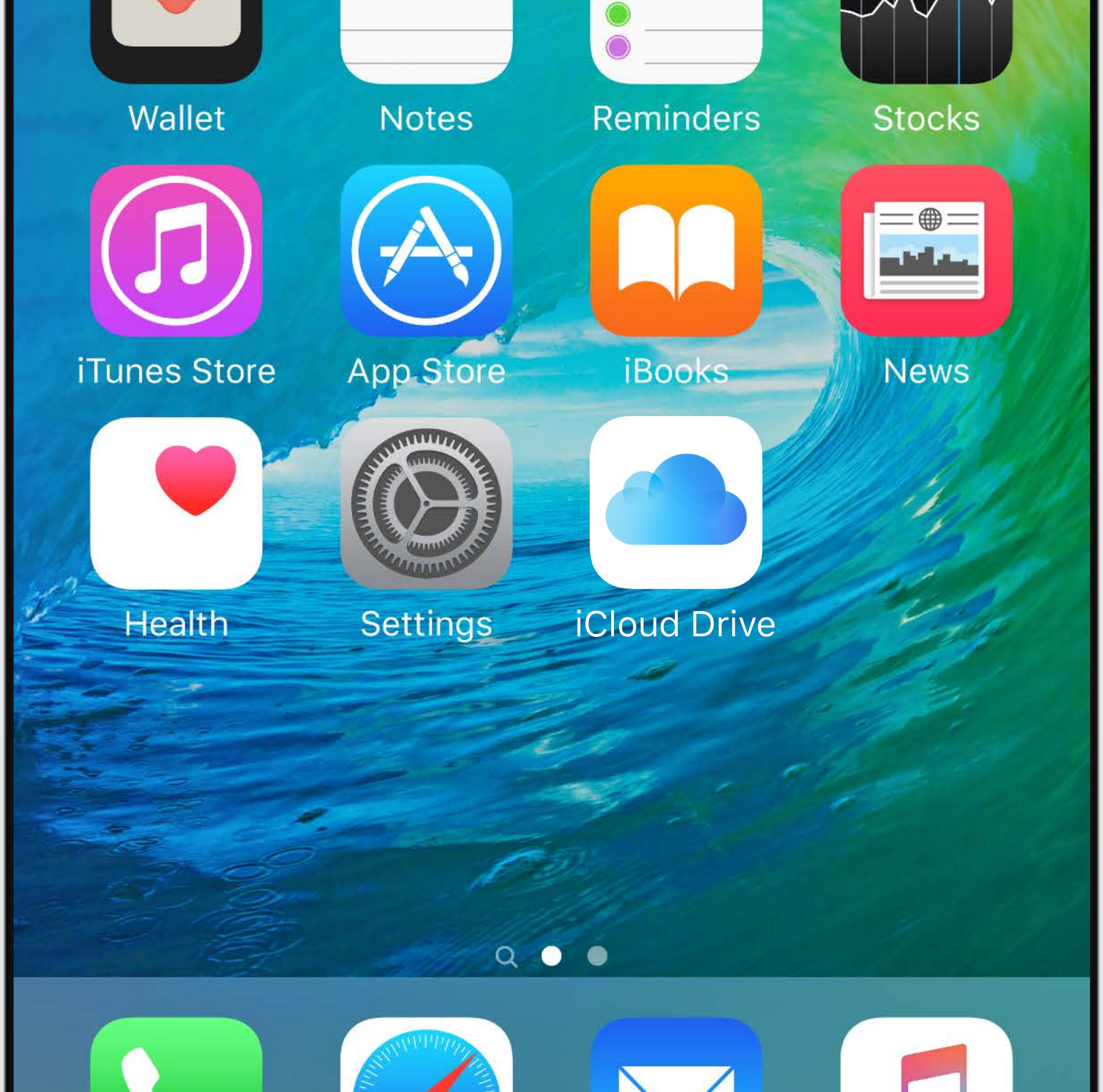
Reminders
Stocks
iTunes Store
App Store
iBooks
News
Health
Settings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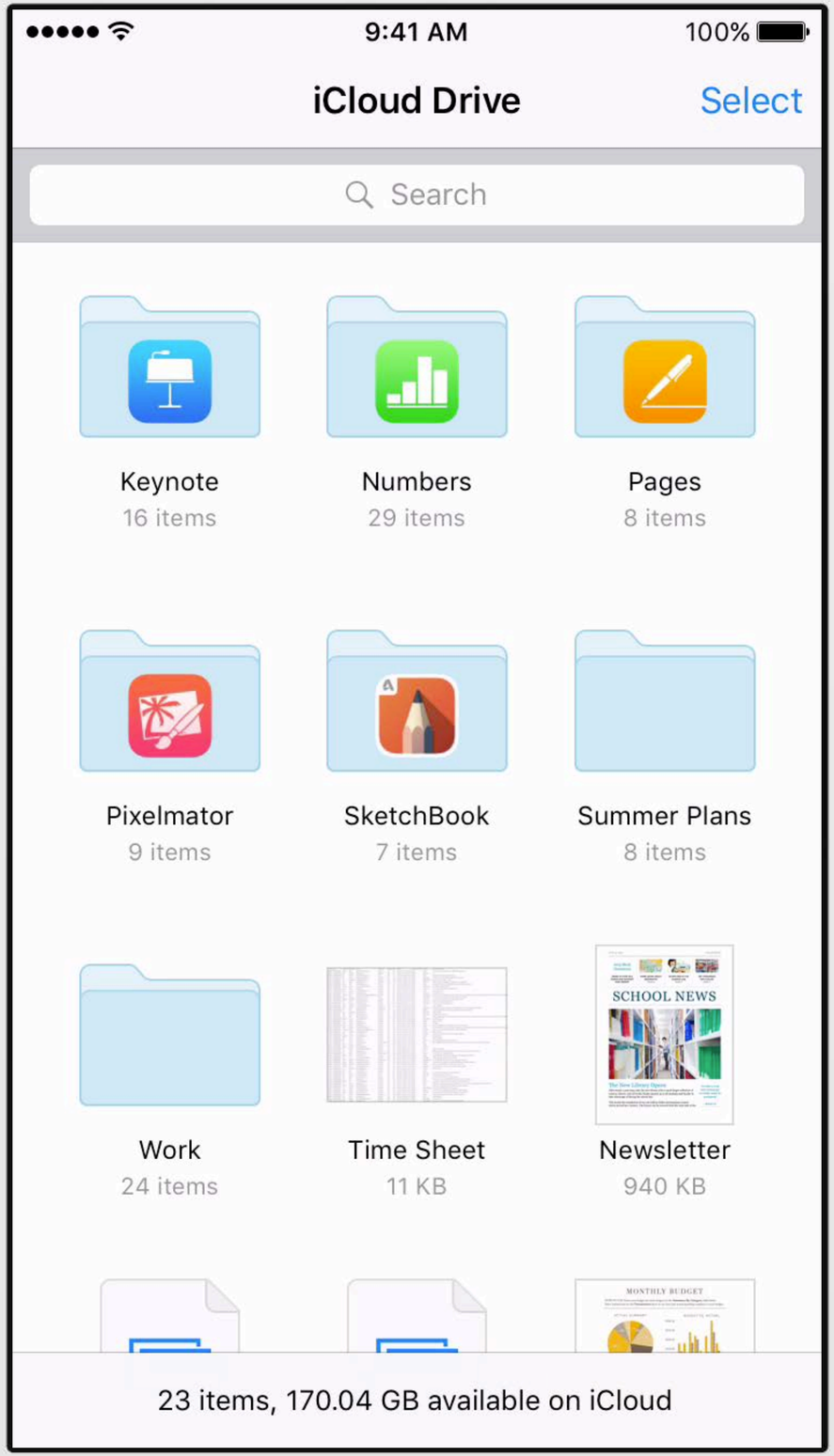
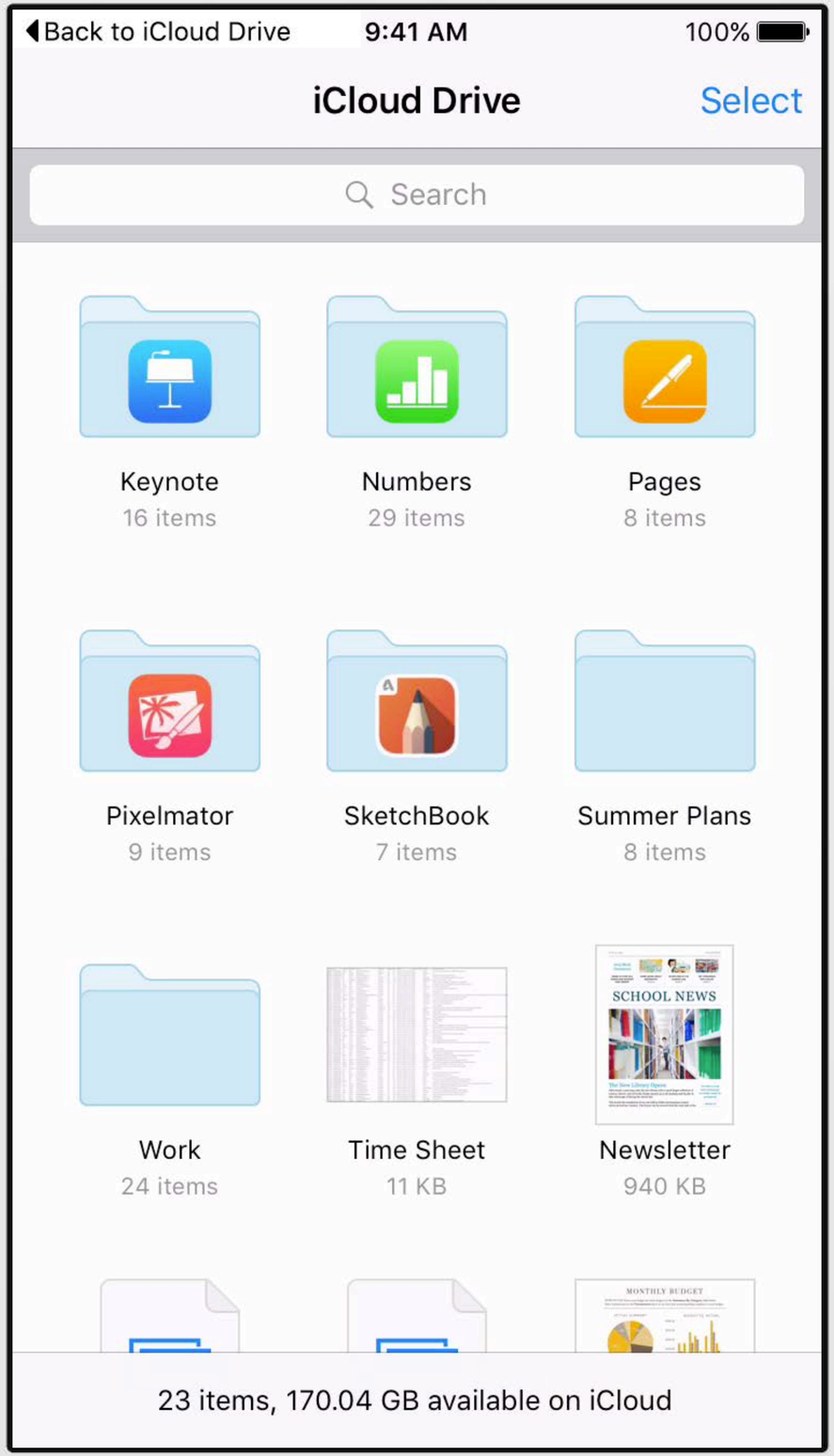
Reminders
Stocks
iTunes Store
App Store
iBooks
News
Health
Settings
iCloud Drive


9:41 AM
100%
iCloud Drive
Select
Search
Keynote
16 items
Numbers
29 items
Pages
8 items
Pixelmator
9 items
SketchBook
7 items
Summer Plans
8 items
Work
24 items
Time Sheet
11 KB
SCHOOL NEWS
Newsletter
940 KB
MONTHLY BUDGET
23 items, 170.04 GB available on iCloud


Back to iCloud Drive
9:41 AM
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iCloud Drive
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Pages
8 items
Pixelmator
9 items
SketchBook
7 items
Summer Plans
8 items
Work
24 items
Time Sheet
11 KB
SCHOOL NEWS
Newsletter
940 KB
MONTHLY BUDGET
23 items, 170.04 GB available on iCloud

Back to iCloud Drive 9:41 AM 100%

2015 Book Donations

BRING IN YOUR OLD BOOKS AND SUPPORT OUR LIBRARY

COME LEARN ABOUT GEOGRAPHY
PAGE 2

WHATS NEW IN THE SCIENCE LAB
PAGE 3

GET ORGANIZED WITH COLOR
PAGE 4

SCHOOL NEWS

The New Library Opens

After nearly a year long wait, the new library with a much larger collection of science, history, and art books finally opened up to all students and faculty to take advantage of during the school day.

This marks the completion of our six-million dollar development project, which started last January. The library can be entered from the west side of the

It's been a long time coming but it's finally ready for everybody!

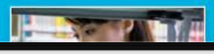
– William S.

school and hours are from 7:00 am - 4:00 pm M-F.

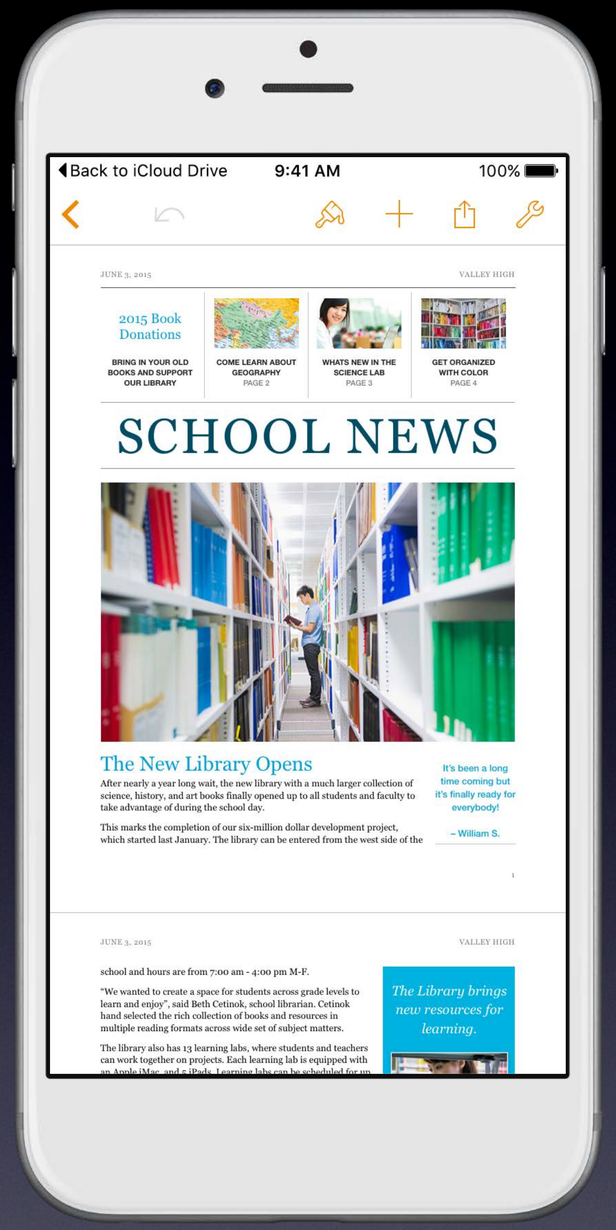
"We wanted to create a space for students across grade levels to learn and enjoy", said Beth Cetinok, school librarian. Cetinok hand selected the rich collection of books and resources in multiple reading formats across wide set of subject matters.

The library also has 13 learning labs, where students and teachers can work together on projects. Each learning lab is equipped with an Apple iMac, and 5 iPads. Learning labs can be scheduled for up

The Library brings new resources for learning.



Open in place



File Coordination

LSSupportsOpeningDocumentsInPlace

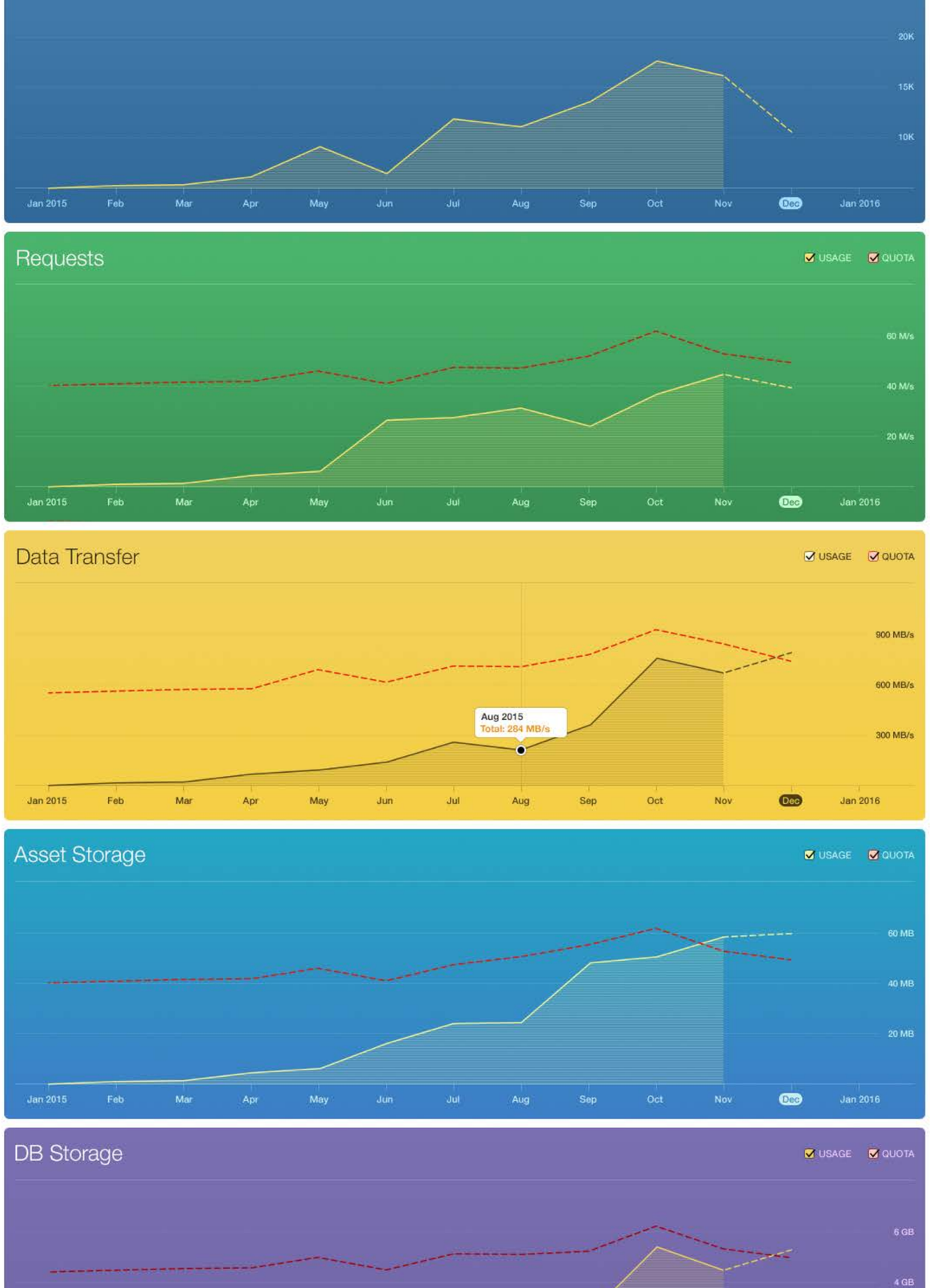
application(app: UIApplication, openURL url: NSURL, options: [String: AnyObject])

CloudKit

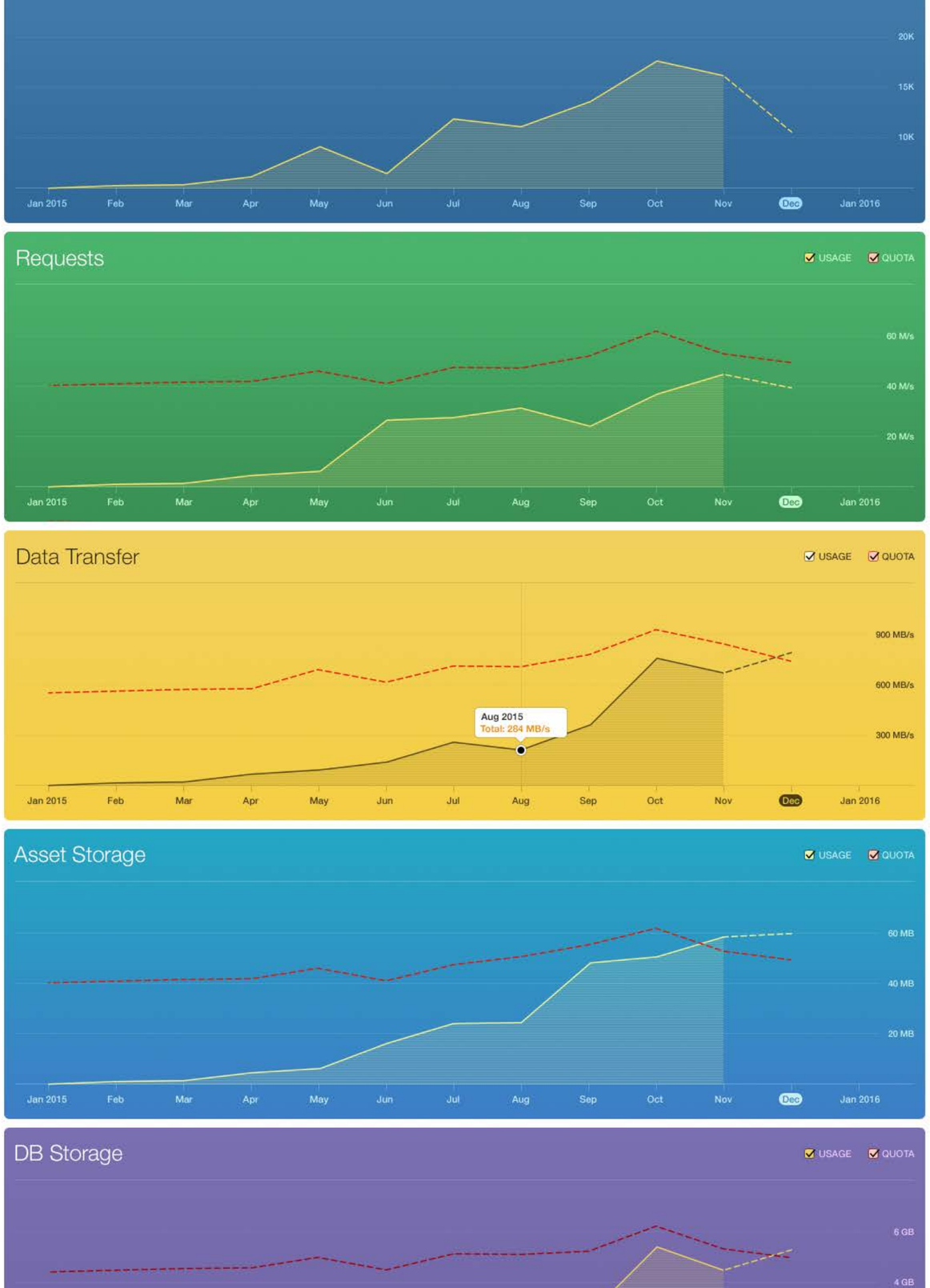
Free (with limits)

	Free
Storage	10 GB Assets 100 MB Database
Transfer	2 GB/day Assets 40 requests/second

	Free
Storage	1 PB Assets 10 TB Database
Transfer	200 TB/day Assets 400 requests/second



CloudKit Dashboard



https://developer.apple.com/cloudkit

CloudKit Web Services

Full access via JSON

JS library

Secure sign in with Apple ID

Swift

Fast

Safe

Modern

Interactive

Fast

Safe

Modern

Interactive

Open

OSI-approved license

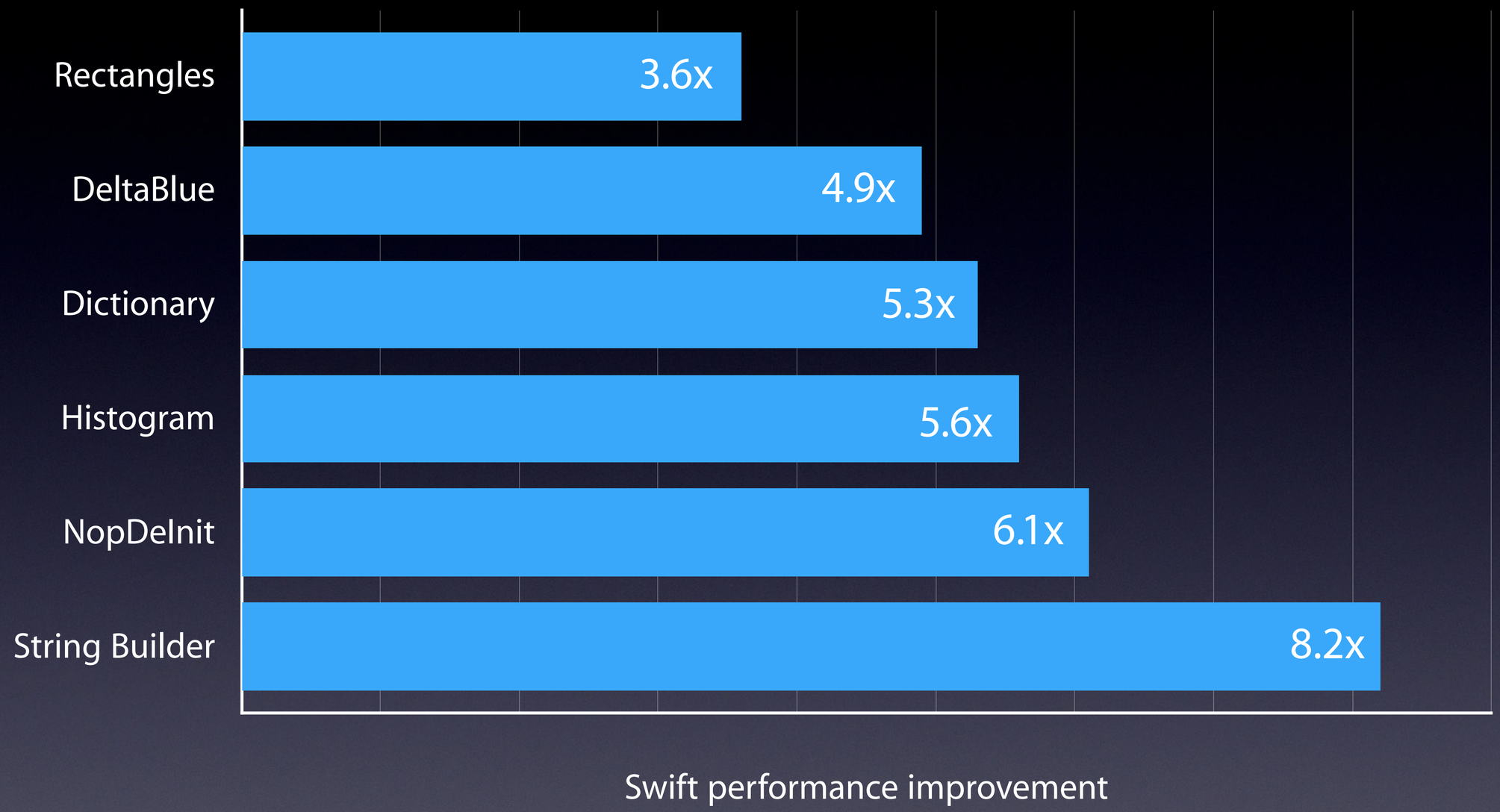
Later this year

Code contributions accepted

"Developers are still going nuts for Apple's new Swift Programming Language"

Klint Finley, Wired

Swift 2


Rectangles
3.6x
DeltaBlue
4.9x
Dictionary
5.3x
Histogram
5.6x
NopDeInit
6.1x
String Builder
8.2x
Swift performance improvement

Synthesized "headers" in Xcode

Availability checking

Multi-payload enums

Swift 1.2 to 2.0 Migrator

Shorter compile time

New playgrounds

@testable

Improved option sets

do { }

Parallelized WMO

Markdown in comments

Protocol extensions

Faster debug mode

Faster runtime

defer

Objective-C generics

Nullability in Objective-C

Error Handling Model

Mutability warnings

Recursive nested functions

C function pointer APIs

guard

Pattern matching in "if"

SIMD support

Error Handling Model

Boilerplate

Duplicated cleanup code

Implicit control flow bugs

Accidentally ignored errors

Error Handling in Swift 2

```swift
func loadMetadata(error: NSErrorPointer) -> Bool
```

```
func loadMetadata(error: NSErrorPointer) -> Bool
```

```
func loadMetadata() throws
```

```
do {
    ...
    ...
} catch {
    // Handle all errors
}
```

```
do {
    ...
    ...
} catch NSCocoaError.UserCancelledError {
    // Handle special case

} catch {
    // Handle all errors
}
```

```
do {
    try loadDocument()
    calculateResult()

} catch NSCocoaError.UserCancelledError {
    // Handle special case

} catch {
    // Handle all errors
}
```

```
throw FileSystemError.OutOfSpace
```

```swift
throw FileSystemError.OutOfSpace
```

```swift
enum FileSystemError : ErrorType {
    case MalformedPath(String)
    case InsufficientPermissions
    case OutOfSpace
    case LostInSpace
}
```

Availability Checking

Availability Checking

Availability Checking


```
doSomething()
doAnotherThing()
~~doWithAnimation()~~
setParentView()
~~layoutGuides~~
setWidth()
```

Availability Checking

```
class ViewController: UIViewController {

    func rearrangeView() {

        guides = view.layoutGuides
```

```
class ViewController: UIViewController {

    func rearrangeView() {
        'layoutGuides' is only available on iOS 9.0 or newer
        guides = view.layoutGuides
```

```
class ViewController: UIViewController {

    func rearrangeView() {

        guides = view.layoutGuides
```

```
class ViewController: UIViewController {

    func rearrangeView() {
        if #available(iOS 9.0, *) {
        guides = view.layoutGuides
```

‘layoutGuides’ is only available on iOS 9.0 and newer

Fix-it	Add if #available version check
Fix-it	Add @available attribute to enclosing instance method
Fix-it	Add @available attribute to enclosing class

```
class ViewController: UIViewController {

    func rearrangeView() {
        if #available(iOS 9.0, *) {
        guides = view.layoutGuides
```

‘layoutGuides’ is only available on iOS 9.0 and newer

Fix-it	Add if #available version check
Fix-it	Add @available attribute to enclosing instance method
Fix-it	Add @available attribute to enclosing class

```
class ViewController: UIViewController {
    @available(iOS 9.0, *)
    func rearrangeView() {
        guides = view.layoutGuides
```

‘layoutGuides’ is only available on iOS 9.0 and newer

Fix-it	Add if #available version check
Fix-it	Add @available attribute to enclosing instance method
Fix-it	Add @available attribute to enclosing class

```
class ViewController: UIViewController {
    @available(iOS 9.0, *)
    func rearrangeView() {
        guides = view.layoutGuides
```

‘layoutGuides’ is only available on iOS 9.0 and newer

Fix-it	Add if #available version check
Fix-it	Add @available attribute to enclosing instance method
Fix-it	Add @available attribute to enclosing class

```
@available(iOS 9.0, *)
class ViewController: UIViewController {

    func rearrangeView() {
        guides = view.layoutGuides
```

‘layoutGuides’ is only available on iOS 9.0 and newer

Fix-it	Add if #available version check
Fix-it	Add @available attribute to enclosing instance method
Fix-it	Add @available attribute to enclosing class

```
let x = filter(map(numbers) { $0 * 3 }, isOdd)
```

```
let x = numbers
```

Fluent Interfaces

```
let x = numbers.map { $0 * 3 }.filter(isOdd)
```

Fluent Interfaces

```
func myMethod(x : Thing?) {

}
```

Early Exits

```
func myMethod(x : Thing?) {
      if let x = x {
         ...
         ...
         ...
      }
}
```

Early Exits

```
func myMethod(x : Thing?) {
      guard let x = x else { return }
         ...
         ...
         ...
    }
}
```

Early Exits

```
func myMethod(x : Thing?) {
      guard let x = x else { return }
      ...
      ...
      ...
}
```

Early Exits

```swift
class func componentsFromLocaleIdentifier(String)
```

Swift-er SDK

```swift
class func componentsFromLocaleIdentifier(String)
-> [NSObject : AnyObject] !
```

Swift-er SDK

```swift
class func componentsFromLocaleIdentifier(String)
-> [NSObject : AnyObject]
```

Swift-er SDK

```swift
class func componentsFromLocaleIdentifier(String)
-> [String : String]
```

Swift-er SDK

Swift in Xcode

Swift in Xcode

Review Changes:

Lister (OS X) 〉 My Mac | Lister | Convert Lister (OS X): **Failed** | Today at 4:56 PM | 21 7

Lister 〉 Lister OS X App 〉 ListerKit Framework (OS X) 〉 Document Architecture 〉 ListDocument.swift 〉 makeWindowControllers()

- ☑ ListDocument.swift
- ☑ TodayListManager.swift
- ☑ List.swift
- ☑ ListItem.swift
- ☑ ListPresenterDelegate...
- ☑ ListPresenterType.swift
- ☑ AllListItemsPresenter....
- ☑ IncompleteListItemsPr...
- ☑ ListPresenterAlgorith...
- ☑ ListPresenterUtilities.s...

ListDocument.swift (After Conversion)

```
    override public func readFromData(data: NSData,
       ofType typeName: String) throws {
        unarchivedList = NSKeyedUnarchiver.
           unarchiveObjectWithData(data) as? List

        if let unarchivedList = unarchivedList {
            listPresenter?.setList(unarchivedList)

            return
        }

        throw NSError(domain: NSCocoaErrorDomain,
           code: NSFileReadCorruptFileError,
           userInfo: [
            NSLocalizedDescriptionKey:
               NSLocalizedString("Could not read
               file.", comment: "Read error
               description"),
            NSLocalizedFailureReasonErrorKey:
               NSLocalizedString("File was in an
               invalid format.", comment: "Read
               failure reason")
        ])
    }

    override public func dataOfType(typeName: String)
       throws -> NSData {
        let outError: NSError! = NSError(domain:
           "Migrator", code: 0, userInfo: nil)
        if let archiveableList = listPresenter?.
           archiveableList {
            return NSKeyedArchiver.
               archivedDataWithRootObject
               (archiveableList)
        }
```

ListDocument.swift (Before Conversion)

```
    override public func readFromData(data: NSData,
       ofType typeName: String, error outError:
       NSErrorPointer) -> Bool {
        unarchivedList = NSKeyedUnarchiver.
           unarchiveObjectWithData(data) as? List

        if let unarchivedList = unarchivedList {
            listPresenter?.setList(unarchivedList)

            return true
        }

        if outError != nil {
            outError.memory = NSError(domain:
               NSCocoaErrorDomain, code:
               NSFileReadCorruptFileError, userInfo:
               [
                NSLocalizedDescriptionKey:
                   NSLocalizedString("Could not read
                   file.", comment: "Read error
                   description"),
                NSLocalizedFailureReasonErrorKey:
                   NSLocalizedString("File was in an
                   invalid format.", comment: "Read
                   failure reason")
            ])
        }

        return false
    }

    override public func dataOfType(typeName: String,
       error outError: NSErrorPointer) -> NSData? {
        if let archiveableList = listPresenter?.
           archiveableList {
            return NSKeyedArchiver.
```

Cancel | Previous | Save

Swift 2 Migrator

Header File View

```swift
//
//  SplashScreenPeopleWallView.swift
//

import UIKit

protocol SplashScreenPeopleWallViewDelegate {
    func nextImageForSplashScreenPeopleWallView(wallView: SplashScreenPeopleWallView) -> UIImage?
}

/// Custom view that renders in IB with photos of my group of friends
public class SplashScreenPeopleWallView: UIView, UIScrollViewDelegate {

    @IBOutlet var delegate: SplashScreenPeopleWallViewDelegate? {
        didSet {
            reloadData()
        }
    }

    private static let kNumberOfColumns = 5
    private static let kNumberOfRows = 3

    private var scrollView: UIScrollView!
    private var imageViews: [UIImageView] = []
    private var displayLink: CADisplayLink!

    required public init(coder aDecoder: NSCoder) {
        super.init(coder: aDecoder)
        commonInit()
    }

    public override init(frame: CGRect) {
        super.init(frame: frame)
        commonInit()
    }

    private func commonInit() {
        scrollView = UIScrollView(frame: CGRectZero)
        scrollView.showsHorizontalScrollIndicator = false
        scrollView.scrollEnabled = false

        for _ in 0 ..< SplashScreenPeopleWallView.kNumberOfRows * (SplashScreenPeopleWallView.kNumberOfColumns
```

```swift
//
//  SplashScreenPeopleWallView.swift
//

import UIKit

protocol SplashScreenPeopleWallViewDelegate {
    func nextImageForSplashScreenPeopleWallView(wallView: SplashScreenPeopleWallView) -> UIImage?
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    required public init(coder aDecoder: NSCoder) {
        super.init(coder: aDecoder)
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    }

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        scrollView.showsHorizontalScrollIndicator = false
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        for _ in 0 ..< SplashScreenPeopleWallView.kNumberOfRows * (SplashScreenPeopleWallView.kNumberOfColumns
```

```swift
//
//  SplashScreenPeopleWallView.swift
//

import UIKit

protocol SplashScreenPeopleWallViewDelegate {
    func nextImageForSplashScreenPeopleWallView(wallView: SplashScreenPeopleWallView) -> UIImage?
}

/// Custom view that renders in IB with photos of my group of friends
public class SplashScreenPeopleWallView: UIView, UIScrollViewDelegate {

    var delegate: SplashScreenPeopleWallViewDelegate?

    init(coder aDecoder: NSCoder)
    init(frame: CGRect)

    /// This helps the custom view show up properly at design time
    func prepareForInterfaceBuilder()
    func scrollViewDidScroll(scrollView: UIScrollView)

    /// The main game view consists a wall of images as well as a scroll area
    func layoutSubviews()

    /// Drives a pretty simply right to left scroll of the friend's photos
    func startAnimating()
    func displayLinkDidFire(displayLink: CADisplayLink)
    func reloadData()
}
```

Header File View

Ready | Today at 7:46 PM

Swift Standard Library 〉 Processing Sequences and Collections

Map

The `map` function takes an array and returns a new array by applying a `transform` to each element in the array. For example, the following code multiplies the quantity of the ingredient by the cost of the ingredient to find the total cost for each ingredient.

```
let totalPrices = shoppingList.map { ingredient in
    return ingredient.quantity * ingredient.price
```

[2, 6, 2, 4, 6, 1]
(6 times)

```
}
visualize(shoppingList, totalPrices)
```

UITableView

1x Tomato	→	$2
1x Saffron	→	$6
1x Rice	→	$2
4x Garlic	→	$4
2x Pepper	→	$6
1x Salt	→	$1

Reduce

You can use the `reduce` function to combine elements of an array into a single value. The `reduce` function takes an initial value to start with and then a function to combine each element in the array with the previous value. The following code takes the total price list and adds them together to compute a final remaining cost:

```
let sum = totalPrices.reduce(0) { currentPrice, priceToAdd in
    return currentPrice + priceToAdd
```

21
(6 times)

```
}
```

30 sec

Rich Comments in Playgrounds

Ready | Today at 7:44 PM

Swift Standard Library 〉 Processing Sequences and Collections

```
/*:
### Map
The `map` function takes an array and returns a new array by applying a `transform` to each
   element in the array. For example, the following code multiplies the quantity of the
   ingredient by the cost of the ingredient to find the total cost for each ingredient.
*/
let totalPrices = shoppingList.map { ingredient in                    [2, 6, 2, 4, 6, 1]
    return ingredient.quantity * ingredient.price                     (6 times)
```

```
}
visualize(shoppingList, totalPrices)                                  UITableView
```

1x Tomato	→	$2
1x Saffron	→	$6
1x Rice	→	$2
4x Garlic	→	$4
2x Pepper	→	$6
1x Salt	→	$1

```
/*:
### Reduce
You can use the `reduce` function to combine elements of an array into a single value. The
   `reduce` function takes an initial value to start with and then a function to combine each
   element in the array with the previous value. The following code takes the total price list
   and adds them together to compute a final remaining cost:
*/
let sum = totalPrices.reduce(0) { currentPrice, priceToAdd in         21
    return currentPrice + priceToAdd                                  (6 times)
```

```
}
sum                                                                   21
```

21

```
/*:
```

30 sec

Rich Comments in Playgrounds

MovementComponent.swift — Edited

DemoBots 〉 DemoBots 〉 Components 〉 MovementComponent.swift 〉 MovementComponent

```swift
/**
Produces the destination point for the node, based on the provided translation.

The performance of this method is based on a graded algorith depending on the `node` object's
   grading and proximity.

    * TODO: This function isn't working quite right -- yet

![Sample graph](performance.png)

- parameter node: The node used to compute the point to be translated to
- parameter translation: The translational movement to apply to the node
- parameter duration: The time interval over which to apply the translation

- returns: The point to which the `node` should move over the specified `duration` time interval.
   Returns `nil` if there is no displacement.
*/
func pointForTranslatingNode(node: SKNode, withTranslationalMovement
                             translation: MovementKind,
                             duration: NSTimeInterval) -> CGPoint? {

    // No translation if the vector is a zeroVector.
    if translation.displacement == float2() { return nil }

    var displacement = translation.displacement

    // If the translation is relative, the displacement vector needs to be
    // rotated to account for the node's current orientation.
    if translation.isRelativeToOrientation {
        displacement = calculateAbsoluteDisplacementFromRelativeDisplacement(displacement)
    }
```

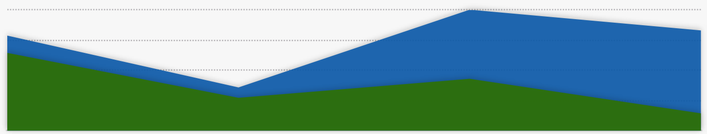
Rich comments in .swift files

Declaration `func pointForTranslatingNode(node: SKNode, withTranslationalMovement translation: MovementKind, duration: NSTimeInterval) -> CGPoint?`

Description Produces the destination point for the node, based on the provided translation.

The performance of this method is based on a graded algorith depending on the node object's grading and proximity.

```
* TODO: This function isn't working quite right -- yet
```



Parameters

node	The node used to compute the point to be translated to
translation	The translational movement to apply to the node
duration	The time interval over which to apply the translation

Returns The point to which the node should move over the specified `duration` time interval. Returns `nil` if there is no displacement.

Declared In MovementComponent.swift

nponent.swift — Edited

MovementComponent

based on the provided translation.

graded algorith depending on the `node` object's

right -- yet

e point to be translated to
vement to apply to the node
which to apply the translation

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```
*/
func pointForTranslatingNode(node: SKNode, withTranslationalMovement
                             translation: MovementKind,
                             duration: NSTimeInterval) -> CGPoint? {

    // No translation if the vector is a zeroVector.
    if translation.displacement == float2() { return nil }

    var displacement = translation.displacement

    // If the translation is relative, the displacement vector needs to be
    // rotated to account for the node's current orientation.
    if translation.isRelativeToOrientation {
        displacement = calculateAbsoluteDisplacementFromRelativeDisplacement(displacement)
    }
```

Rich comments in .swift files

Playgrounds

Multiple pages

Rich text comments

Inline results

Supporting source files

Embedded resources

Demo

Playgrounds


XCODE

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help

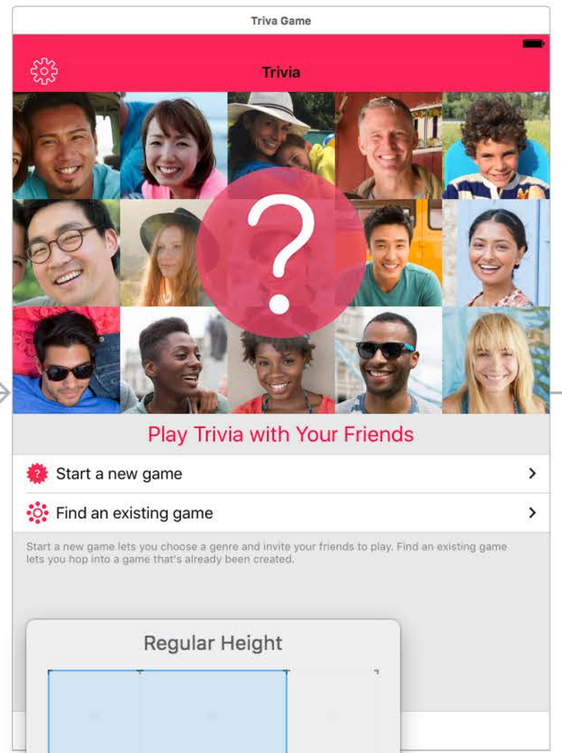
Wed 9:41 AM

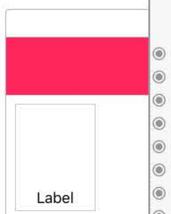
Trivia 〉 iPhone 6 | Trivia | Build Trivia: **Succeeded** | Today at 9:41 AM

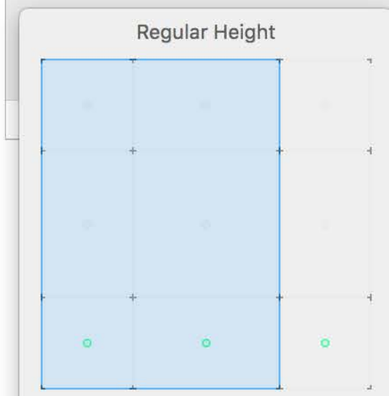
Trivia 〉 Trivia 〉 Main.storyboard 〉 No Selection

Manual 〉 LobbyViewController.swift 〉 No Selection

- Trivia
  - Trivia
    - AppDelegate.swift
    - Main.storyboard
    - Media.xcassets
    - GameNavigationController.swift
    - Splash Screen
    - Genre Picker
    - Player Picker
    - Lobby View Controller
      - LobbyViewController.swift
      - CircleLayout.swift
    - Model
      - Game.swift
      - Player.swift
      - Genre.swift
    - View
      - GenreCollectionViewCell.swift
      - LobbyCollectionViewCell.swift
      - DisclosureIndicatorView.swift
    - Supporting Files
  - Trivia Tests
  - Trivia UI Tests
    - Trivia_UI_Tests.swift
    - Info.plist
  - UsageStatistics
    - UsageStatistics.h
    - UsageLog.h
    - UsageLog.m
    - Info.plist
  - Products

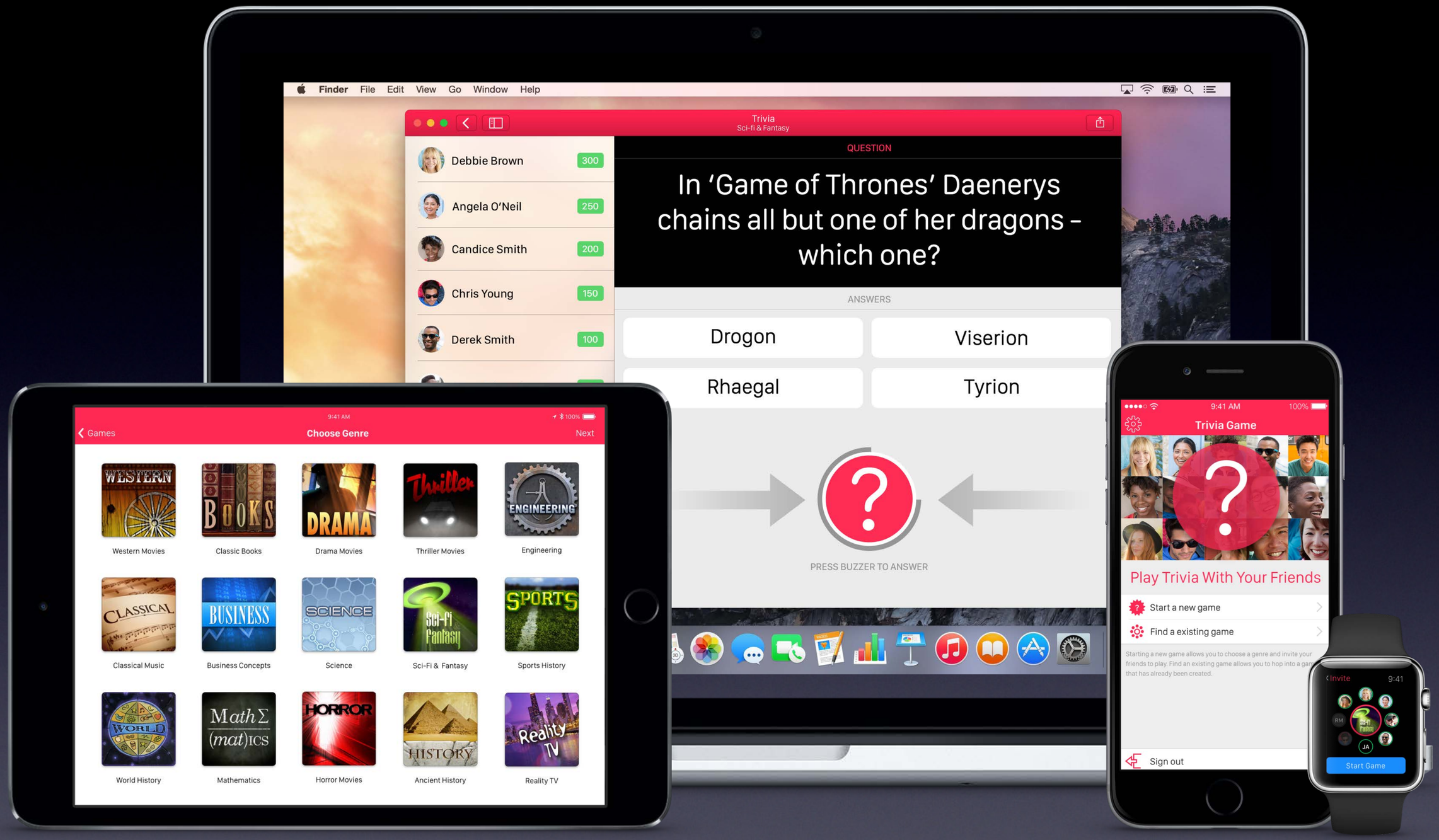


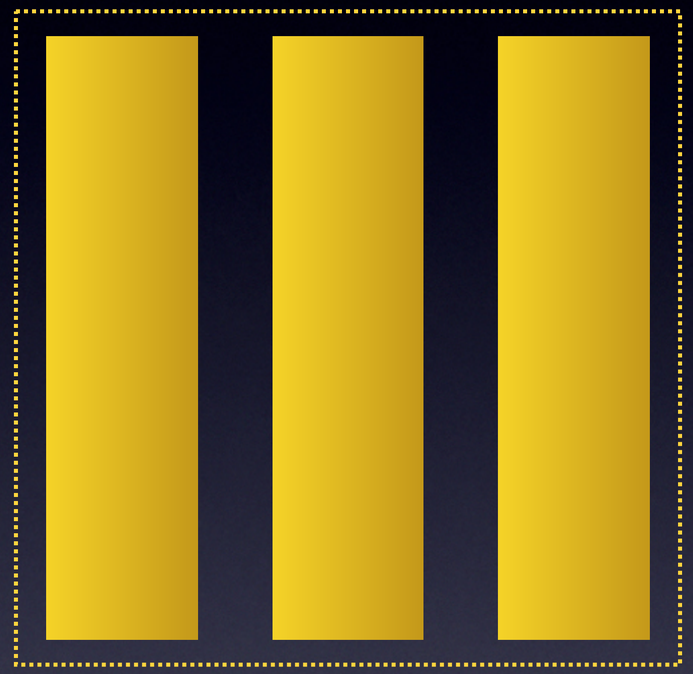




wAny hRegular

```
public class LobbyViewController: UIViewController, UICollectionViewDataSource,
    UICollectionViewDelegate {

    public var game: Game?

    @IBOutlet var collectionView: UICollectionView!
    @IBOutlet var genreImageView: UIImageView!
    @IBOutlet var genreLabel: UILabel!
    @IBOutlet var playersReadyLabel: UILabel!
    @IBOutlet var infoTextLabel: UILabel!
    @IBOutlet var readyToPlaySwitch: UISwitch!
    @IBOutlet var startGameButton: UIButton!
    @IBOutlet weak var genreImageWrapperView: UIView!

    var players: [Player] = []
    var readyToPlay: Bool = false
    var viewDidAppearWasCalled: Bool = false

    // MARK: - View lifecycle

    override public func viewDidLoad() {
        super.viewDidLoad()

        collectionView.collectionViewLayout = CircleLayout(itemSize: CGSizeMake
            (88, 113))
        genreImageView.image = game?.genre?.image
        genreImageWrapperView.layer.borderColor = UIColor.redColor().CGColor

        if let g = game {
            players += g.players
        }
    }

    public override func viewWillAppear(animated: Bool) {
        super.viewWillAppear(animated)

        genreLabel.text = game?.genre?.name
        readyToPlaySwitch.on = readyToPlay

        updateUI()
    }

    public override func viewDidAppear(animated: Bool) {
        super.viewDidAppear(animated)

        viewDidAppearWasCalled = true
        animateInPlayers()
    }

    // MARK: - Collection view data source

    public func collectionView(collectionView: UICollectionView,
        numberOfItemsInSection section: Int) -> Int {
        return viewDidAppearWasCalled ? players.count : 0
```


Finder File Edit View Go Window Help
Trivia
Sci-fi & Fantasy
Debbie Brown 300
Angela O'Neil 250
Candice Smith 200
Chris Young 150
Derek Smith 100
QUESTION
In 'Game of Thrones' Daenerys chains all but one of her dragons – which one?
ANSWERS
Drogon
Viserion
Rhaegal
Tyrion
PRESS BUZZER TO ANSWER
9:41 AM
Games
Choose Genre
Next
Western Movies
Classic Books
Drama Movies
Thriller Movies
Engineering
Classical Music
Business Concepts
Science
Sci-Fi & Fantasy
Sports History
World History
Mathematics
Horror Movies
Ancient History
Reality TV
9:41 AM
100%
Trivia Game
Play Trivia With Your Friends
Start a new game
Find a existing game
Sign out
Invite
9:41
Start Game



Stack View

Stack View

Round 1

Sci-fi & Fantasy

Round 1

Sci-fi & Fantasy

Round 1

Sci-fi & Fantasy

QUESTION

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Round 1

Sci-fi & Fantasy

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Round 1

Sci-fi & Fantasy

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ANSWERS

Round 1

Sci-fi & Fantasy

QUESTION

In ‘Game of Thrones’ Daenerys chains all but one of her dragons — which one?

ANSWERS

- Drogon
- Viserion
- Rhaegal

Round 1

Sci-fi & Fantasy

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Round 1

Sci-fi & Fantasy

QUESTION

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9:41 AM
100%
Round 1
Sci-fi & Fantasy
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ANSWERS
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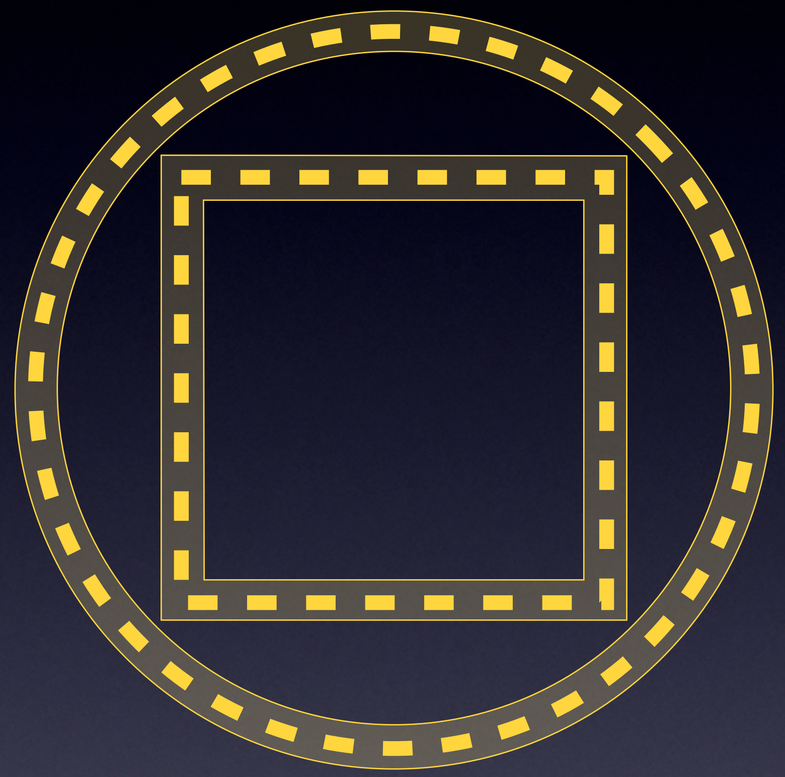
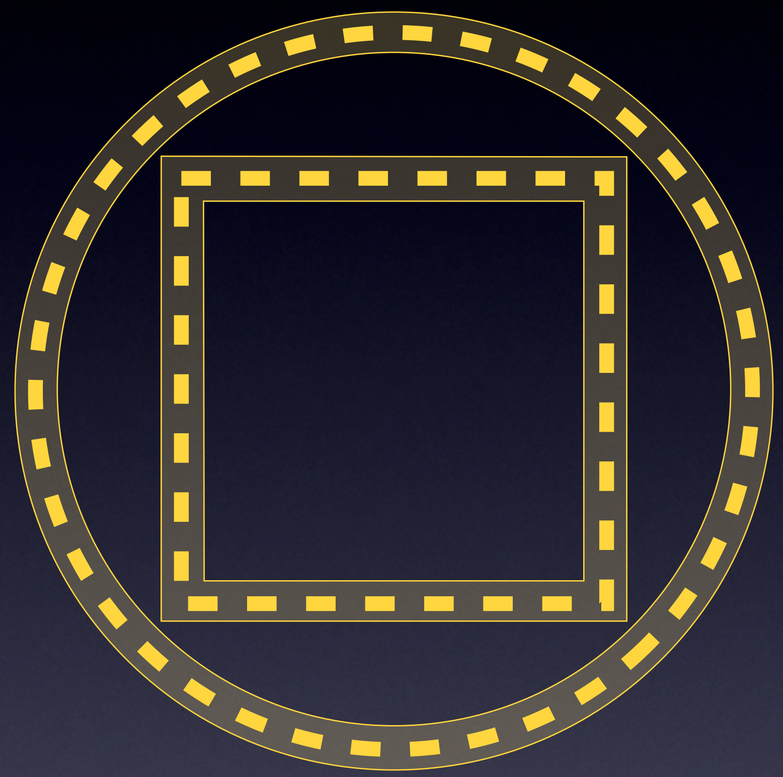
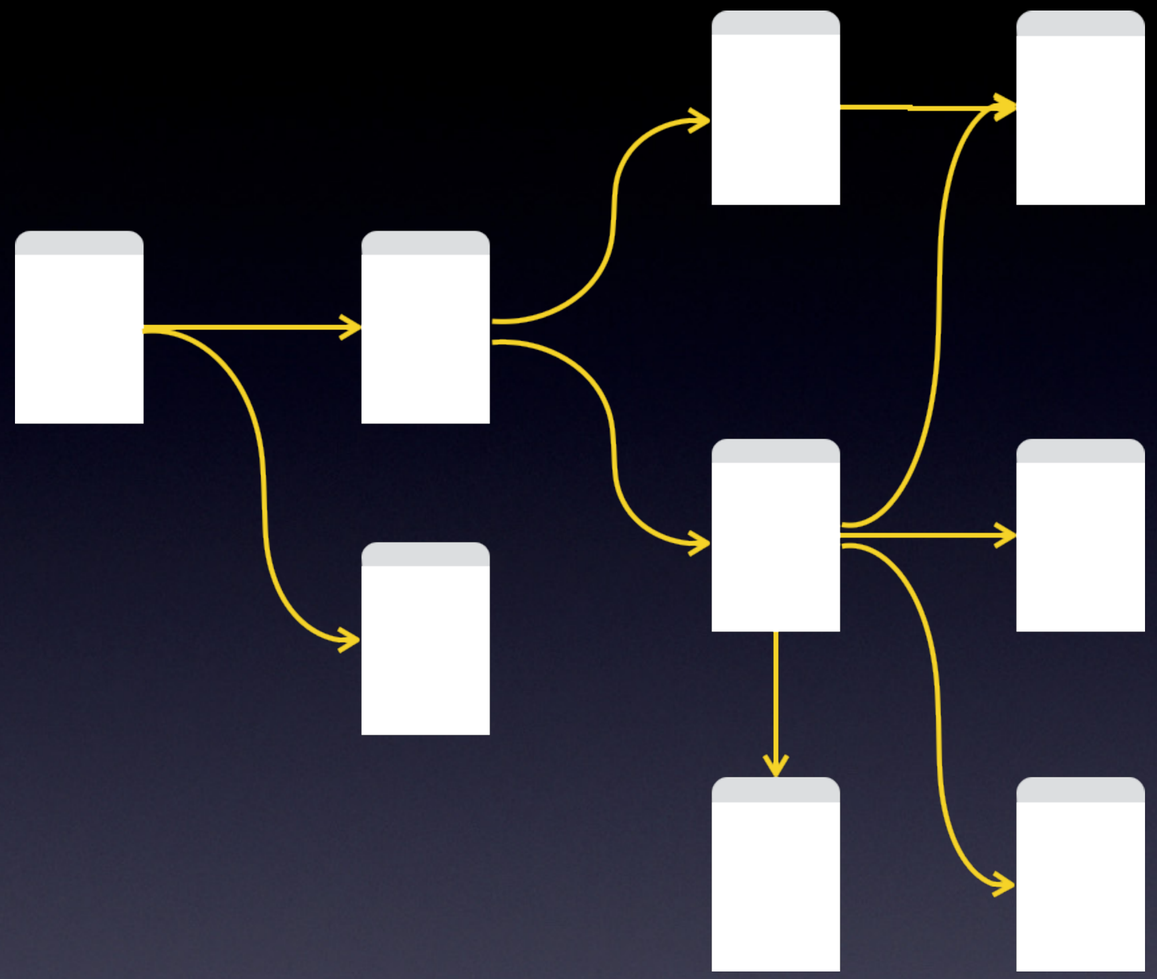
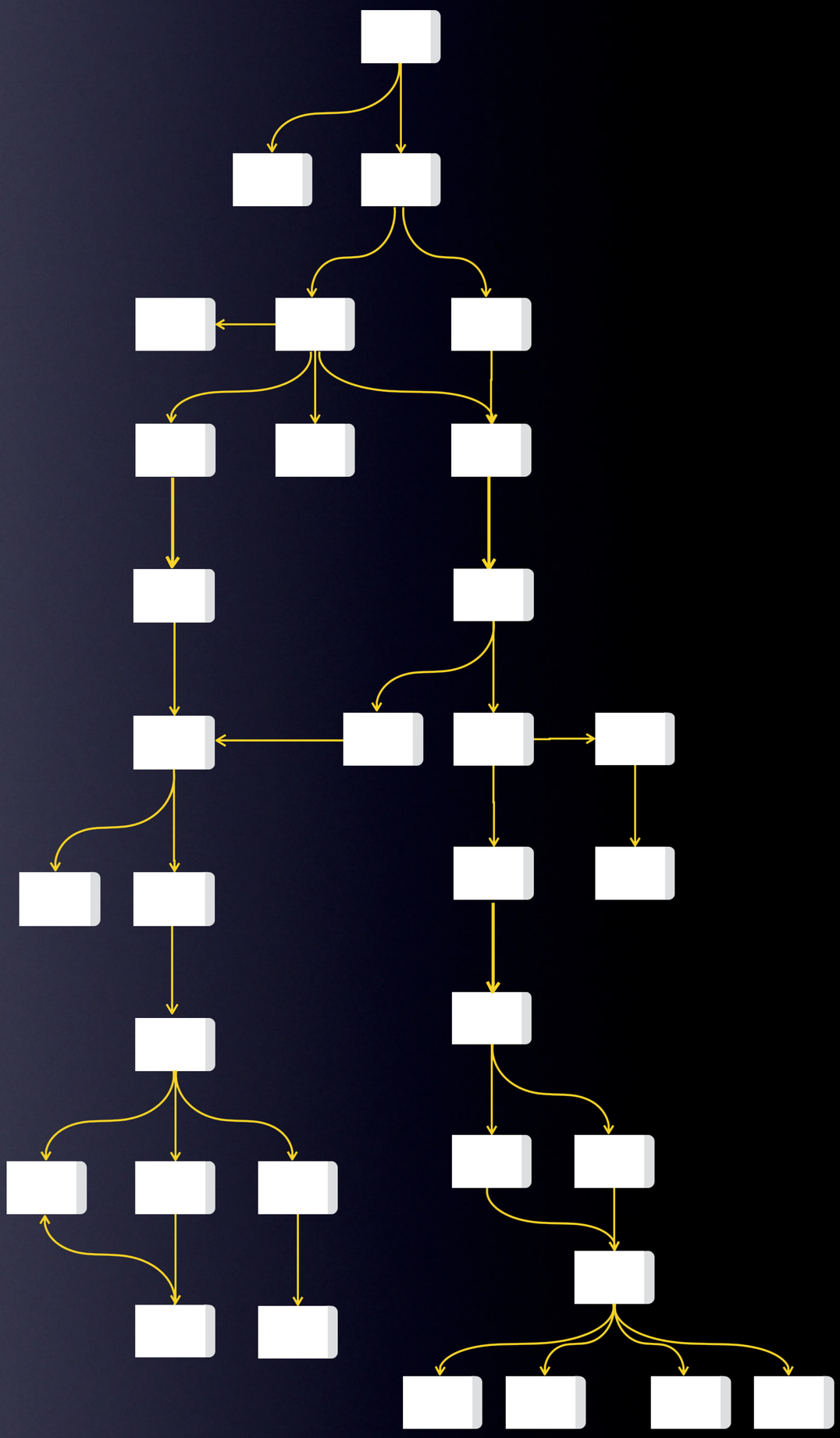


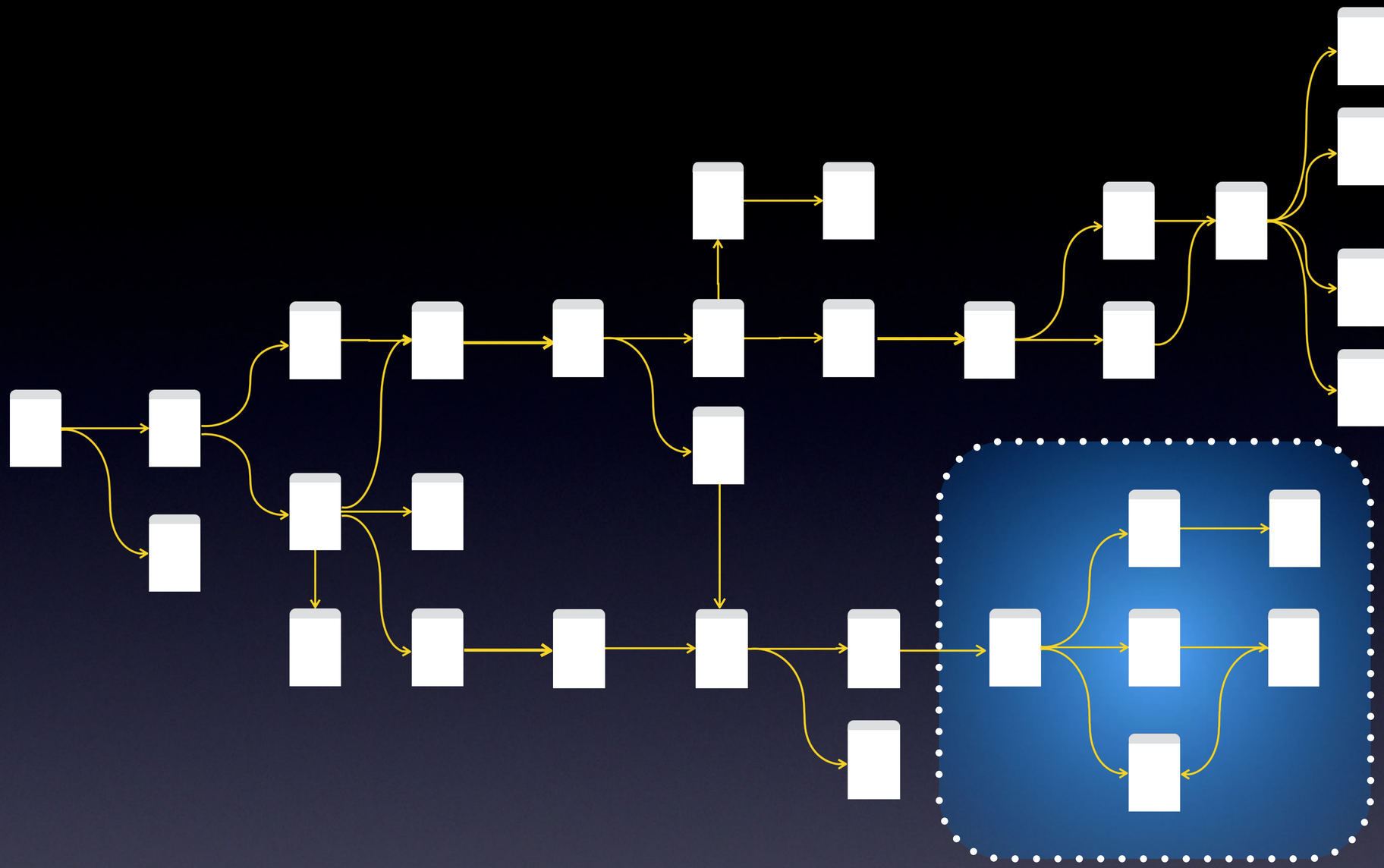
Storyboard References

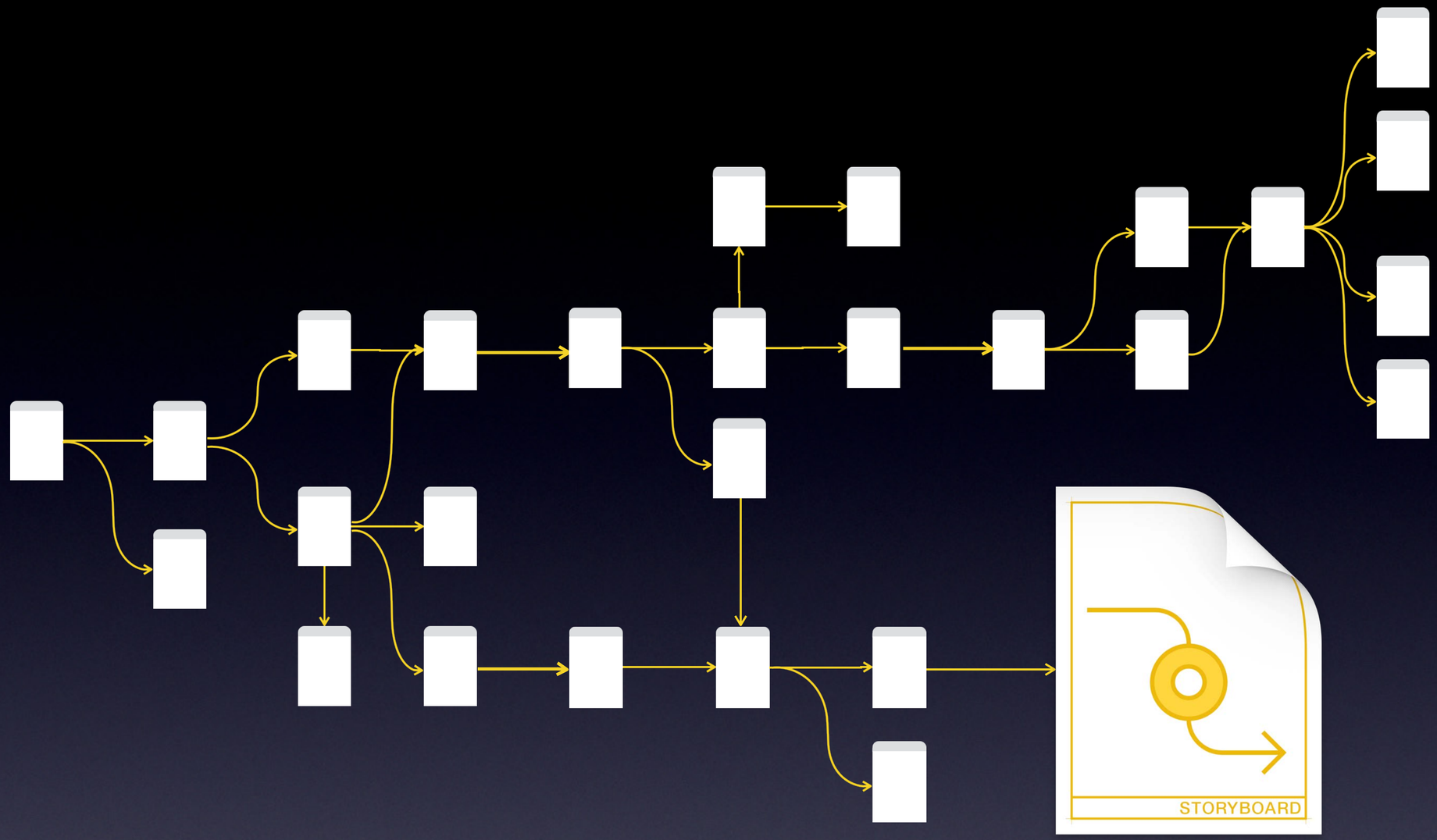


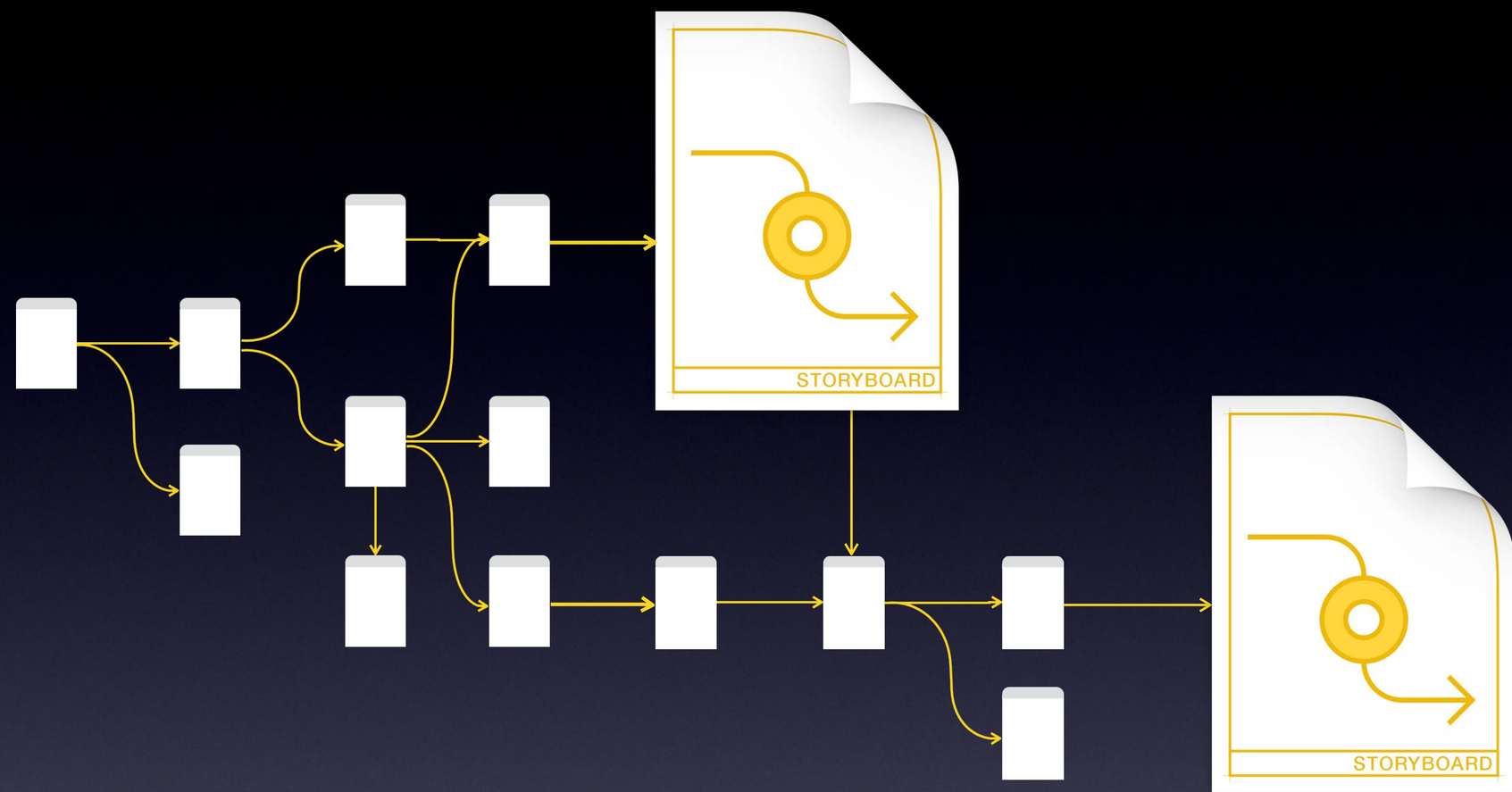
Storyboard References

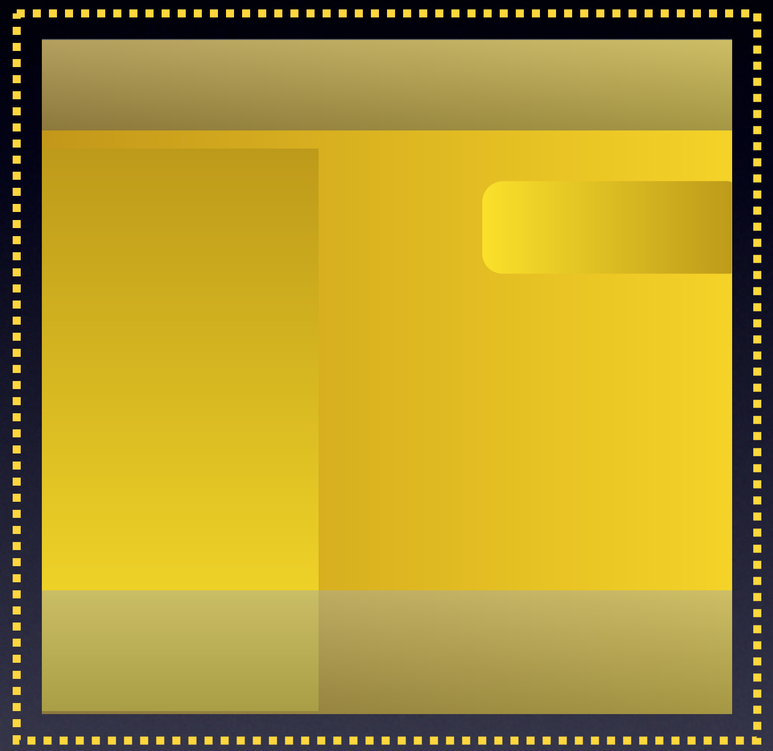




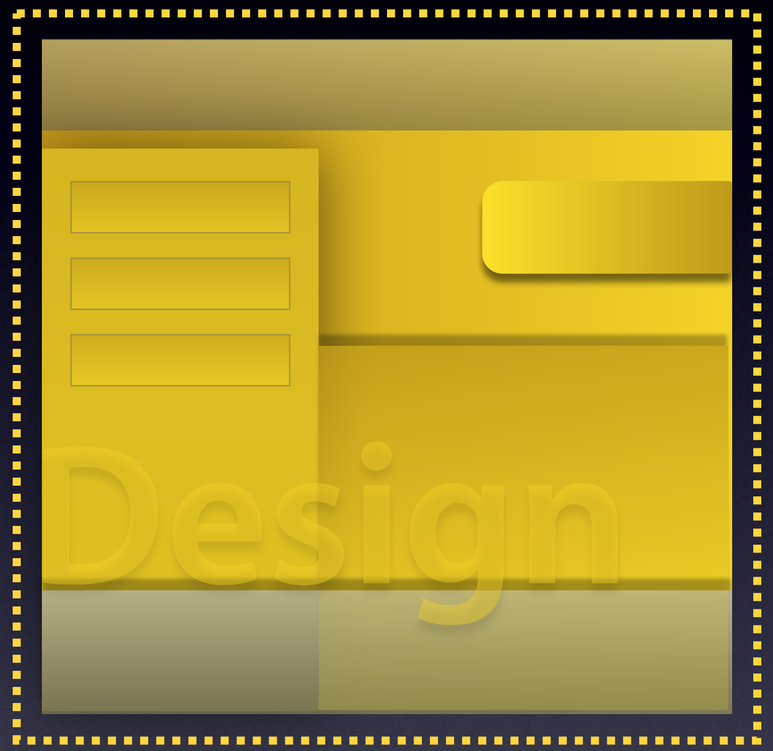



STORYBOARD

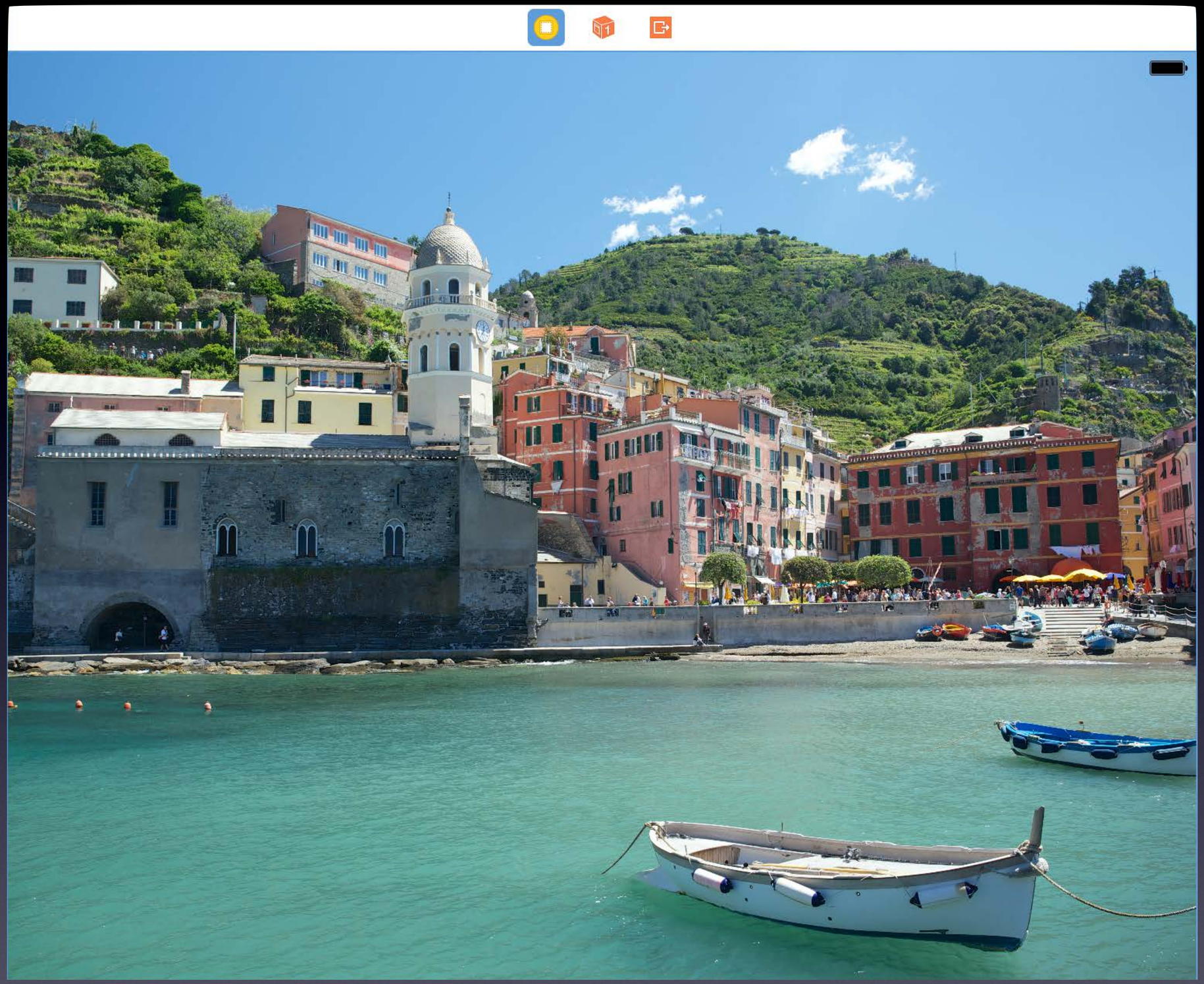

STORYBOARD
STORYBOARD

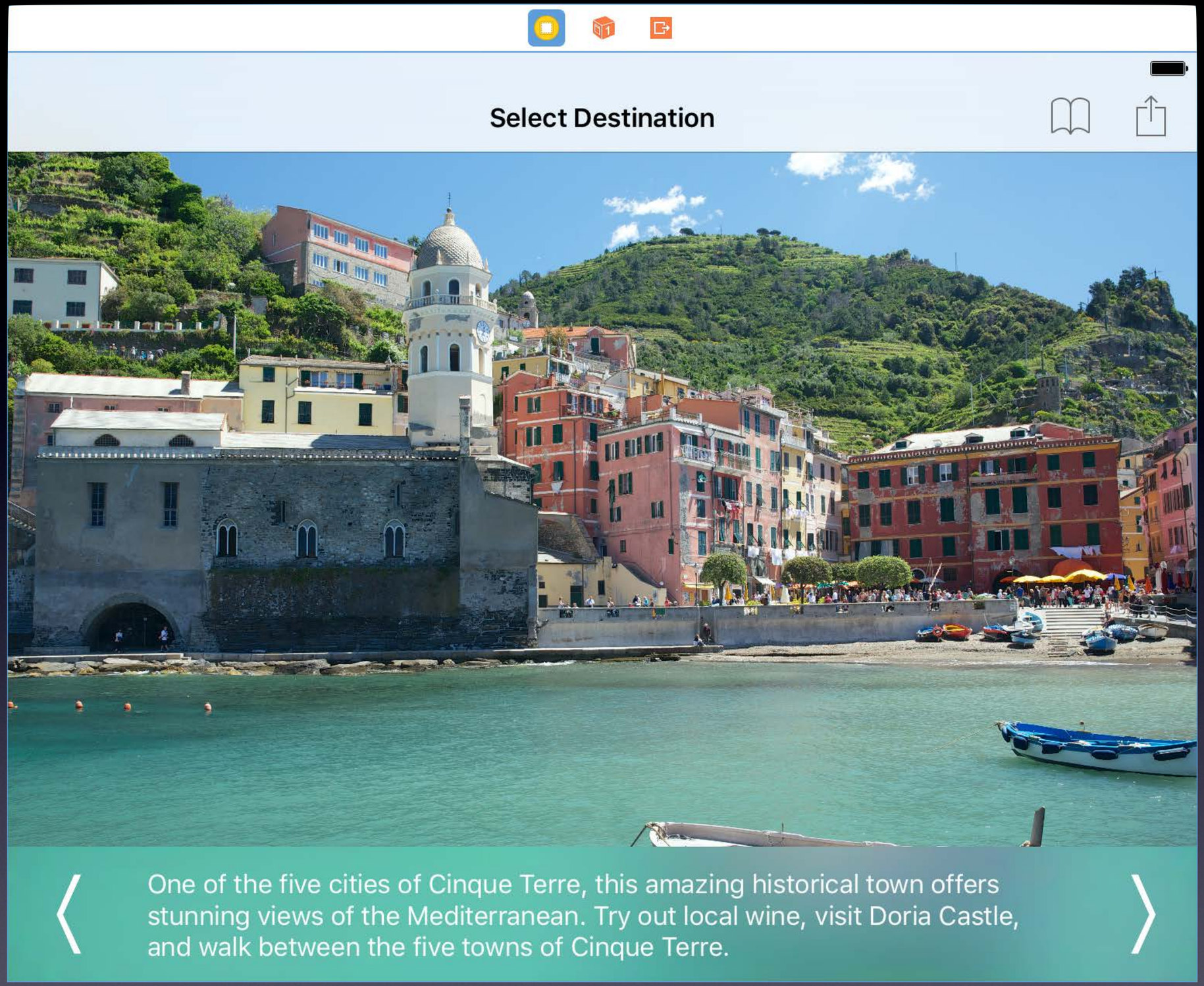


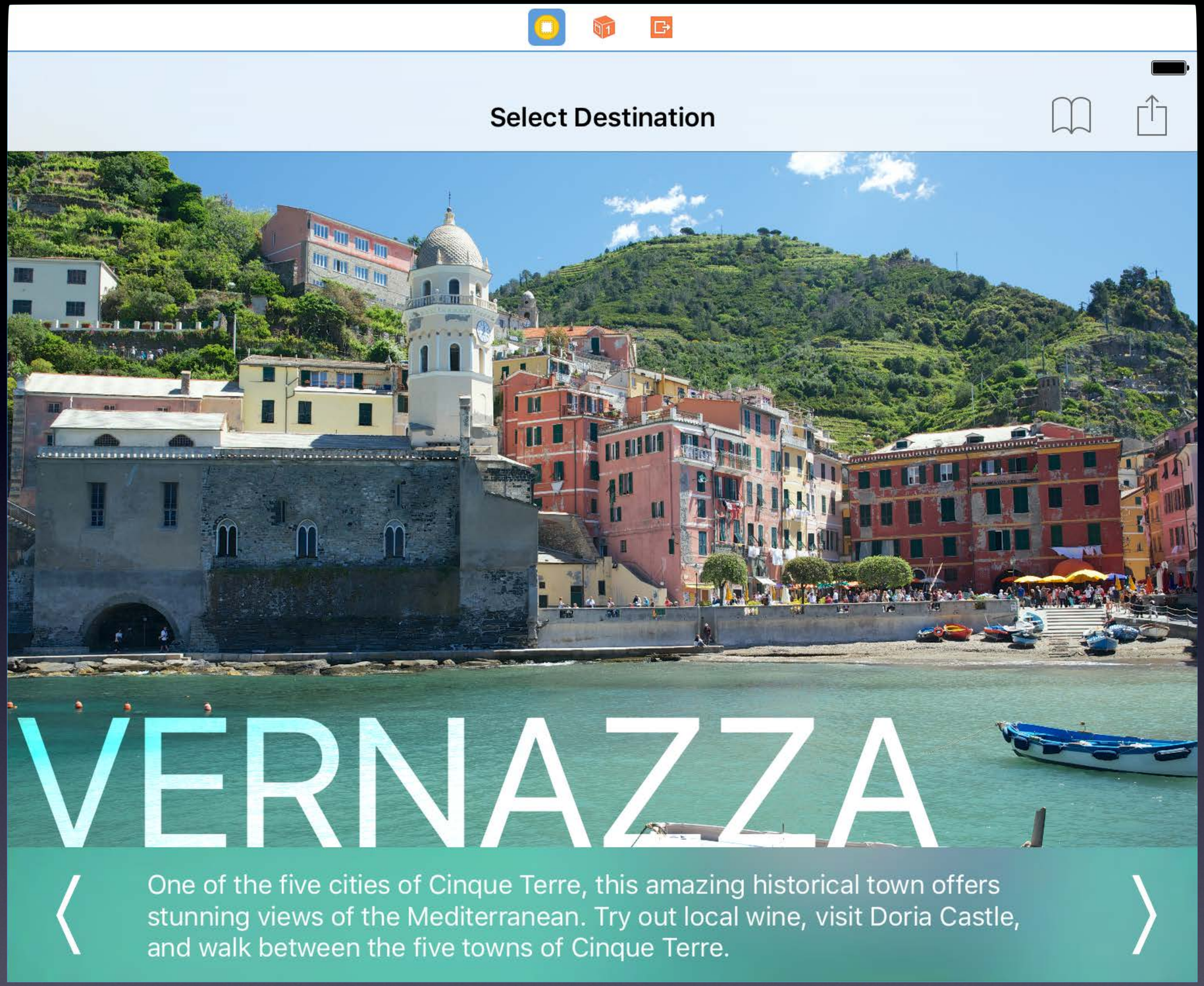
What You See …

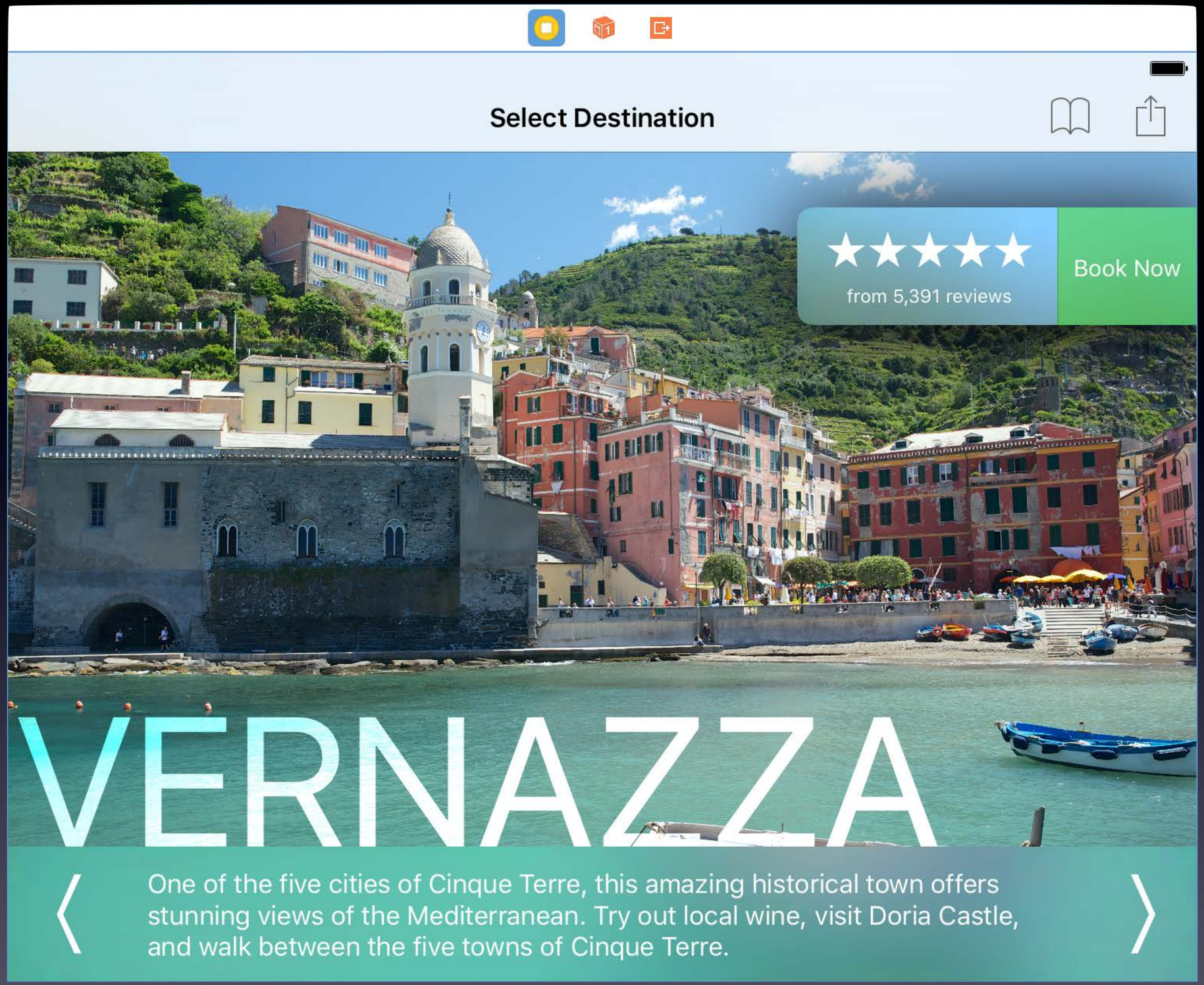


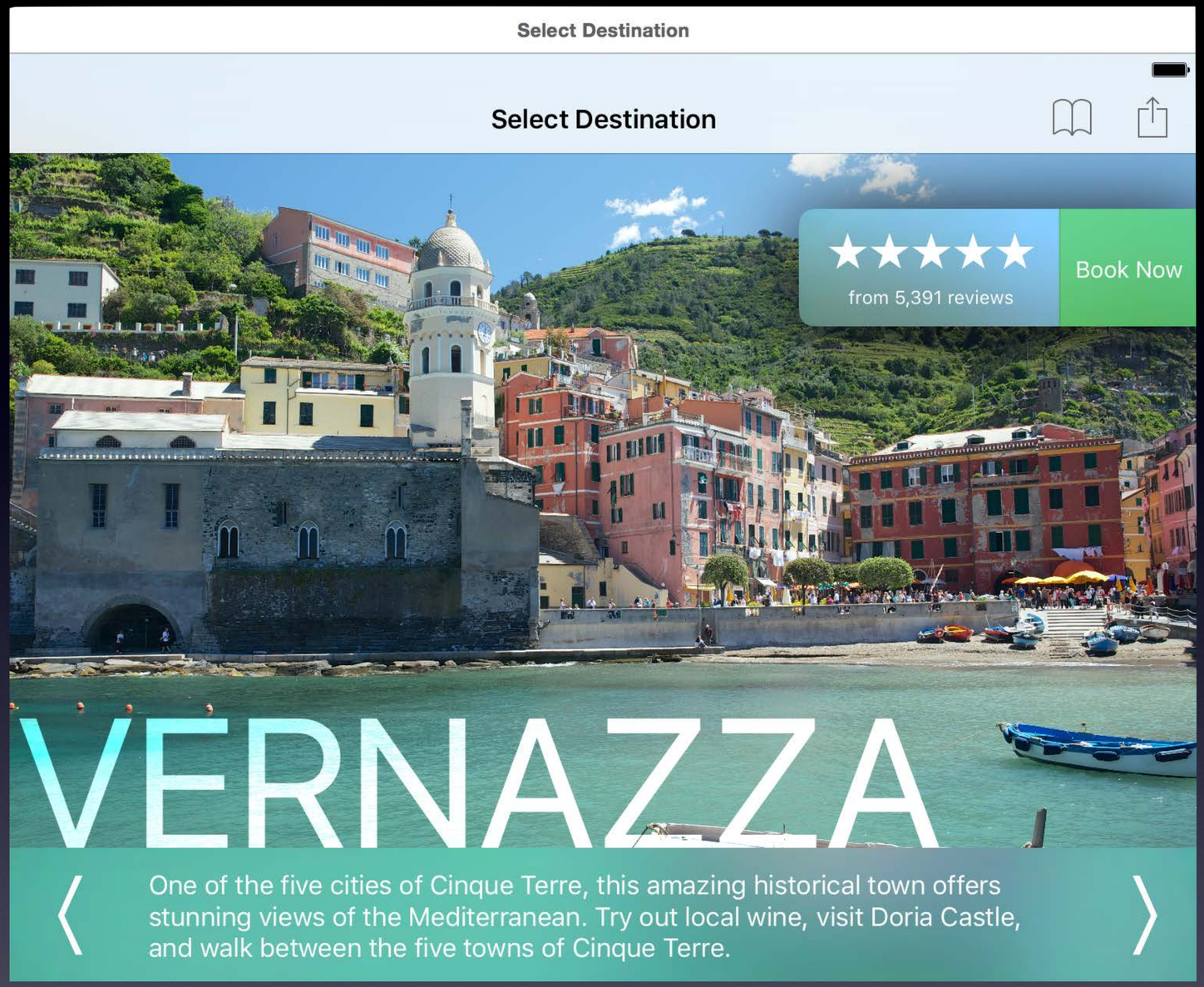
What You See …

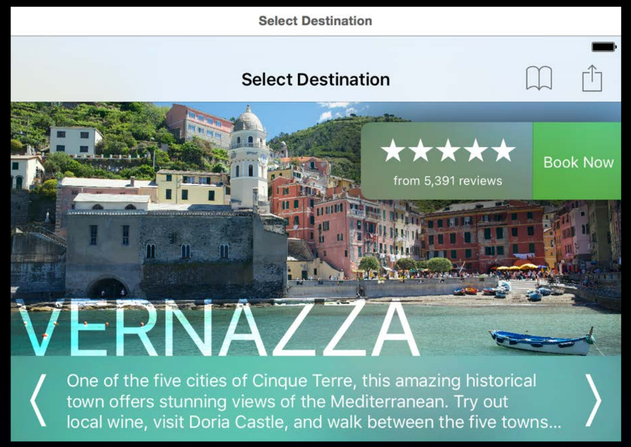


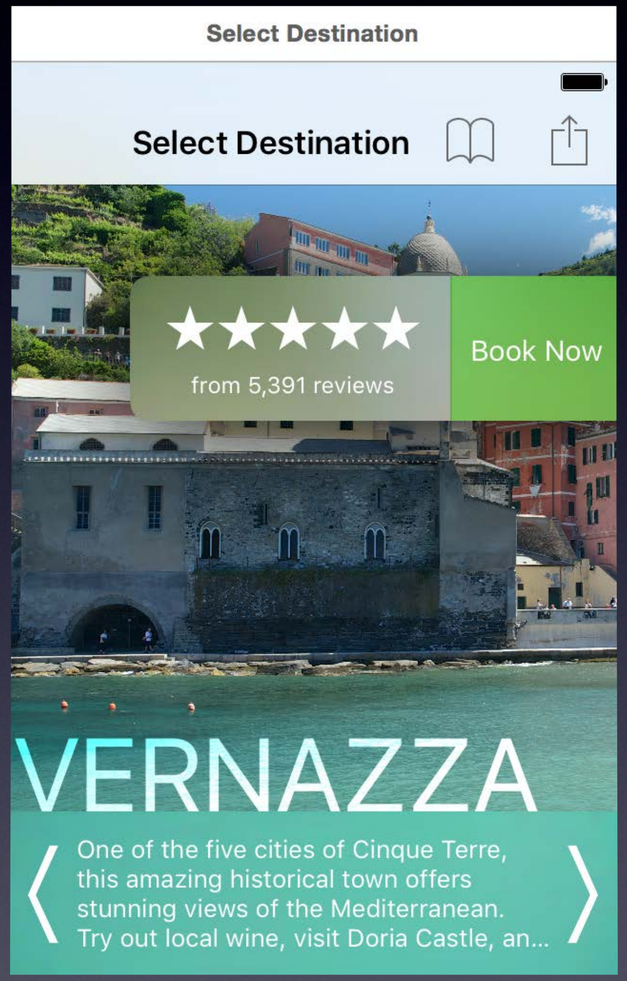

Select Destination
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns of Cinque Terre.

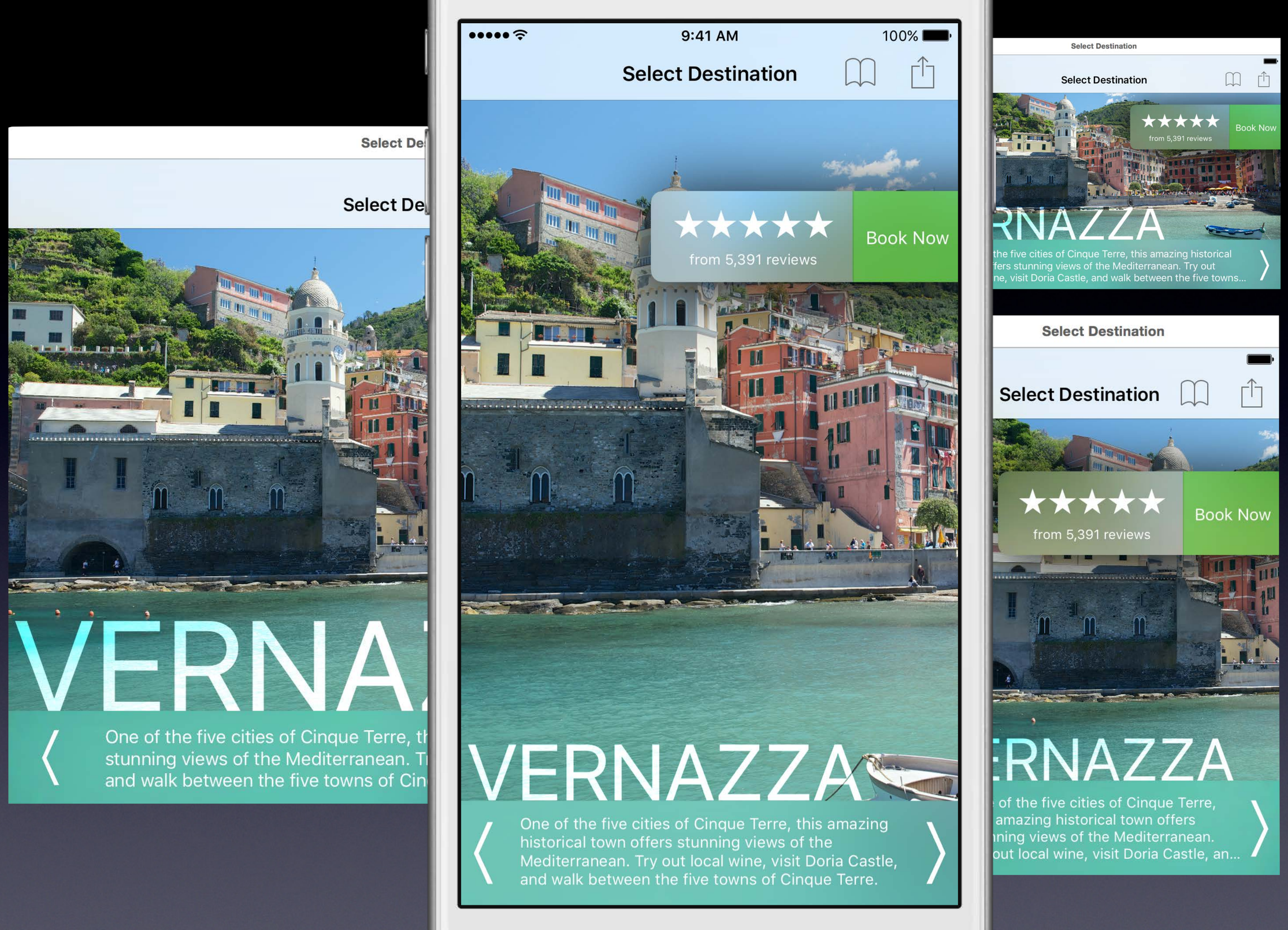

Select Destination
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns of Cinque Terre.


Select Destination
from 5,391 reviews
Book Now
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns of Cinque Terre.


Select Destination
Select Destination
from 5,391 reviews
Book Now
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns of Cinque Terre.


Select Destination
Select Destination
from 5,391 reviews
Book Now
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns...


Select Destination
Select Destination
from 5,391 reviews
Book Now
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, an...

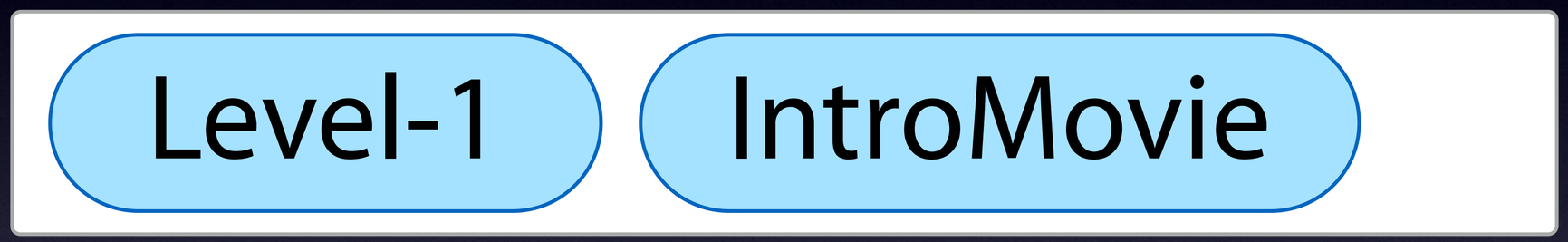

9:41 AM
100%
Select Destination
from 5,391 reviews
Book Now
VERNAZZA
One of the five cities of Cinque Terre, this amazing historical town offers stunning views of the Mediterranean. Try out local wine, visit Doria Castle, and walk between the five towns of Cinque Terre.

On Demand Resources

On Demand Resource Tags

On Demand Resource Tags

On Demand Resource Tags



All Prefetched +

Level-1 (35.4 MB)

- memoryChip.png ... in Assets/Scenes/Level1
- resistor_vertical.png ... in Assets/Scenes/Level1
- level-1.data ... in Assets/Scenes/Level1
- level-1.sks ... in Assets/Scenes/Level1

+ −

Level-2 (76.4 MB)

- robotIdle.spriteatlas ... in Assets/Scenes/Level2
- blueCapacitor.png ... in Assets/Scenes/Level2
- blueEnd.png ... in Assets/Scenes/Level2


Level-1
35.4 MB
Level-2
76.4 MB
Level-3
101 MB
Audio
81.6 MB
MakingOfMovie
135.9 MB
DemoRobots.app

DemoBots (iOS) iPhone 6 | Running DemoBots on iPhone 6

Disk Report

Disk | Profile in Instruments

Reading		Writing	
0.0 KB/s	3.4 MB	0.0 KB/s	0.0 KB
Per Second	Total	Per Second	Total

Reading and Writing Rates

1MB/s
500KB/s

Read Written

On Demand Resources

Tag

Tag	Size	Status
Level-1	35.4 MB	Downloaded
Level-2	76.4 MB	In Use
Level-3	101 MB	Downloading
Level-4	84.2 MB	Not Downloaded
Audio-1		
MakingOfMovie		

No Selection

Test Method - Add a test case method to a test class.

Union Declaration - Declare a new union type, where all fields overlap at the same memory location.

While Statement - Execute code while a condition is true.

Objective-C -initWithFrame: Method - Initialize a custom view subclass.

Character Name Check - Validating the name of the character from the static text is as expected

DemoBots

DemoBots (iOS) iPhone 6

Running DemoBots on iPhone 6

Disk Report

Disk

Profile in Instruments

Reading

0.0 KB/s

Per Second

3.4 MB

Total

Writing

0.0 KB/s

Per Second

0.0 KB

Total

Reading and Writing Rates

1MB/s

500KB/s

Read

Written

On Demand Resources

Tag

Tag	Size	Status
Level-1	35.4 MB	Downloaded
Level-2	76.4 MB	In Use
Level-3	101 MB	Downloading
Level-4	84.2 MB	Not Downloaded
Audio-1		
MakingOfMovie		

DemoBots

No Selection

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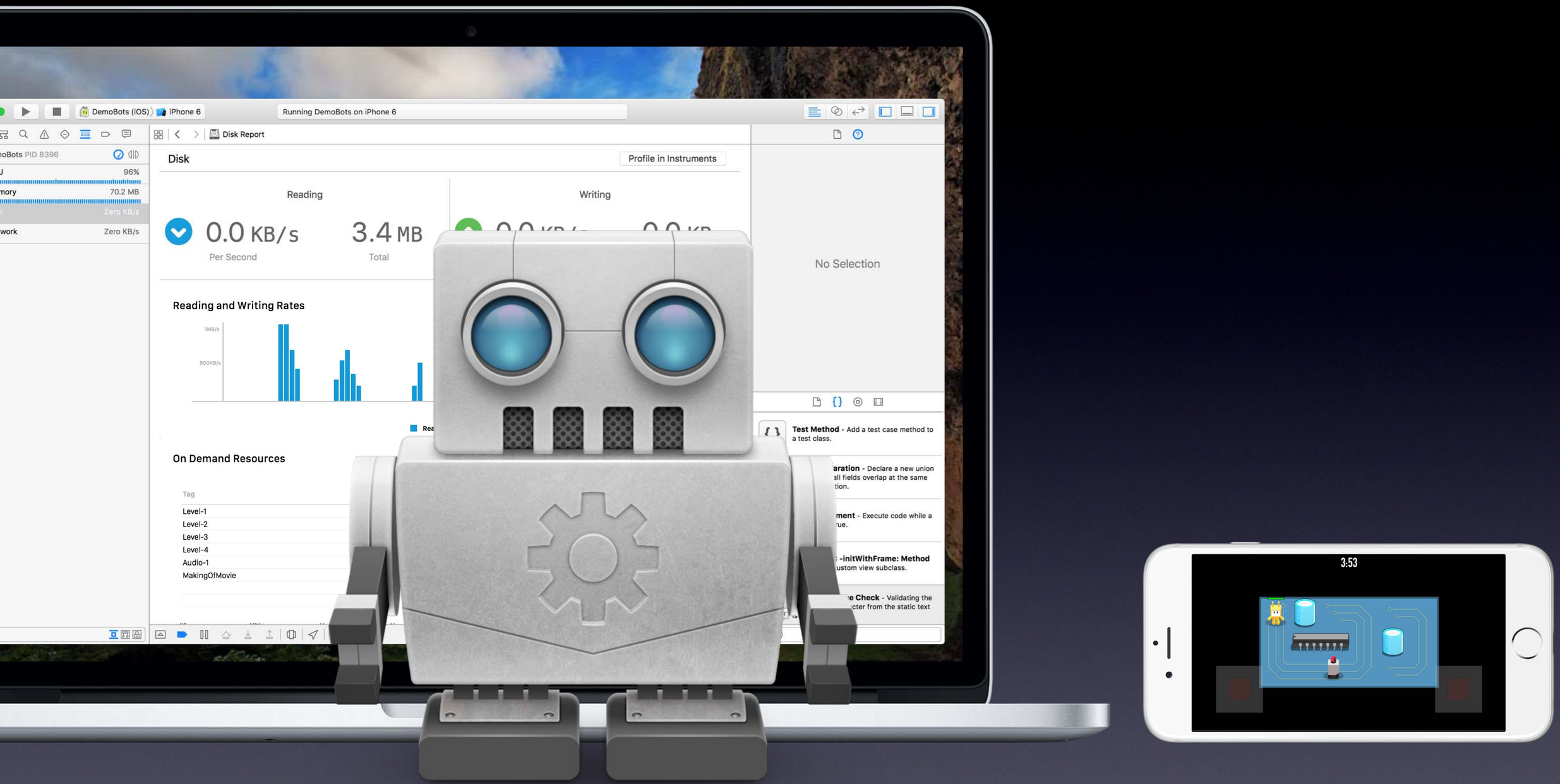
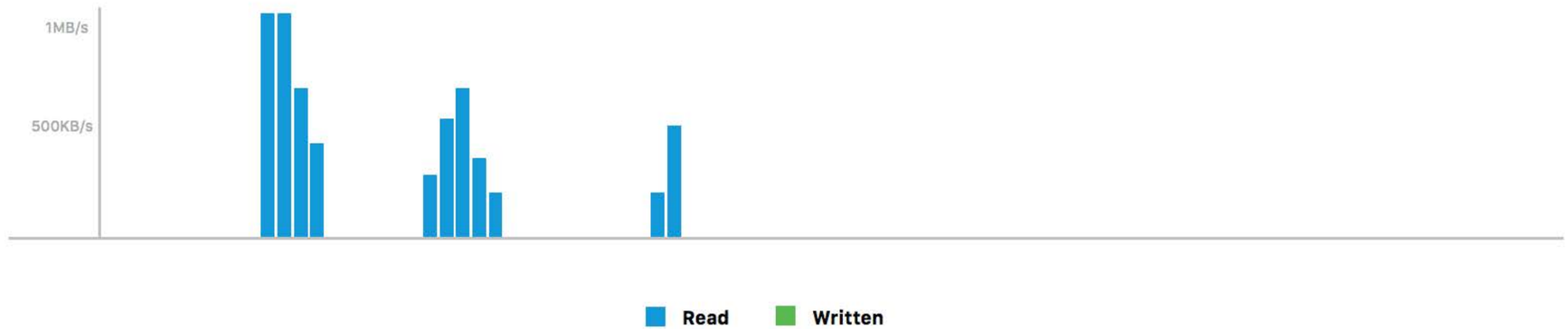

DemoBots (iOS)
iPhone 6
Running DemoBots on iPhone 6
Disk Report
Disk
Profile in Instruments
Reading
Writing
0.0 KB/s
Per Second
3.4 MB
Total
No Selection
Reading and Writing Rates
1MB/s
500KB/s
On Demand Resources
Tag
Level-1
Level-2
Level-3
Level-4
Audio-1
MakingOfMovie
Test Method - Add a test case method to a test class.
3:53

Reading and Writing Rates



On Demand Resources

Tag

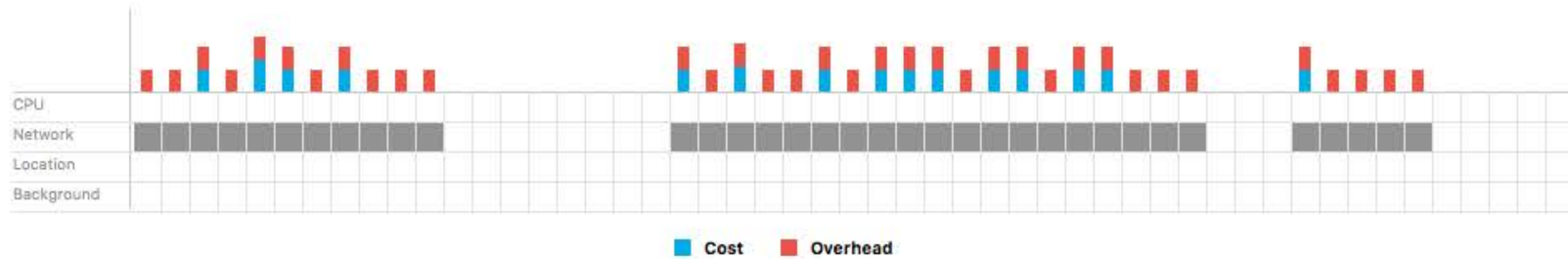
Tag	Size	Status
Level-1	35.4 MB	Downloaded
Level-2	76.4 MB	In Use
Level-3	101 MB	Downloading
Level-4	84.2 MB	Not Downloaded
Audio-1	81.6 MB	Not Downloaded
MakingOfMovie	135.9 MB	Not Downloaded

Debugging and Profiling Tools

Energy

Utilization	Average	
Zero Energy Impact	High Energy Impact	45% Overhead

Energy Impact



Legend

Cost represents energy use resulting from the work your app performs. Overhead represents energy use as a result of bringing up radios and other system resources required to perform that work.

High CPU Utilization

CPU usage of greater than 20%. High CPU utilization rapidly drains a device's battery. Always use the CPU efficiently and return to idle as quickly as possible when not directly responding to user input.

Time Profile

Network

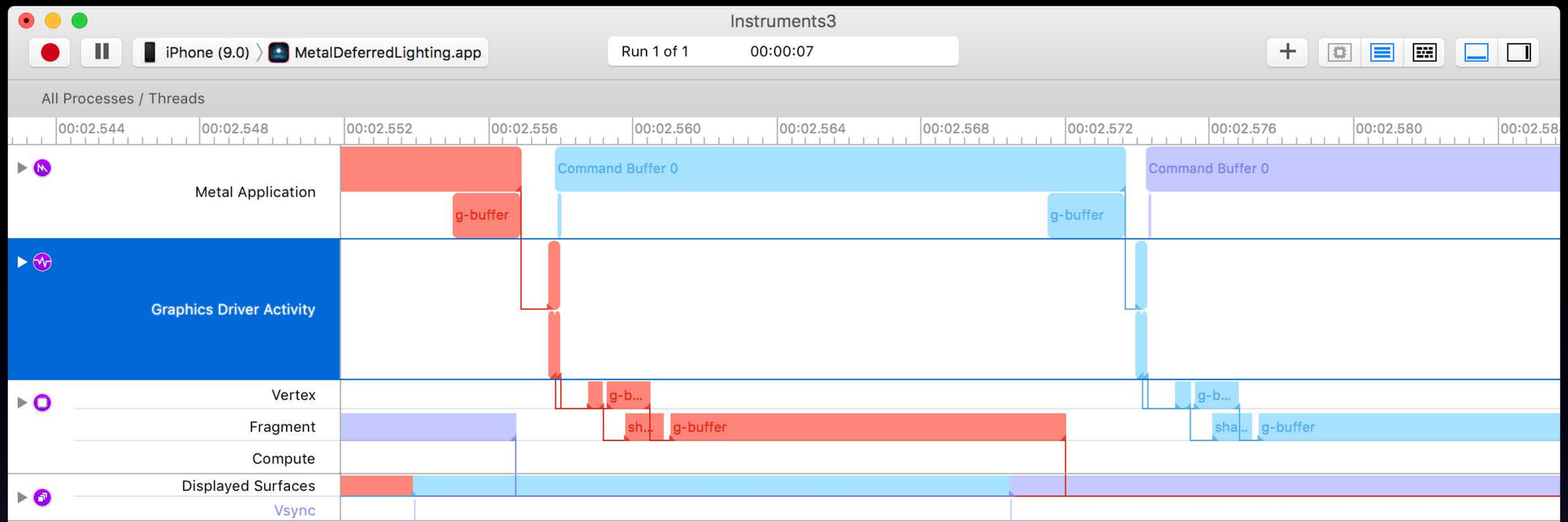
Network activity occurring in response to your app. Networking brings up radios, which require power for prolonged periods. Batch network activity whenever possible to reduce overhead.

Network Profile

Location

Location activity performed by your app. More precise and frequent locating uses more energy. Request location and increase precision only when truly necessary.

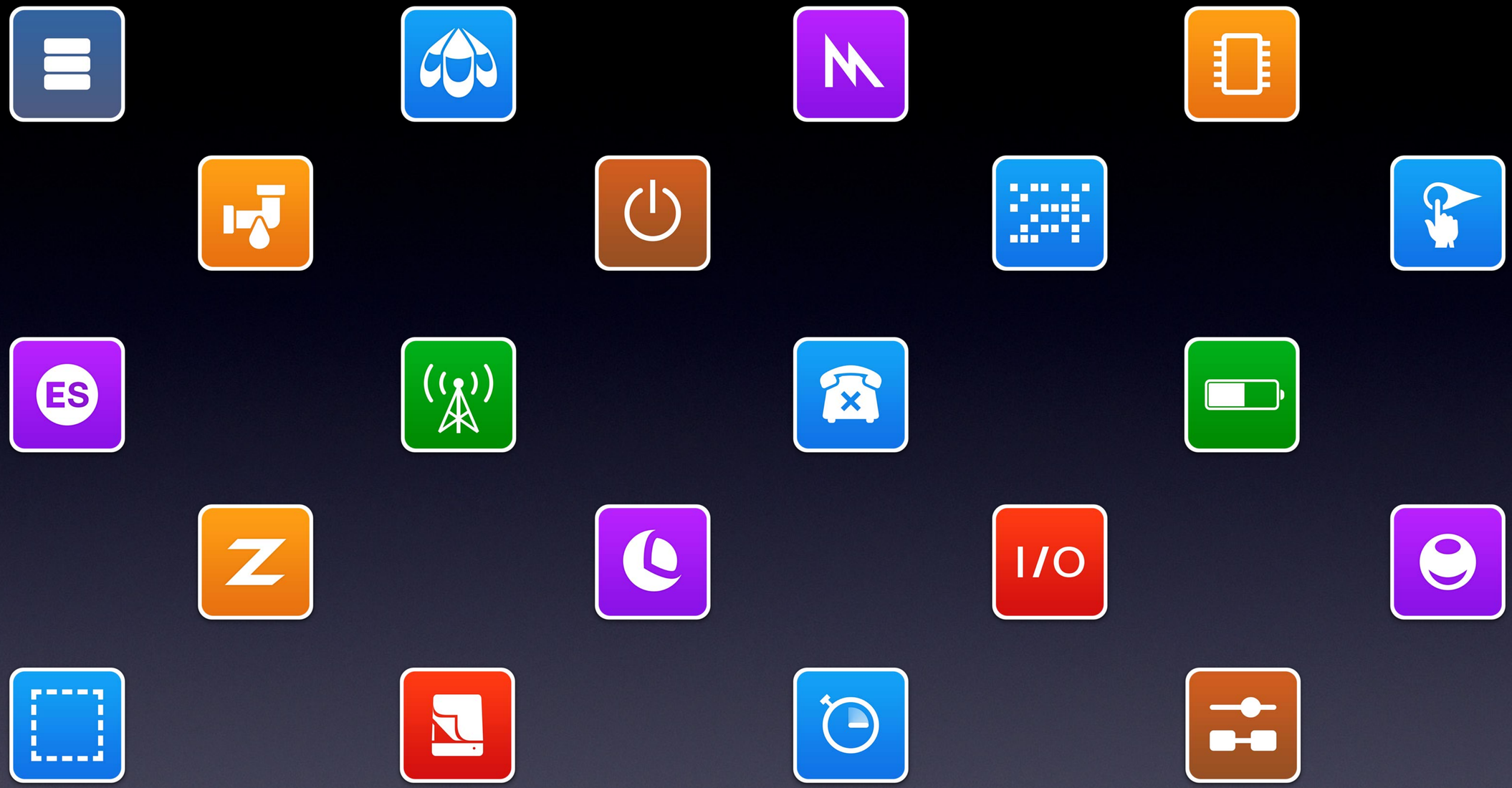
Location

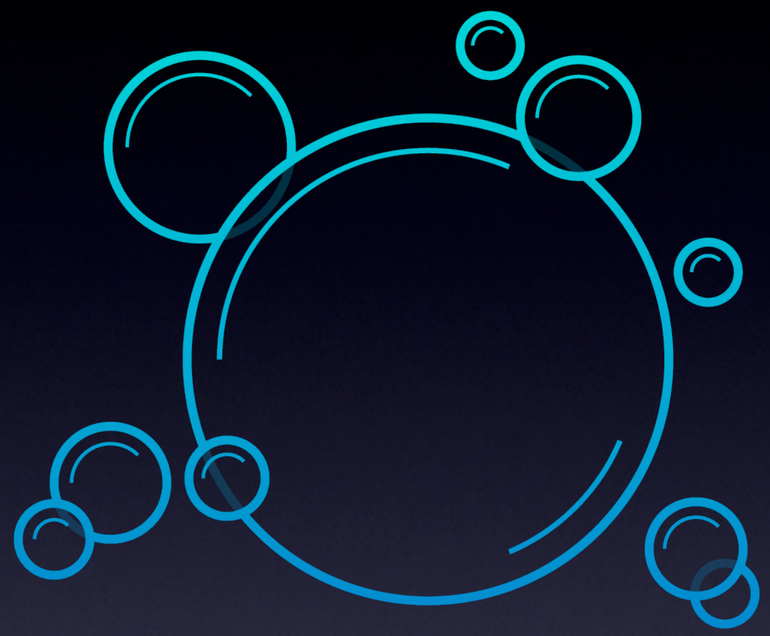


Details 〉 Graphics Driver Processing

Instrument Detail

Event	Start Time	End Time	Duration	Frame	Process
shadow buffer	00:01.405.292	00:01.405.401	109.33 µs	16	MetalDeferredLighting.app
g-buffer	00:01.405.401	00:01.405.458	56.75 µs	16	MetalDeferredLighting.app
Command Buffer 0	00:01.421.673	00:01.422.086	412.62 µs	17	MetalDeferredLighting.app
shadow buffer	00:01.421.674	00:01.421.982	308.21 µs	17	MetalDeferredLighting.app
g-buffer	00:01.421.983	00:01.422.086	103.12 µs	17	MetalDeferredLighting.app
Command Buffer 0	00:01.438.207	00:01.438.376	168.83 µs	18	MetalDeferredLighting.app
shadow buffer	00:01.438.207	00:01.438.316	109.17 µs	18	MetalDeferredLighting.app
g-buffer	00:01.438.317	00:01.438.375	58.42 µs	18	MetalDeferredLighting.app
Command Buffer 0	00:01.454.915	00:01.455.094	178.96 µs	19	MetalDeferredLighting.app
shadow buffer	00:01.454.916	00:01.455.030	113.83 µs	19	MetalDeferredLighting.app
g-buffer	00:01.455.030	00:01.455.094	63.75 µs	19	MetalDeferredLighting.app
Command Buffer 0	00:01.471.621	00:01.471.800	179.54 µs	20	MetalDeferredLighting.app
shadow buffer	00:01.471.621	00:01.471.735	114.46 µs	20	MetalDeferredLighting.app


ES
I/O



Address Sanitizer

```
38 10 80 02    F1 33 A0 00    70 9D 19 00
FF 08 00 00    01 00 00 00    00 00 E0 A0
25 A4 00 01    90 9E 19 00    01 00 00 00
70 00 00 FF    B7 99 87 8F    55 F1 9F 00
```

```
38 10 80 02   F1 33 A0 00   70 9D 19 00
FF 08 00 00   01 00 00 00   00 00 E0 A0
25 A4 00 01   90 9E 19 00   01 00 00 00
70 00 00 FF   B7 99 87 8F   55 F1 9F 00
```

```
38 10 80 02    9F 19 00 00    2B A4 00 01
FF 08 00 00    70 00 00 A4    00 00 E0 A0
25 A4 00 01    28 A0 00 01    01 00 00 00
70 00 00 FF    03 1E 00 00    55 F1 9F 00
```

the "robot" variable

heap overflow here

```
9F 19 00 00     2B A4 00 01
70 00 00 A4     00 00 E0 A0
28 A0 00 01     01 00 00 00
03 1E 00 00     55 F1 9F 00
```

backtrace of allocation

backtrace of occurrence

Crash Logs

Crash Logs

Archives | Crashes

iOS Apps
- Adventure
- PhotoAlbum
- Recipes
- Trivia

OS X Apps
- Adventure
- Recipes

App Store 〉 1.0 Release

- **Splash Screen array out of b...** 2379 devices
- **Memory issue when logging** 2301 devices
- **Filtering leads to out of boun...** 2227 devices
- **Trivia: Trivia_GamePlayerPick...** 2003 devices
- **Crashed while filtering playe...** 1883 devices
- **Hard to reproduce crash whe...** 1820 devices
- **Assertion in image loading** 1522 devices
- **Crash when mashing answer...** 1226 devices
- **Assertion when multiple play...** 1122 devices
- **Blew the stack when loading...** 1087 devices
- **Trivia: Trivia_GamePlayerPick...** 815 devices
- **Crash when inviting too man...** 735 devices

Memory issue when logging

Thread 0

0	libsystem_kernel...	__pthread_kill
1	libsystem_pthrea...	pthread_kill
2	libsystem_c.dylib	abort
3	libsystem_malloc...	free
4	**UsageStatistics**	**-[UsageLog endLogging]**
5	Trivia	Trivia.GameNavigationControllerDelegate.navigationController (navigationCont...
6	Trivia	@objc @objc Trivia.GameNavigationControllerDelegate.navigationController (T...
7	UIKit	-[UINavigationController navigationTransitionView:didEndTransition:fromView:t...
8	UIKit	-[UINavigationController _startCustomTransition:]_block_invoke
9	UIKit	-[_UIViewControllerTransitionContext completeTransition:]
10	UIKit	-[_UINavigationParallaxTransition animateTransition:]_block_invoke93
11	UIKit	-[UIViewAnimationBlockDelegate _didEndBlockAnimation:finished:context:]
12	UIKit	-[UIViewAnimationState sendDelegateAnimationDidStop:finished:]
13	UIKit	-[UILayoutContainerView layoutSubviews]
14	UIKit	-[UIView(CALayerDelegate) layoutSublayersOfLayer:]
15	QuartzCore	-[CALayer layoutSublayers]
16	QuartzCore	CA::Layer::layout_if_needed(CA::Transaction*)
17	QuartzCore	CA::Layer::layout_and_display_if_needed(CA::Transaction*)
18	QuartzCore	CA::Context::commit_transaction(CA::Transaction*)
19	QuartzCore	CA::Transaction::commit()
20	QuartzCore	CA::Transaction::observer_callback(__CFRunLoopObserver*, unsigned long, voi...
21	CoreFoundation	__CFRUNLOOP_IS_CALLING_OUT_TO_AN_OBSERVER_CALLBACK_FUNCTION__
22	CoreFoundation	__CFRunLoopDoObservers
23	CoreFoundation	CFRunLoopRunSpecific
24	UIKit	-[UIApplication _run]
25	UIKit	UIApplicationMain

1 of 7

Crash Information

Memory issue when logging
2301 devices

Open in Project...

Crash Log Details

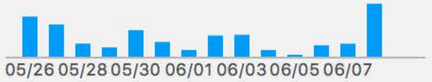
Binary Trivia 2.0 (55)
Thread 0
iOS Version 9.0 (13A4254n)
Device iPhone 6 Plus

Notes

We've been unable to reproduce this crash, but several users have reported it.

Last 2 Weeks Operating System

iOS 8.3	42%
iOS 8.4	36%
iOS 9.0	23%



Mark As Resolved

Crash Information

Memory issue when logging
2301 devices

Open in Project...

Crash Log Details

Binary	Trivia 2.0 (55)
Thread	0
iOS Version	9.0 (13A4254n)
Device	iPhone 6 Plus

Notes

We've been unable to reproduce this crash, but several users have reported it.

Last 2 Weeks Operating System

iOS 8.3	42%
iOS 8.4	36%
iOS 9.0	23%

Mark As Resolved

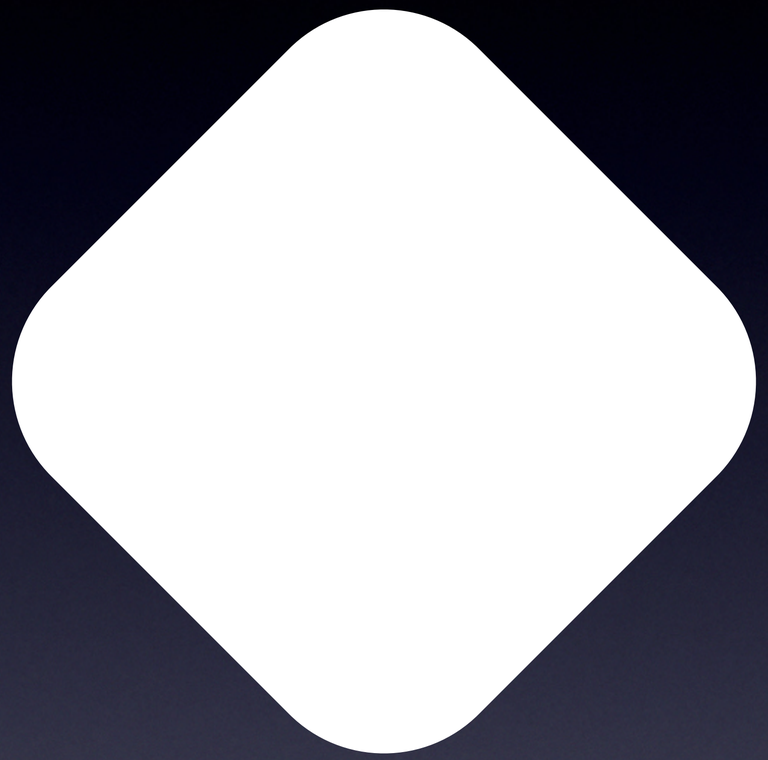
Trivia 〉 iPhone 6 | Running

Trivia 〉 UsageStatistics 〉 UsageLog.m 〉 No Selection

UsageStatistics: -[UsageLog endLogging]

- Thread 0
  - 0 __pthread_kill
  - 3 free
  - 4 -[UsageLog endLogging]
  - 5 Trivia.GameNavigationControllerDelegat...
  - 6 @objc @objc Trivia.GameNavigationCon...
  - 7 -[UINavigationController navigationTran...
  - 25 UIApplicationMain
  - 26 main
  - 27 start
- Thread 1
- Thread 2
- Thread 3
- Thread 4
- Thread 5
- Thread 6

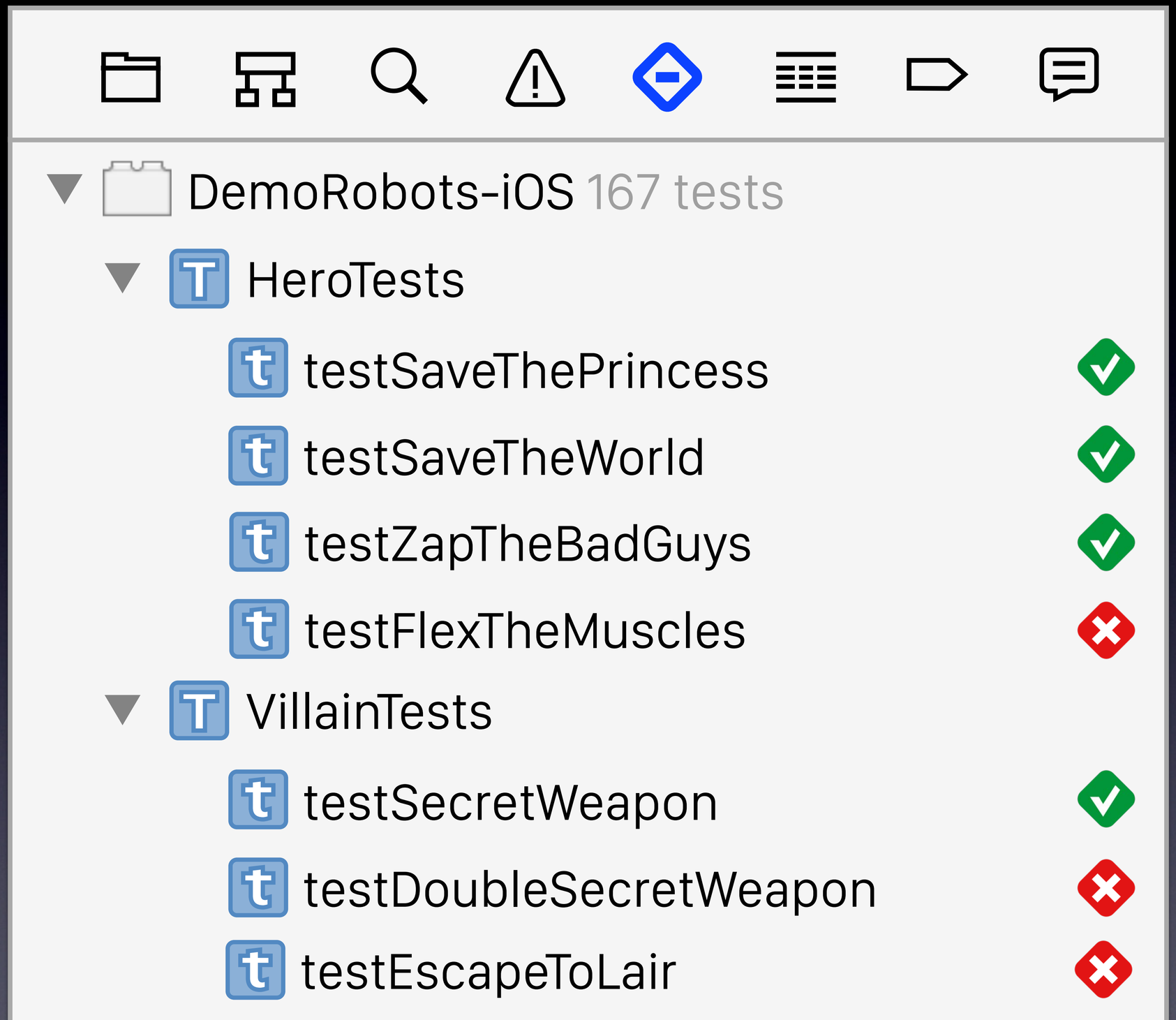
```
//
//  UsageLog.m
//  Trivia
//
//  Copyright © 2015 Apple Inc. All rights reserved.
//

#import "UsageLog.h"

@implementation UsageLog

char * log_buffer = NULL;
int disconnect_attempts = 0;

- (id)init {
    if (self = [super init]) {
        log_buffer = malloc(50);
    }
    return self;
}

- (void)dealloc {
    free(log_buffer);
}

- (void)logAction: (const char *) action {
    sprintf(log_buffer, "USAGE-LOG: %s", action);
    NSLog(@"%@", [[NSString alloc] initWithUTF8String: log_buffer]);
}

- (void)endLogging {
    if (++disconnect_attempts > 2) free(log_buffer);
}

@end
```



Testing

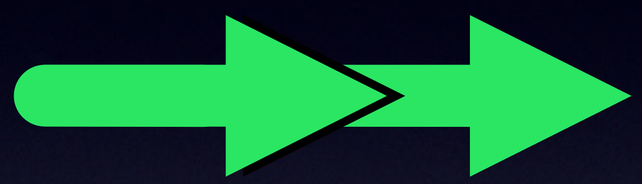
Testing

Testing


DemoRobots-iOS 167 tests
HeroTests
testSaveThePrincess
testSaveTheWorld
testZapTheBadGuys
testFlexTheMuscles
VillainTests
testSecretWeapon
testDoubleSecretWeapon
testEscapeToLair

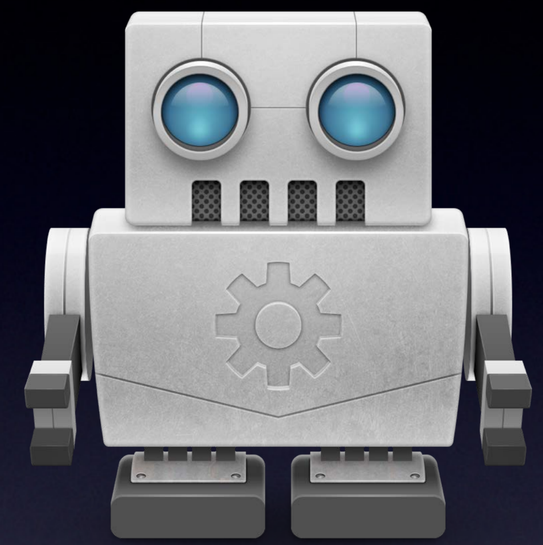
API

Performance



Synchronous Asynchronous

Xcode

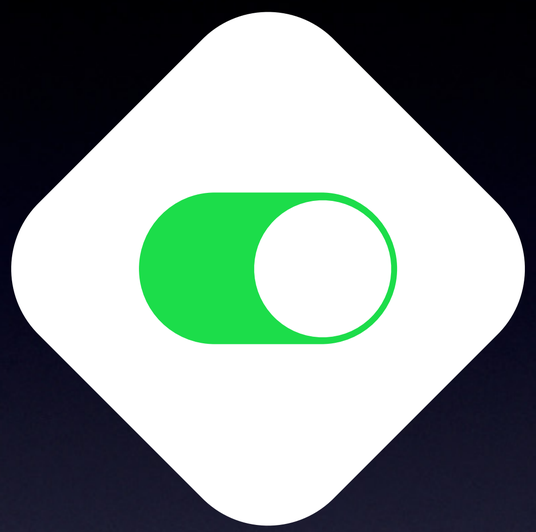


Bots

Unit Testing

Unit Testing

Unit Testing



User Interface Testing

Unit Testing

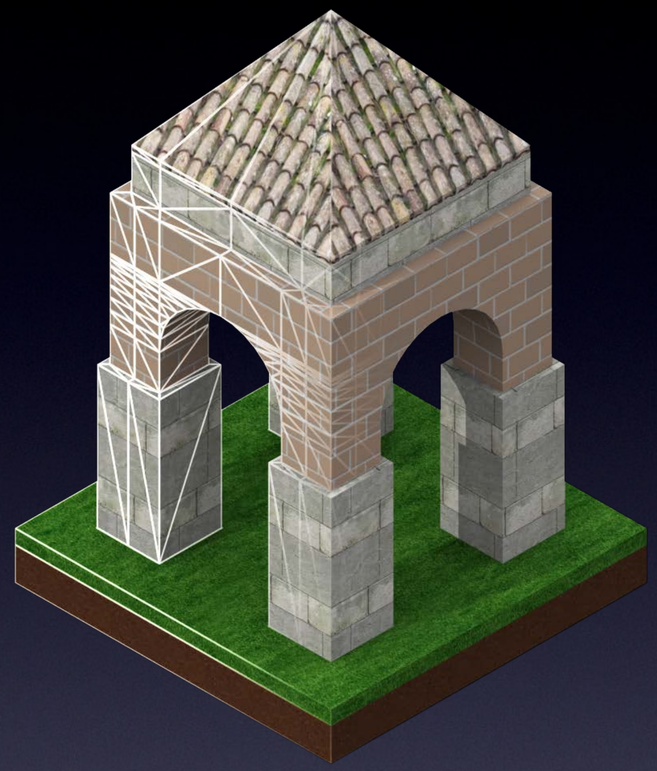
User Interface Testing

Code Coverage

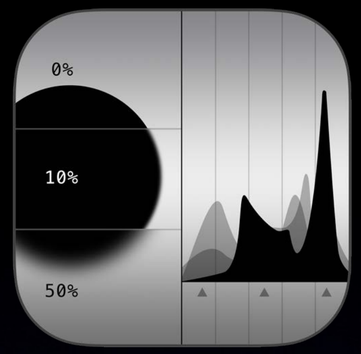
Demo

Testing using Xcode

Action Editor
Accurate Rendering
iOS Energy Gauge
User Interface Recording
Texture Atlas Support
Incremental SCM Logs
GPU System Trace
Bitcode
User Interface Testing
Local ODR hosting
Instruments Track View
Data Sets
Code Coverage
SCM with ssh
Level Editor
App Extension Crash Logs
App Slicing
Action Editor
Stack View
Playground Pages
Address Sanitizer
ODR Resource Tagging
Global Illumination
ODR Debug Gauge
Storyboard References
OS X Crash Logs
View Debugger Focus
SCM On-Ramp



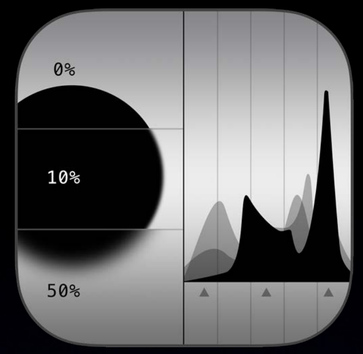
Games and Graphics


0%
10%
50%







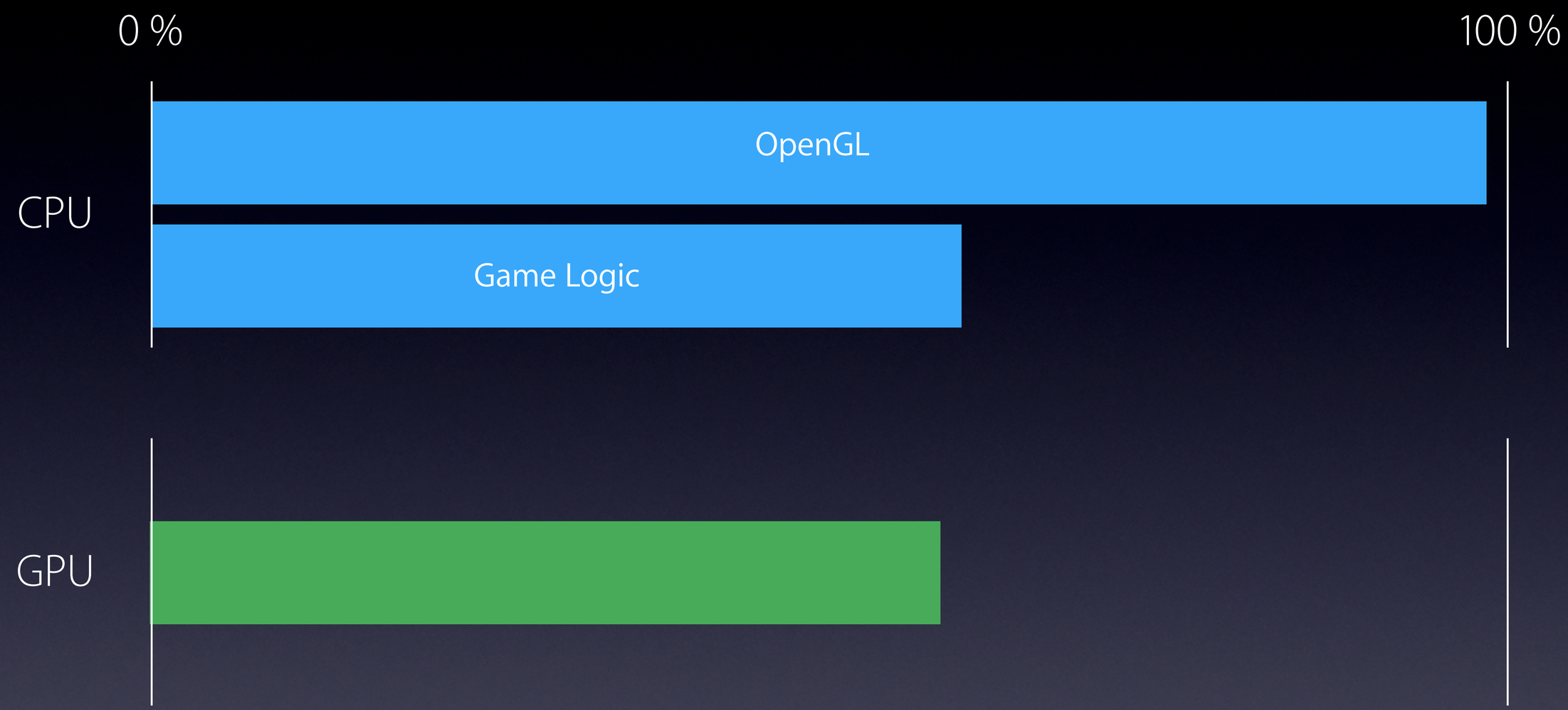


0%
10%
50%








Metal



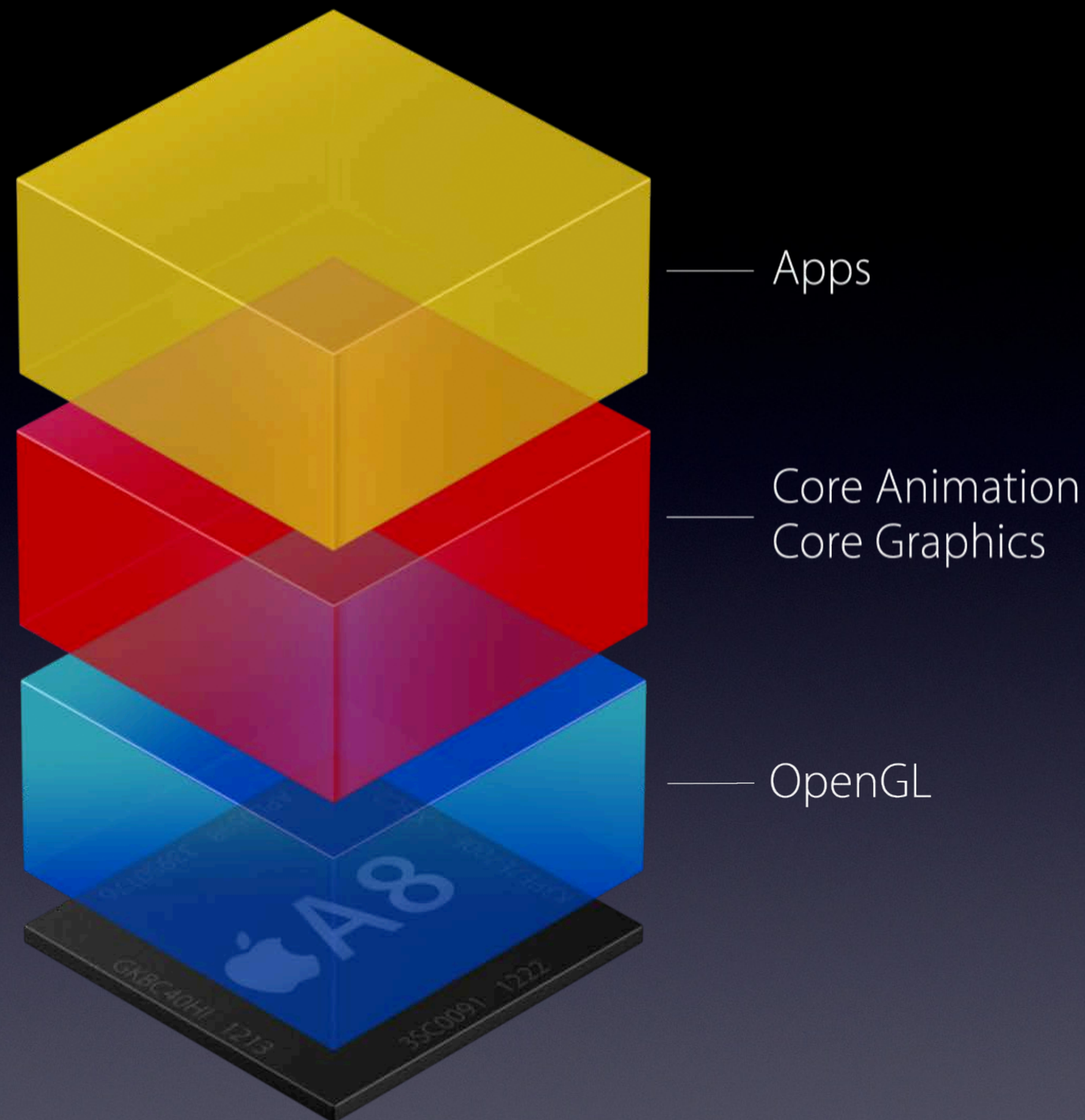
OpenGL

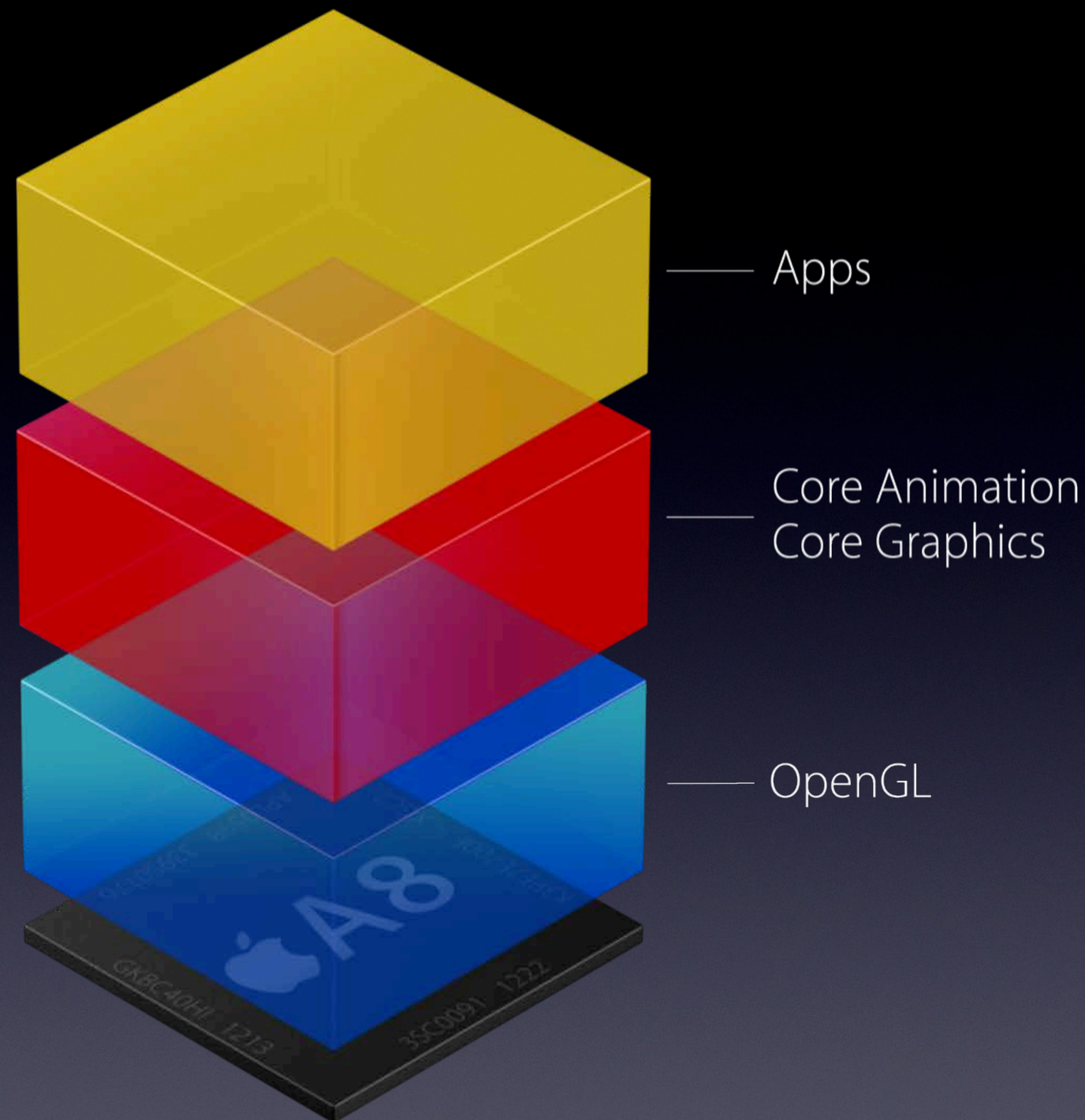
Metal

Demo

David McGavran, Adobe Systems

Adobe


Apps
Core Animation
Core Graphics
OpenGL
A8

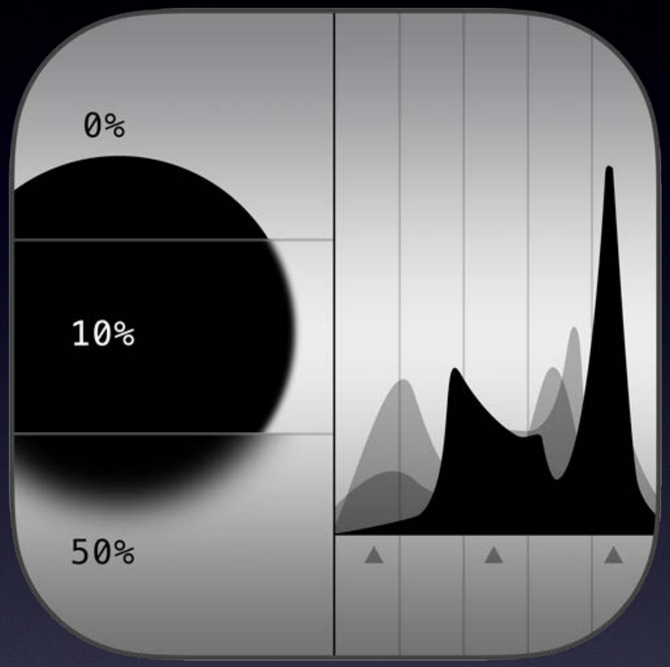

Apps
Core Animation
Core Graphics
OpenGL
A8

MetalKit

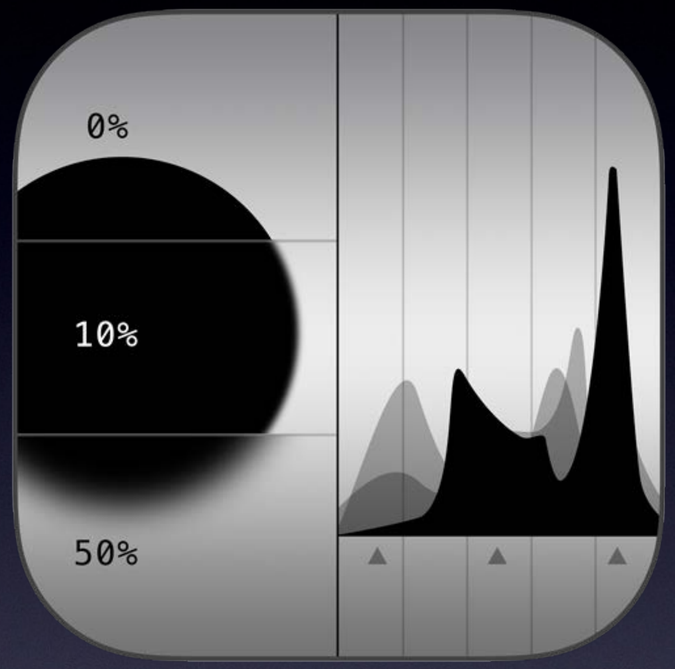
Views

Textures

Models/Meshes



Metal Performance Shaders



Optimized shader library

Compute and graphics

Individually tuned for each GPU

Model I/O

Models and materials

3D meshes

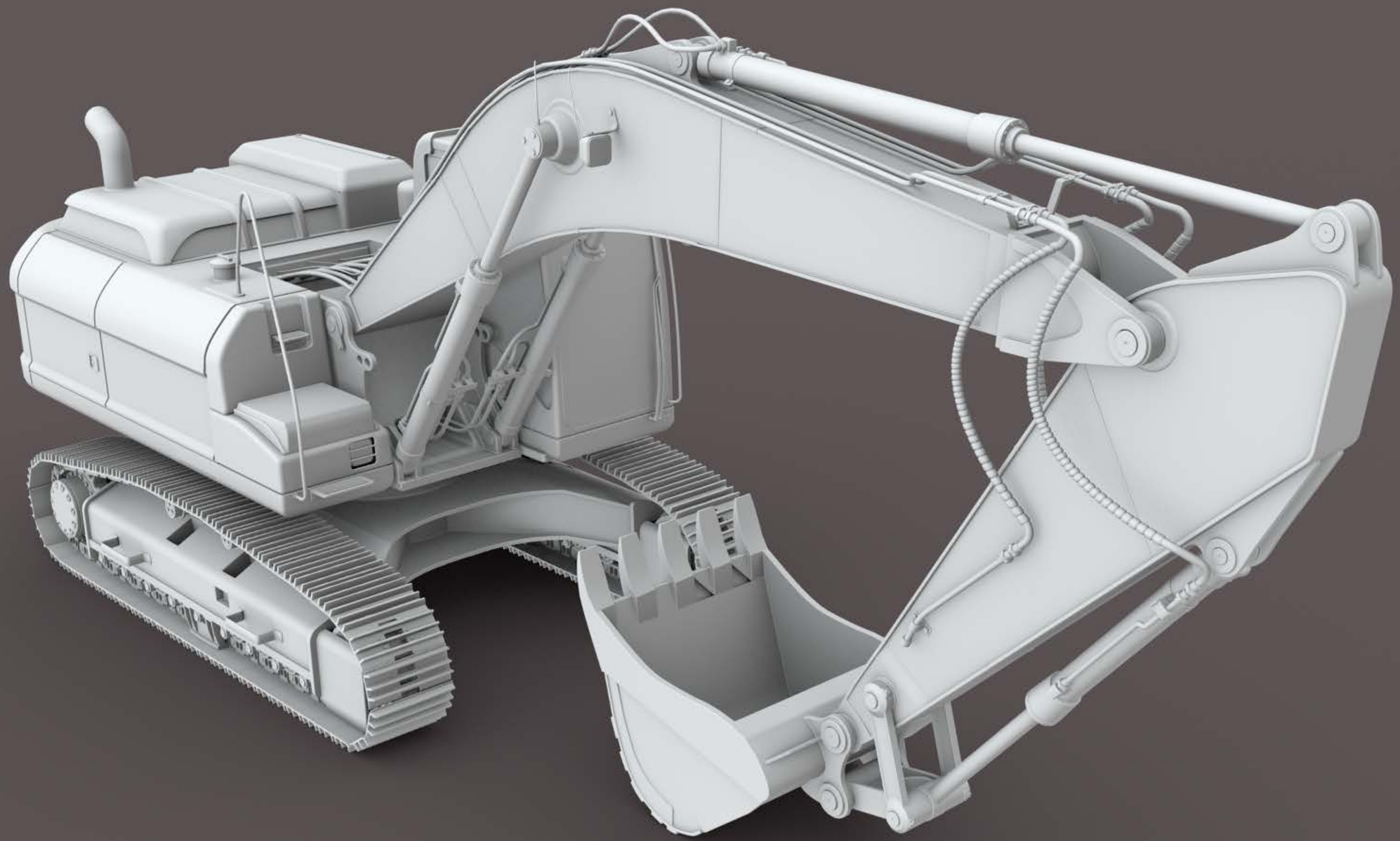
Offline raytraced lighting

State of the art lighting

Physically based materials

Offline raytracing


EXCAVATOR
G360
EXCAVATOR




EXCAVATOR
G360
EXCAVATOR

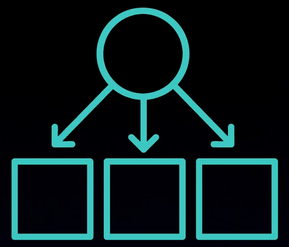

EXCAVATOR
G360
EXCAVATOR

GameplayKit

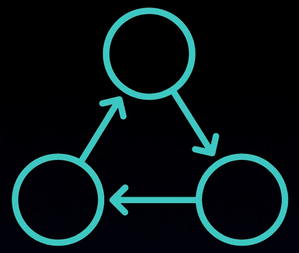
Brains of your game

Pathfinding and flocking

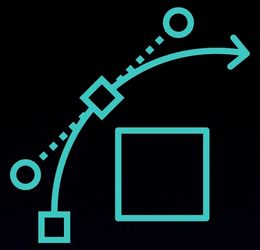
Game logic



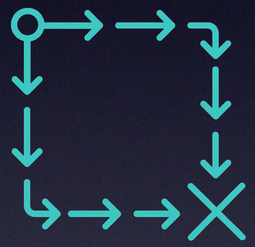
Entities and Components



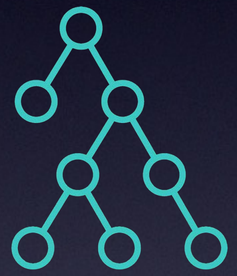
State Machines



Agents



Pathfinding



MinMax AI

Random Sources

Rule Systems

ReplayKit

Game play recording

Hardware accelerated

Built-in sharing and saving

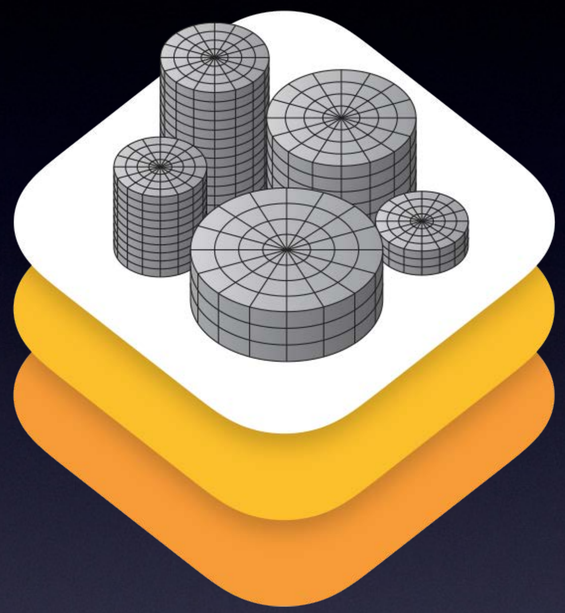
Voiceover

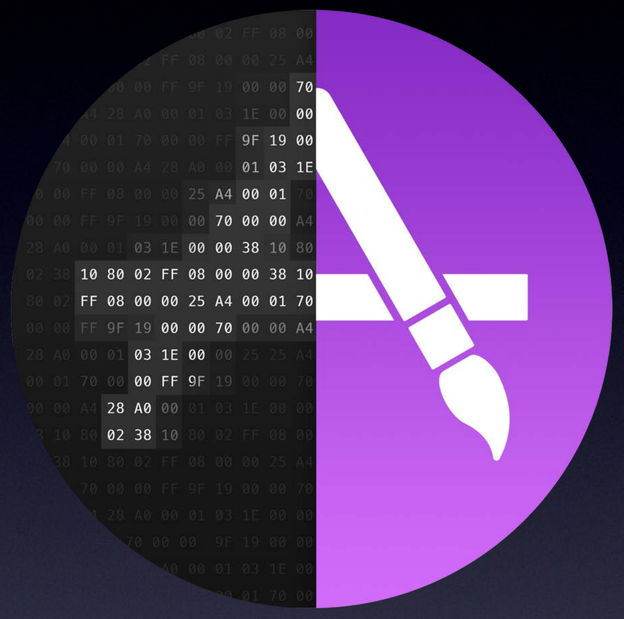
Trimming

Demo

Xcode game tools


9
X
2






XCODE

iOS 9

watchOS 2

OS X El Capitan

OS X Server 5

Xcode 7

Sample code

developer.apple.com/wwdc/resources/

TestFlight

Over 115 sessions

Over 115 labs

Over 1000 Apple engineers

WWDC15