

Building libraries for iOS

Going native

Alexander Dodatko
2014

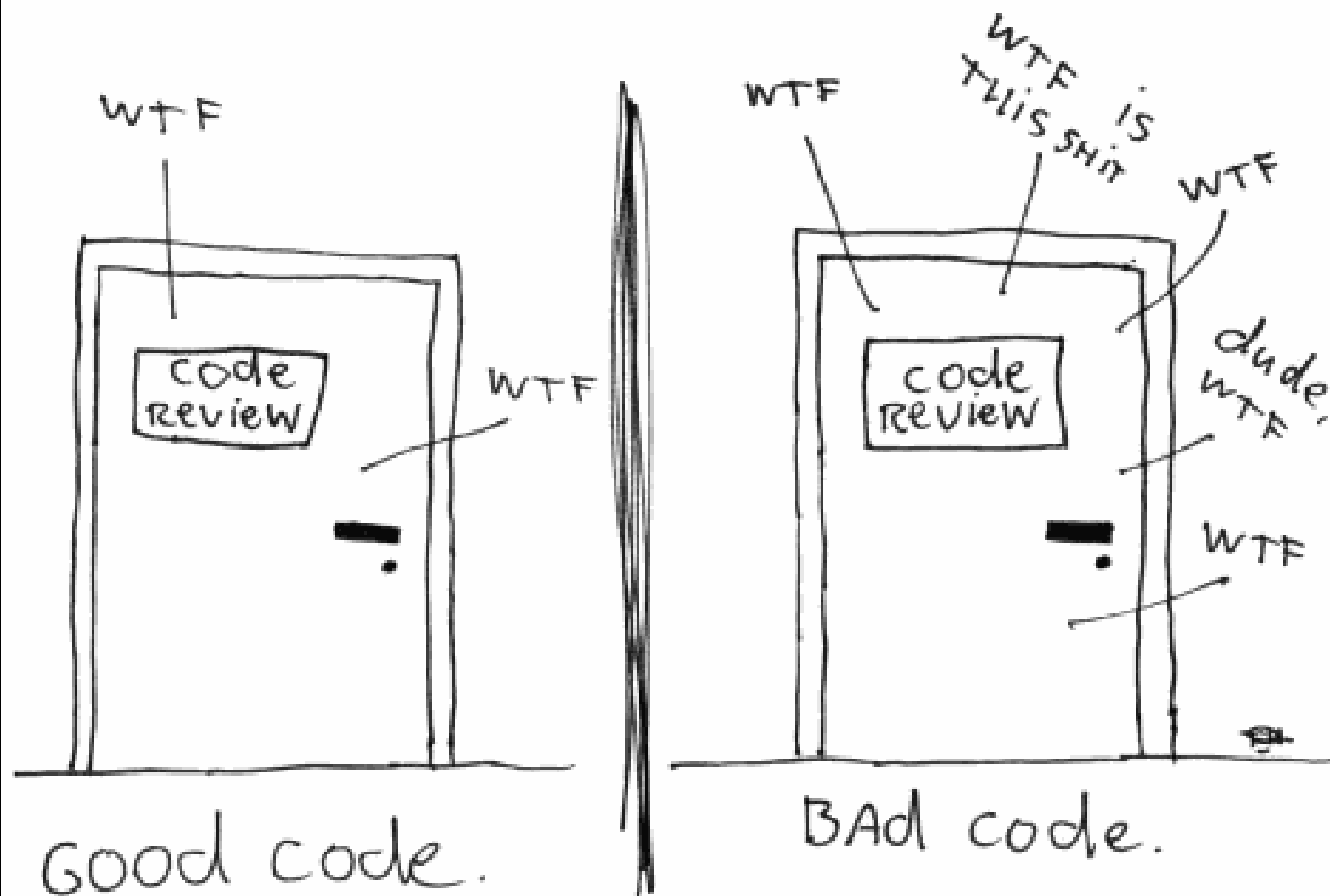


The standard library saves
programmers from having
to reinvent the wheel.

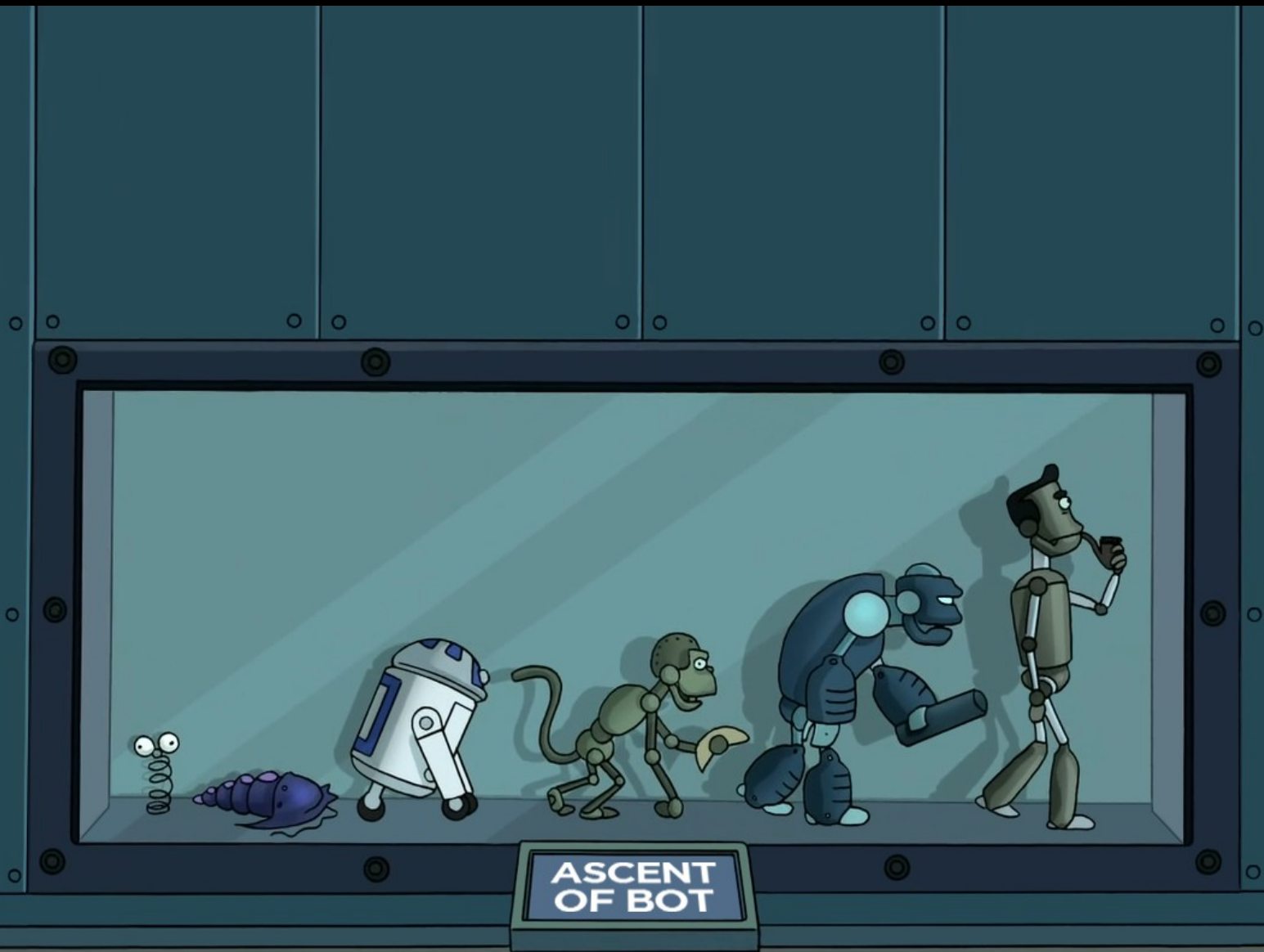
Bjarne Stroustrup

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

The ONLY valid MEASUREMENT of Code QUALITY: WTFs/minute



Code Reuse is Important



ASCENT
OF BOT

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 white plate filled with spaghetti. The spaghetti is topped with a thick, vibrant red tomato sauce and a generous layer of shredded white cheese. A small sprig of fresh green basil is tucked into the top right of the dish. Overlaid on the right side of the image is a standard Windows-style context menu. The menu is light gray with a thin black border. It contains six items: 'Undo', 'Cut', 'Copy', 'Paste', 'Delete', and 'Select All'. The 'Copy' item is highlighted with a dark blue background and white text. A white mouse cursor arrow is pointing at the 'Copy' option. The other menu items have a light gray background and black text, with the first letter of each word underlined. Horizontal lines separate the menu items.

Undo

Cut

Copy

Paste

Delete

Select All

August 2011



CocoaPods

@CocoaPods



Follow

@oliverfoggin Thanks! Just over one year old:

[github.com/CocoaPods/Coco...](https://github.com/CocoaPods/CocoaPods)

↩ 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

Flag media



+Felix

Trends

Worldwide ▾ 2004 - present ▾ All categories ▾ Web Search ▾



Hot Searches

▸ Top Charts

Explore

NCAA March Madness

Compare

Search terms

Locations

Time ranges

cocoapods

Search term

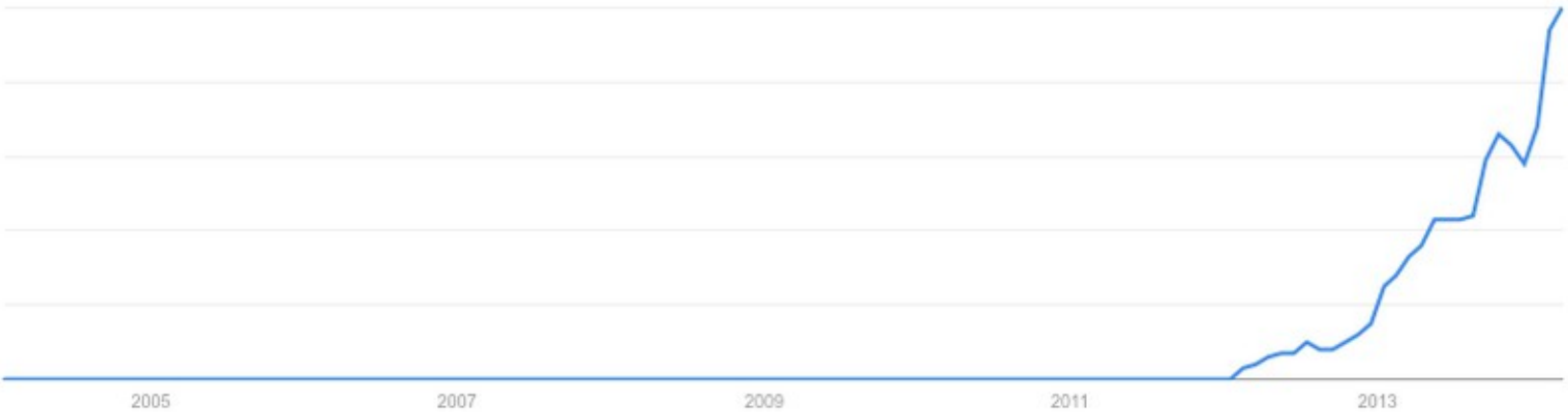
+ Add term

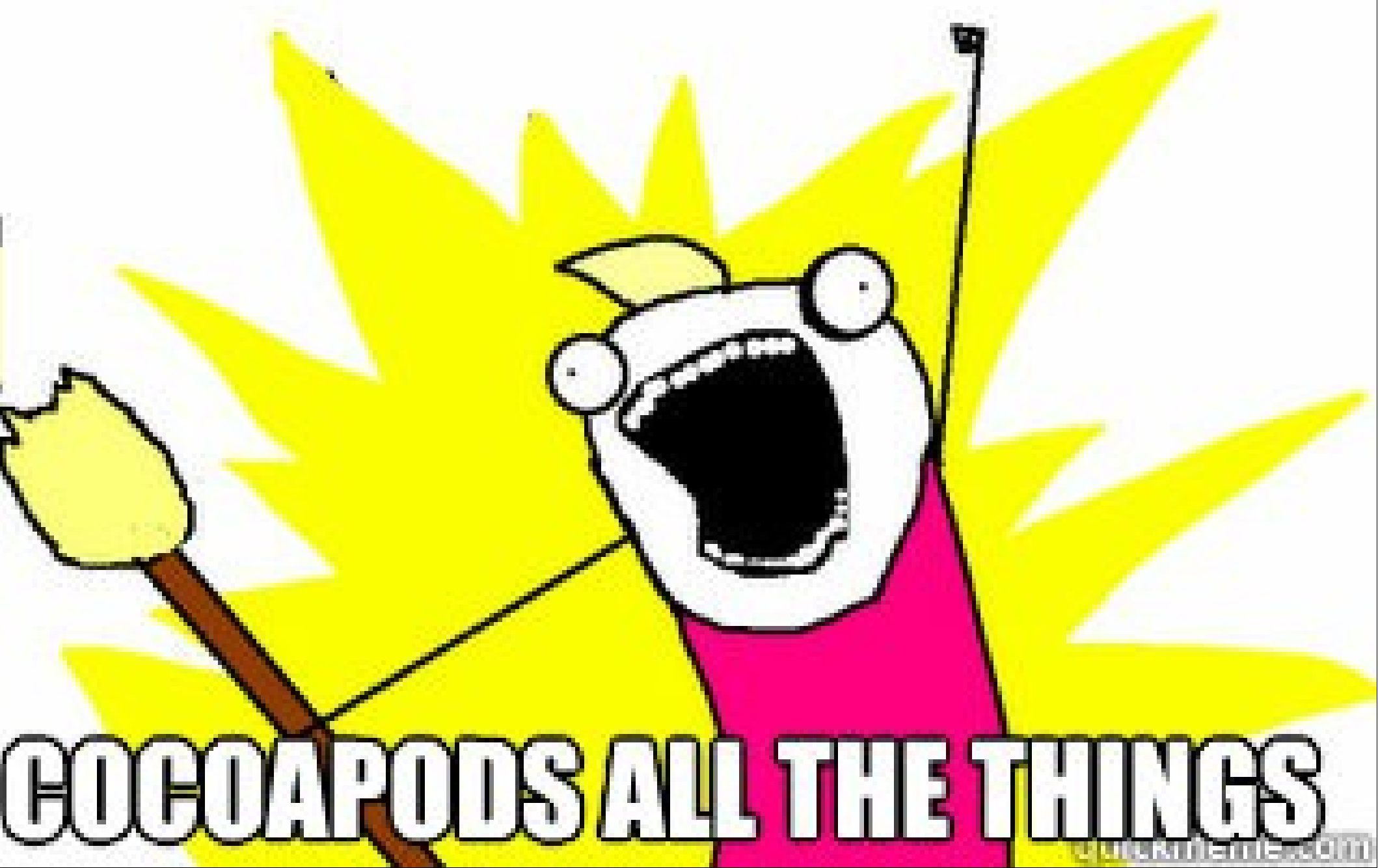
Share ▾

Interest over time ?

☐ News headlines ?

☐ Forecast ?





COCOAPODS ALL THE THINGS

**\$ SUDO GEM INSTALL
COCOAPODS**



**I HAVE NO
IDEA WHAT
I'M DOING**

7 GEMS INSTALLED

pod install SomeAwesomeLibXYZ



Except...

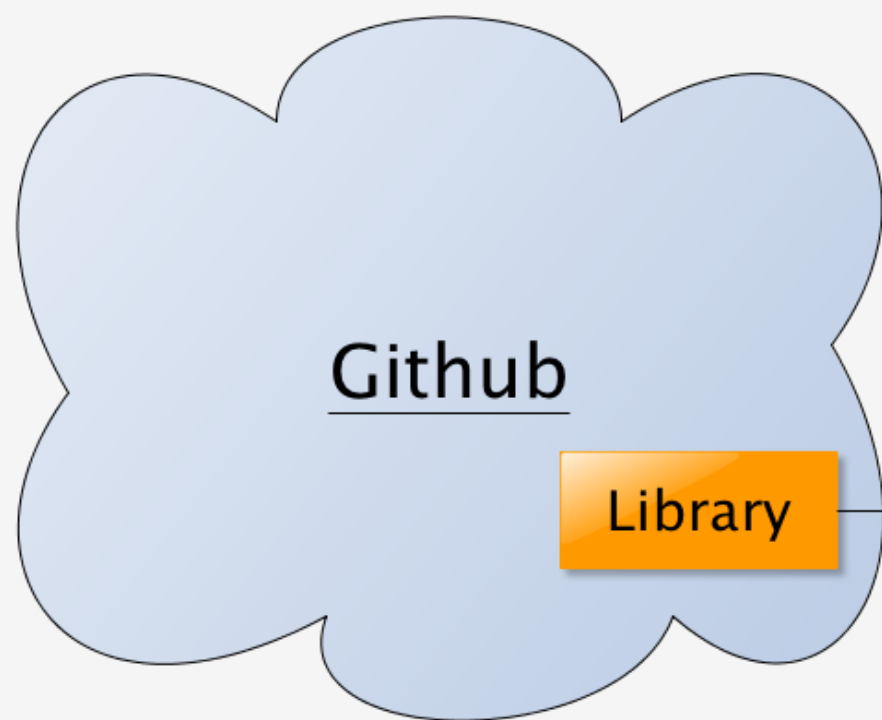






CocoaPods

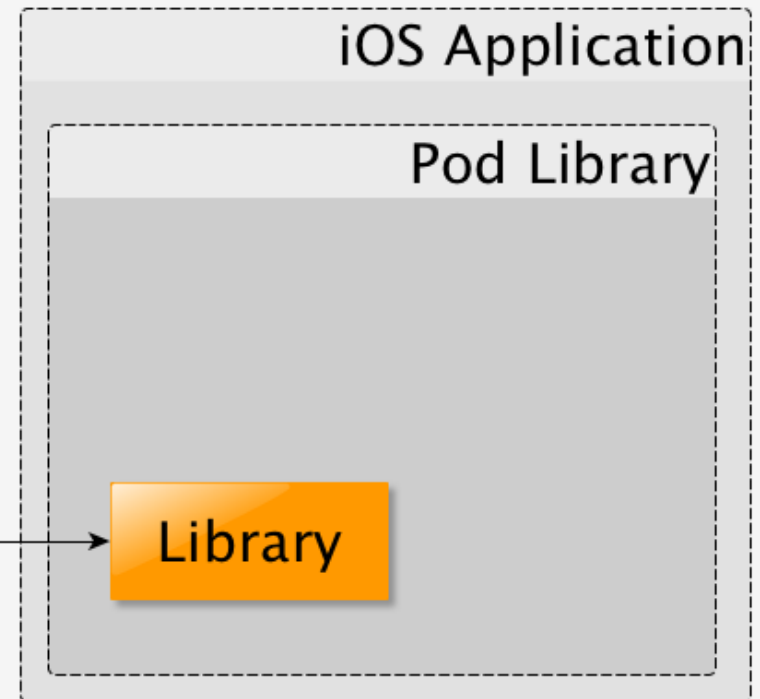
Typical Workflow



Github

Library

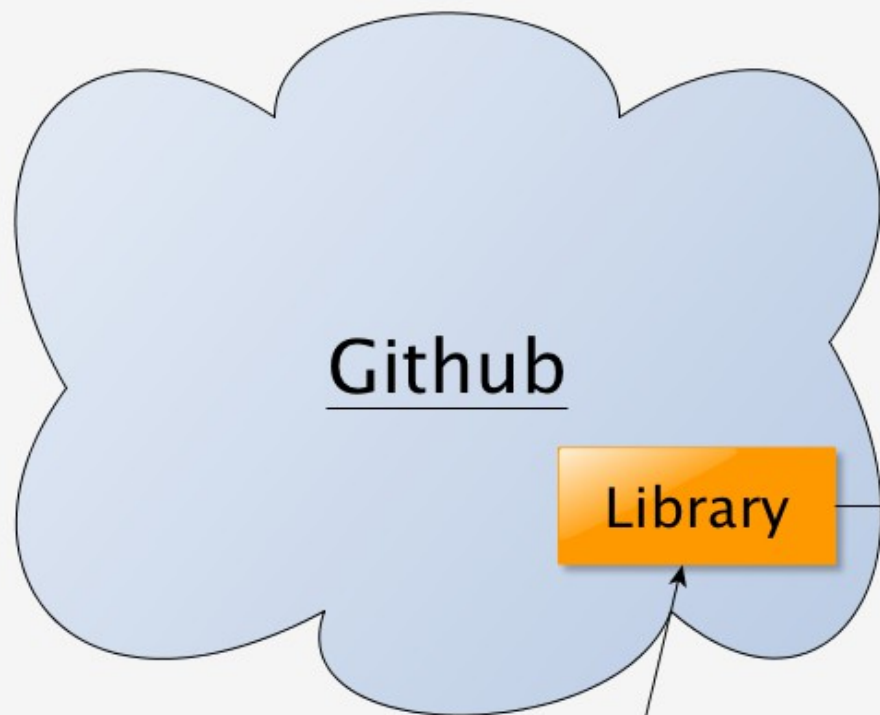
pod install



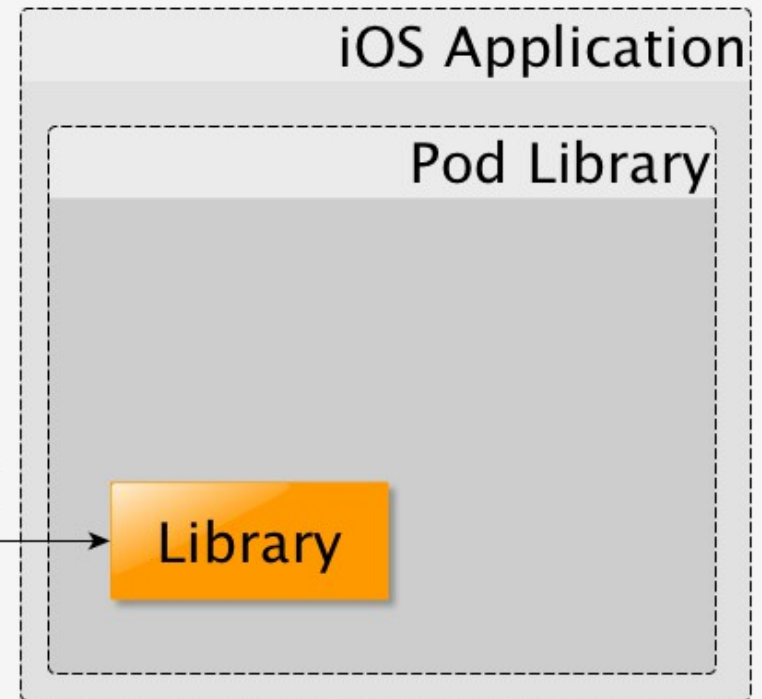
iOS Application

Pod Library

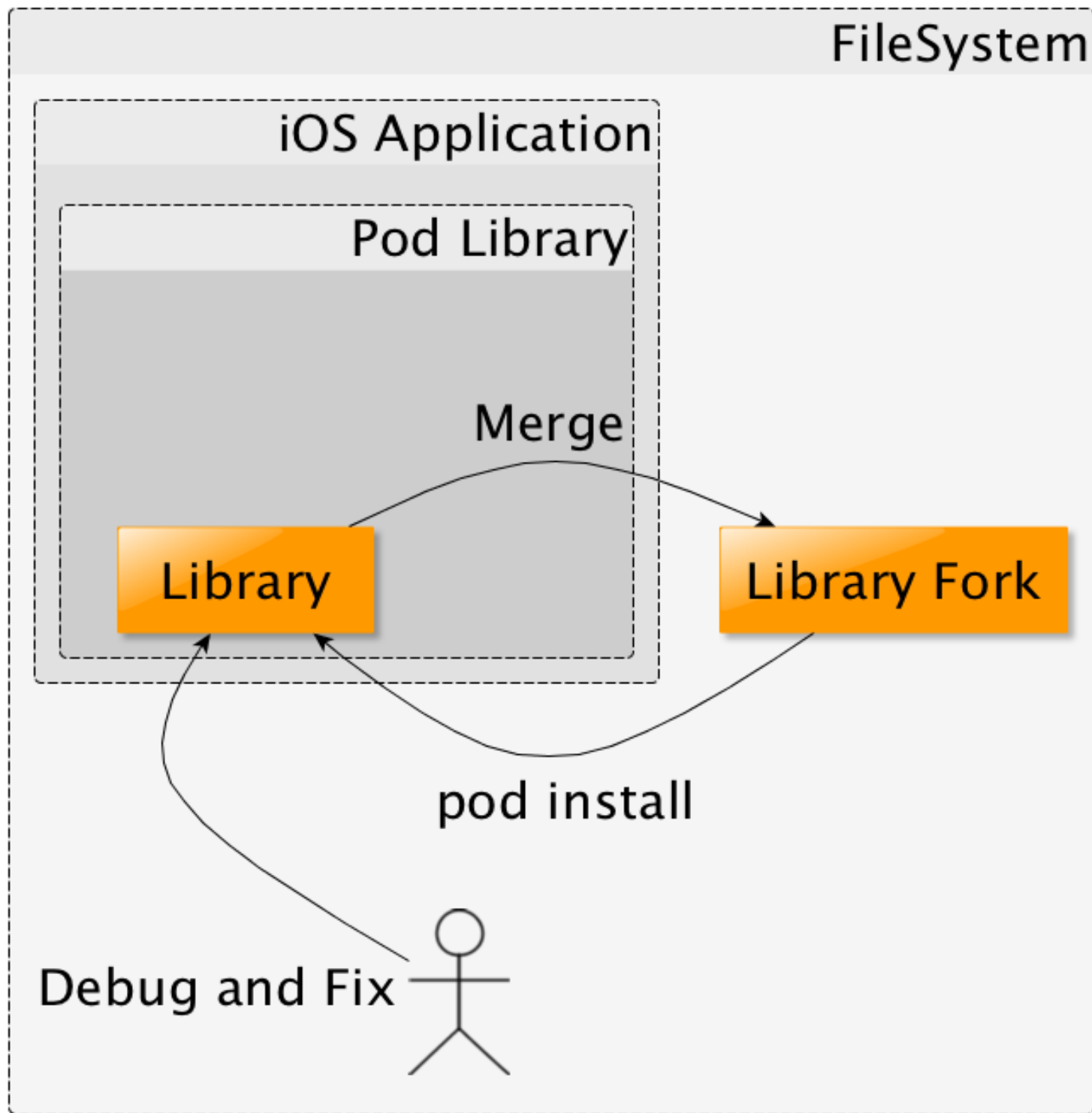
Library



pod install



Feature



Our own Busyness Logic

iOS Application

UITableViewController

Model

Pod Library

AFNetworking

FMDB

iAsyncLite

CocoaLumberjack

MagicalRecord

ReactiveCocoa

MBProgressHUD

In-Place Editing

iOS Application

UITableViewController

Busyness Logic Libs

Problem Domain Classes

Persistent Cache

Networking

Own UI Widget Libs

Pod Library

AFNetworking

FMDB

iAsyncLite

CocoaLumberjack

MagicalRecord

ReactiveCocoa

MBProgressHUD

Modular Architecture Benefits

Code Reuse

Test Coverage

Easier to Apply Changes

Frequent Changes

UITableViewController

Busyness Logic Libs

Own UI Widget Libs

Pod Library

AFNetworking

FMDB

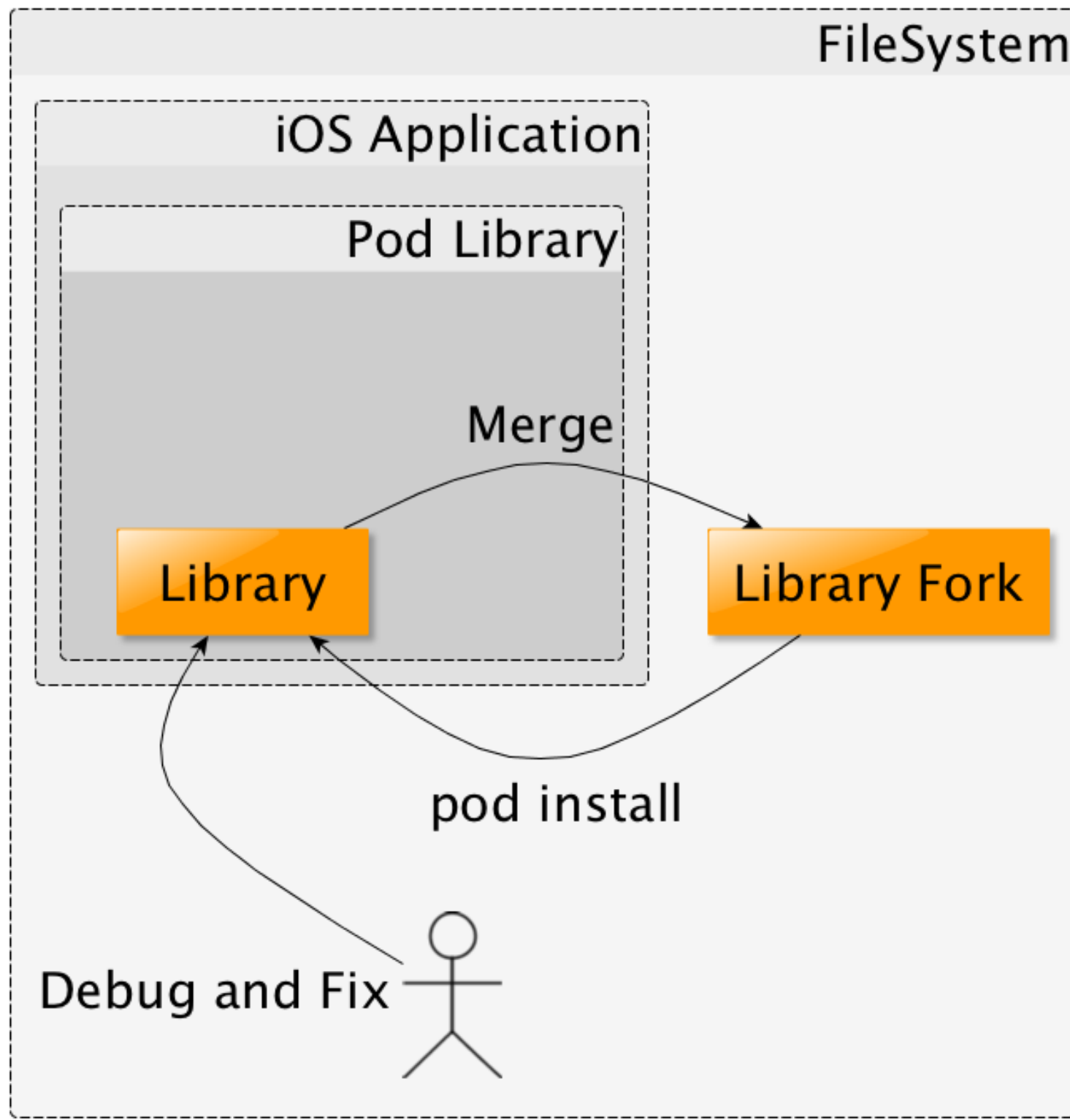
iAsyncLite

CocoaLumberjack

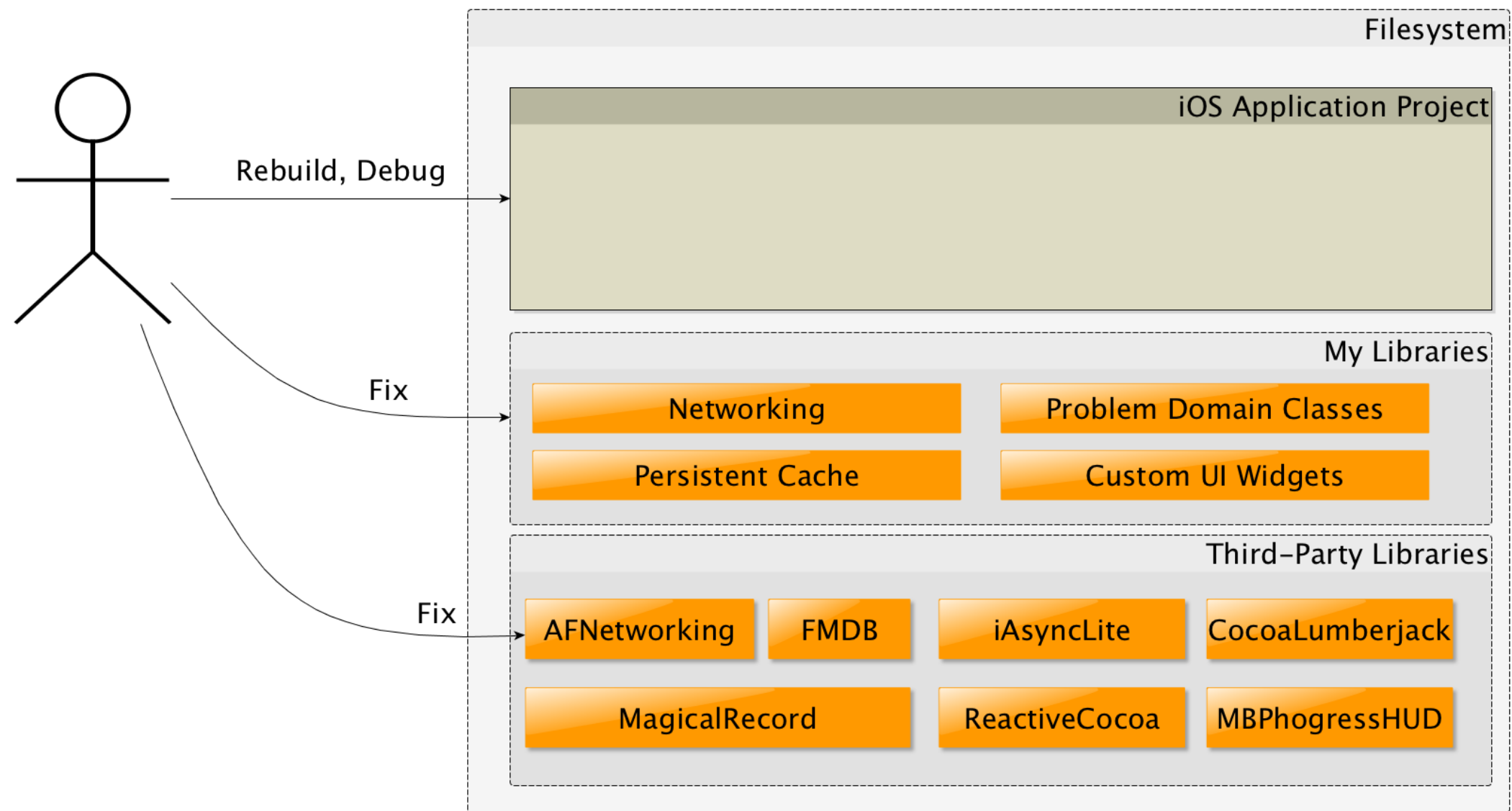
MagicalRecord

ReactiveCocoa

MBProgressHUD



Going Native





CocoaPods

--no-integrate



ListItemsBrowserDemo > iPhone Retina (4-inch)




ListItemsBrowserDemo

3 targets, iOS SDK 7.0

▼  lib

►  SitecoreItemsBrowser.framework

►  SitecoreMobileSDK.framework

 **SCItemsBrowser.xcodeproj**

3 targets, iOS SDK 7.0

►  ListItemsBrowserDemo

►  ListItemsBrowserDemoTests

► **Frameworks**

►  Products

ListItemsBrowserDemo copy-Info.plist

```
1 #imp
```

2

3

4

5

6

7

9

10

11

@cla

@cla

/ ***

This

The

The

Choose a template for your new target



iOS

Application

Framework & Library

Other



OS X

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

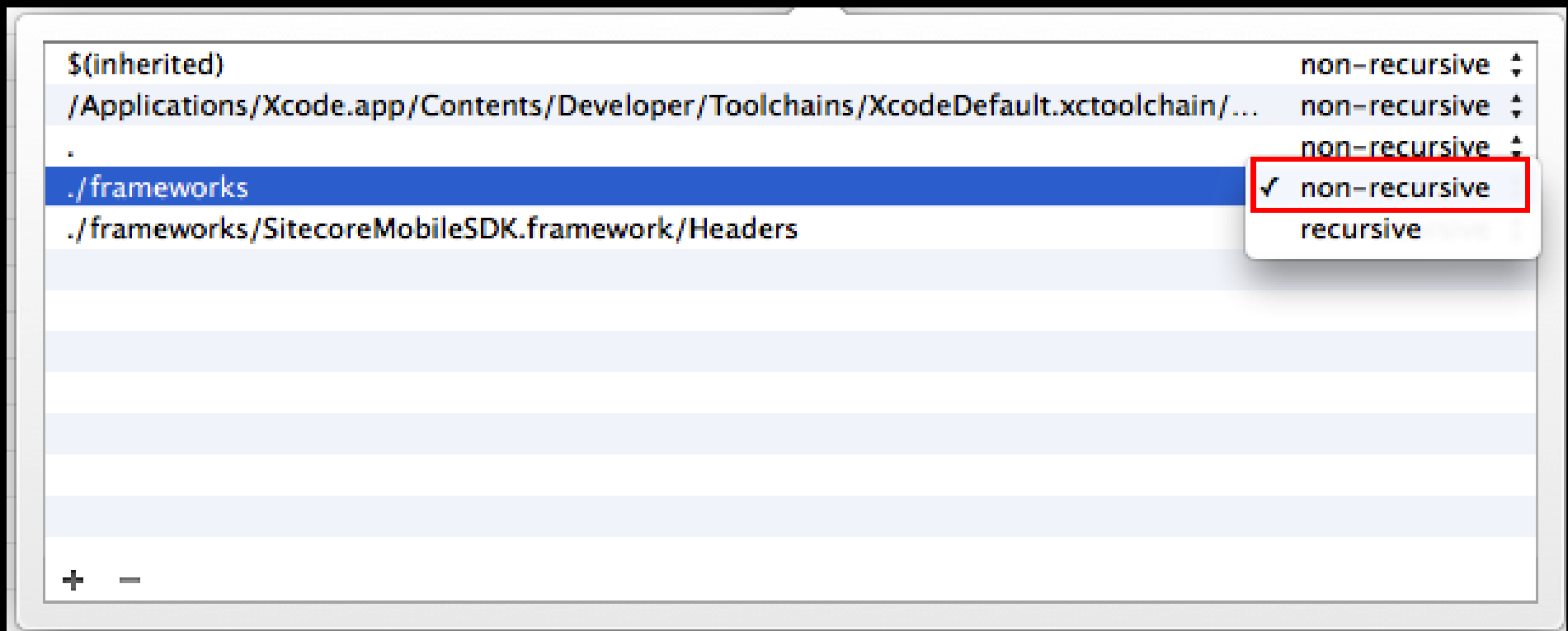
```
#import <AFNetworking/AFNetworking.h>
```

▼ Search Paths

Setting	ListItemsBrowserDemo
Always Search User Paths	No ⇅
Framework Search Paths	../../frameworks
Header Search Paths	/Applications/Xcode.app/Contents/Developer/Platforms/iPhoneOS.platform/Library/DevKit/iPhoneOSDevKit.framework/Resources/Headers/PublicHeaders
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

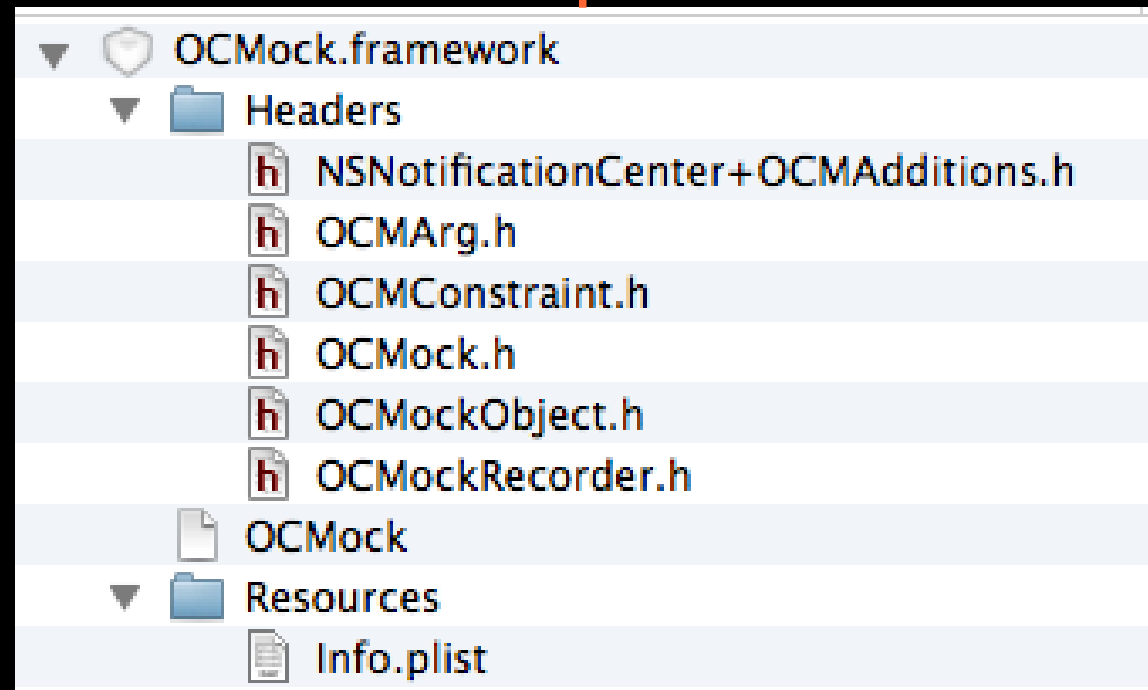
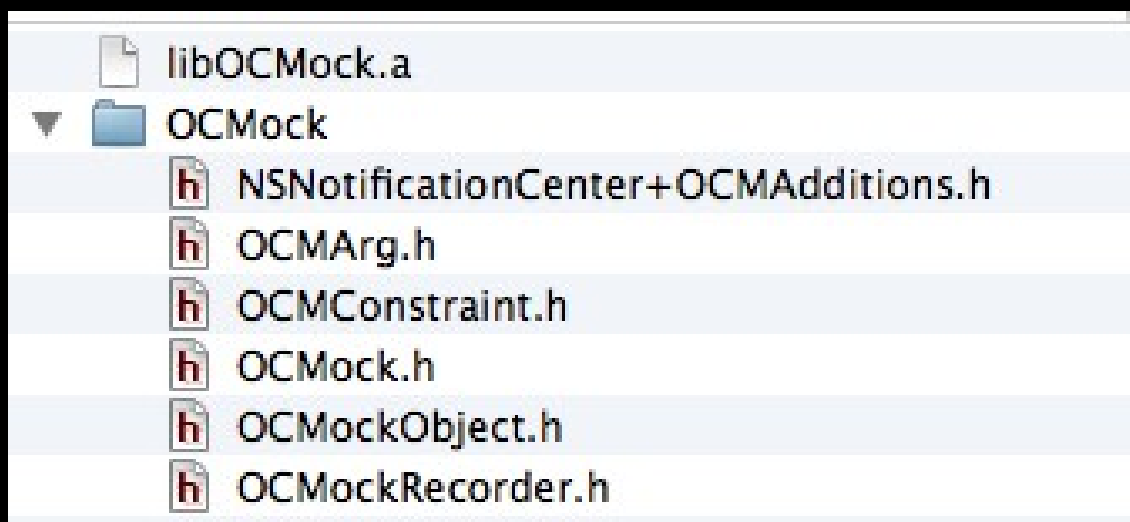


```
#import <AFNetworking/AFNetworking.h>
```



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

Static Framework for iOS



```
<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

```
// AppDelegate
// CrazyOnes
//
// Copyright (c) 2014 Apple Inc. All rights reserved.
```

```
import Cocoa
```

```
class AppDelegate : NSObject, NSApplicationDelegate {
    var misfits: Array<NSObject>
    var rebels: Array<NSObject>
    var troubleMakers: Array<NSObject>
```

```
@IBOutlet var window: NSWindow
```

```
init() {
    misfits = Array()
    rebels = Array()
    troubleMakers = Array()
}
```

```
func applicationDidFinishLaunching(aNotification: NSNotification) {
    heresToTheCrazyOnes()
}
```

```
func heresToTheCrazyOnes() {
    for misfit in misfits {
        quote(misfit)
    }

    for rebel in rebels {
        glorify(rebel)
    }

    for troubleMaker in troubleMakers {
        vilify(troubleMaker)
    }
}
```

```
func quote(misfit: NSObject) {
}
```

```
func glorify(rebel: NSObject) {
}
```

```
func vilify(troubleMaker: NSObject) {
}
```

```
}
```





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



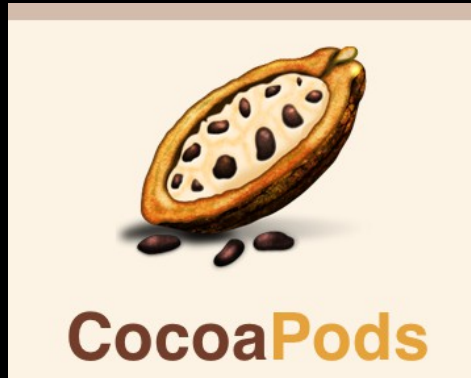
CocoaPods

More Binary Pods

In My Opinion



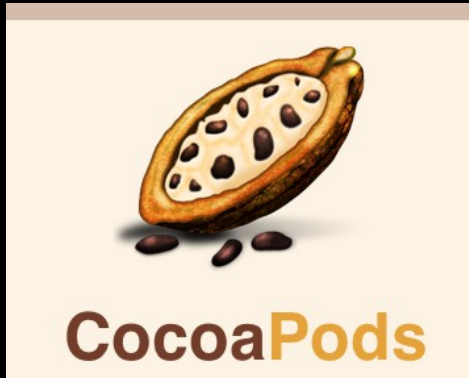
For Development
and Unit Testing



For Distribution



For You



For End Users

Library Dependencies and Linker



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

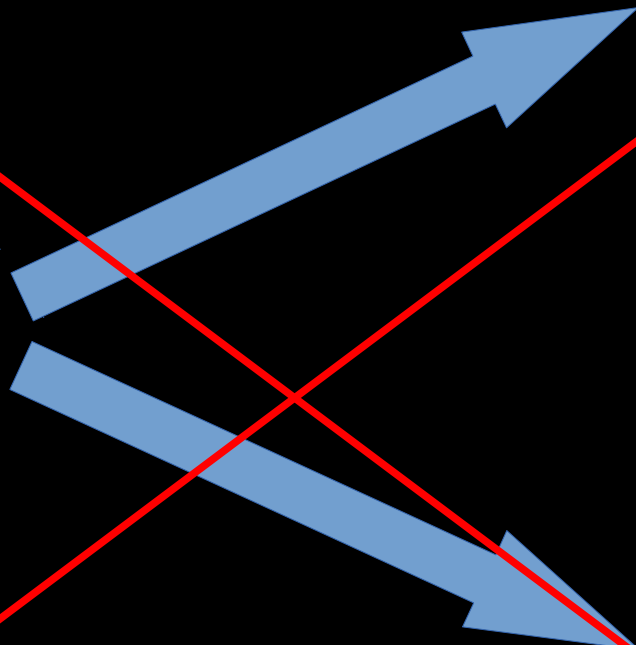
Duplicate symbol _main in /Users/samuellleeuwenburg/Library/Developer/Xcode/DerivedData/SDLStackOverflowTest1-awqtenipezizyreqnvxupfbheywd/Build/Intermediates/SDLStackOverflowTest1.build/Debug/SDLStackOverflowTest1.build/Objects-normal/x86_64/SDLMain.o and /Users/samuellleeuwenburg/Library/Developer/Xcode/DerivedData/SDLStackOverflowTest1-awqtenipezizyreqnvxupfbheywd/Build/Intermediates/SDLStackOverflowTest1.build/Debug/SDLStackOverflowTest1.build/Objects-normal/x86_64/main.o for architecture x86_64

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



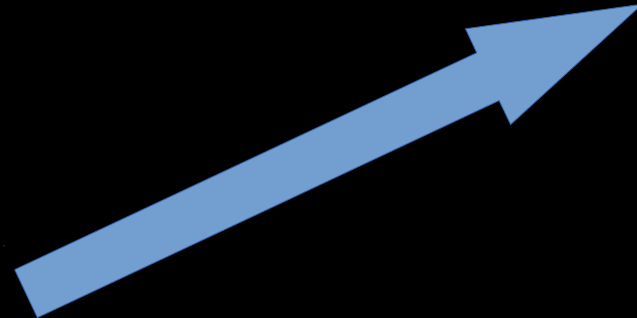
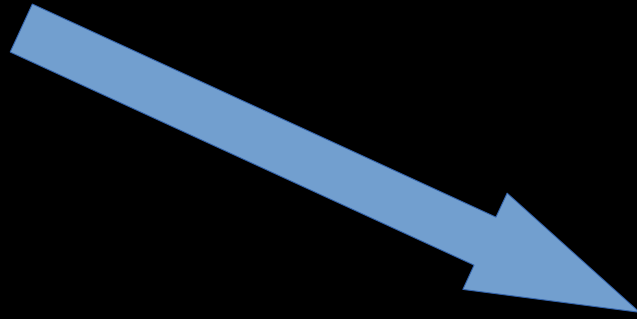
Activity Log Complete 9/26/12 3:41 PM

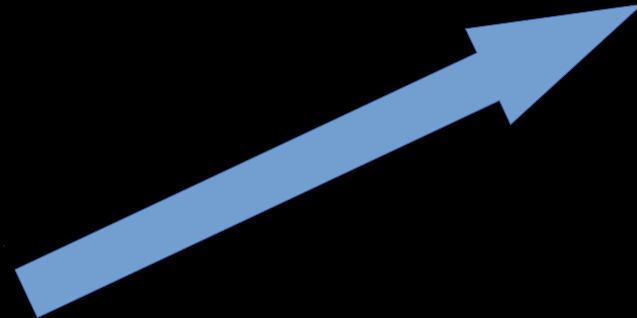
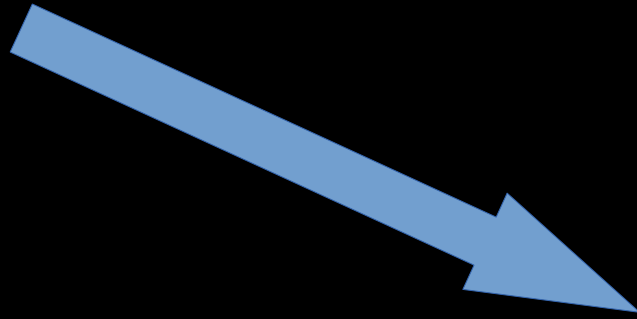
1 error, 1 warning

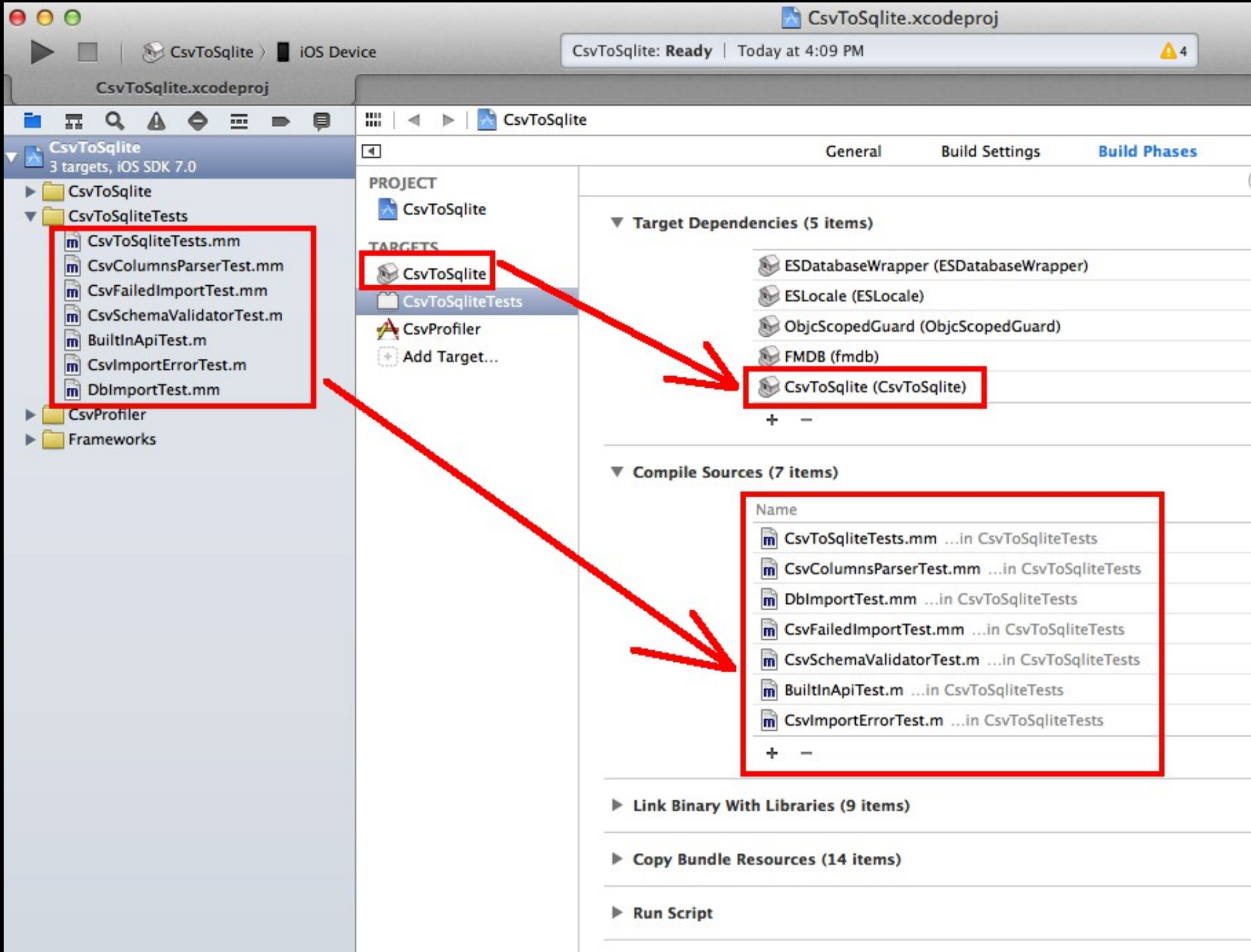




Never Link Libraries into Other
Libraries









All Testable Code Should be in
libraries



Use Precompiled Headers

Reduce Compiling Duration

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

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

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

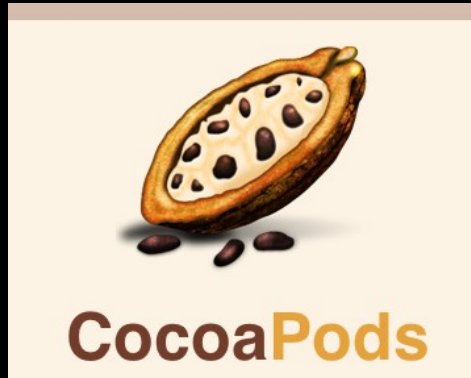
```
  
// Pure C headers go here  
#include <math.h>
```

Order by Dependencies

Library Vendor's Checklist



For Development
and Unit Testing

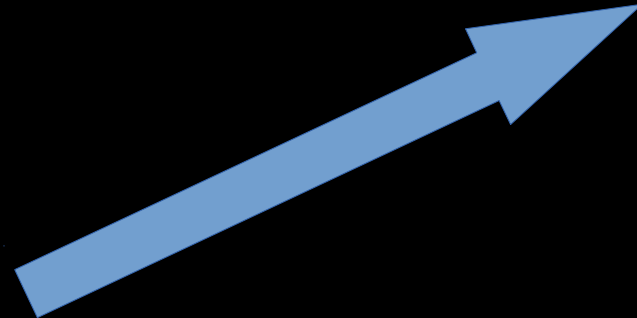
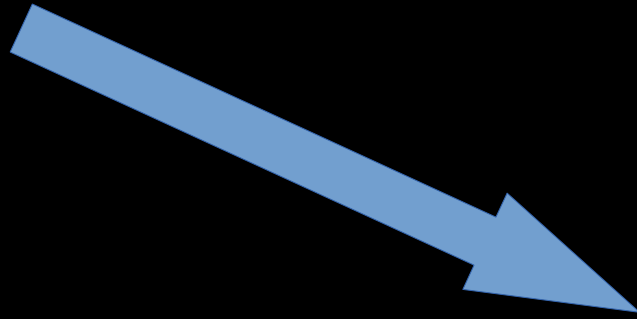


For Distribution



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

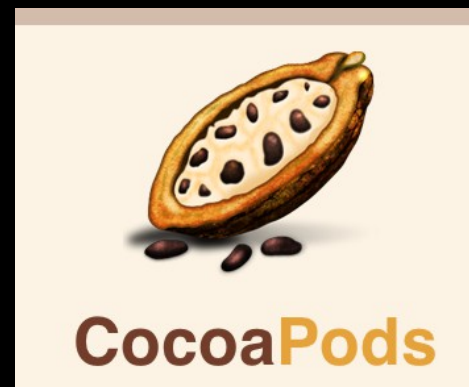
For Public Headers



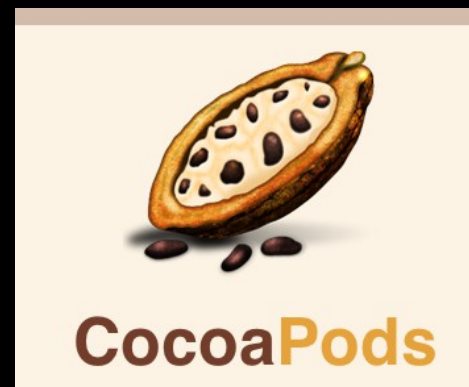


Do Write Unit Tests

With best possible coverage
you can afford



Deliver Binary Pods



Source Based Pods as a “Plan B”

Native Rulezzz

Alexander Dodatko

@dodikk88