

Building libraries for iOS Going native

Alexander Dodatko
2014



The standard library saves
programmers from having
to reinvent the wheel.

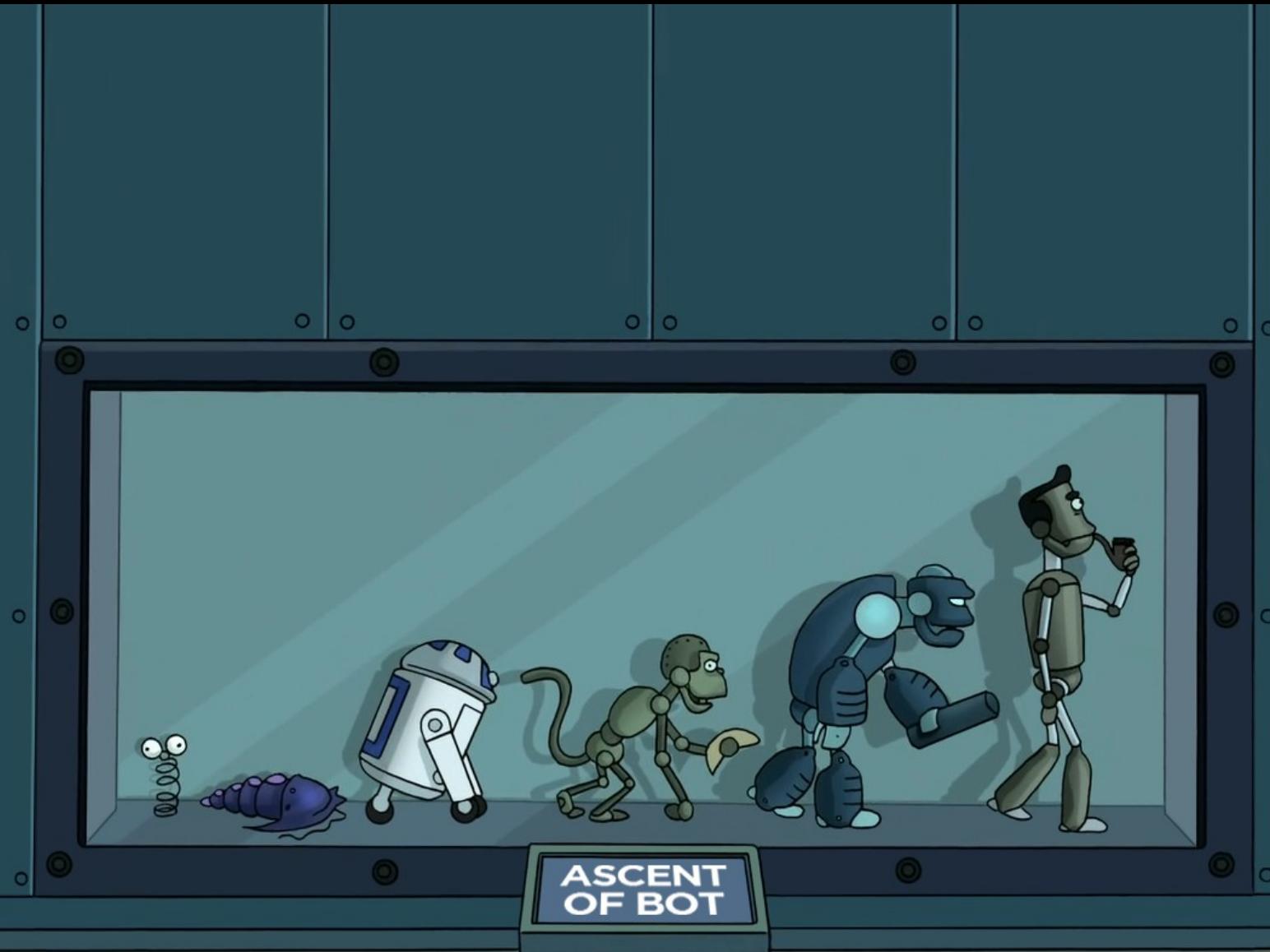
Bjarne Stroustrup

<http://bit.ly/1iqZ3JO>

The ONLY VALID MEASUREMENT OF Code QUALITY: WTFs/minute



Code Reuse is Important



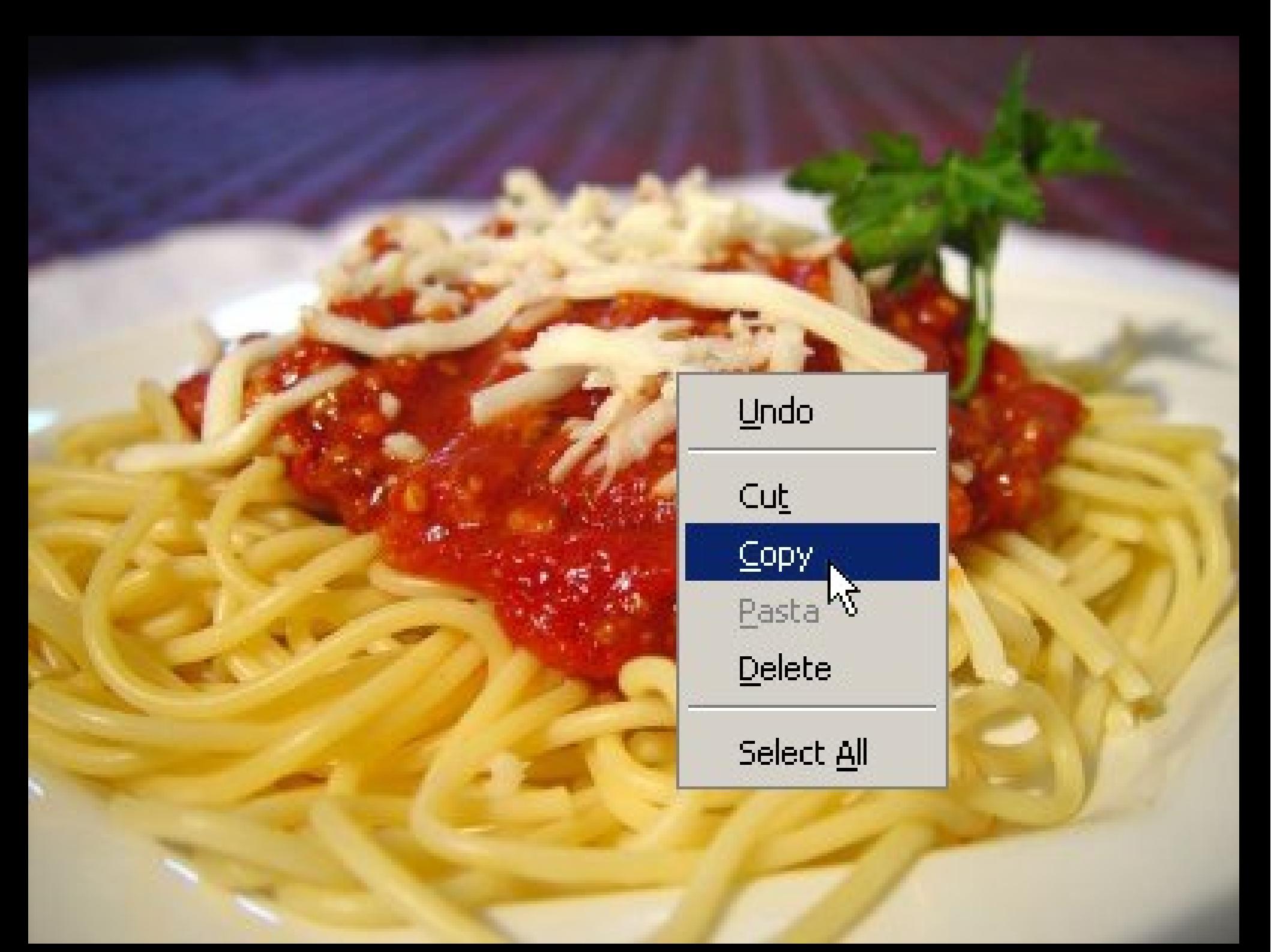
March 2008



<http://engt.co/1pOLKH9>

The fastest code is the code
that reaches the market first

Nobody Cares

A close-up photograph of a plate of spaghetti. The pasta is coated in a vibrant red tomato sauce and topped with melted white cheese. A small sprig of green parsley is visible in the background. A context menu is overlaid on the image, centered on the spaghetti. The menu has a light gray background with black text and a dark blue selection bar. The options are: Undo, Cut, Copy, Paste, Delete, and Select All. The "Copy" option is highlighted with a dark blue background and a white outline. A cursor arrow points to the right edge of the "Copy" button.

Undo

Cut

Copy

Paste

Delete

Select All

August 2011



CocoaPods
@CocoaPods



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@oliverfoggin Thanks! Just over one year old:
github.com/CocoaPods/Coco...

Reply Retweet Favorite More



GitHub

CocoaPods

An Objective-C library dependency manager. Contribute to CocoaPods development by creating an account on GitHub.

[View on web](#)



4:36 AM - 2 Oct 2012

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+Felix

Trends

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cocoapods

Search term

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Compare

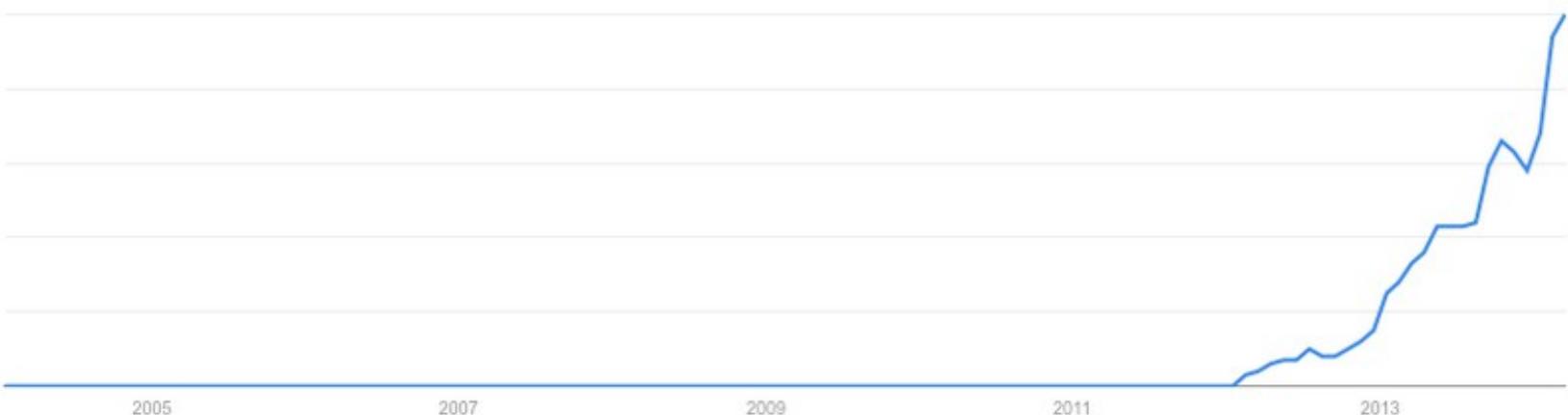
[Search terms](#)

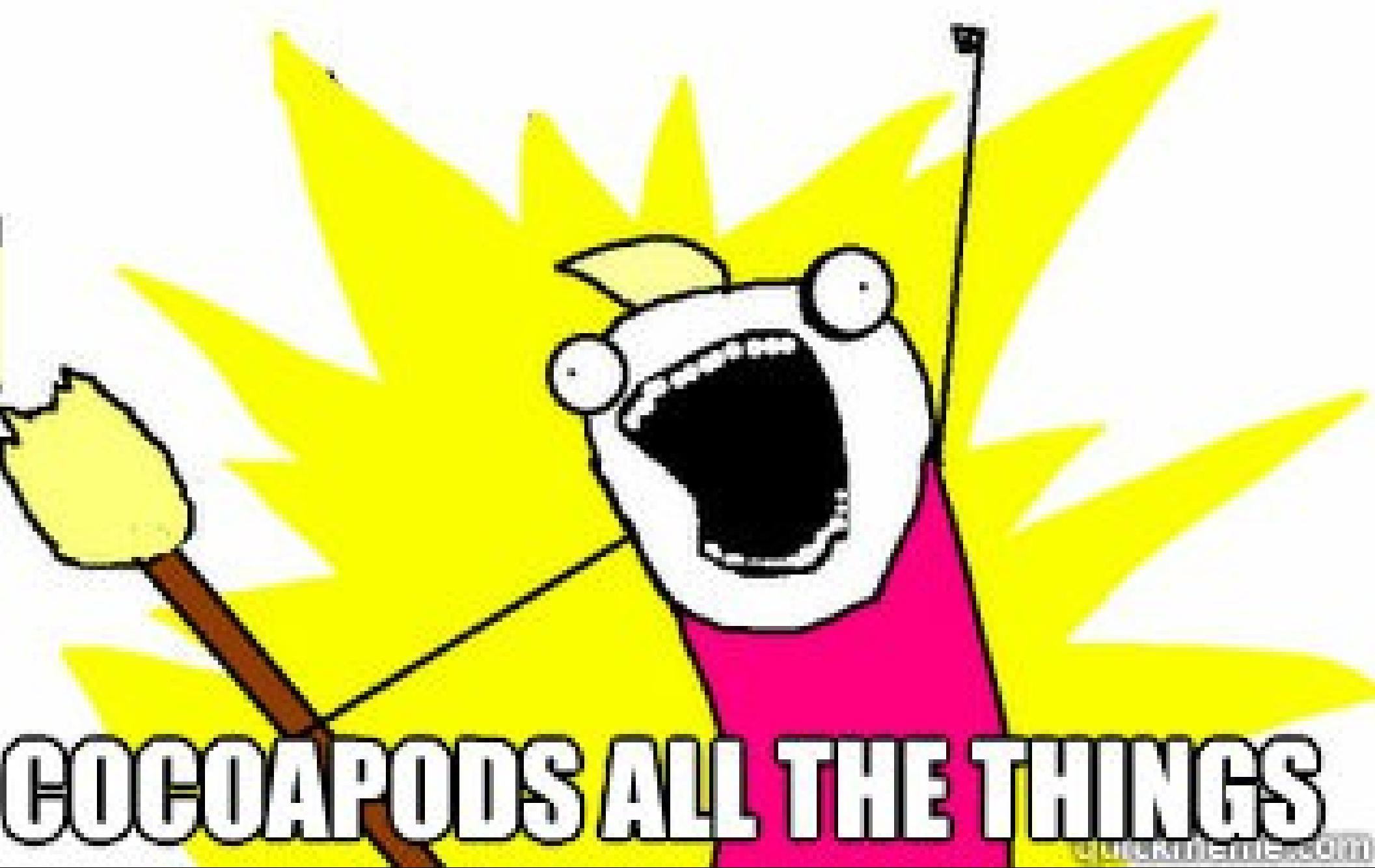
Interest over time

 News headlines ? Forecast ?

Locations

Time ranges





COCOAPODS ALL THE THINGS

**\$ SUDO GEM INSTALL
COCOAPODS**

I HAVE NO
IDEA WHAT
I'M DOING



7 GEMS INSTALLED

pod install SomeAwesomeLibXYZ



Except...



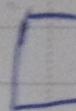




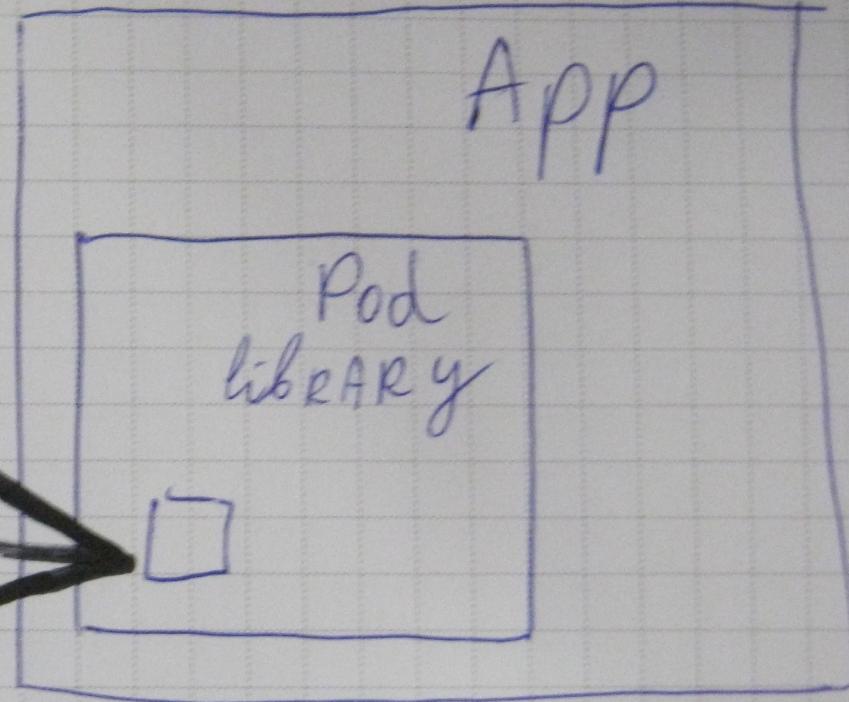
CocoaPods

Typical Workflow

Github



files
Pod install



Github

APP

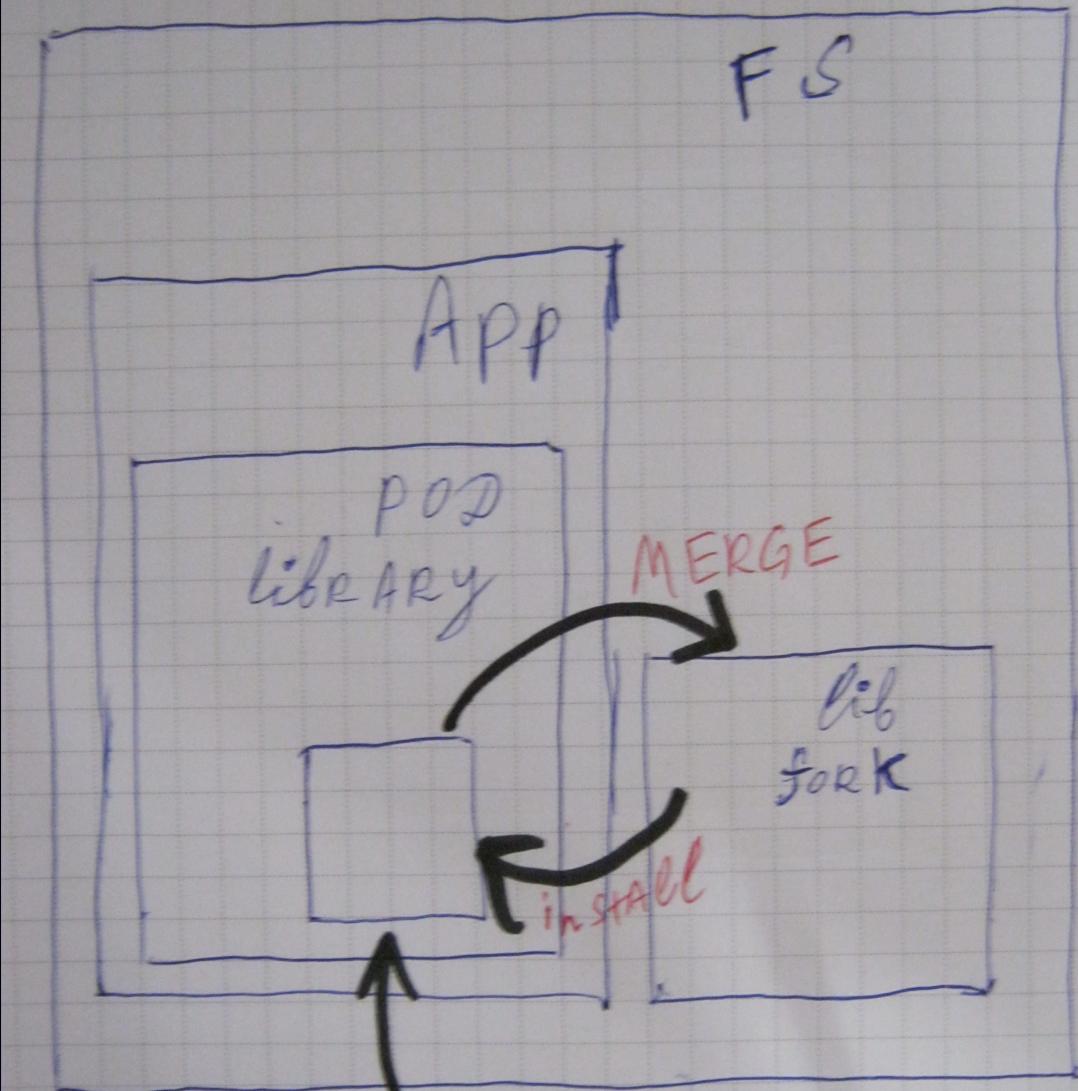
Siles
Pod Install

Pod
library



feature

F S



Debug
and
Fix

Our own Busyness Logic

App

.UI

Model

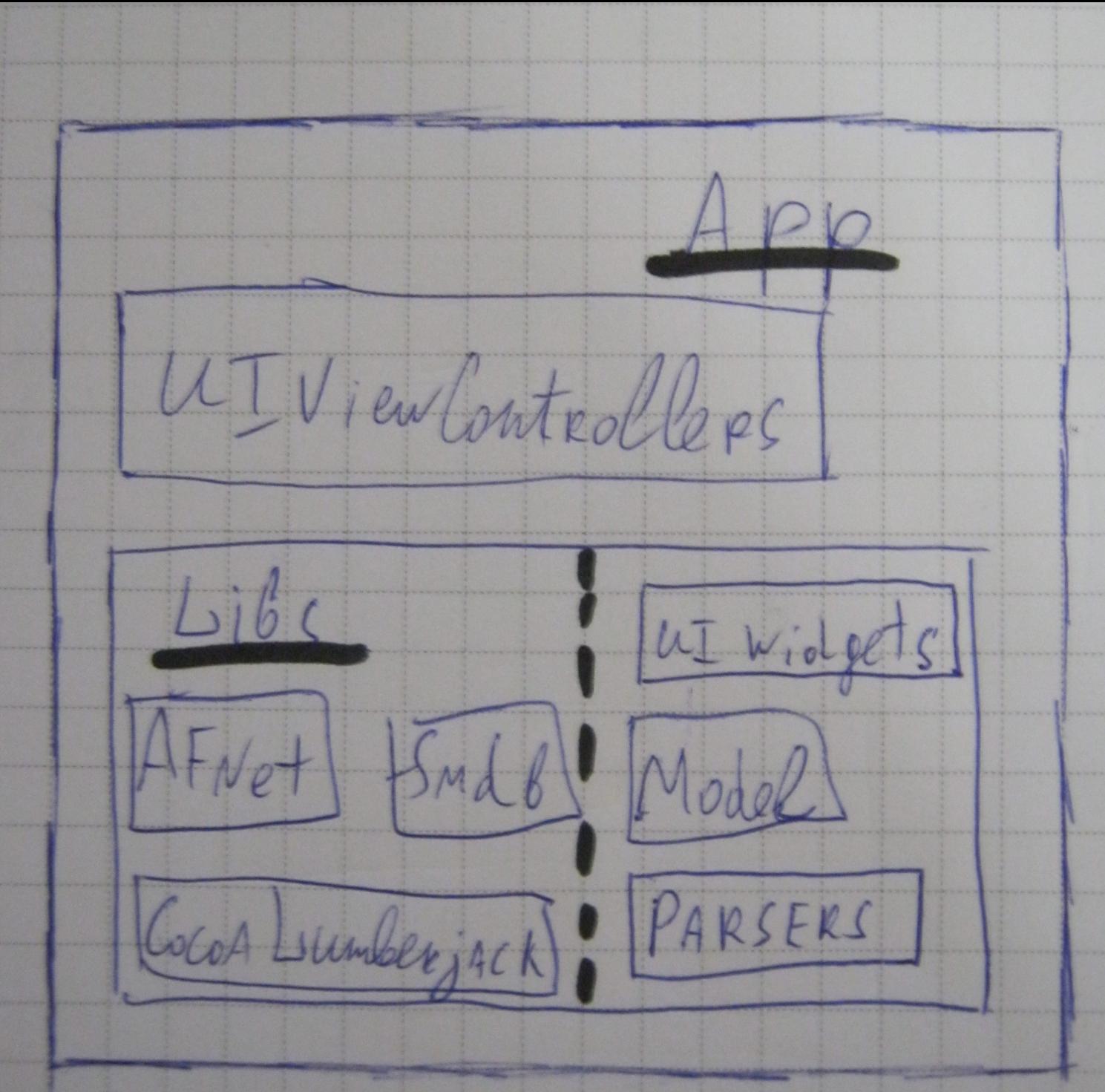
Libs

AFNet

fmdb

CocoALumberjack

In-Place Editing

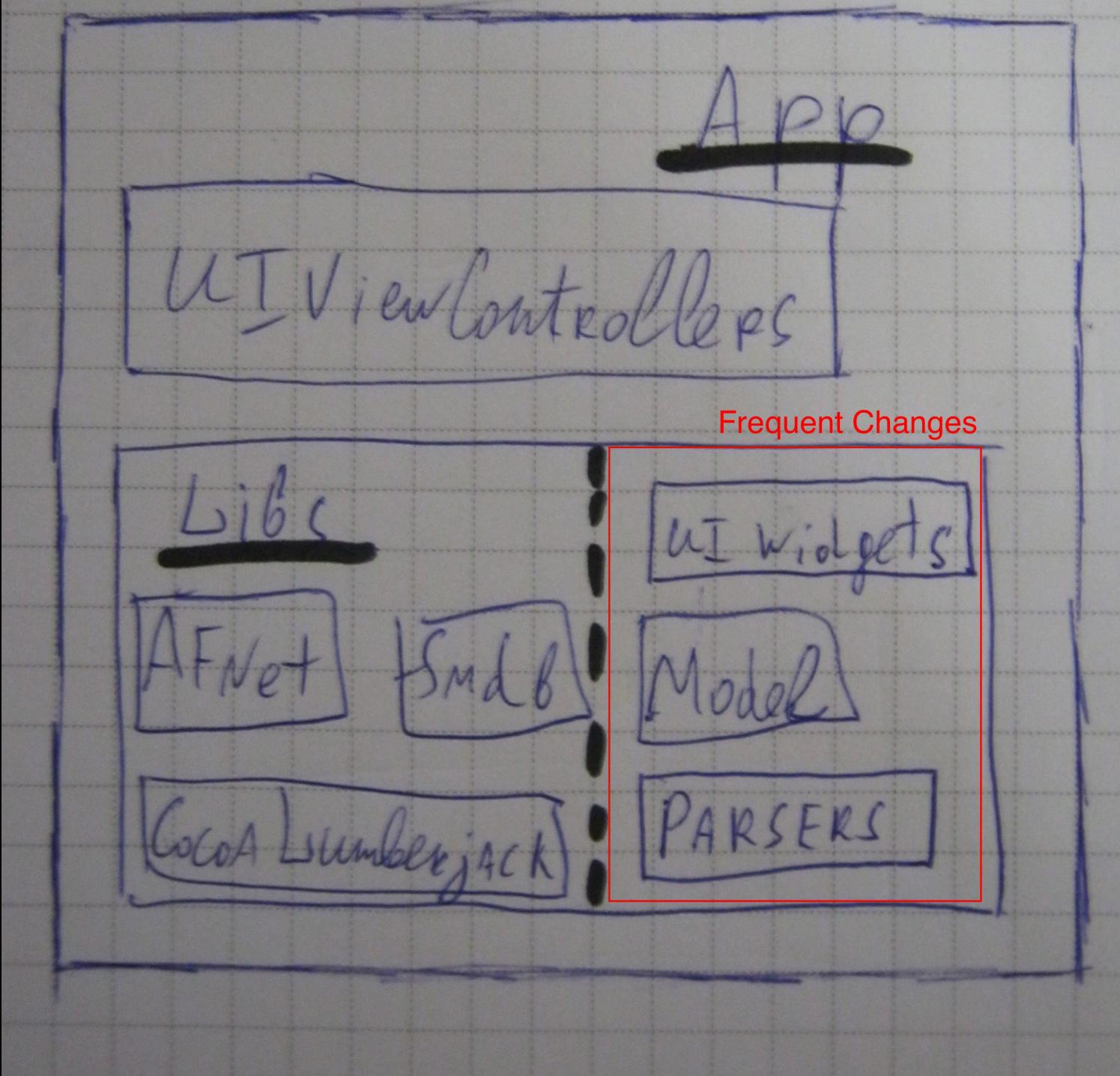


Modular Architecture Benefits

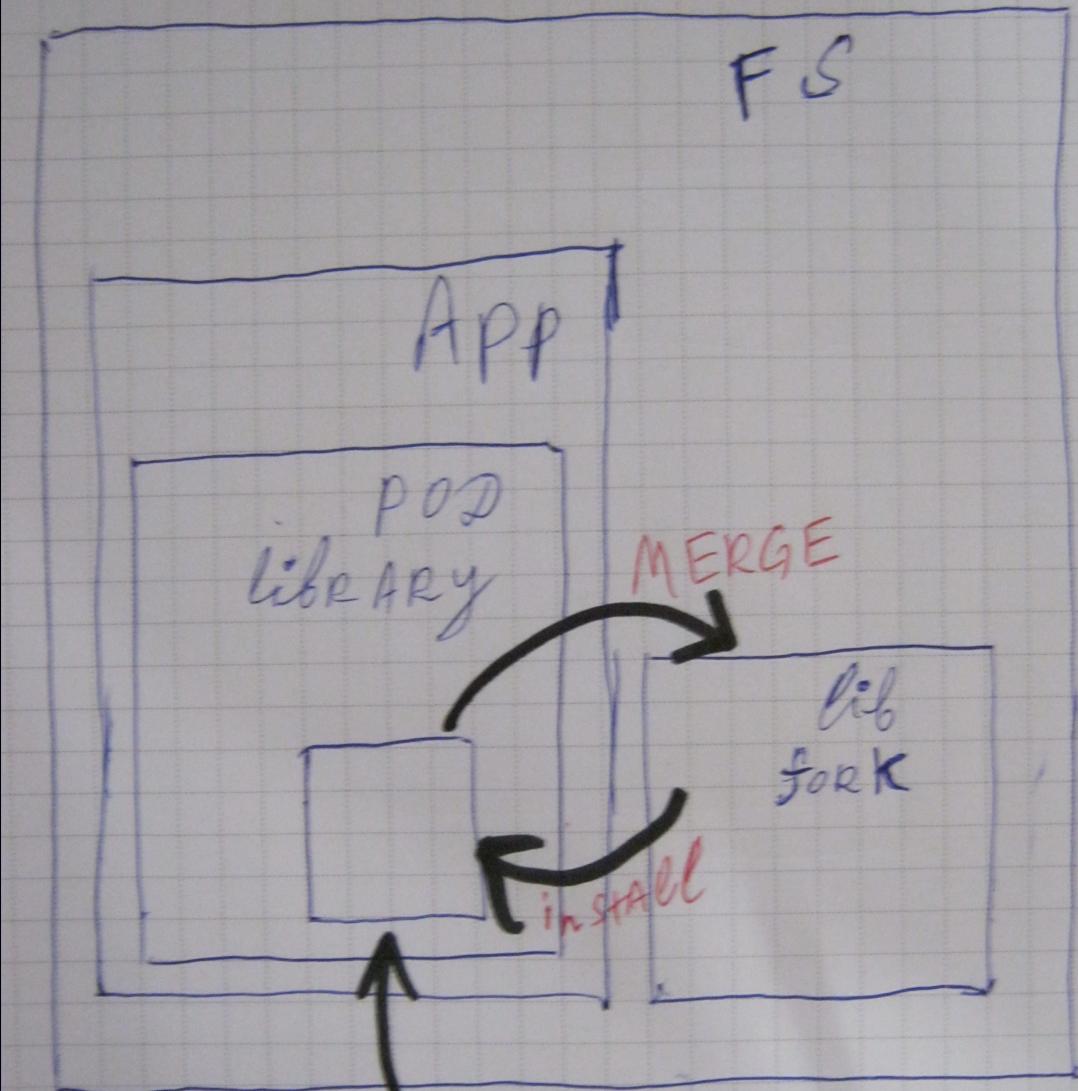
Code Reuse

Test Coverage

Easier to Apply Changes

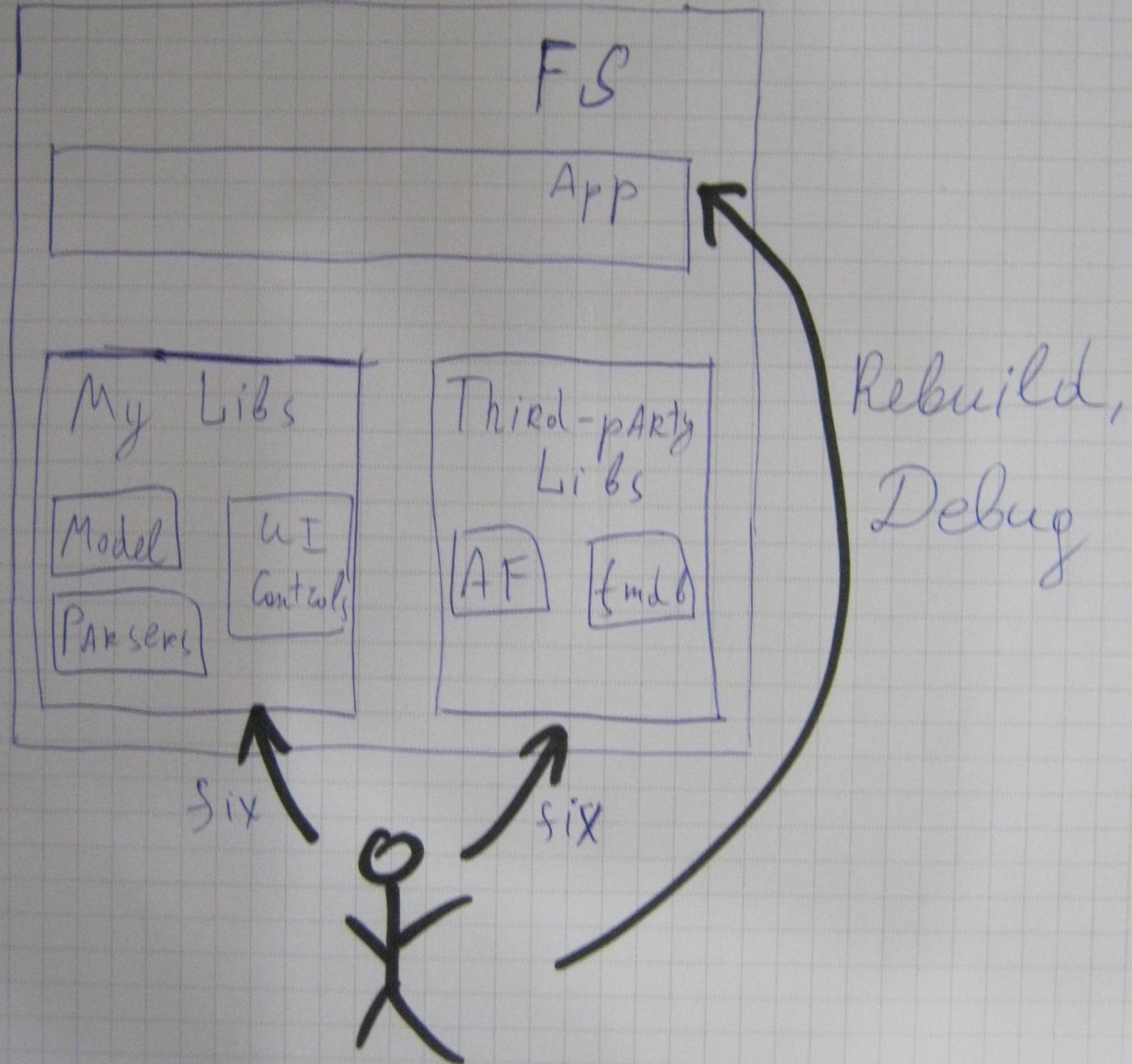


F S



Debug
and
Fix

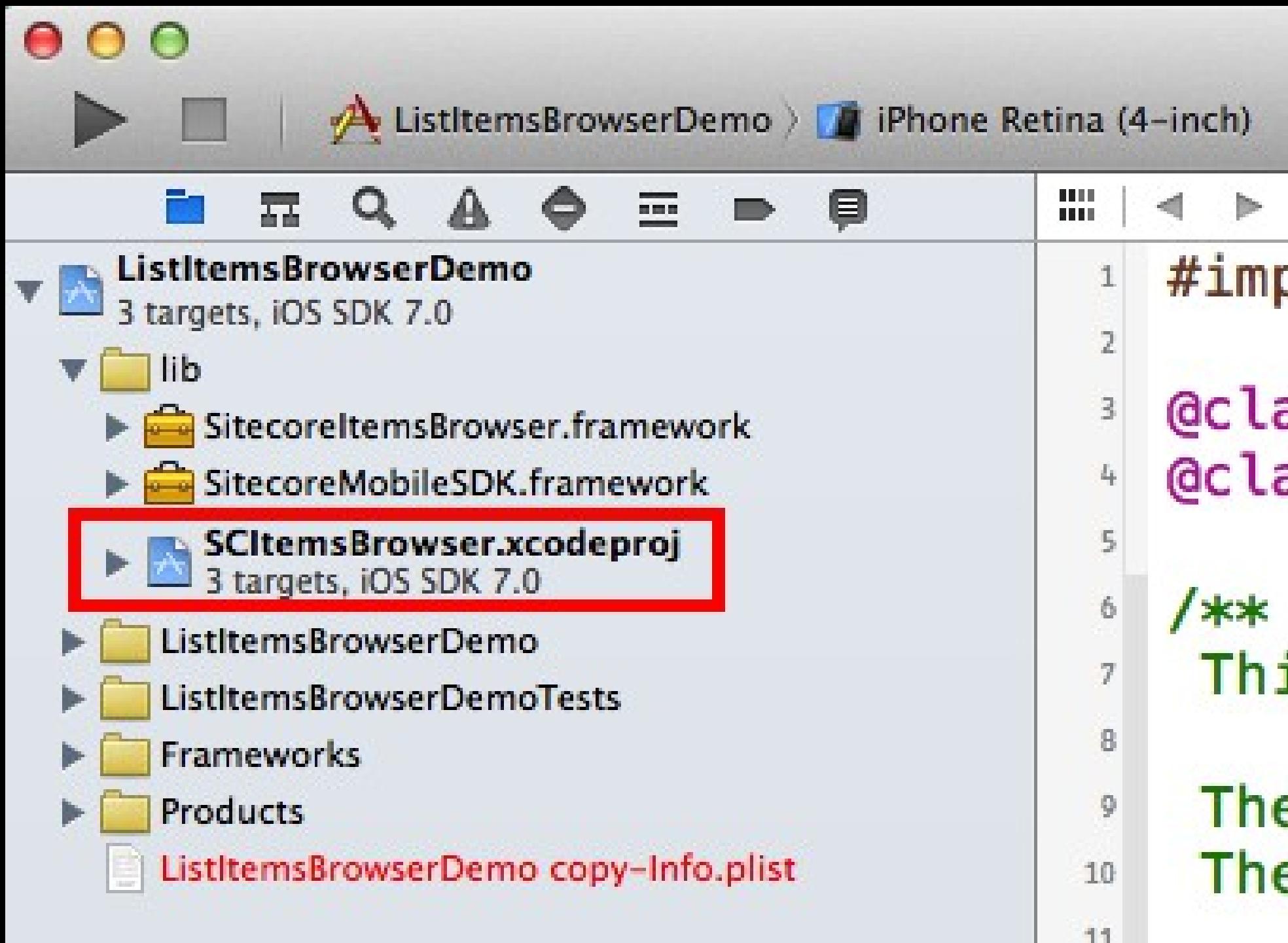
Going Native





CocoaPods

--no-integrate



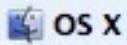
Choose a template for your new target



Application

Framework & Library

Other



Application

Framework & Library

Application Plug-in

System Plug-in

Other



Fake Static iOS
Framework



Static iOS
Framework



Cocoa Touch Static
Library

Cancel

Previous

Next

Not Just Library Target



#import <AFNetworking/AFNetworking.h>

VS

#import "AFHTTPRequestOperation.h"

For Implementation Files

```
#import "AFHTTPRequestOperation.h"
```

▼ Search Paths

| | |
|--|--|
| Setting |  ListItemsBrowserDemo |
| Always Search User Paths | No ▾ |
| Framework Search Paths | .../../frameworks |
| Header Search Paths | /Applications/Xcode.app/Cont... |
| Library Search Paths | .../../frameworks |
| Rez Search Paths | |
| Sub-Directories to Exclude in Recursive Searches | *.nib *.lproj *.framework *.gch |
| Sub-Directories to Include in Recursive Searches | |
| User Header Search Paths | |

For Public Headers

#import <AFNetworking/AFNetworking.h>

▼ Search Paths

| Setting | |
|--|---------------------------------|
| Always Search User Paths | No |
| Framework Search Paths | .../../frameworks |
| Header Search Paths | /Applications/Xcode.app/Cont... |
| Library Search Paths | .../../frameworks |
| Rez Search Paths | |
| Sub-Directories to Exclude in Recursive Searches | *.nib *.lproj *.framework *.gch |
| Sub-Directories to Include in Recursive Searches | |
| User Header Search Paths | |



Incapsulation



\$(inherited)

/Applications/Xcode.app/Contents/Developer/Toolchains/XcodeDefault.xctoolchain/... non-recursive

.

./frameworks non-recursive

./frameworks/SitecoreMobileSDK.framework/Headers recursive

+ -

A screenshot of a file search interface. The search results list includes the path \$(inherited), the Xcode toolchain directory, a dot separator, the ./frameworks directory, and the SitecoreMobileSDK.framework/Headers folder. The ./frameworks entry has a dropdown menu open, showing two options: "non-recursive" (which is checked) and "recursive". A red box highlights the "non-recursive" option in the dropdown. At the bottom left of the interface, there are "+" and "-" buttons.

```
#import <AFNetworking/AFNetworking.h>
```



```
#import <Foundation/Foundation.h>
```

Static Framework for iOS



| | |
|---|-------------------------------------|
| | libOCMock.a |
| ▼ | OCMock |
| | NSNotificationCenter+OCMAdditions.h |
| | OCMArg.h |
| | OCMConstraint.h |
| | OCMock.h |
| | OCMockObject.h |
| | OCMockRecorder.h |



| | |
|---|-------------------------------------|
| ▼ | OCMock.framework |
| | ▼ Headers |
| | NSNotificationCenter+OCMAdditions.h |
| | OCMArg.h |
| | OCMConstraint.h |
| | OCMock.h |
| | OCMockObject.h |
| | OCMockRecorder.h |
| | OCMock |
| ▼ | Resources |
| | Info.plist |



```
<plist version="1.0">
<dict>
    <key>CFBundleDevelopmentRegion</key>
    <string>English</string>
    <key>CFBundleIdentifier</key>
    <string>org.ocmock</string>
    <key>CFBundleInfoDictionaryVersion</key>
    <string>6.0</string>
    <key>CFBundlePackageType</key>
    <string>FMWK</string>
    <key>CFBundleSignature</key>
    <string>????</string>
    <key>CFBundleVersion</key>
    <string>2.2.3</string>
</dict>
</plist>
```



Drag & Drop



Framework Search Path is updated by Xcode



Frameworks Reduce Compilation Time





Sharing Swift Code is
Painful



Wrapper Obj-C Classes



swift -emit-module
swift -emit-library



CocoaPods

CocoaPods Makes you Care about Versioning



CocoaPods

CocoaPods set Rules for Library Vendors



CocoaPods

More Binary Pods

In My Opinion



For Development
and Unit Testing



For Distribution



For You



For End Users

Library Dependencies and Linker



```
ld: duplicate symbol _main in /Users/samuelleeuwenburg/Library/Developer/Xcode/D  
SDLStackOverflowTest1-awqtenipezizyreqnvxupfbheywd/Build/Intermediates/SDLStack  
Debug/SDLStackOverflowTest1.build/Objects-normal/x86_64/SDLMain.o and /Users/sa  
Library/Developer/Xcode/DerivedData/SDLStackOverflowTest1-awqtenipezizyreqnvxup  
Intermediates/SDLStackOverflowTest1.build/Debug/SDLStackOverflowTest1.build/Obj  
main.o for architecture x86_64  
clang: error: linker command failed with exit code 1 (use -v to see invocation)
```

Duplicate symbol _main in /Users/samuelleeuwenburg/Library/Developer/Xcode/DerivedData/SDLStackO

! Linker command failed with exit code 1 (use -v to see invocation)



Activity Log Complete 9/26/12 3:41 PM

1 error, 1 warning

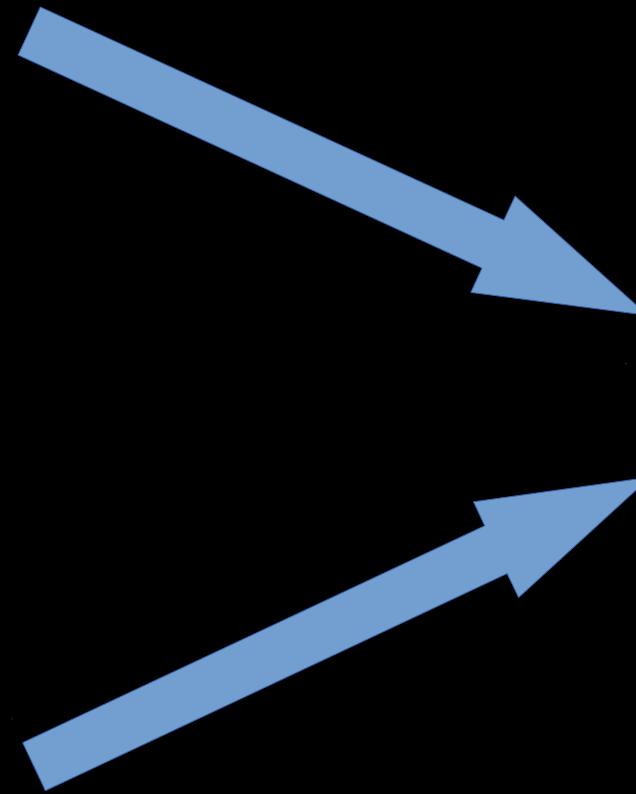


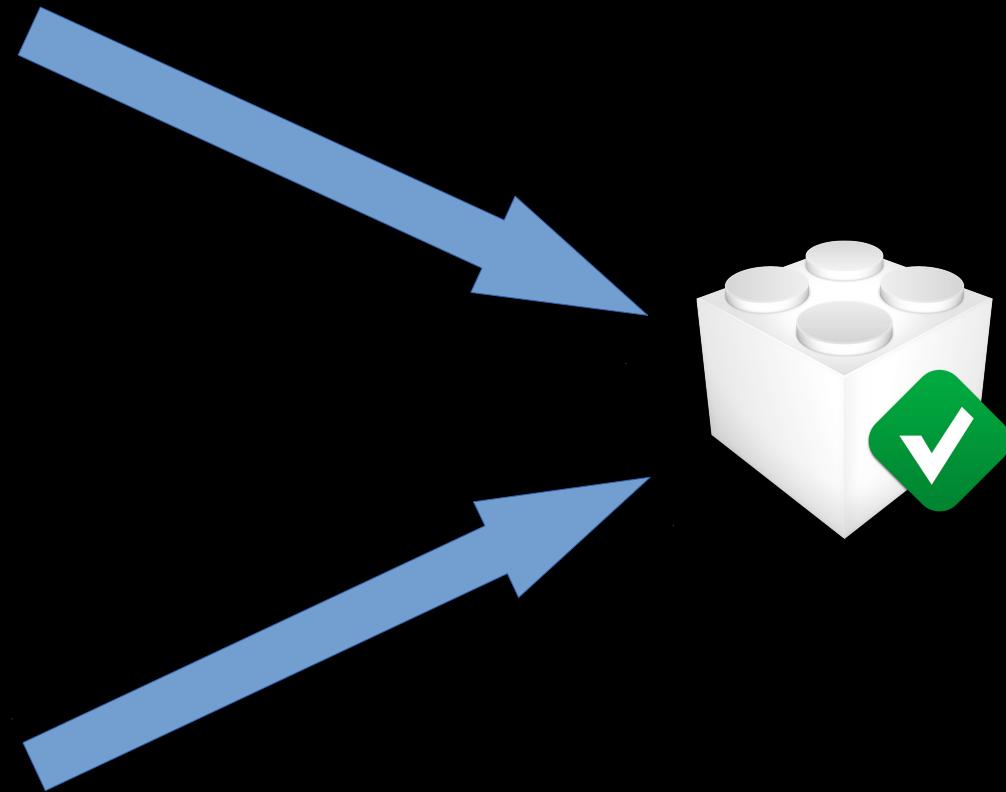


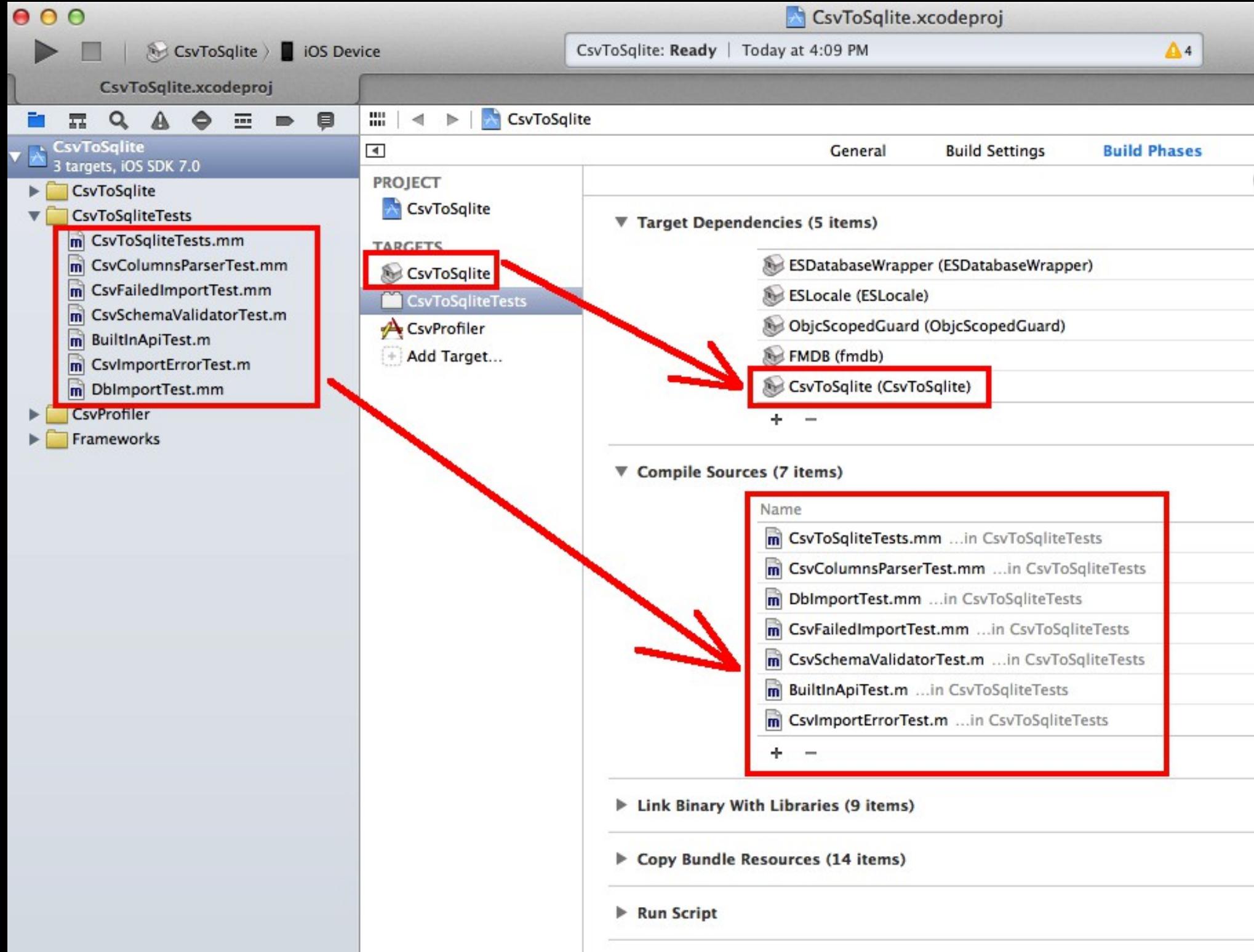
Never Link Libraries into Other Libraries



Touch









All Testable Code Should be in libraries



Use Precompiled Headers

Reduce Compiling Duration

```
#ifdef __OBJC__
#define __cplusplus
    // Objective-C++ headers go here
    #import "MyObjectiveCppClass.h"
#endif

// Objective-C headers go here
#import <Foundation/Foundation.h>
#endif

#endif __cplusplus
// Pure C++ headers go here
#include <vector>
#endif

// Pure C headers go here
#include <math.h>
```

Order by Dependencies

Library Vendor's Checklist



For Development
and Unit Testing



For Distribution

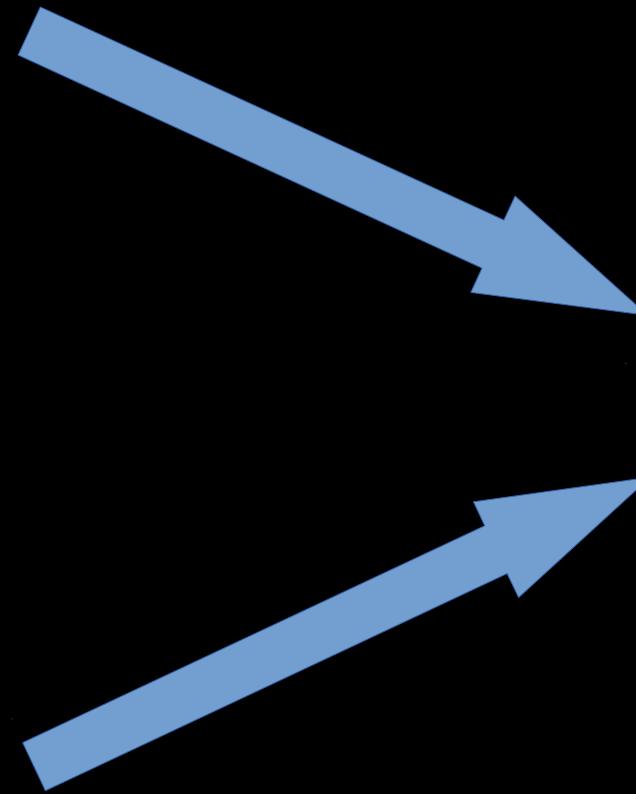


```
#import <AFNetworking/AFNetworking.h>
```

For Public Headers



Touch





Deliver Binary Pods



Source Based Pods as a “Plan B”

Native Rulezzz

Alexander Dodatko

@dodikk88