Apple Platforms Kickoff

Session 601

Craig Federighi
VP, OS X Software

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

WWDC11
MOSCONE
WEST

1500

New APIs in iOS 5

3000

New APIs in Lion

Accelerate
AddressBook
AGL
AppKit
AppleShareClientCore
ApplicationServices
AudioToolbox
AudioUnit
Automator
AVFoundation
CalendarStore
Carbon
CoreAudio
CoreData
CoreFoundation
CoreLocation
CoreMedia
CoreMediaIO
CoreMIDI
CoreServices
CoreVideo
CoreWLAN
DirectoryService
DiskArbitration
DrawSprocket
Foundation
GSS
ICADevices
ImageCaptureCore
IMServicePlugin
InputMethodKit
IOBluetooth
IOBluetoothUI
IOKit
JavaScriptCore
Kerberos
Kernel
LatentSemanticMapping
Message
NetFS
OpenAL
OpenCL
OpenDirectory
OpenGL
PCSC
PreferencePanes
Python
QTKit
Quartz
QuartzCore
QuickLook
QuickTime
Ruby
RubyCocoa
Security
SecurityInterface
ServiceManagement
SyncServices
SystemConfiguration
Tcl
Tk
vecLib
VideoDecodeAcceleration
WebKit
XgridFoundation
XPCService

Accelerate
AddressBook
AGL
AppKit
AppleShareClientCore
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AudioToolbox
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AVFoundation
CalendarStore
Carbon
CoreAudio
CoreData
CoreFoundation
CoreLocation
CoreMedia
CoreMediaIO
CoreMIDI
CoreServices
CoreVideo
CoreWLAN
DirectoryService
DiskArbitration
DrawSprocket
[illegible]
GSS
ICADevices
ImageCaptureCore
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Message
NetFS
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[illegible]
OpenGL
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Security
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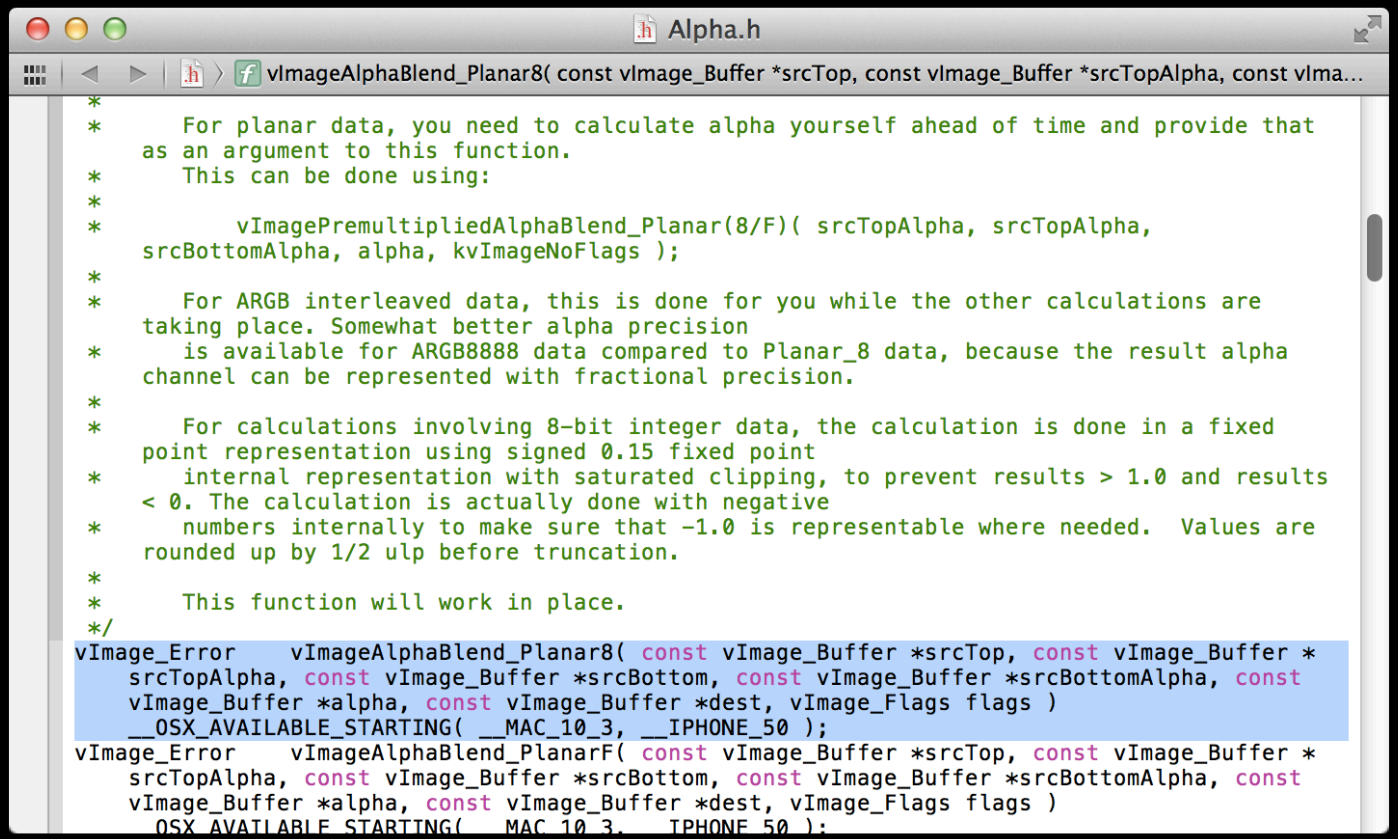
ServiceManagement
SyncServices
SystemConfiguration
Tcl
Tk
vecLib
VideoDecodeAcceleration
WebKit
XgridFoundation
XPCService

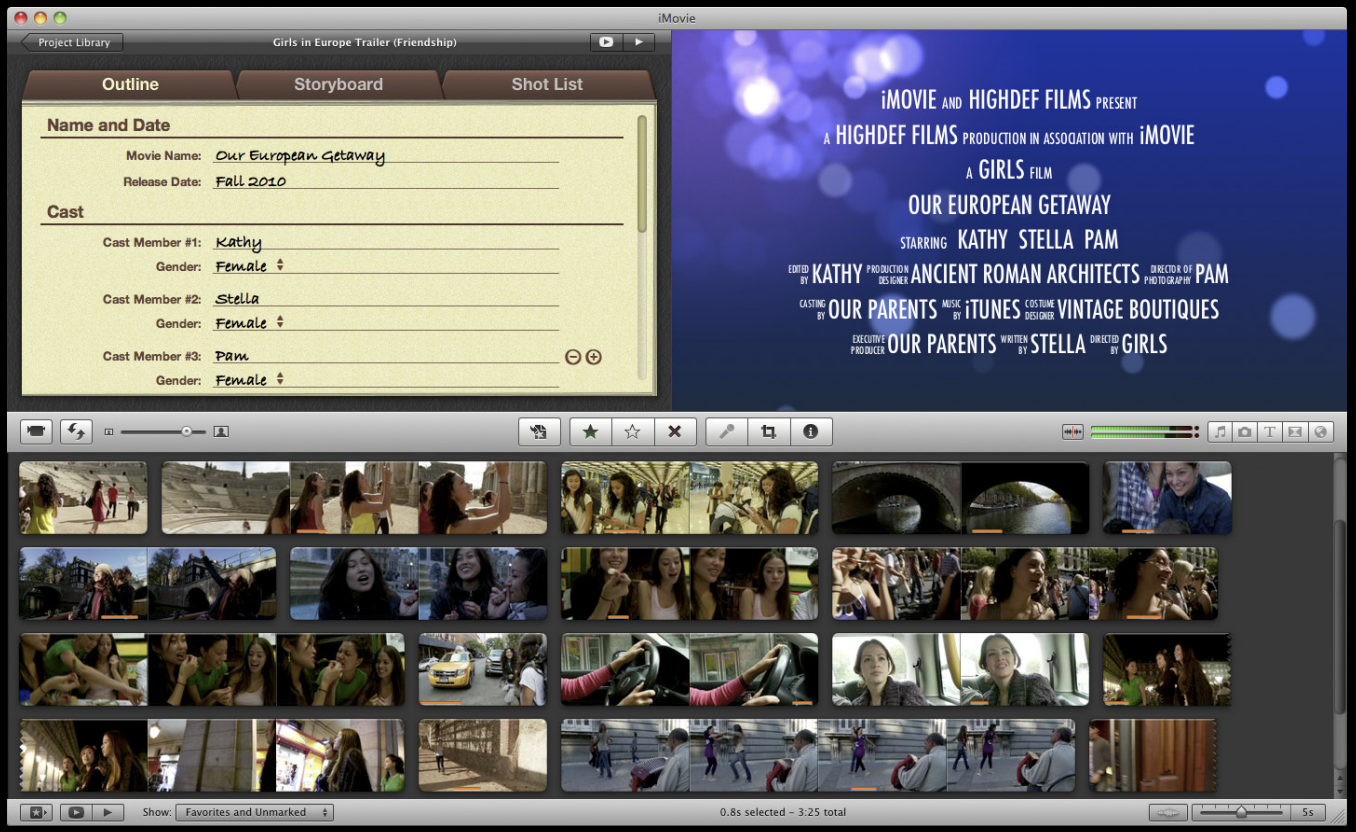
Accelerate


Alpha.h
vImageAlphaBlend_Planar8(const vImage_Buffer *srcTop, const vImage_Buffer *srcTopAlpha, const vIma...
*
* For planar data, you need to calculate alpha yourself ahead of time and provide that as an argument to this function.
* This can be done using:
*
* vImagePremultipliedAlphaBlend_Planar(8/F)(srcTopAlpha, srcTopAlpha, srcBottomAlpha, alpha, kvImageNoFlags);
*
* For ARGB interleaved data, this is done for you while the other calculations are taking place. Somewhat better alpha precision
* is available for ARGB8888 data compared to Planar_8 data, because the result alpha channel can be represented with fractional precision.
*
* For calculations involving 8-bit integer data, the calculation is done in a fixed point representation using signed 0.15 fixed point
* internal representation with saturated clipping, to prevent results > 1.0 and results < 0. The calculation is actually done with negative
* numbers internally to make sure that -1.0 is representable where needed. Values are rounded up by 1/2 ulp before truncation.
*
* This function will work in place.
*/
vImage_Error vImageAlphaBlend_Planar8(const vImage_Buffer *srcTop, const vImage_Buffer *srcTopAlpha, const vImage_Buffer *srcBottom, const vImage_Buffer *srcBottomAlpha, const vImage_Buffer *alpha, const vImage_Buffer *dest, vImage_Flags flags)
__OSX_AVAILABLE_STARTING(__MAC_10_3, __IPHONE_50);
vImage_Error vImageAlphaBlend_PlanarF(const vImage_Buffer *srcTop, const vImage_Buffer *srcTopAlpha, const vImage_Buffer *srcBottom, const vImage_Buffer *srcBottomAlpha, const vImage_Buffer *alpha, const vImage_Buffer *dest, vImage_Flags flags)
__OSX_AVAILABLE_STARTING(__MAC_10_3, __IPHONE_50);

MacBook Pro

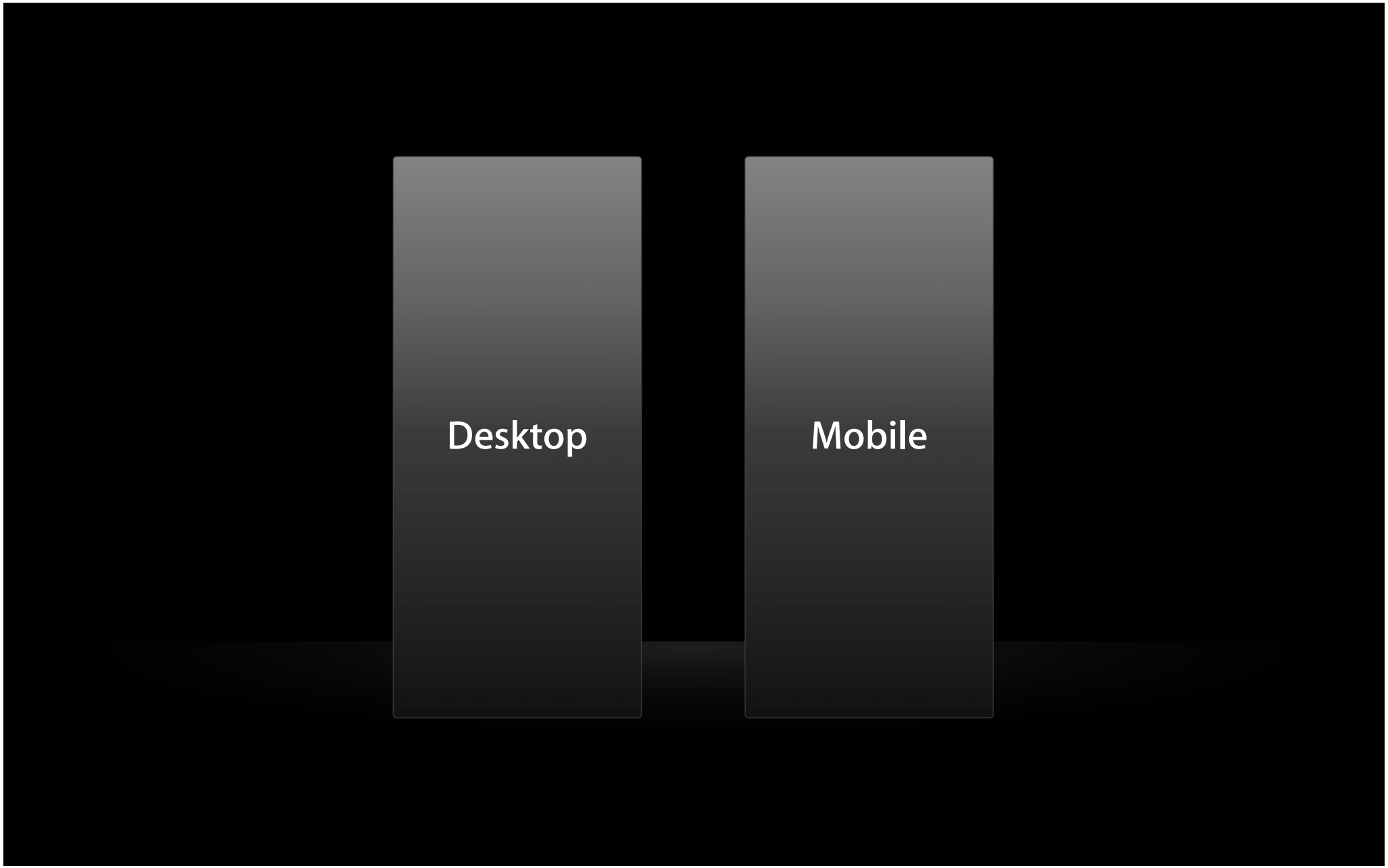
iPad
9:41 AM
Messages
Monday
6
Calendar
Notes
Reminders
Milk
Eggs
Bread
Maps
280
YouTube
Videos
Contacts
Game Center
iTunes
App Store
Newsstand
FaceTime
Camera
Photo Booth
Settings
Safari
Mail
Photos
Music

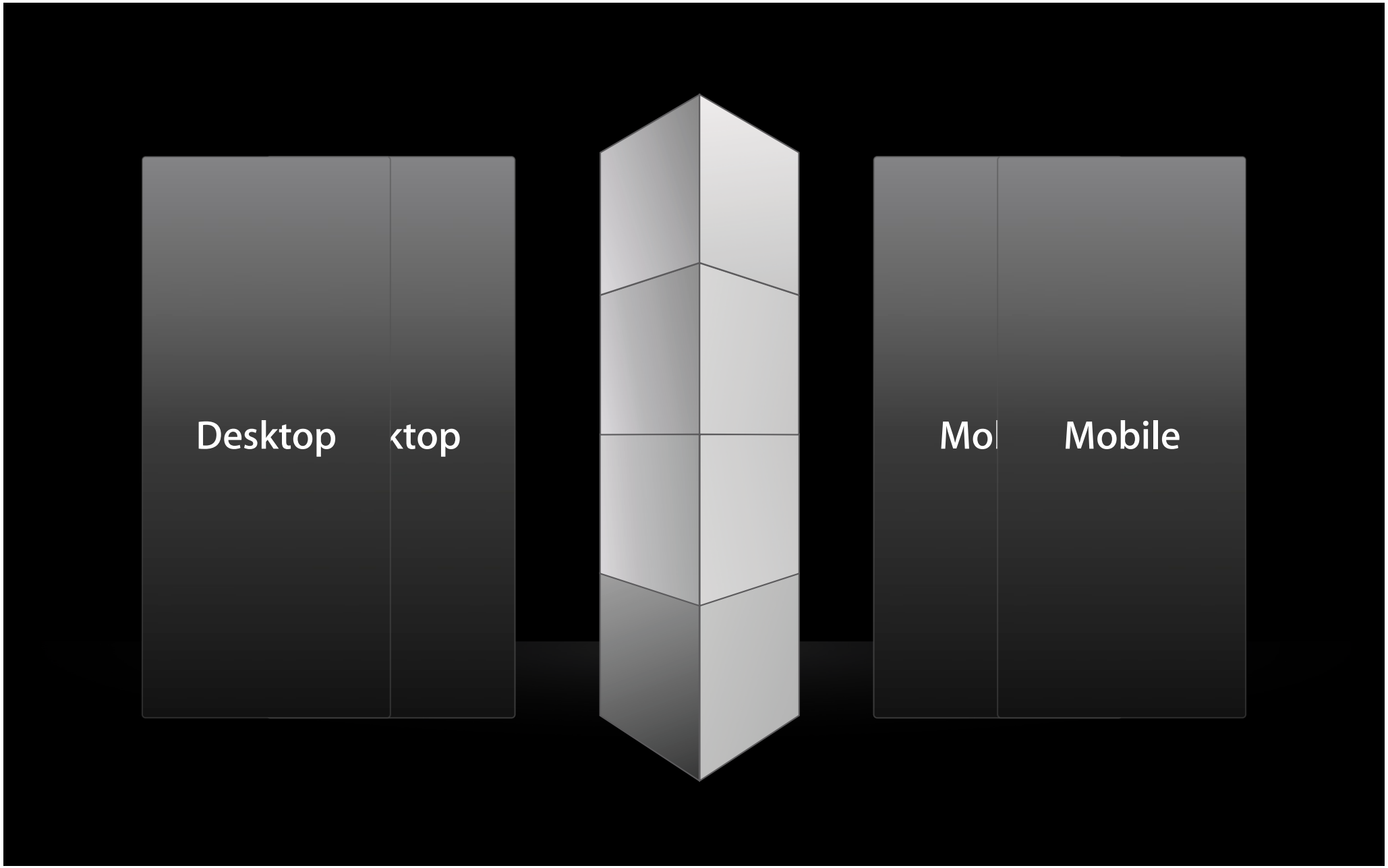
iPhoto
LIBRARY
Events
Photos
Faces
Places
RECENT
Road Trip
Last Import
Last 12 Months
Flagged
7
Trash
ALBUMS
PROJECTS
SLIDESHOWS
Climbing
Trekking
Mia's soccer match
Winter Break
Party
Spring
Gymnastics meet
Road Trip
The Family Menagerie
Summer in Australia
Farmers Market
Little Christina
Crested Butte
Lord Howe Island
Maria's Wedding
Full Screen
Search
Zoom
Slideshow
Info
Edit
Create
Add To
Share

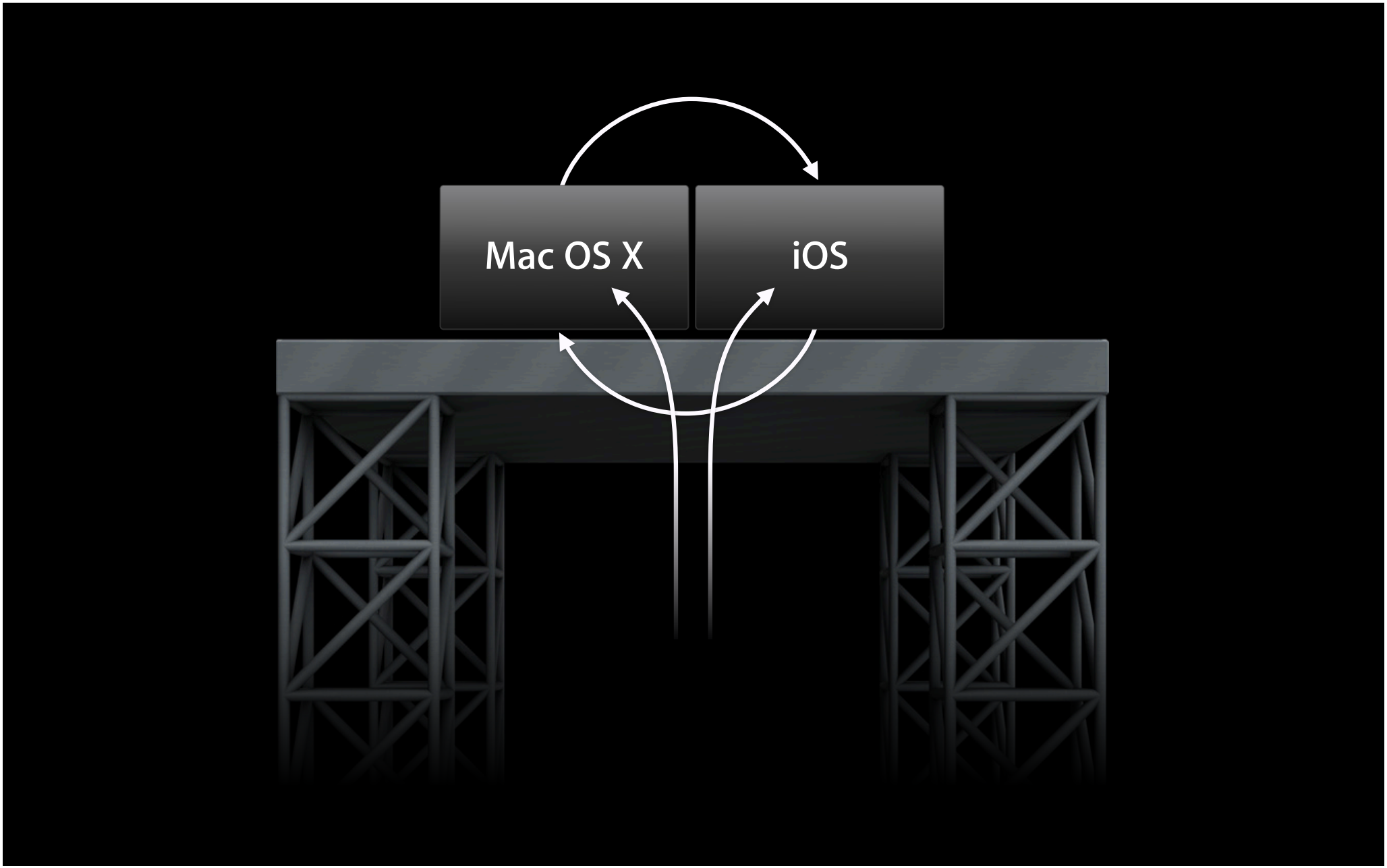

iMovie
Project Library
Girls in Europe Trailer (Friendship)
Outline
Storyboard
Shot List
Name and Date
Movie Name: Our European Getaway
Release Date: Fall 2010
Cast
Cast Member #1: Kathy
Gender: Female
Cast Member #2: Stella
Gender: Female
Cast Member #3: Pam
Gender: Female
iMOVIE AND HIGHDEF FILMS PRESENT
A HIGHDEF FILMS PRODUCTION IN ASSOCIATION WITH iMOVIE
A GIRLS FILM
OUR EUROPEAN GETAWAY
STARRING KATHY STELLA PAM
EDITED BY KATHY PRODUCTION DESIGNER ANCIENT ROMAN ARCHITECTS DIRECTOR OF PHOTOGRAPHY PAM
CASTING BY OUR PARENTS MUSIC BY iTUNES COSTUME DESIGNER VINTAGE BOUTIQUES
EXECUTIVE PRODUCER OUR PARENTS WRITTEN BY STELLA DIRECTED BY GIRLS
Show: Favorites and Unmarked
0.8s selected – 3:25 total
5s

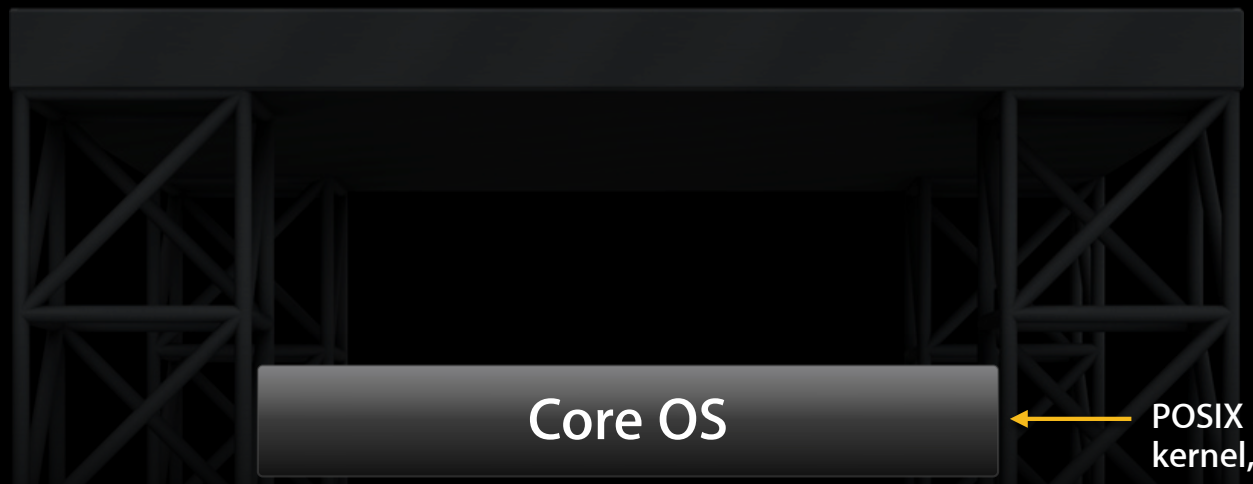
iPad
9:41 AM
Edit
Video
My Projects
Our Hawaiian Adventure
Undo
Feb 20, 2011
18s
21s
Feb 16, 2011
10s
Feb 13, 2011
6.8s
Feb 12, 2011
42.9s
Recording 1
Island Jingle
Suspense Rising

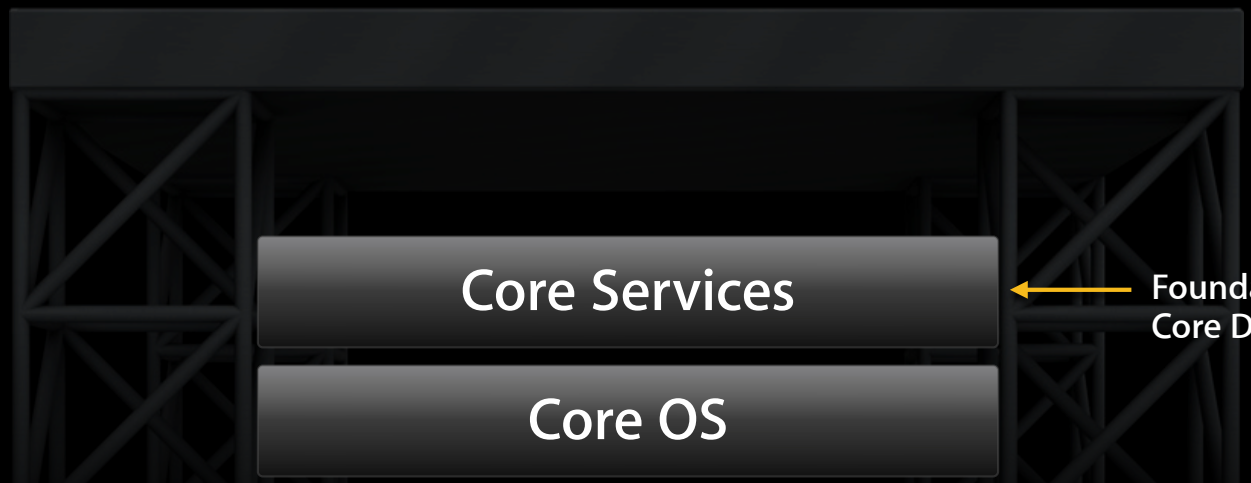
iPad
9:41 AM
My Songs
Instruments
All
1
2
3
4
5
6
7
8
9
10
Drums
Bass
Tambourine
Piano
Synths
String Section
My Vocal
My Guitar


Desktop
Mobile

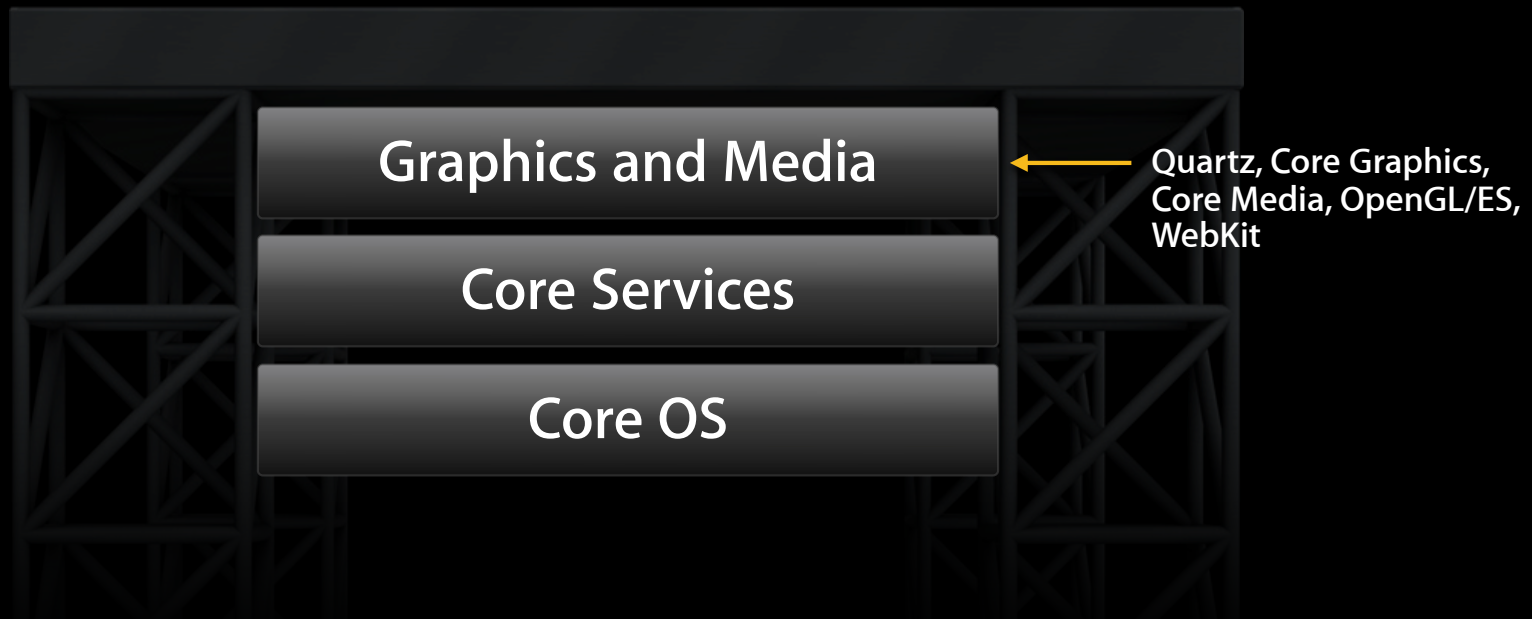

Desktop
Mobile

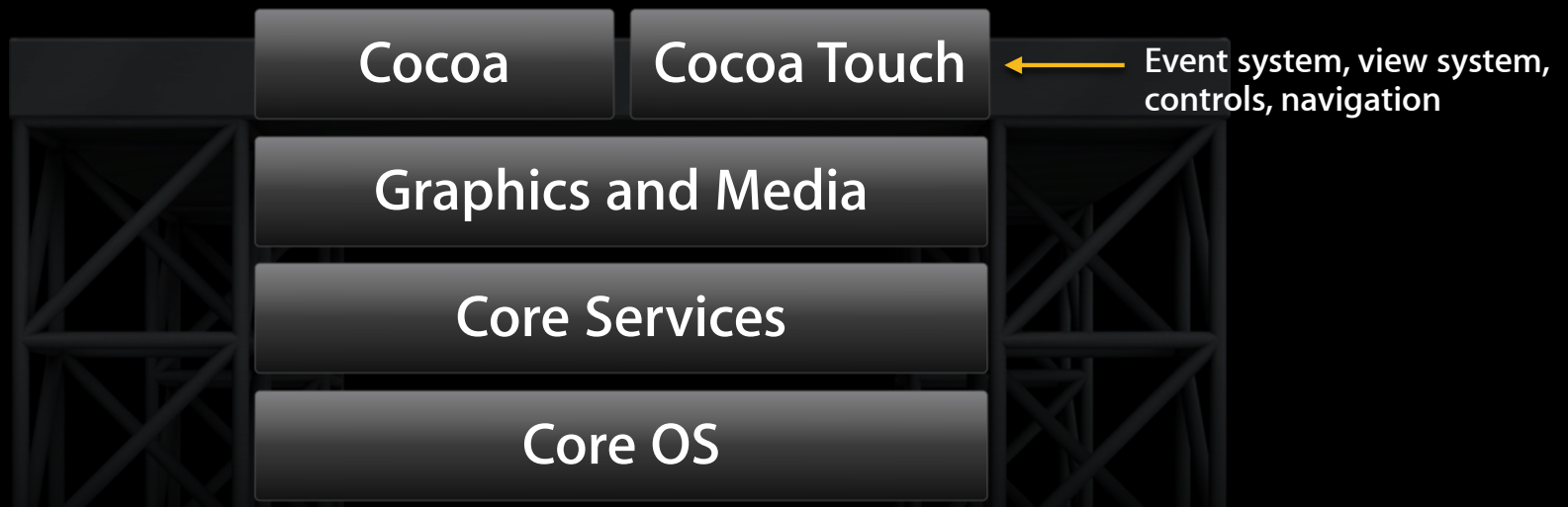

Mac OS X
iOS

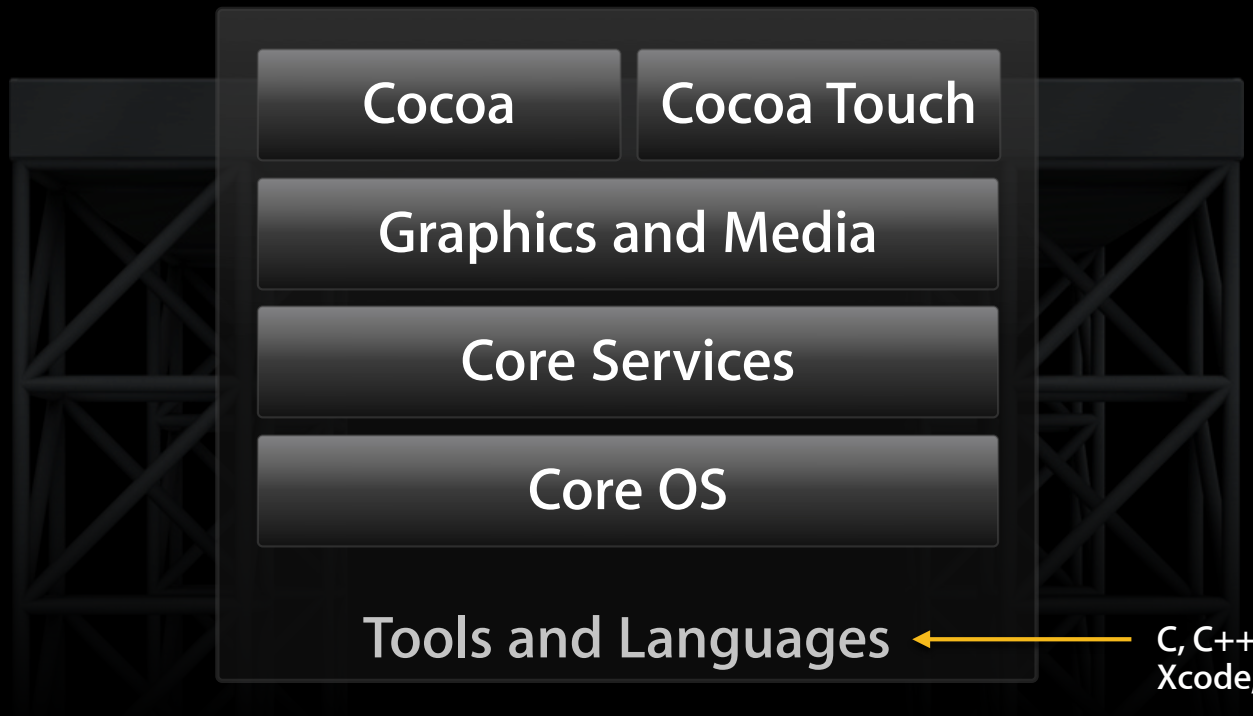

Core OS
POSIX and BSD interfaces,
kernel, IOKit, filesystem,
power management,
security



Foundation, GCD,
Core Data, networking


Graphics and Media
Core Services
Core OS
Quartz, Core Graphics,
Core Media, OpenGL/ES,
WebKit


Cocoa
Cocoa Touch
Event system, view system, controls, navigation
Graphics and Media
Core Services
Core OS


Cocoa
Cocoa Touch
Graphics and Media
Core Services
Core OS
Tools and Languages
C, C++, Objective-C
Xcode, LLVM, Instruments

View-based TableView

AVFoundation

Core Location

Sandboxing

Cocoa

Cocoa Touch

Graphics and Media

Core Services

Core OS

Tools and Languages

GCD

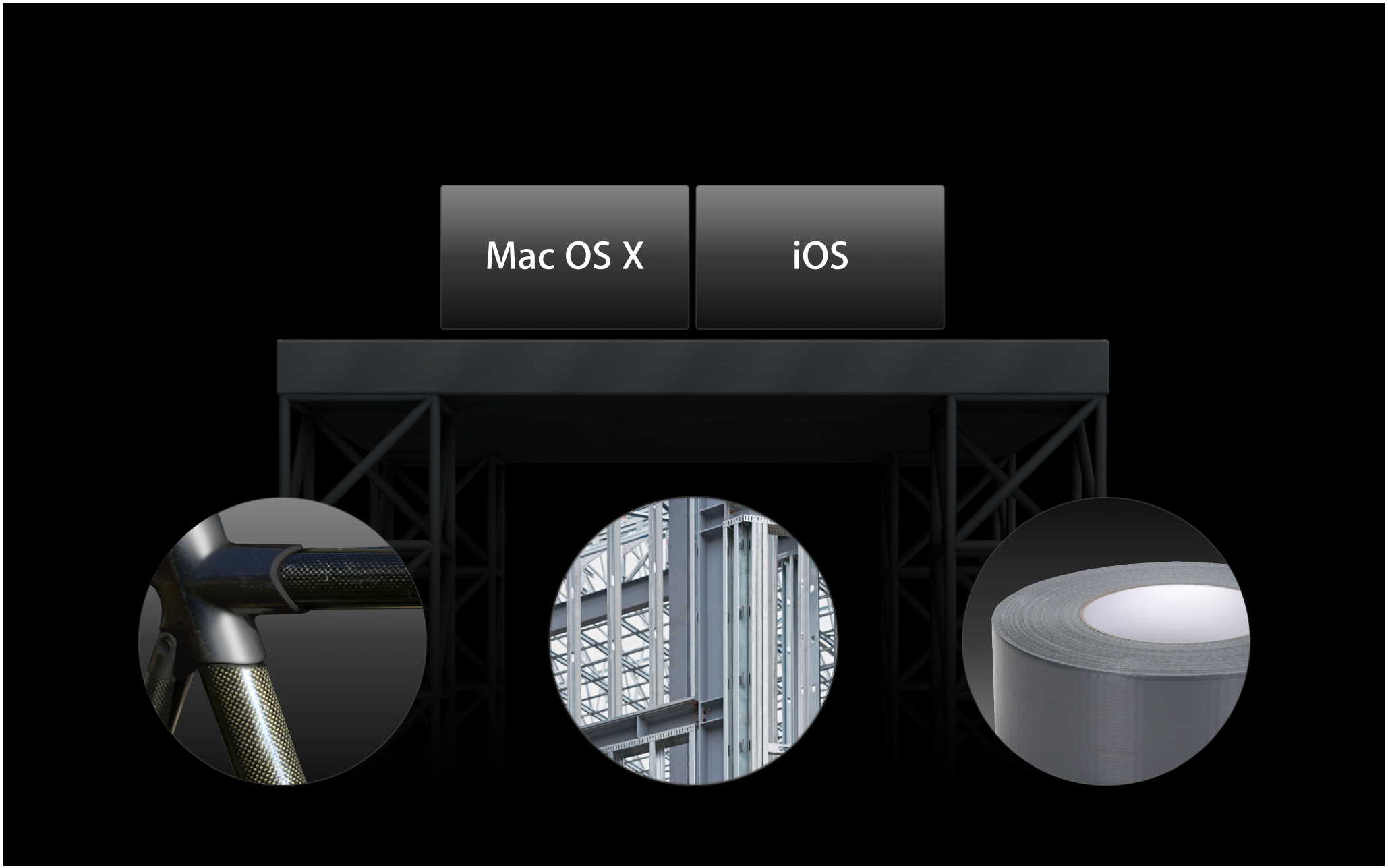
Cloud Storage

UIDocument

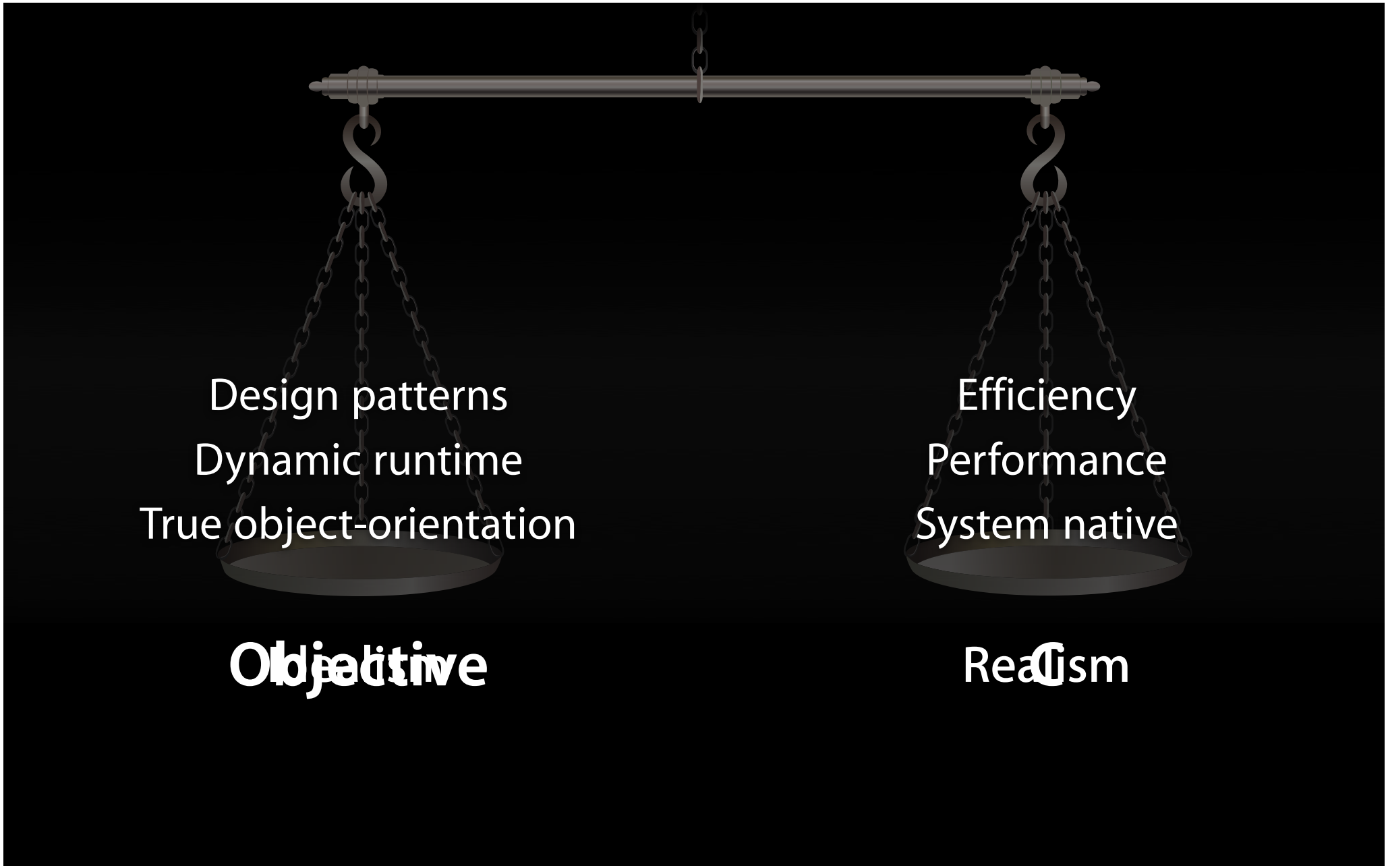
Core Image

Accelerate

Security


Mac OS X
iOS

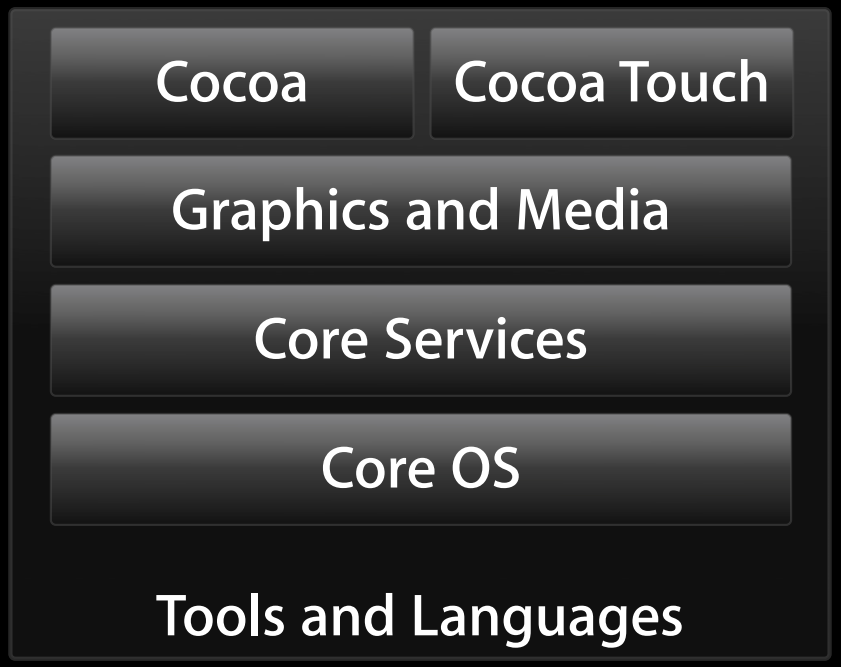
Pragmatism

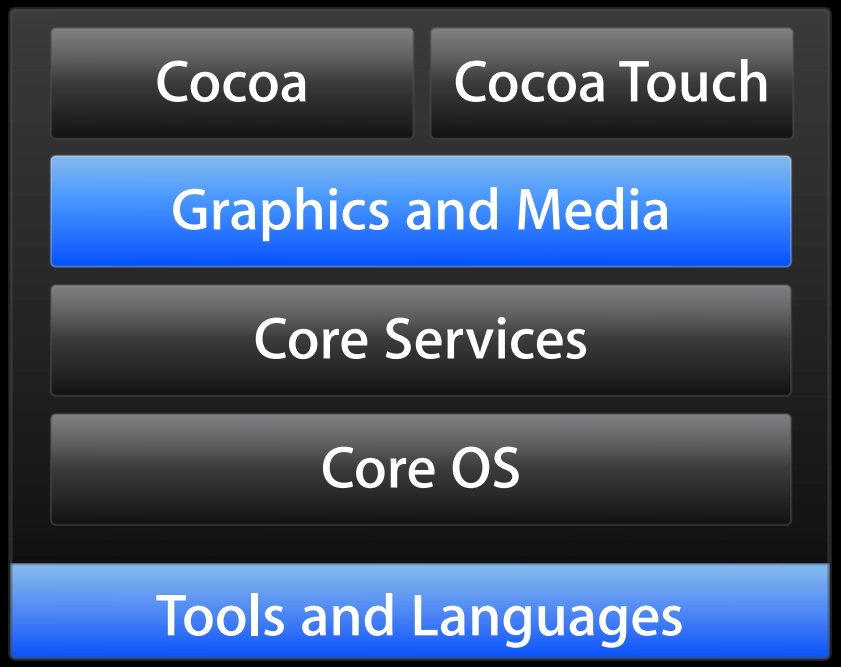

Design patterns
Dynamic runtime
True object-orientation
Efficiency
Performance
System native
Objective
Realism

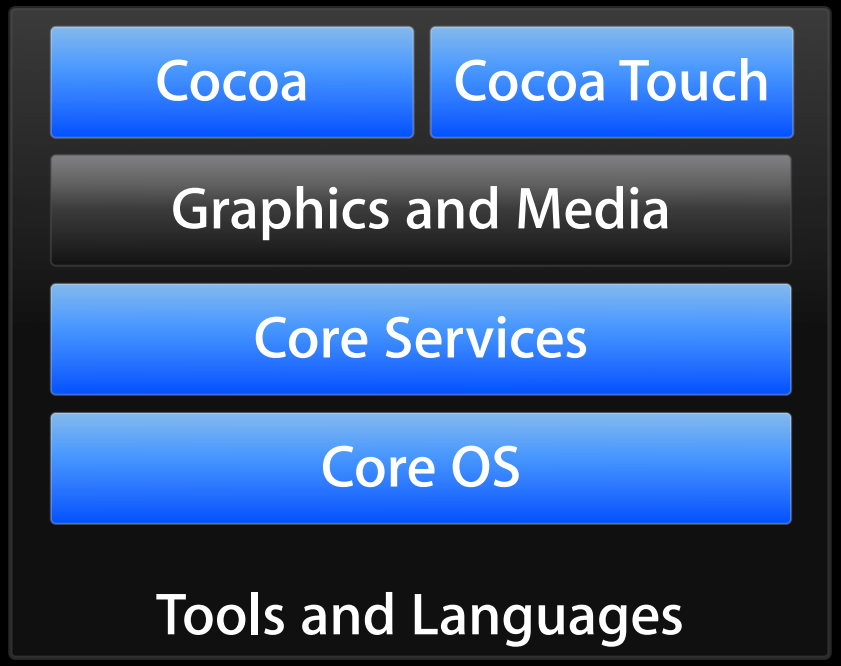
```
[myObject retain]
[myObject release]
```

Color palette
Writing Tools
ARCHITECT: XCODE

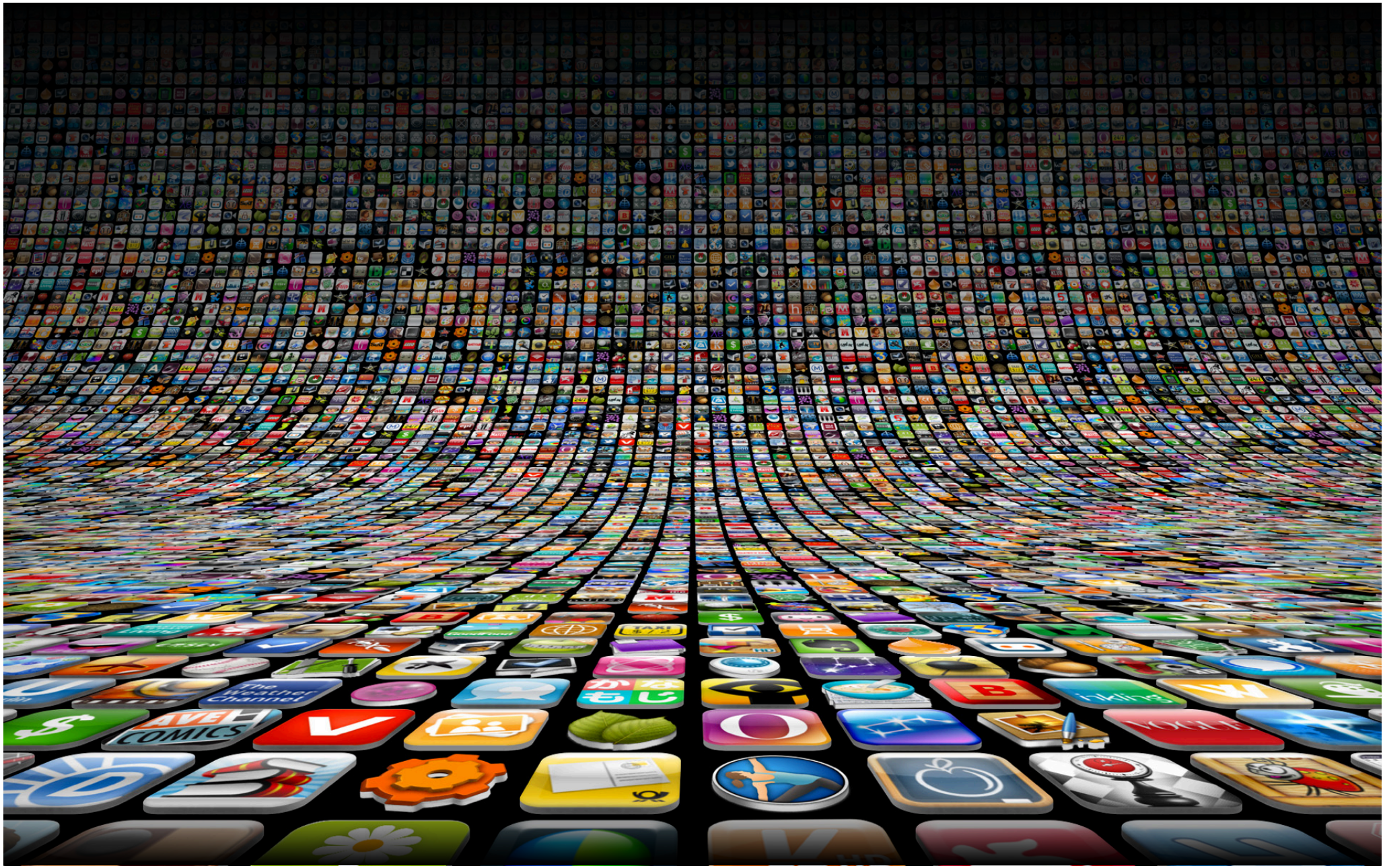
The Speed of Explicit Object Management
The Simplicity of Garbage Collection


Cocoa
Cocoa Touch
Graphics and Media
Core Services
Core OS
Tools and Languages


Cocoa
Cocoa Touch
Graphics and Media
Core Services
Core OS
Tools and Languages


Cocoa
Cocoa Touch
Graphics and Media
Core Services
Core OS
Tools and Languages

5



Our users expect…

Simple

Immersive

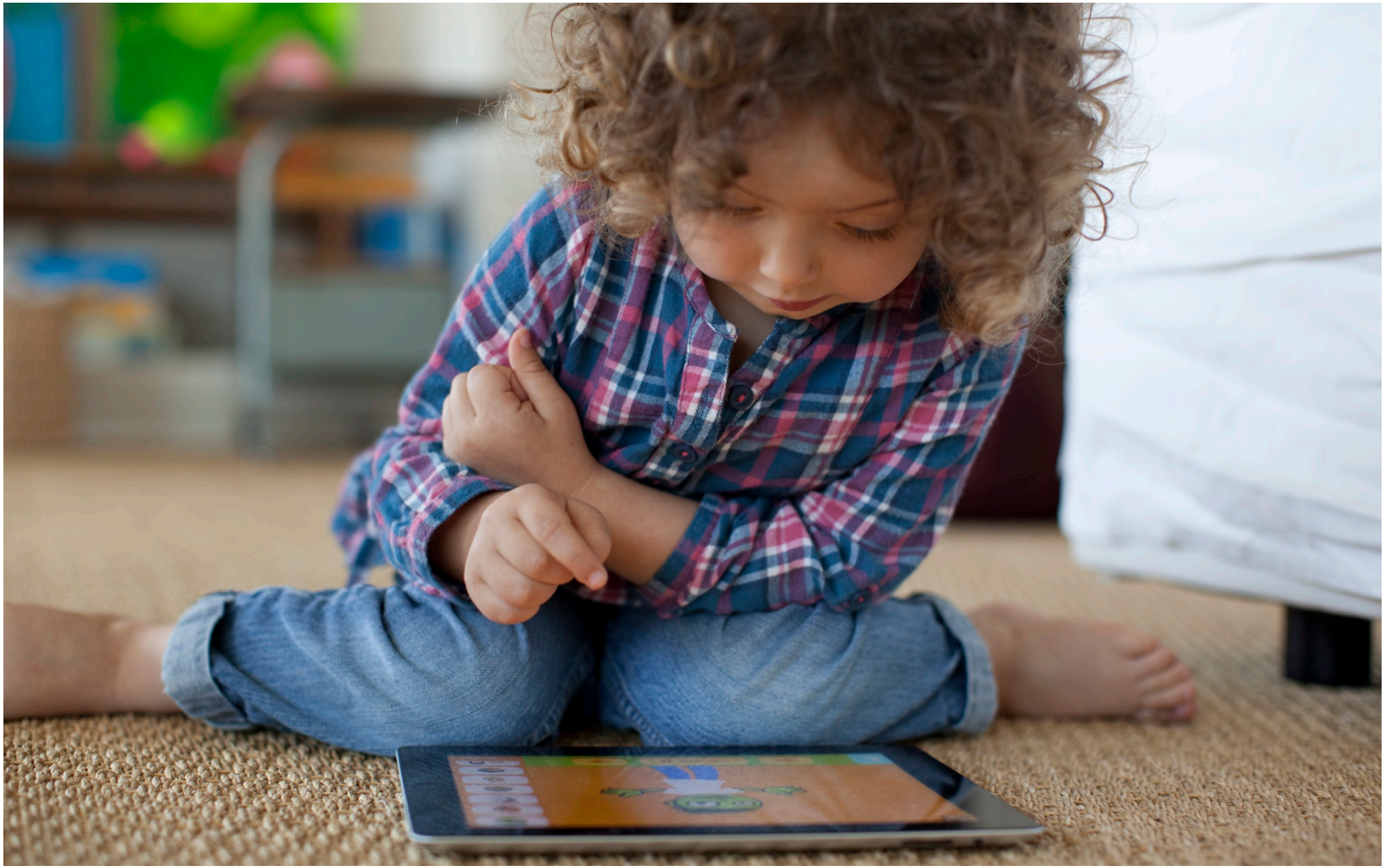
Fast

Secure

Connected

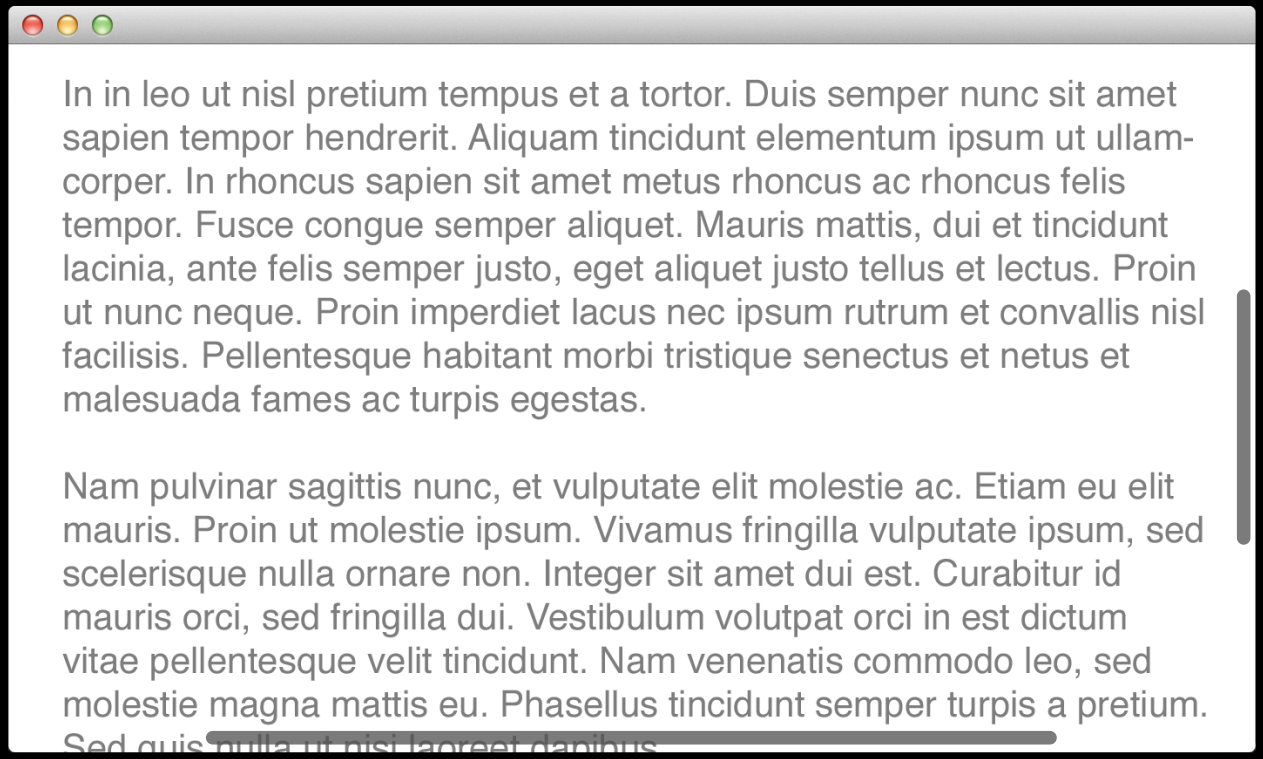
Simple

FLY
LAND

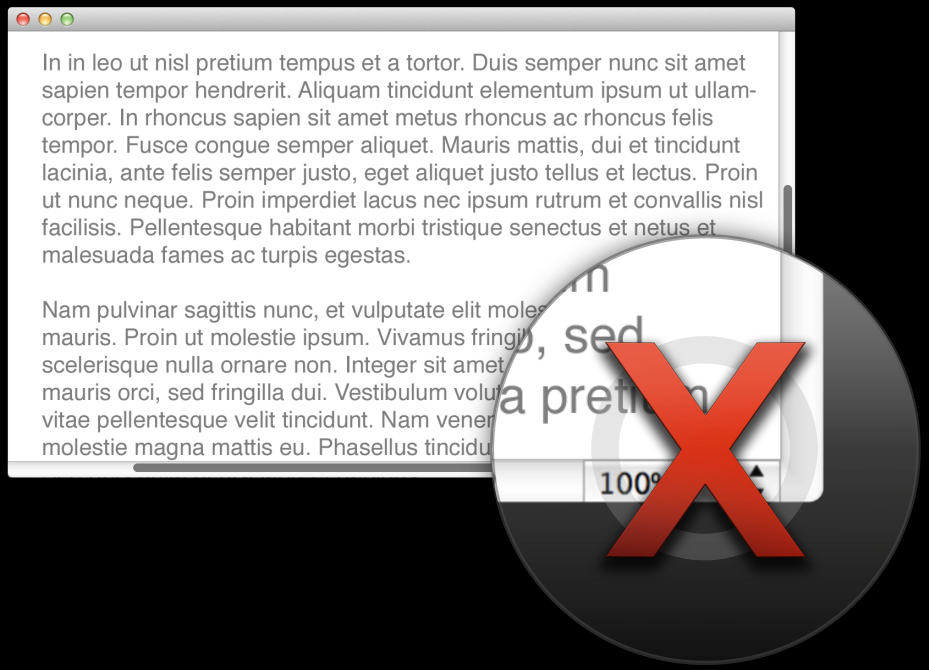


Safari File Edit View History Bookmarks Window Help
The New York Times - Breaking News, World News & Multimedia
http://www.nytimes.com/
The New York Times
Deal for Deputy for Academics Clears Way for Schools Chief
Iraq's Troubles Drive Out Refugees Who Came Back
Fruitful Talent Made Art World Multiply
Universities Tell High Schools Logos Are Off Limits
MacBook Pro

Overlay Scrollers



Overlay Scrollers



- Not visible when not scrolling
  - Behavior varies depending on input device

```
NSScrollerStyleOverlay,
NSScrollerStyleLegacy

NSScrollElasticity
```

- Alleys no longer suitable for controls

Scrolling Direction

massa sed enim.

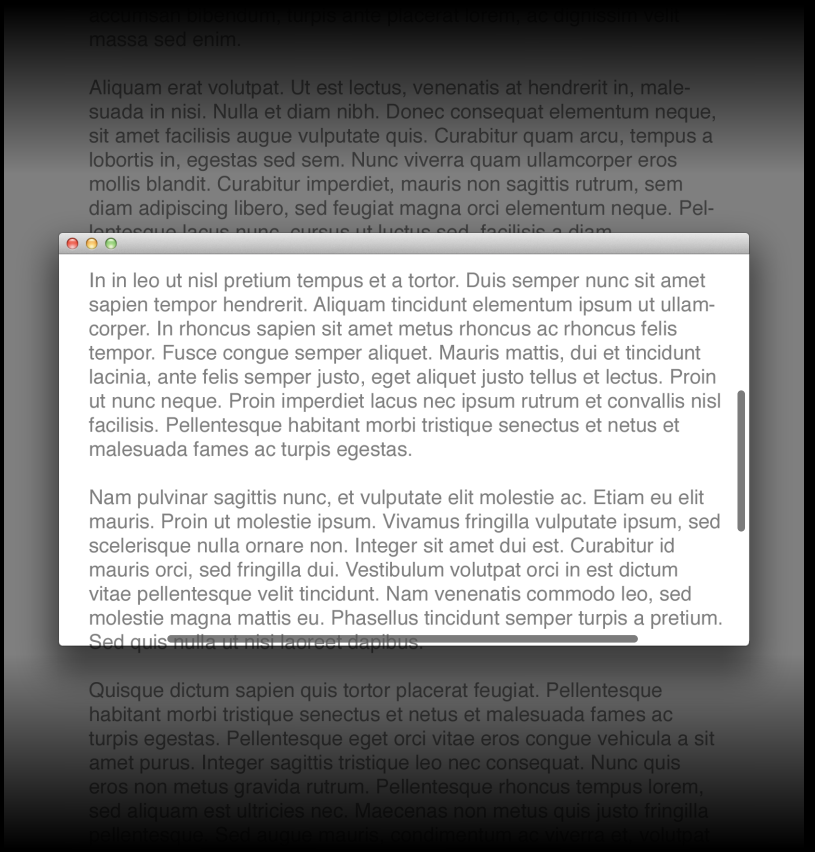
Aliquam erat volutpat. Ut est lectus, venenatis at hendrerit in, male-
suada in nisi. Nulla et diam nibh. Donec consequat elementum neque,
sit amet facilisis augue vulputate quis. Curabitur quam arcu, tempus a
lobortis in, egestas sed sem. Nunc viverra quam ullamcorper eros
mollis blandit. Curabitur imperdiet, mauris non sagittis rutrum, sem
diam adipiscing libero, sed feugiat magna orci elementum neque. Pel-

In in leo ut nisl pretium tempus et a tortor. Duis semper nunc sit amet sapien tempor hendrerit. Aliquam tincidunt elementum ipsum ut ullamcorper. In rhoncus sapien sit amet metus rhoncus ac rhoncus felis tempor. Fusce congue semper aliquet. Mauris mattis, dui et tincidunt lacinia, ante felis semper justo, eget aliquet justo tellus et lectus. Proin ut nunc neque. Proin imperdiet lacus nec ipsum rutrum et convallis nisl facilisis. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

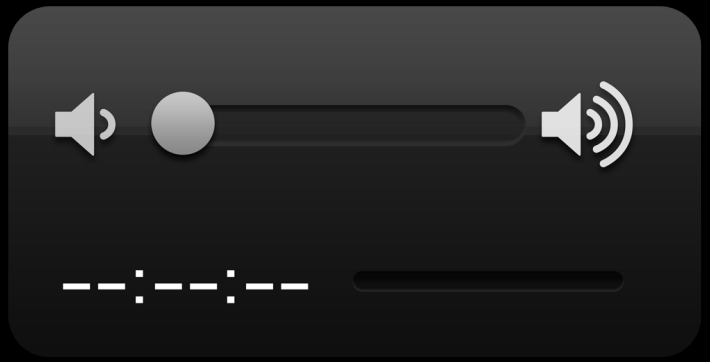
Nam pulvinar sagittis nunc, et vulputate elit molestie ac. Etiam eu elit mauris. Proin ut molestie ipsum. Vivamus fringilla vulputate ipsum, sed scelerisque nulla ornare non. Integer sit amet dui est. Curabitur id mauris orci, sed fringilla dui. Vestibulum volutpat orci in est dictum vitae pellentesque velit tincidunt. Nam venenatis commodo leo, sed molestie magna mattis eu. Phasellus tincidunt semper turpis a pretium.

Quisque dictum sapien quis tortor placerat feugiat. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Pellentesque eget orci vitae eros congue vehicula a sit amet purus. Integer sagittis tristique leo nec consequat. Nunc quis eros non metus gravida rutrum. Pellentesque rhoncus tempus lorem, sed aliquam est ultricies nec. Maecenas non metus quis justo fringilla

Scrolling Direction

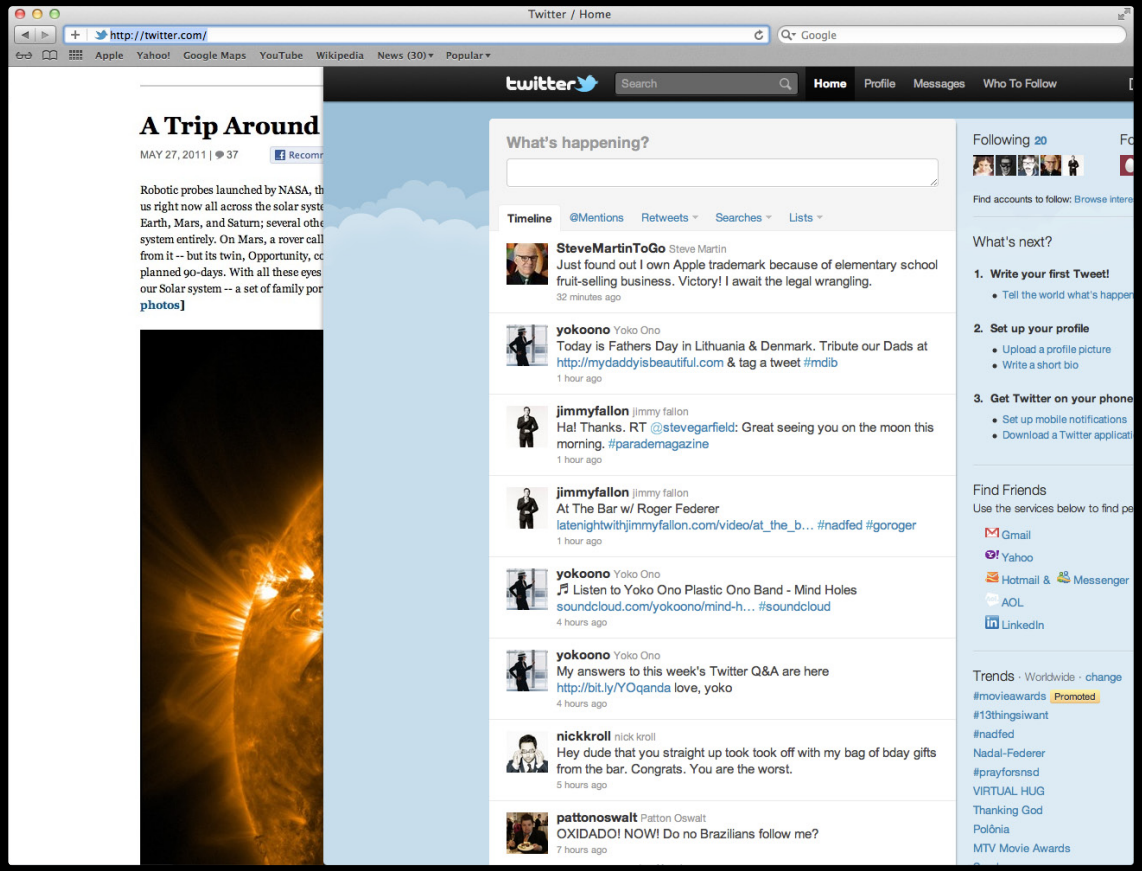


Scrolling Direction



New scrolling property indicates reversal of direction

Anything depending on scrolling direction needs to look for `isDirectionInvertedFromDevice` in NSEvent


Twitter / Home
http://twitter.com/
Google
Apple Yahoo! Google Maps YouTube Wikipedia News (30) Popular
A Trip Around
MAY 27, 2011 | 37
Robotic probes launched by NASA, th
us right now all across the solar syste
Earth, Mars, and Saturn; several othe
system entirely. On Mars, a rover call
from it -- but its twin, Opportunity, c
planned 90-days. With all these eyes
our Solar system -- a set of family por
photos]
twitter
Search
Home Profile Messages Who To Follow
What's happening?
Timeline @Mentions Retweets Searches Lists
SteveMartinToGo Steve Martin
Just found out I own Apple trademark because of elementary school fruit-selling business. Victory! I await the legal wrangling.
32 minutes ago
yokoono Yoko Ono
Today is Fathers Day in Lithuania & Denmark. Tribute our Dads at http://mydaddyisbeautiful.com & tag a tweet #mdib
1 hour ago
jimmyfallon jimmy fallon
Ha! Thanks. RT @stevegarfield: Great seeing you on the moon this morning. #parademagazine
1 hour ago
jimmyfallon jimmy fallon
At The Bar w/ Roger Federer
latenightwithjimmyfallon.com/video/at_the_b… #nadfed #goroger
1 hour ago
yokoono Yoko Ono
Listen to Yoko Ono Plastic Ono Band - Mind Holes
soundcloud.com/yokoono/mind-h… #soundcloud
4 hours ago
yokoono Yoko Ono
My answers to this week's Twitter Q&A are here
http://bit.ly/YOqanda love, yoko
4 hours ago
nickkroll nick kroll
Hey dude that you straight up took took off with my bag of bday gifts from the bar. Congrats. You are the worst.
5 hours ago
pattonoswalt Patton Oswalt
OXIDADO! NOW! Do no Brazilians follow me?
7 hours ago
Following 20
Find accounts to follow: Browse interes
What's next?
1. Write your first Tweet!
Tell the world what's happen
2. Set up your profile
Upload a profile picture
Write a short bio
3. Get Twitter on your phone
Set up mobile notifications
Download a Twitter applicati
Find Friends
Use the services below to find pe
Gmail
Yahoo
Hotmail & Messenger
AOL
LinkedIn
Trends · Worldwide · change
#movieawards Promoted
#13thingsiwant
#nadfed
Nadal-Federer
#prayforsnsd
VIRTUAL HUG
Thanking God
Polônia
MTV Movie Awards

Demo

Gestures

Momentum/Elastic scrolling

- New distinct “momentum phase”

```
NSEvent scrollingDeltaX
NSEvent scrollingDeltaY
```

Fluid swiping

```
NSResponder
wantsScrollEventForSwipeTracking
NSEvent tracksSwipeEventWithOptions:
```

MacBook Air
esc
delete
tab
caps lock
enter
return
shift
shift
command
option

Auto Save

Saves in place

- Safe atomic operation

Asynchronous disk I/O by default

Smart saving policy

12
1
2
3
4
5
6
7
8
9
10
11

Auto Save

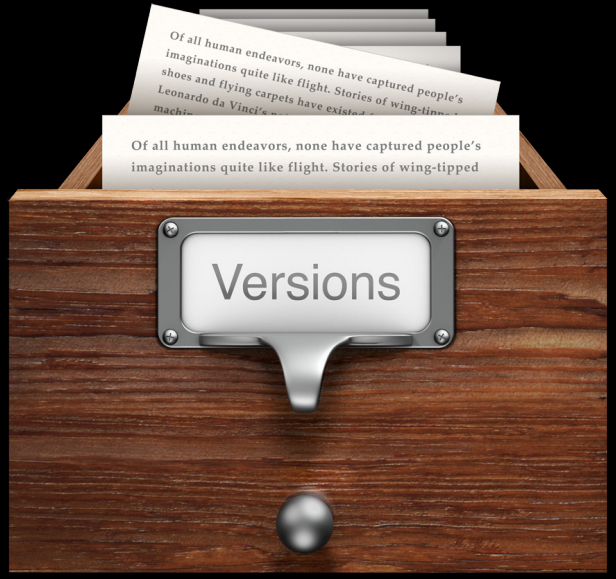
Built into NSDocument

- Override autoSavesInPlace:

```
+ (BOOL)autosavesInPlace {
    return YES;
}
```

Or, do it the hard way

- NSFilePresenter
- NSFileCoordinator


Of all human endeavors, none have captured people's imaginations quite like flight. Stories of wing-tipp
shoes and flying carpets have existe
Leonardo da Vinci's
Of all human endeavors, none have captured people's imaginations quite like flight. Stories of wing-tipped
Versions

Versions

Automatically creates revisions

- Hourly
- On open
- On save
- On reversion
- On duplication
- On rename
- When locked
- Significant changes

Versions

What you do

- Implement Auto Save
- "Current document" is *your* NSDocument window
- NSFileVersion foundation API

Optional

- Versions-specific UI changes

Immersive

iPad
9:41 AM
Edit
Video
My Projects
Our Hawaiian Adventure
Undo
Feb 20, 2011
18s
21s
Feb 16, 2011
10s
Feb 13, 2011
6.8s
Feb 12, 2011
42.9s
Recording 1
Island Jingle
Suspense Rising

Preview File Edit View Go Tools Bookmarks Window Help
Mon 10:50 AM
2010GuitarGuide.pdf (page 51 of 64) — Locked
Electronics
The performance-ready Expression System faithfully reproduces your Taylor's natural voice
Our commitment to great acoustic tone doesn't end with the guitar. It includes the realm of amplified sound for players who want to plug in and convey all the great acoustic nuances they love about their Taylors. A guitar's shape, its wood pairings, and the technique of the player together create a unique tonal character, and we think that voice deserves to be heard when the guitar is plugged-in. After all, many gigging acoustic players stake their livelihood on their live sound, and they want a pickup that sounds natural, is reliable, and is easy to use.
We decided to develop our own acoustic pickup, the Expression System® (ES), because other after-market pickups like a traditional piezo transducer had never managed to produce a true acoustic sound. We started by studying how a guitar resonates. We worked closely with
with all the richness, articulation and dynamic range you could ask for. It's also highly feedback resistant.
Another goal of the ES design was to offer easy-to-use tone controls without intruding on the beautiful aesthetic of a Taylor. With three soft-touch roller knobs elegantly embedded in the upper bout of the guitar, you can adjust your volume, bass, midrange and treble frequencies, allowing you to dial in your sound to suit the performance space. The latest version of the ES (updated in 2007) allows players to turn off one or both body sensors with a switch on the preamp board inside the soundhole, features a battery indicator LED, and includes a fused string ground to protect players who play at venues that may not have proper electrical ground.
Although the ES was originally
for each string. The ES-T has an onboard preamp and the same active controls found on the full ES. Featuring a custom-voiced EQ and dynamic response, the system is powered by a 9-volt battery, with a battery life LED power indicator (which is lit when the battery is being used). The pickup also has a Phase switch for feedback control, which is located on the preamp board inside the soundhole.
ES-N / Nylon Series
New for 2010, the ES-N applies our ES pickup technology to our Nylon Series. It's similar to the ES-T, but the preamp design and tone controls were customized to complement the nylon-string voice. Our standard ES control knobs replace the Fishman EQ control unit formerly installed in the guitar's upper bout, adding more tone-shaping control
other electronics inside the body of the guitar and won't present an obstruction to the installation process. NT neck design only. ($500)
• The ES retrofit is used on a Taylor that has the Fishman Onboard Blender, Fishman Prefix or the L.R. Baggs pickup used on the Doyle Dykes Signature Model. Side-mounted controls fill the existing preamp hole in the guitar. ($500)
• The ES upgrade will modify your ES-equipped Taylor guitar from the former AA battery power source to the 9v system currently used. The latest version of the ES also includes a fused string ground, battery indicator LED, and switches that allow you to turn off the body sensors
The K4
Another Taylor tone-shaping product that we feel deserves a place in any serious musician's toolbox is the K4 Preamp and Equalizer. Like the ES, it incorporates the ultra-musical analog circuitry of Mr. Rupert Neve and expands the degree of tone control of the ES, allowing you to precisely shape your guitar's tone by honing in on the notes or frequencies of your choice and then cutting or boosting them to taste. It's perfect for studio or home recording and live performance. Among the K4's features are a tuner output, phase reverse switch, headphone jack, and an effects
MacBook Air

Acoustic Electronics
The performance-ready Expression System faithfully reproduces your Taylor's natural voice
Our commitment to great acoustic tone doesn't end with the guitar. It includes the realm of amplified sound for players who want to plug in and convey all the great acoustic nuances they love about their Taylors. A guitar's shape, its wood pairings, and the technique of the player together create a unique tonal character, and we think that voice deserves to be heard when the guitar is plugged in. After all, many gigging acoustic players stake their livelihood on their live sound, and they want a pickup that sounds natural, is reliable, and is easy to use.
We decided to develop our own acoustic pickup, the Expression System® (ES), because other aftermarket pickups like a traditional piezo transducer had never managed to produce a true acoustic sound. We started by studying how a guitar resonates. We worked closely with legendary pro audio designer Mr. Rupert Neve. Ultimately, our product development group designed a high-fidelity acoustic pickup and preamp that are fully integrated into the guitar. We've been installing it in our guitars since 2003, and some of the biggest names in music, from John Fogerty to George Strait, rely on it for a great acoustic sound on stage.
The ES incorporates a network of magnetic sensors that work like a microphone to capture the acoustic detail coming from the guitar's body and neck as they resonate. Two body sensors affixed to the underside of the guitar's soundboard (top) capture all the sonic detail of its movement, while the neck sensor picks up string and neck vibration. A pro audio grade preamp cleanly boosts the signal and eliminates noise that might otherwise distort or muddy the tone. The result is amplified acoustic tone that sounds like you and your guitar, with all the richness, articulation and dynamic range you could ask for. It's also highly feedback resistant.
Another goal of the ES design was to offer easy-to-use tone controls without intruding on the beautiful aesthetic of a Taylor. With three soft-touch roller knobs elegantly embedded in the upper bout of the guitar, you can adjust your volume, bass, midrange and treble frequencies, allowing you to dial in your sound to suit the performance space. The latest version of the ES (updated in 2007) allows players to turn off one or both body sensors with a switch on the preamp board inside the soundhole, features a battery indicator LED, and includes a fused string ground to protect players who play at venues that may not have proper electrical ground.
Although the ES was originally designed with performance in mind, the sound quality is good enough that many players and recording engineers also use the ES signal for recording.
In the end, the ES will satisfy the most demanding pro player, yet makes it simple enough for anyone to plug in and get a great live tone. Even if you're not quite ready for that open mic night, with the ES, your guitar will be ready to go when you are.
The ES comes standard on acoustic/electric models from the 300 Series up and is optional on models in our acoustic line.
ES-T Under-Saddle Transducer / 100 & 200 Series
Inspired by our Expression System technology and installed on our 100 and 200 Series, the ES-T™ is a single-source, under-saddle transducer with individual elements for each string. The ES-T has an onboard preamp and the same active controls found on the full ES. Featuring a custom-voiced EQ and dynamic response, the system is powered by a 9-volt battery, with a battery life LED power indicator (which is lit when the battery is being used). The pickup also has a Phase switch for feedback control, which is located on the preamp board inside the soundhole.
ES-N / Nylon Series
Now for 2010, the ES-N applies our ES pickup technology to our Nylon Series. It's similar to the ES-T, but the preamp design and tone controls were customized to complement the nylon-string voice. Our standard ES control knobs replace the Fishman EQ control unit formerly installed in the guitar's upper bout, adding more tone-shaping control and preserving the natural design aesthetic.
ES Installation and Retrofits
Whatever model of acoustic guitar you own, whether an older Taylor with pre-ES electronics, a model without electronics, or even another brand of acoustic, our Factory Service Center can install or retrofit the Expression System. A retrofit for "classic" Taylor necks (featuring a one-piece, pre-NT neck design) incorporates the same type of a neck/string sensor used on the standard ES, only the pickup housing is mounted in the soundhole. The Baby and Big Baby can be equipped with an active under-saddle transducer ($150).
• The ES install adds the ES to a Taylor that doesn't currently have electronics, or a guitar that has other electronics inside the body of the guitar and won't present an obstruction to the installation process. NT neck design only. ($500)
• The ES retrofit is used on a Taylor that has the Fishman Onboard Blender, Fishman Prefix or the L.R. Baggs pickup used on the Doyle Dykes Signature Model. Side-mounted controls fill the existing preamp hole in the guitar. ($500)
• The ES upgrade will modify your ES-equipped Taylor guitar from the former AA battery power source to the 9v system currently used. The latest version of the ES also includes a fused string ground, battery indicator LED, and switches that allow you to turn off the body sensors. ($300)
• The ES-NC (no controls) is an option for customers who want the ES electronics but also want to preserve the pure acoustic aesthetic of their guitar. This version features the ES sensors and preamp, but has no volume or tone controls. The pickup installation also features a standard endpin jack along the tail line instead of the ES battery carriage. (The 9v battery is housed inside the soundhole.) ($500)
ES installation includes our Refresh service package. For more information, see our service package listings on page 53, or feel free to call Taylor's Customer Service Department at (800) 943-6782.
The K4
Another Taylor tone-shaping product that we feel deserves a place in any serious musician's toolbox is the K4 Preamp and Equalizer. Like the ES, it incorporates the ultra-musical analog circuitry of Mr. Rupert Neve and expands the degree of tone control of the ES, allowing you to precisely shape your guitar's tone by honing in on the notes or frequencies of your choice and then cutting or boosting them to taste. It's perfect for studio or home recording and live performance. Among the K4's features are a tuner output, phase reverse switch, headphone jack, and an effects
loop, which allows you to use reverb, a stomp box, a volume pedal or other effects and maintain a balanced signal chain. Multiple, transformer-coupled balanced outputs give you routing flexibility, enabling you to drive an amp, PA or both. The K4 is also handy for enhancing the amplified sound of other types of acoustic/electric guitars. If you like to detail your tone, the K4 is an essential piece of gear.
Tip: Because of its flexible, smooth EQ section, the K4 can come in handy in a mixing session. Try using the K4 as a channel insert on your mixing console the next time you do a mix.
MacBook Air

Full Screen Apps

System-wide in Lion

- Enables application switching without exiting full screen

Consistent UI

Consistent behaviors

- Dock hides
- Dock and menu always available

Full Screen UI Options

Decide how toolbars and other interface elements are displayed

Take advantage of new APIs

- Custom full screen transition animations
- Toolbars
- NSPopover

Demo

Full Screen Apps

New API

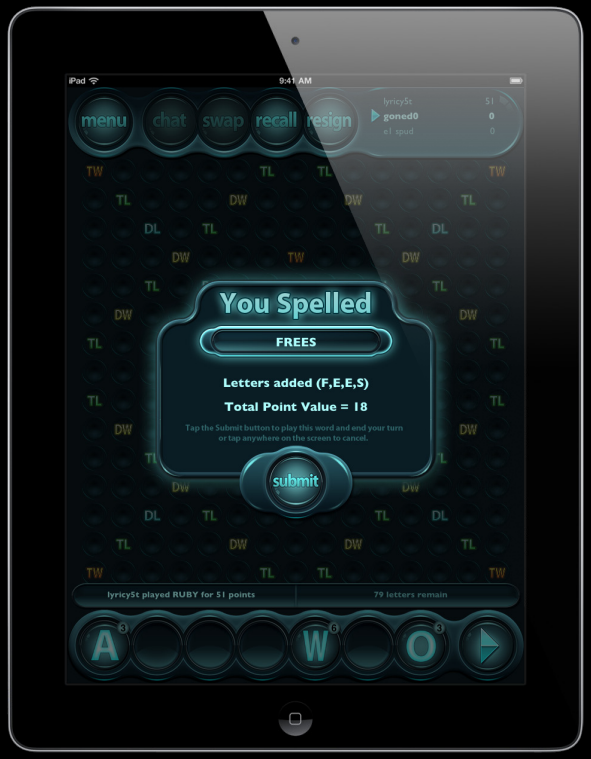
- NSApplication
  - `NSApplicationPresentationFullScreen`
- NSWindow
  - `NSWindowCollectionBehaviorFullScreenPrimary`
- NSWindowDelegate

JavaScript full screen API
in WebKit

BEECHERTON
LAP 1/3
POS 6/6
00:07.050
MONACATO

GL Kit

UIKit Skinning



APIs throughout UIKit

New protocol for skinning

`UIAppearance`

- Background images
- Tint colors
- Text color, size, and font

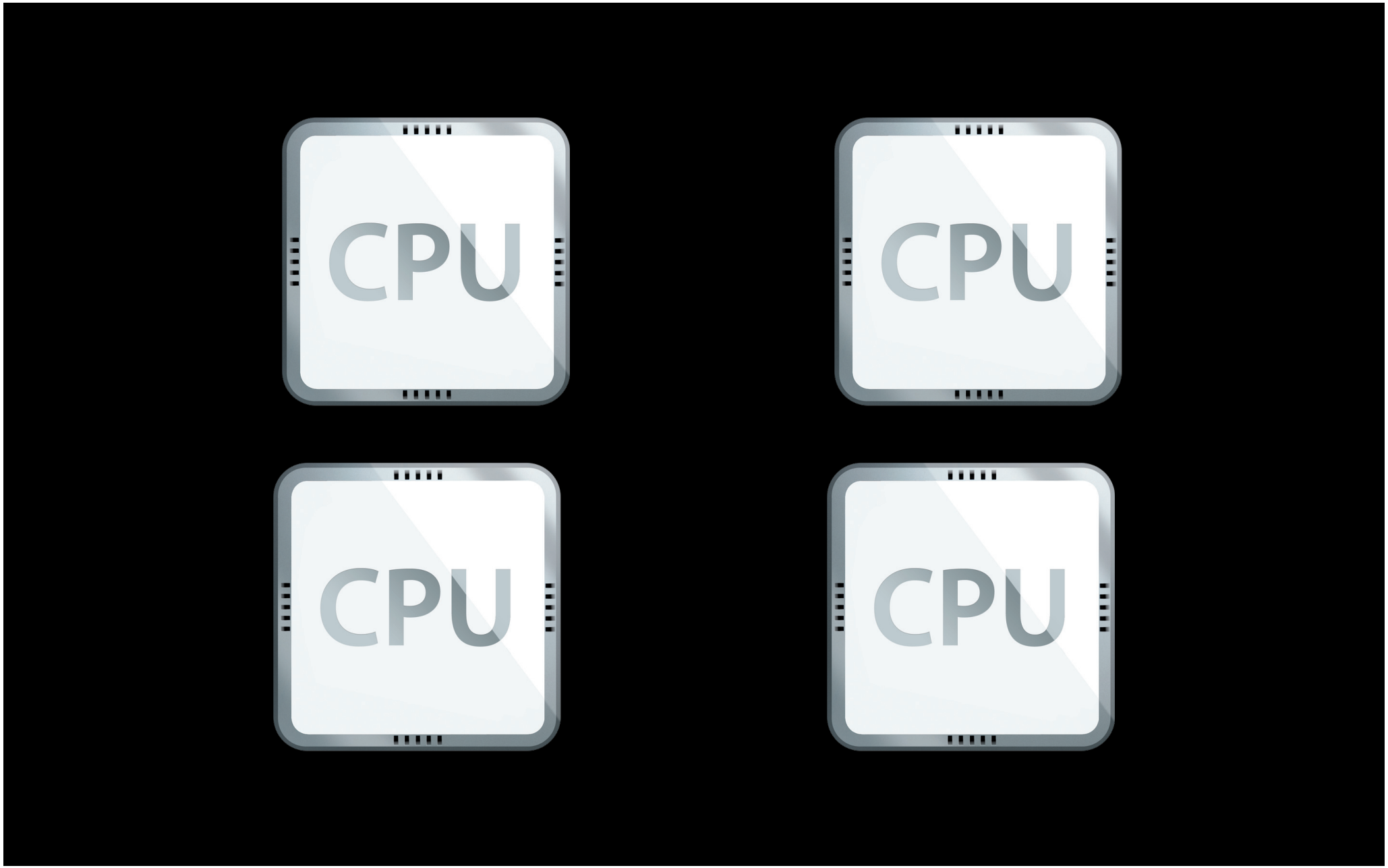
Instance, global, or containing class scope

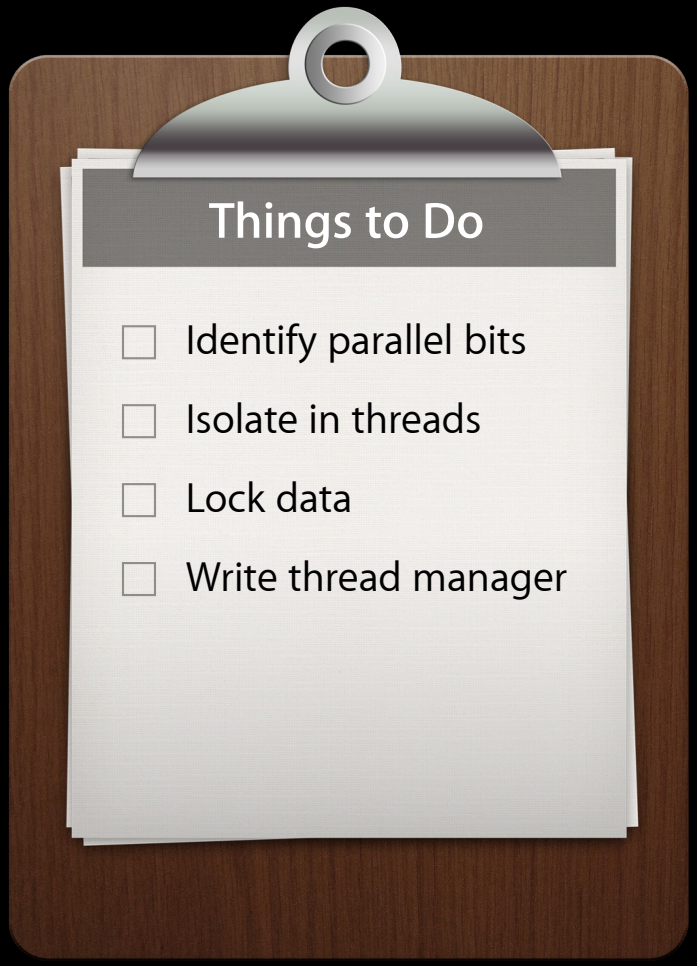
- e.g., change background of buttons inside Popovers

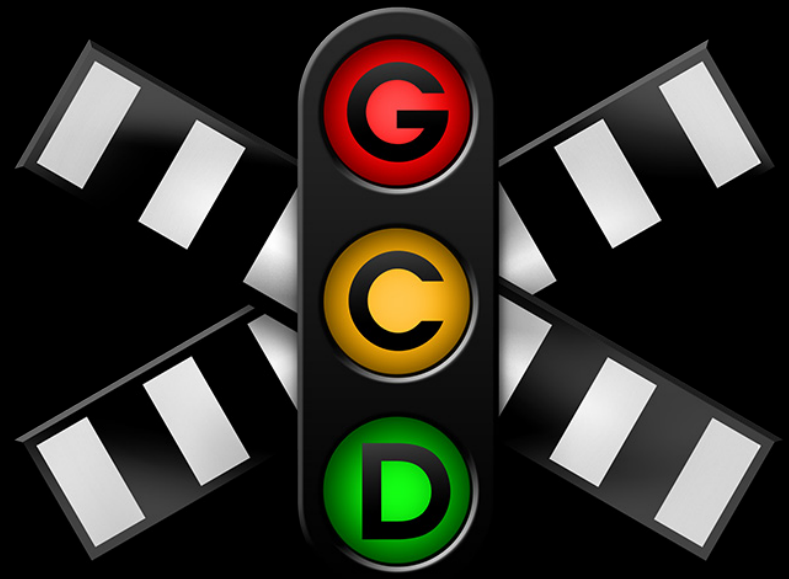
Fast

80
60
100
120
140
160
180
200
220
240
260
40
120
20
140
0 m/h
160
100
80
60
40
20
0 k/h

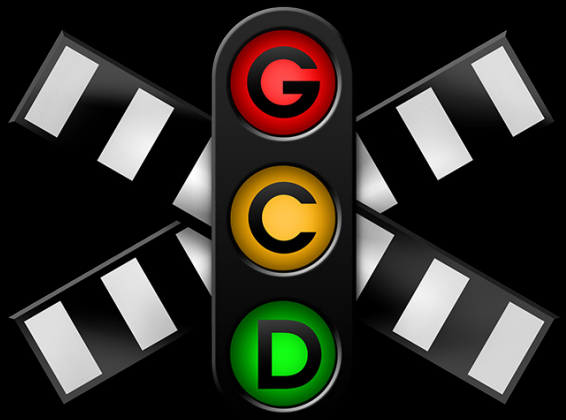
CPU


CPU
CPU
CPU
CPU


Things to Do
Identify parallel bits
Isolate in threads
Lock data
Write thread manager


G
C
D

Dispatch



Block-based

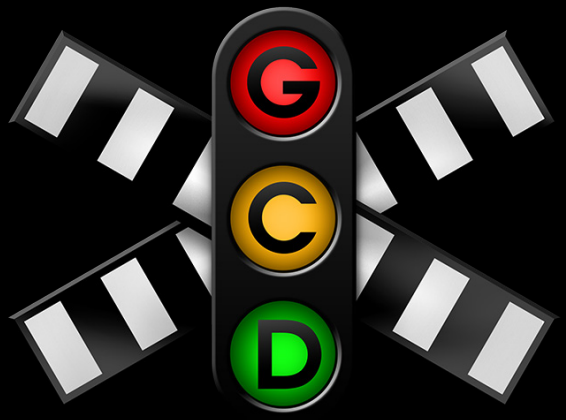
Low overhead

Lockless scheduling

Wait-free algorithms

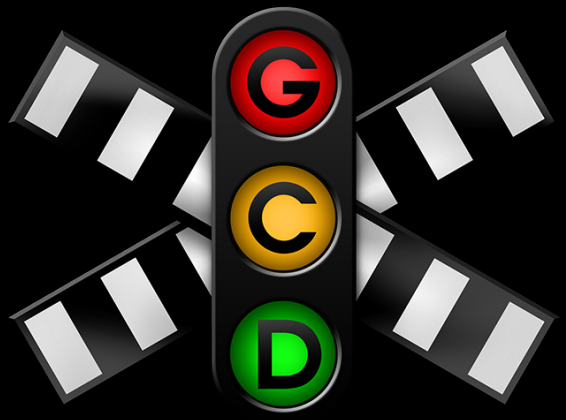
Scales up

Scales down


G
C
D

iPad
9:41 AM
Monday
6
Messages
Calendar
Notes
Reminders
Maps
YouTube
Videos
Contacts
Game Center
iTunes
App Store
Newsstand
FaceTime
Camera
Photo Booth
Settings
Safari
Mail
Photos
Music

New in Grand Central Dispatch

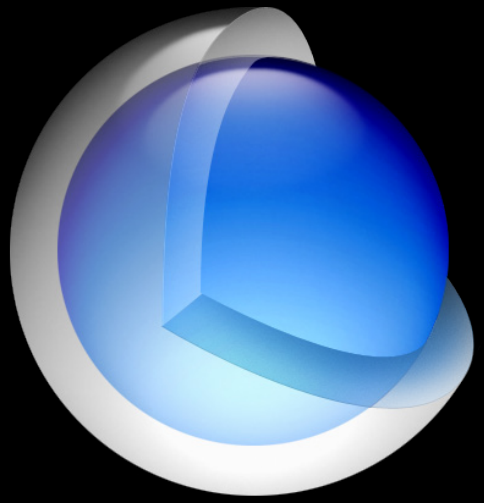


Serialized I/O

- Use blocks and queues to manage asynchronous file and network I/O

Private concurrent queues

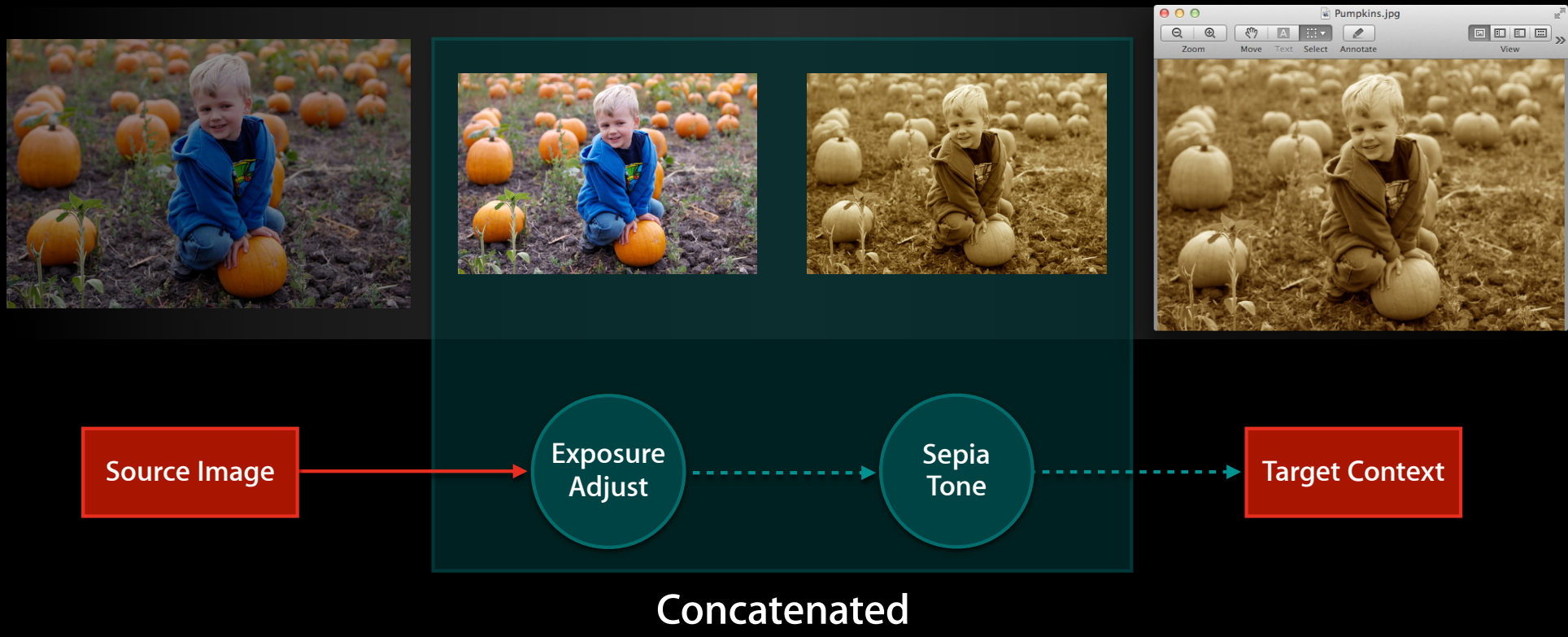
Core Image



GPU-accelerated image processing

Executes shader pipeline

Base set of 17 filters and effects on iOS, over 100 filters on Mac



Filter Pipelines

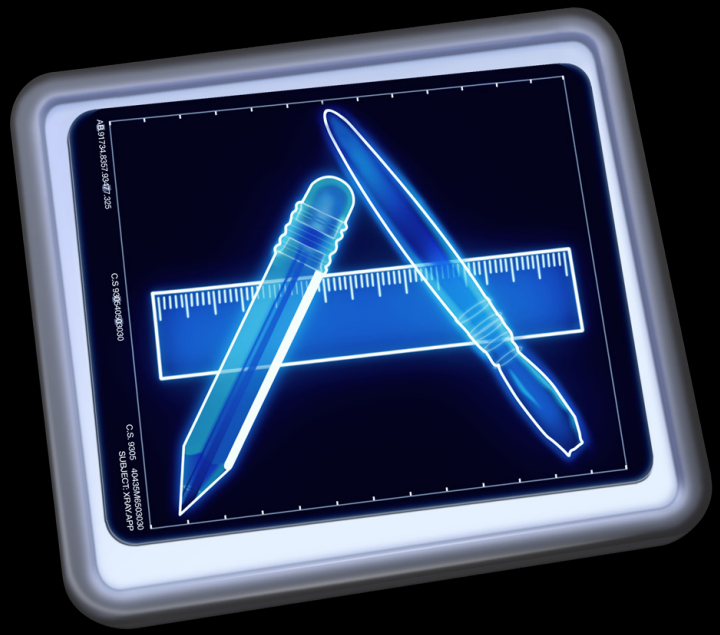
Accelerate Framework

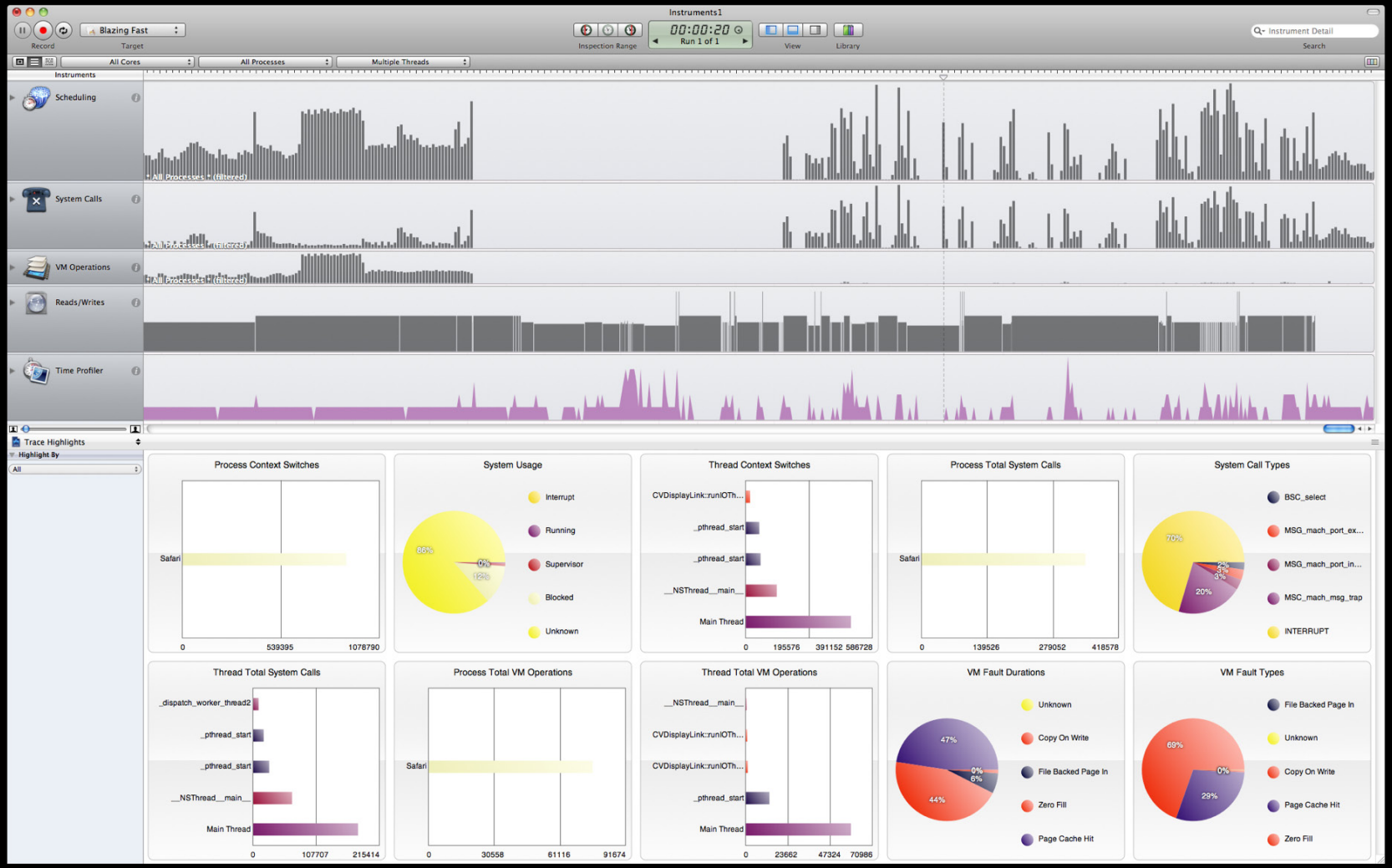
Hand-tuned assembly code

Takes advantage of vector units in CPU

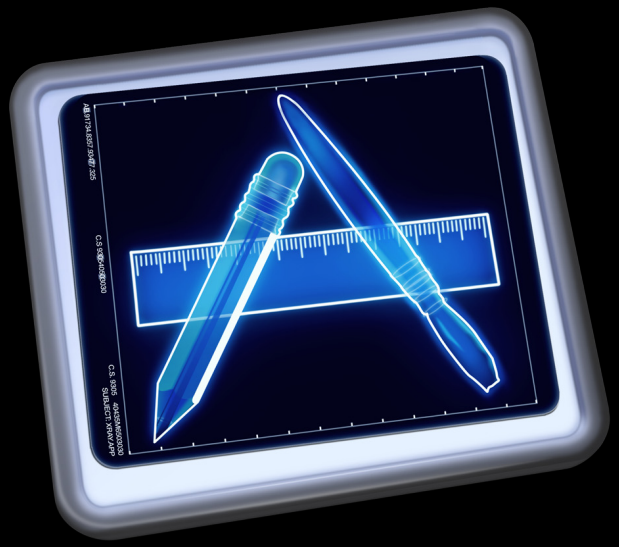
Image processing algorithms in vImage

Trigonometric and transcendental functions in vForce




Instruments1
Blazing Fast
Record
Target
00:00:20
Run 1 of 1
Inspection Range
View
Library
Instrument Detail
Search
All Cores
All Processes
Multiple Threads
Instruments
Scheduling
System Calls
VM Operations
Reads/Writes
Time Profiler
Trace Highlights
Highlight By
All
Process Context Switches
Safari
0
539395
1078790
System Usage
Interrupt
Running
Supervisor
Blocked
Unknown
86%
0%
12%
Thread Context Switches
CVDisplayLink::runIOTh...
_pthread_start
_pthread_start
__NSThread__main__
Main Thread
0
195576
391152 586728
Process Total System Calls
Safari
0
139526
279052
418578
System Call Types
BSC_select
MSG_mach_port_ex...
MSG_mach_port_in...
MSC_mach_msg_trap
INTERRUPT
70%
2%
3%
5%
20%
Thread Total System Calls
_dispatch_worker_thread2
_pthread_start
_pthread_start
__NSThread__main__
Main Thread
0
107707
215414
Process Total VM Operations
Safari
0
30558
61116
91674
Thread Total VM Operations
__NSThread__main__
CVDisplayLink::runIOTh...
CVDisplayLink::runIOTh...
_pthread_start
Main Thread
0
23662
47324
70986
VM Fault Durations
Unknown
Copy On Write
File Backed Page In
Zero Fill
Page Cache Hit
47%
0%
6%
44%
VM Fault Types
File Backed Page In
Unknown
Copy On Write
Page Cache Hit
Zero Fill
69%
0%
29%

Instruments



Performance sampling and analysis of memory and CPU

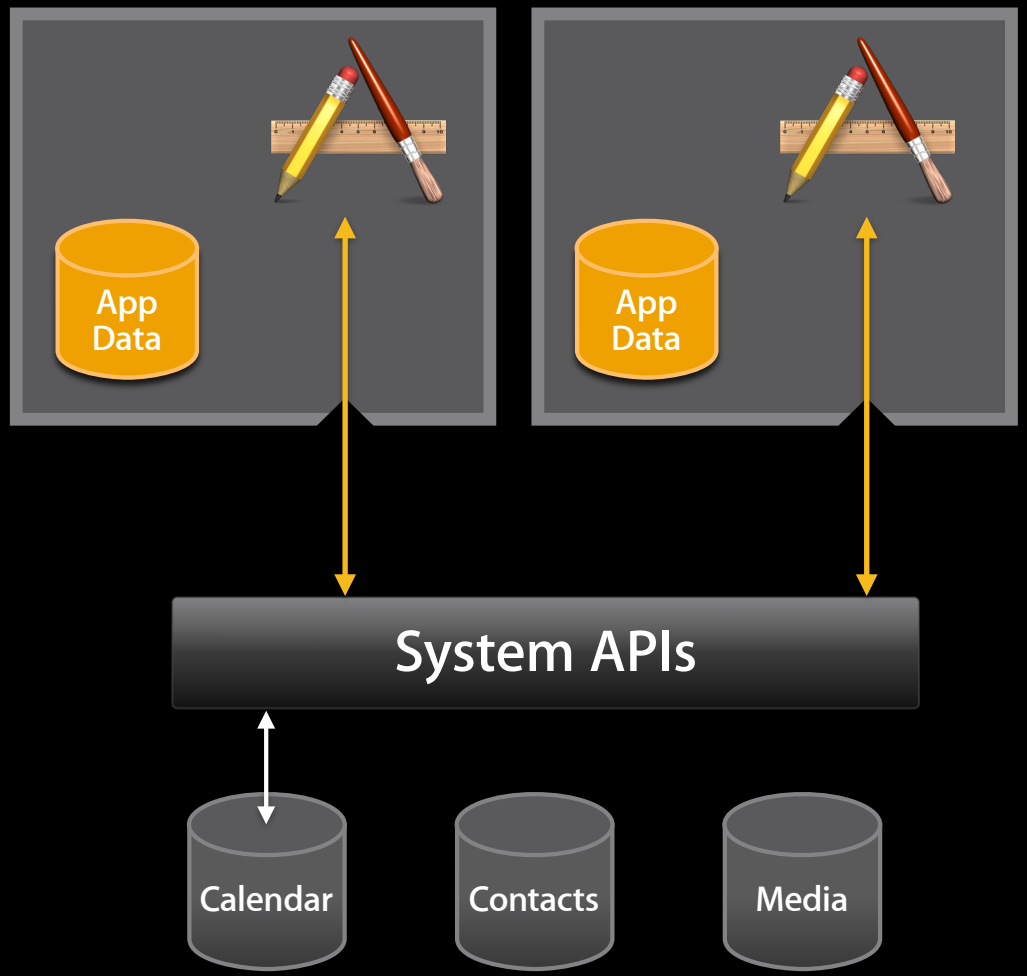
UI automation

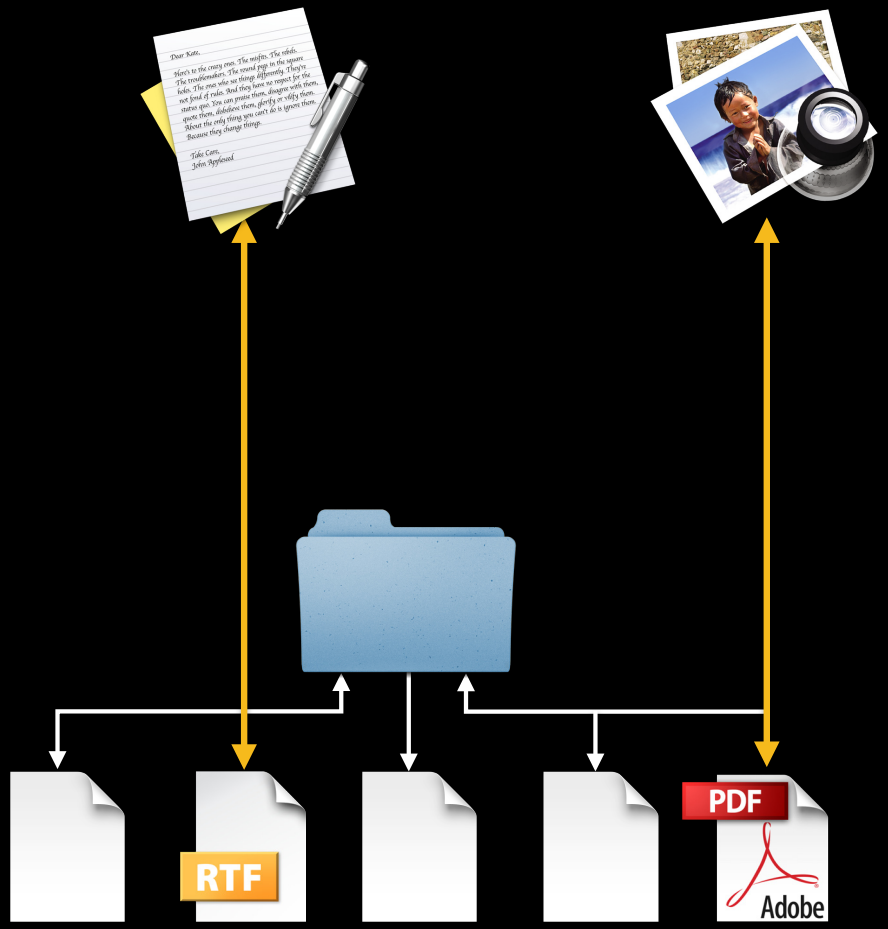
Retain cycle debugging

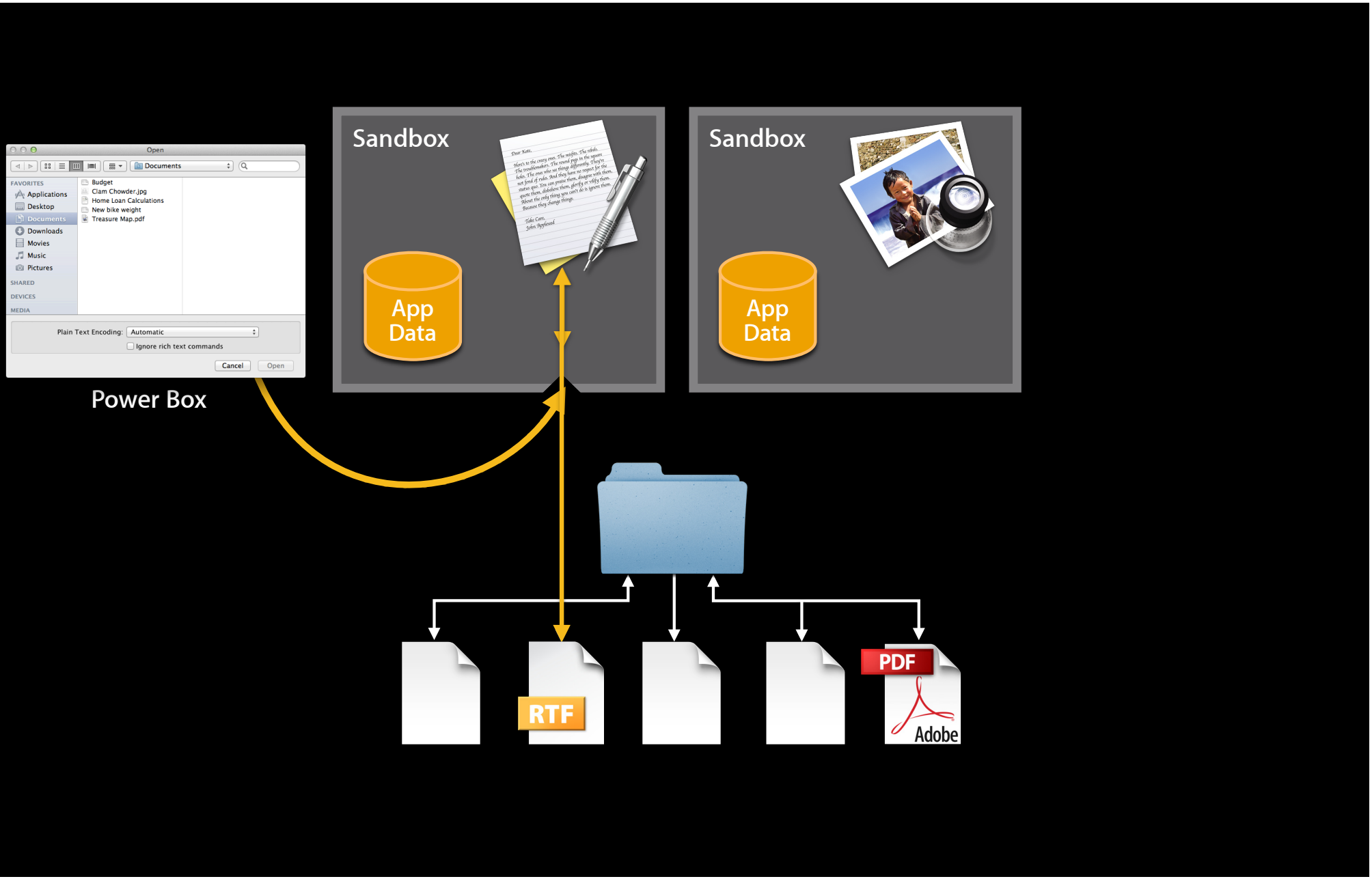
Systrace brought to iOS

OpenGL performance tools

Secure


App
Data
App
Data
System APIs
Calendar
Contacts
Media


RTF
PDF
Adobe


Open
Documents
FAVORITES
Applications
Desktop
Documents
Downloads
Movies
Music
Pictures
SHARED
DEVICES
MEDIA
Budget
Clam Chowder.jpg
Home Loan Calculations
New bike weight
Treasure Map.pdf
Plain Text Encoding:
Automatic
Ignore rich text commands
Cancel
Open
Power Box
Sandbox
App Data
Sandbox
App Data
RTF
PDF
Adobe

App Sandbox in Lion

Entitlements-based system similar to iOS

Protects system against apps being compromised

Power Box provides system-mediated access to user-specified files

Sandboxing Your App

Use proper path query APIs for temp directories, settings, etc.

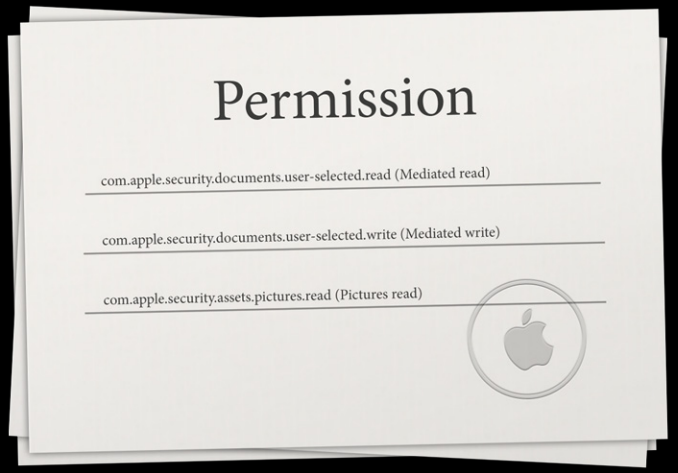
Set up code signing

- Signing identity
- Build setting

Entitlements editor in Xcode 4.1

- Choose the minimum necessary set of entitlements

Entitlements



Filesystem

- Mediated/unmediated, read/write

Folders and assets

- Downloads, movies, pictures, music

Networking

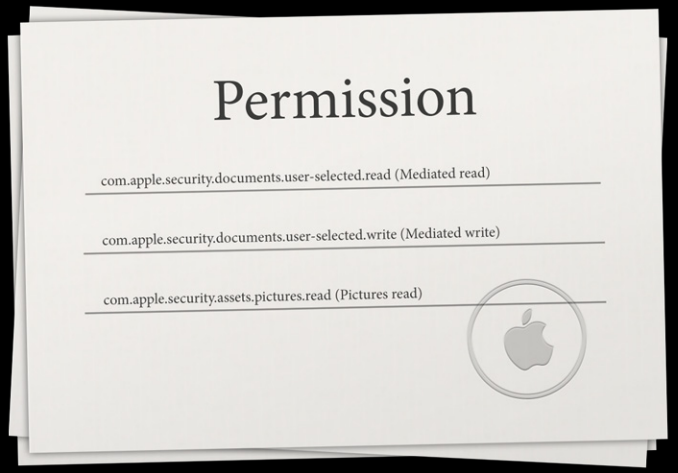
Hardware

- Camera, mic, USB, printing

Personal information

- Address book, calendar, location

Temporary Exceptions



Provided for transition purposes

- Send Apple Events
- Mach service lookups
- Home-relative file read/write
- Absolute path read/write
- Inherit app sandbox from parent process

Mac App Store

All Mac apps submitted after November 1 must implement sandboxing

- Justify all requested entitlements
- Consistent with visible features

Temporary exceptions are *temporary*

Data Protection

Provides protection beyond device-level encryption

Hardware accelerated AES 128

Now for Core Data

File Vault 2

Encrypts entire drive

Supports external drives

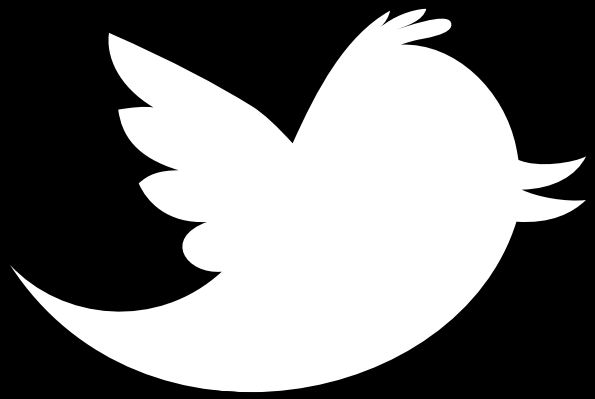
Based on new Core Storage volume format

AES-XTS 128 encryption

AES-NI hardware accelerated on capable CPUs

Connected

Twitter



New built-in TweetSheet UI for Twitter

- `TWTTweetComposeViewController`
- Image attachments
- URLs

User accounts

- `ACAccount mechanism`

Arbitrary API requests

- `TWRequest`

Pages
Bridges
An introduction to man's oldest innovation
MacBook Air
Pages
Getting Started
Southtown Garden
Bridges
Journey Cycles
History Of Flight
Playbill
Home
School

iPad
9:41 AM
Pages
Edit
Tap to Get Started with Pages.
Getting Started
Today, 16:59
Southtown Garden
Today, 16:59
Bridges
Today, 16:59
JourneyCycles
Journey Cycles
Today, 16:59
A Brief History of Flight
History Of Flight
Today, 16:59
Paradise Can't Wait
Playbill
Today, 16:59
Home
Today, 16:58
School
Today, 16:57

Cloud Storage

Two data types

- Key-Value Store
- Mobile documents

Key-Value Store

Dictionary in the sky

```
NSUbiquitousKeyValueStore
```

Limited value size, number of keys

Apps do not need to be running to get new values

Mobile Documents

Documents everywhere

App writes to cloud storage sandbox

Transfers are asynchronous

File metadata and data are handled separately

METADATA
DATA
METADATA
DATA
DATA
Bridges
An introduction to man's oldest innovation
MacBook Air

In the Cloud

Data is encrypted for transfer and storage

Stored in a geographic location close to the user

URL for user sharing

- NSFileManager extension

Enabling iCloud Storage

Give users a choice

Request entitlements for cloud storage

Mobile documents

- `NSDocument` and `UIDocument` have built-in support
- `NSFileManager`, `NSFilePresenter`, `NSFileCoordinator` for roll-your-own
- Core data support for “shoebox” apps

Sharing Data Between Apps

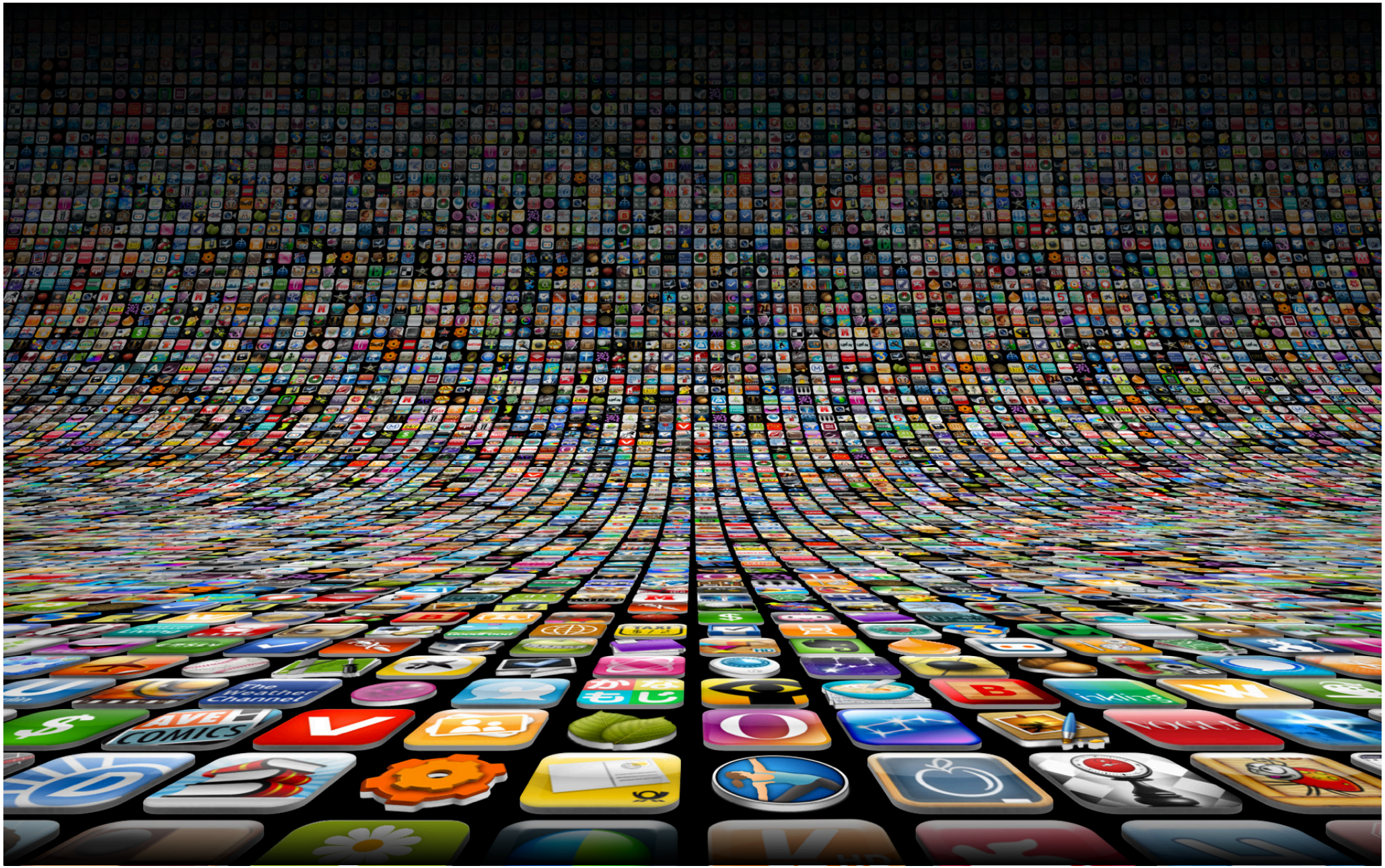
Default access is based on bundle id

Entitlements for sharing

- Must be same developer prefix

  `com.myCompany.*`

- Cross-device sharing
- Premium and free version sharing



$10000

Getting to Market

Mac App Store

- In-app purchase
  - Use StoreKit to manage purchasing
  - Register product info in iTunes Connect
- Delta updates
  - Just works!
- Push notification
  - Extensions to NSApplication
  - Icon badges

San Francisco Chronicle
U.S. sets its sights on solar savings
Design of new UCSF building is a good fit
THE DAILY
WINDSOR KNOT
THE NEW YORKER
SUMMER MOVIE SPECIAL
POPULAR SCIENCE
INVENTIONS
NATION GEOGRA
Yosemite
SUMMER LIVE GUIDE
SPIN
MUMFORD & SONS
ELLE
US OPEN PREVIEW
Make Your Swing Repeat Repeat Repeat

Newsstand Kit

Manage issue content for magazine and newspaper apps that appear in Newsstand

Set up content to download on regular schedule

Think Global!

Over 90 countries

41 languages

Millions of users

Phased Approach

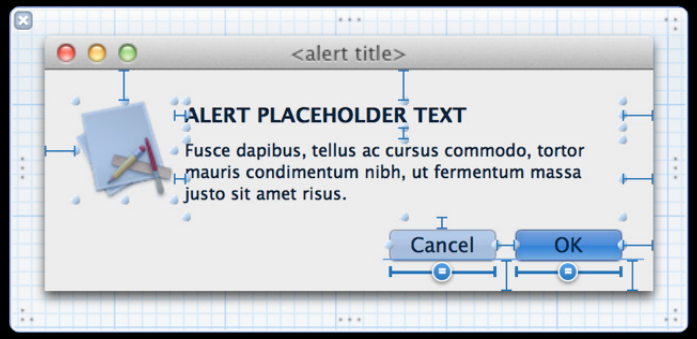
Localize metadata in the app store

Internationalize your app

- Take advantage of locale-aware UI
- Use system frameworks

Translate

- Strings
- Templates and other in-app content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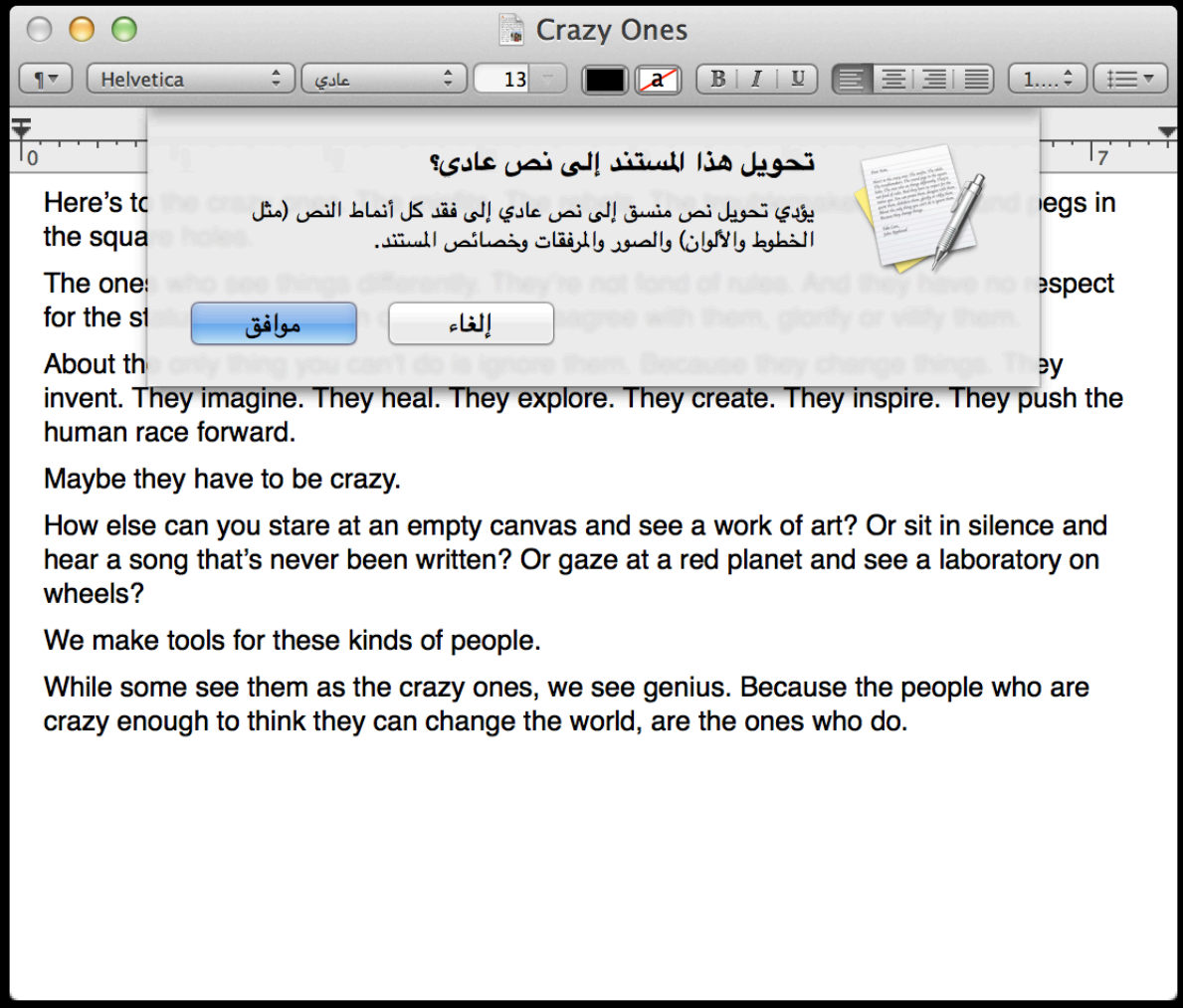
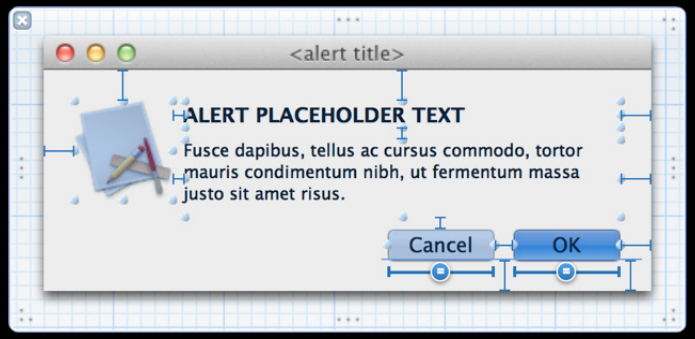
ALERT PLACEHOLDER TEXT
Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus.
Cancel
OK


Crazy Ones
Helvetica
عادي
13
تحويل هذا المستند إلى نص عادى؟
يؤدي تحويل نص منسق إلى نص عادي إلى فقد كل أنماط النص (مثل الخطوط والألوان) والصور والمرفقات وخصائص المستند.
موافق
إلغاء
Here's to
egs in
the squa
The one
espect
for the st
About th
ey
invent. They imagine. They heal. They explore. They create. They inspire. They push the human race forward.
Maybe they have to be crazy.
How else can you stare at an empty canvas and see a work of art? Or sit in silence and hear a song that's never been written? Or gaze at a red planet and see a laboratory on wheels?
We make tools for these kinds of people.
While some see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do.

Auto Layout



Constraints rather than coordinates

Supports "flipping" when using right-to-left languages

Interface Builder support in Xcode 4.1

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UIDocument	Dispatch	Instruments	GLKit	Push notifications
Gestures	Sandboxing	Objective-C	Core Image	Newsstand Kit
Full Screen	Data Protection	Core Data	Game Center	iAd
UIKit Skinning	Networking		Core Audio	Safari extensions
Twitter integration	Device access		Core Animation	HTML5
Autolayout	XPC			

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