おはよおう ございます

GOOD MORNING!

REAL WORLD MOCKING IN SWIFT

YOU WANT TO WRITE TESTS

BUT YOU DON'T WANT THEM TO MESS UP YOUR REAL STUFF

OR BE SLOW

```swift
let session = NSURLSession()
let url = NSURL(string: "http://www.tryswiftconf.com")!
let task = session.dataTaskWithURL(url) { (data, _, _) -> Void in
    if let data = data {
        let string = String(data: data, encoding: NSUTF8StringEncoding)
        print(string)
    }
}
task.resume()
```

OCMOCK CAN'T SAVE
YOU NOW

```
class HTTPClientTests: XCTestCase {
    var subject: HTTPClient!
    let session = MockURLSession()

    override func setUp() {
        super.setUp()
        subject = HTTPClient(session: session)
    }
```

```swift
class HTTPClientTests: XCTestCase {
    var subject: HTTPClient!
    let session = MockURLSession()

    override func setUp() {
        super.setUp()
        subject = HTTPClient(session: session)
    }

    func test_GET_RequestsTheURL() {
        let url = NSURL(string: "http://www.tryswiftconf.com")!

        subject.get(url) { (_, _) -> Void in }
```

```swift
class HTTPClientTests: XCTestCase {
    var subject: HTTPClient!
    let session = MockURLSession()

    override func setUp() {
        super.setUp()
        subject = HTTPClient(session: session)
    }

    func test_GET_RequestsTheURL() {
        let url = NSURL(string: "http://www.tryswiftconf.com")!

        subject.get(url) { (_, _) -> Void in }

        XCTAssert(session.lastURL === url)
    }
}
```

IT WILL TAKE A LOT OF

TIME

YOU WILL WONDER IF IT'S

WORTH IT

WHY USE MOCKS

» Make tests faster (like 1000s of times faster!) 🚄

» Increase coverage of test suite 🌍

» Make tests more robust 💪

TESTING

THE TIME

TO WRITE TESTS IS

NOW

MONACO
MONACO
MONACO
ÉTABLISSEMENTS
P. SOURIAU
ÉQUIPEMENT ÉLECTRIQUE
ACCESSOIRES
BOBINAGES
MAGNETOS, DYNAMOS
Essol
L'HUILE SUPÉRIEURE
VEEDOL
SHELL
Mobiloil
TOTAL

DEPENDENCY INJECTION

```
class VideoCaptureManager: NSObject {
    var userDefaults: UserDefaultsProtocol

    //MARK: - Initializers
    override init() {
        self.userDefaults = UserDefaults()
    }

    convenience init(userDefaults: UserDefaultsProtocol) {
        self.init()
        self.userDefaults = userDefaults
    }
}
```

“DEPENDENCY INJECTION MEANS GIVING AN OBJECT ITS INSTANCE VARIABLES. REALLY. THAT'S IT.”

James Shore

WHY NOT JUST USE A SINGLETON?

```
class VideoUploadManager {
    static let sharedInstance = VideoUploadManager()
}

class TimeMachineAPI {
    func uploadVideo(videoRecording: VideoRecording) {
        VideoUploadManager.sharedInstance.upload(videoRecording: self.videoRecording, completion: { (error) -> Void in
            if let error = error {
                Log.error(error.localizedDescription)
            }
        })
    }
}
```

WHY USE DEPENDENCY INJECTION

» Easy customization 🎨

» Clear ownership 🔐

» Testability 😍

CONSTRUCTOR INJECTION

TEST DOUBLES

TYPES OF TEST DOUBLES

» Stubs 😀

» Mocks 😕

» Partial mocks 😟

STUBS

“FAKES A RESPONSE TO METHOD CALLS OF AN OBJECT”

Unit Testing Tutorial: Mocking Objects

```
class StubTimeMachineAPI: TimeMachineAPI {
    var videoUrl = "https://www.youtube.com/watch?v=SQ8aRKG9660"

    func getVideoFor(year: Int) -> String {
        return videoUrl
    }
}
```

MOCKS

“LET YOU CHECK IF A METHOD CALL IS PERFORMED OR IF A PROPERTY IS SET”

Unit Testing Tutorial: Mocking Objects

```
class MockTimeMachine: TimeMachine {
    var timeTravelWasCalled = false

    mutating func timeTravelTo(year: Int) {
        timeTravelWasCalled = true
    }
}
```

PARTIAL MOCK

“ANY ACTUAL OBJECT WHICH HAS BEEN WRAPPED OR CHANGED”

Justin Searls

“TO PROVIDE ARTIFICIAL RESPONSES TO SOME METHODS BUT NOT OTHERS”

Justin Searls

PARTIAL MOCKS ARE AN
ANTI-PATTERN

WHAT'S WRONG WITH PARTIAL MOCKS?

» Challenging to set up 😫

» Decreases the comprehensibility of the test 😶

WHAT'S REAL?
WHAT'S FAKE?

MOCKING

MOCKING IN SWIFT VIA PROTOCOLS

“THIS KIND OF TESTING IS REALLY SIMILAR TO WHAT YOU GET WITH MOCKS, BUT IT’S SO MUCH BETTER.”

Protocol-Oriented Programming in Swift

“MOCKS ARE INHERENTLY FRAGILE.”

Protocol-Oriented Programming in Swift

“YOU HAVE TO COUPLE YOUR TESTING CODE”

Protocol-Oriented Programming in Swift

“TO THE IMPLEMENTATION DETAILS OF THE CODE UNDER TEST.”

Protocol-Oriented Programming in Swift

PLAYS WELL WITH STRUCTS AND CLASSES

PROTOCOLS HELP WHEN THERE'S INTERNAL DEPENDENCIES

THEY SAID DON'T MOCK TYPES YOU DON'T OWN

Mock Roles, not Objects

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London WC1V 7AA

{sfreeman, npryce, tmackinnon, jwalnes} @thoughtworks.com

WHY IT'S BAD TO MOCK TYPES YOU DON'T OWN

- Have to be sure that the behavior you implement in a mock matches the external library
- The external library could change, breaking your mock

MOCKING APPLE FRAMEWORK CLASSES

```
class UserDefaultsMock: UserDefaultsProtocol {

    private var objectData = [String : AnyObject]()

    func objectForKey(key: UserDefaultsKey) -> AnyObject? {
        return objectData[key.name]
    }

    func setObject(value: AnyObject?, forKey key: UserDefaultsKey) {
        objectData[key.name] = value
    }

    func removeObjectForKey(key: UserDefaultsKey) {
        objectData[key.name] = nil
    }

}
```

TIME TRAVELER TIMES

TEST THAT USES USERDEFAULTSMOCK

```
func testNotificationSettingsLoad() {
    let userDefaultsMock = UserDefaultsMock()
    mockUserDefaults.setObject("NEVER", forKey: "timeMachineBreakingNewsPushNotification")
    mockUserDefaults.setObject("NEVER", forKey: "timeMachineDailyDigestPushNotification")

    let dataProvider = PushNotificationsDataProvider(userDefaults: mockUserDefaults)
    let expectedFrequencies: [PushNotificationFrequency] = [.Never, .All, .All, .Never]

    XCTAssertEqual(expectedFrequencies, dataProvider.notificationSettings.values)

}
```

MOCKING NSNOTIFICATIONCENTER WAS NOT WORTH IT

» Complex 😕

» Injected throughout entire codebase 😰

» Limited functionality compared to real object 😬

» Solves a problem that doesn’t really exist 👻

THEY SAID DON'T MOCK VALUE TYPES

“WHEN YOU’RE DOING...SIMPLE DATA IN AND DATA OUT, YOU DON’T NEED MOCKING OR STUBBING.”

Andy Matuschak

“YOU CAN PASS A VALUE INTO A FUNCTION, THEN LOOK AT THE RESULTING VALUE.”

Andy Matuschak

“TRY MAKING YOUR REFERENCE TYPES IMMUTABLE”

Joe Groff

WHAT MAKES A GOOD MOCK

- Quick and easy to write
- Relatively short and does not contain tons of information you don’t need
- Legitimate reason to not use real object

I AM THOUGHTFUL ABOUT WHAT GETS MOCKED AND WHY

FELLOW TIME TRAVELERS

LET'S LOOK TOWARDS THE FUTURE

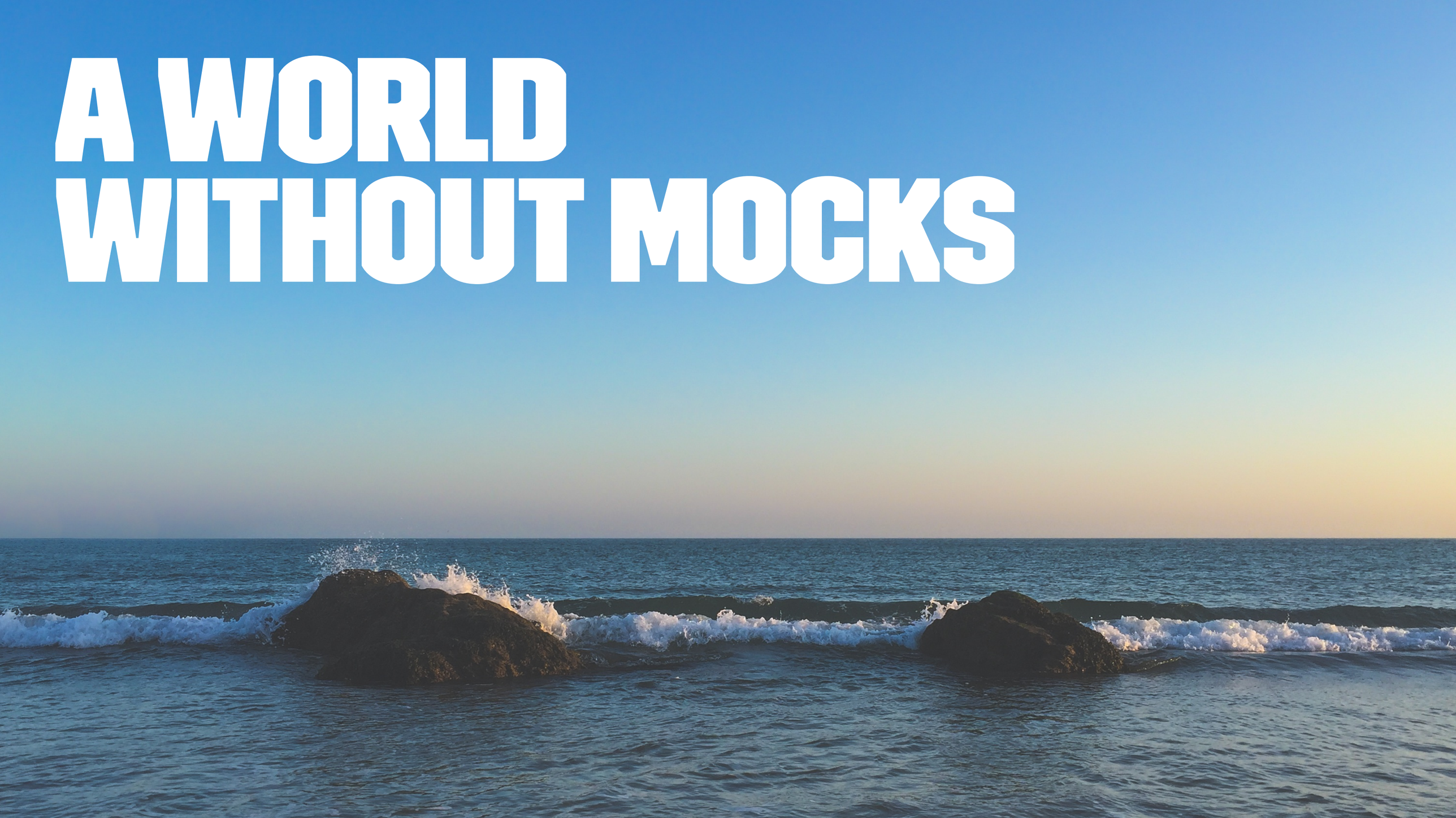
SWIFT

MOCKING FRAMEWORKS

DOBBY
MOCKFIVE
SWIFTMOCK

CUCKOO

A WORLD WITHOUT MOCKS



WRAP UP

- 💪 If you want to improve your codebase, write tests
- 💪 Mocks allow you to write great tests
- 💪 Create simple mocks that will last

WRITE MOCKS AND USE THEM FOR GREAT GOOD