

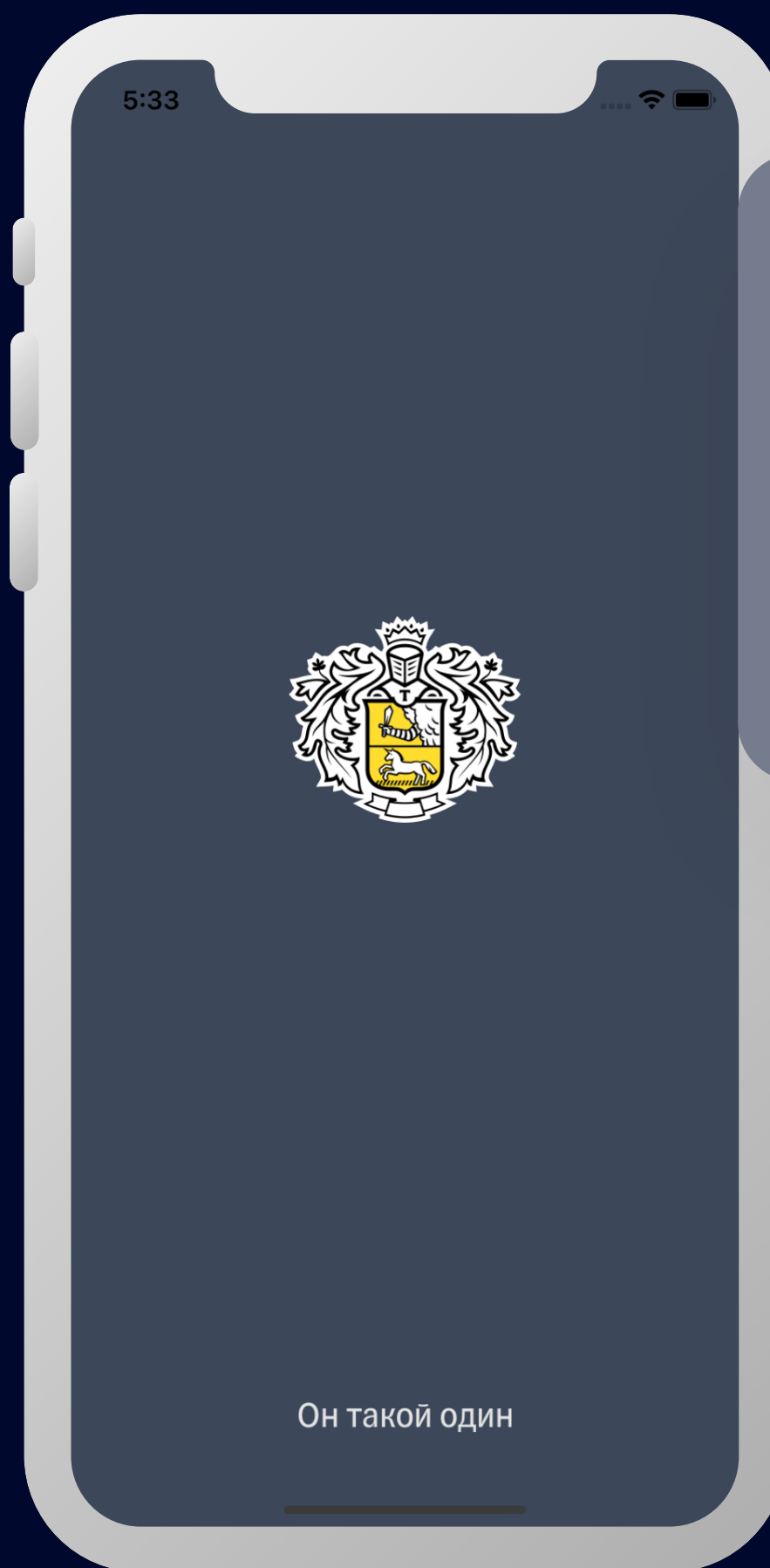


# **Использование XCFramework в крупном iOS-проекте, или как ускорить сборку в 2 раза**

# Содержание

- ✓ Проблема долгой сборки iOS проекта на примере "Тинькофф Бизнес"
- ✓ Принцип деплоя компонентов с CocoaPods в формате xcframework
- ✓ Версионирование и совместимость ABI
- ✓ Использование xcframework в инфре Тинькофф
- ✓ Ограничения и проблемы
- ✓ Результаты

# Тинькофф Бизнес



**1.6M**

Строк кода  
на Swift

**+30K**

Строк кода  
в месяц

**368**

Модулей  
(prod-ов)

**50+**

Разработчиков

# Тинькофф Бизнес

**>12 мин**

Холодная  
сборка



**1.6M**

Строк кода  
на Swift

**+30K**

Строк кода  
в месяц

**368**

Модулей  
(prod-ов)

**50+**

Разработчиков

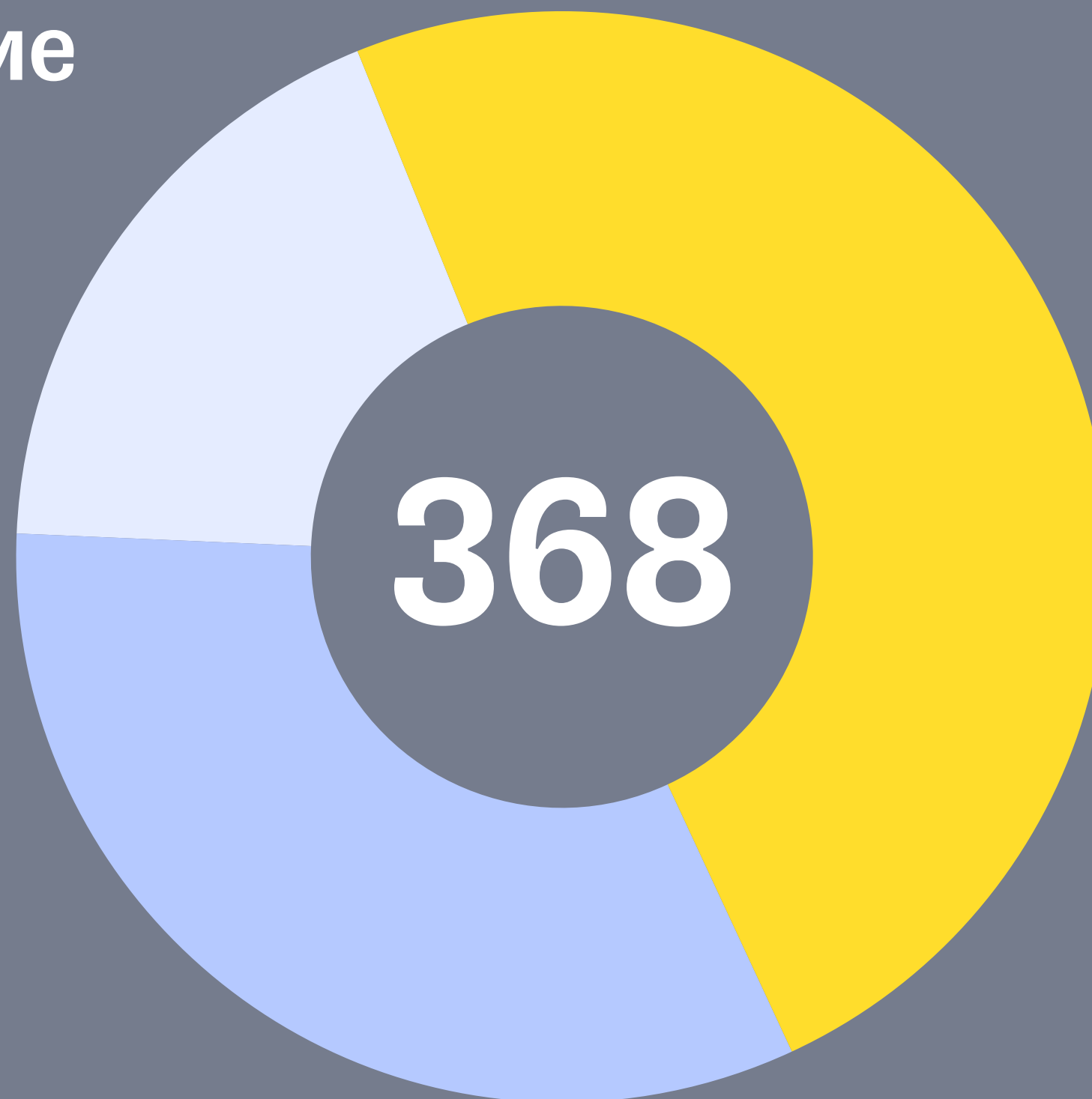
# Модули

Сторонние

67

Внешние

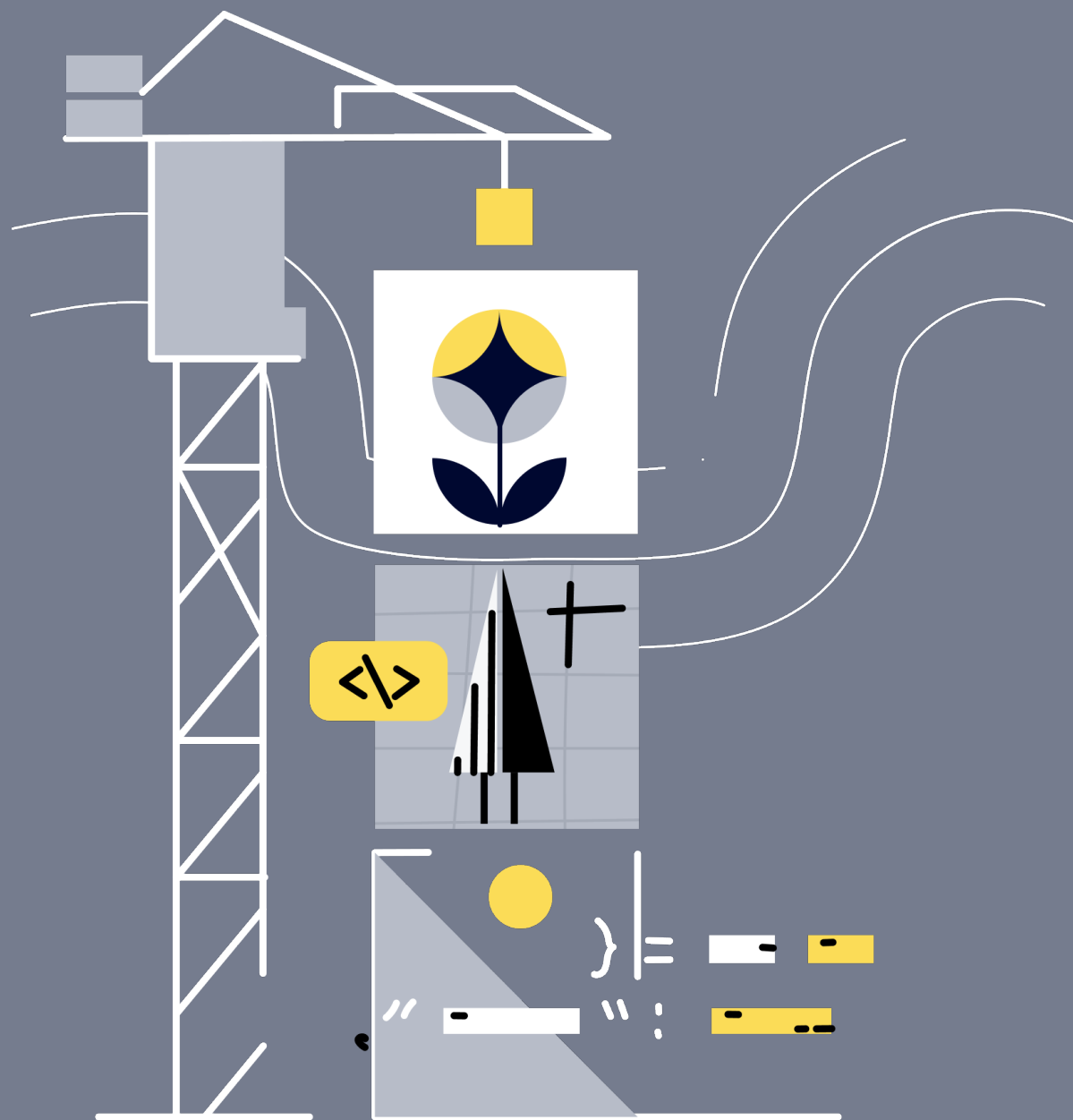
181



Локальные

120

# Почему?



## Плюсы

- Простая реализации
- Дешевая интеграция
- Портбельность артефактов








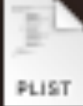


## Минусы

- Не подходит для локальных подов

# **XCFramework**

# XCFramework

- ▼  TinkoffNetwork.xcframework
  - ▼  ios-arm64
    - >  dSYMs
    - >  TinkoffNetwork.framework
  - ▼  ios-arm64\_x86\_64-simulator
    - >  dSYMs
    - >  TinkoffNetwork.framework
  -  Info.plist



# XCFramework

...

```
lipo -info TinkoffNetwork.xcframework/ios-arm64_x86_64-simulator/  
TinkoffNetwork.framework/TinkoffNetwork  
Architectures in the fat file: TinkoffNetwork.xcframework/ios-arm64_x86_64-simulator/  
TinkoffNetwork.framework/TinkoffNetwork are: x86_64 arm64
```

# XCFramework

```
lipo -info TinkoffNetwork.xcframework/ios-arm64/TinkoffNetwork.framework/TinkoffNetwork ↵  
Non-fat file: TinkoffNetwork.xcframework/ios-arm64/TinkoffNetwork.framework/  
TinkoffNetwork is architecture: arm64
```

# XCFramework

...

```
$ xcodebuild archive
```

# XCFramework

```
...  
$ xcodebuild archive \  
  -workspace TinkoffNetworkExample.xcworkspace \  
  -scheme TinkoffNetwork \  
  -configuration Release \  
  -sdk iphoneos \  
  -archivePath build/iphoneos.xcarchive \  
  SKIP_INSTALL=NO \  
  BUILD_LIBRARY_FOR_DISTRIBUTION=YES \  
  CODE_SIGNING_REQUIRED=NO \  
  CODE_SIGN_IDENTITY=''
```

# XCFramework

```
$ xcodebuild archive \
  -workspace TinkoffNetworkExample.xcworkspace \
  -scheme TinkoffNetwork \
  -configuration Release \
  -sdk iphoneos \
  -archivePath build/iphoneos.xcarchive \
  SKIP_INSTALL=NO \
  BUILD_LIBRARY_FOR_DISTRIBUTION=YES \
  CODE_SIGNING_REQUIRED=NO \
  CODE_SIGN_IDENTITY=''
```

iphonios  
iphonesimulator  
watchos  
watchsimulator  
...

# XCFramework

```
...  
$ xcodebuild archive \  
  -workspace TinkoffNetworkExample.xcworkspace \  
  -scheme TinkoffNetwork \  
  -configuration Release \  
  -sdk iphoneos \  
  -archivePath build/iphoneos.xcarchive \  
  SKIP_INSTALL=NO \  
  BUILD_LIBRARY_FOR_DISTRIBUTION=YES \  
  CODE_SIGNING_REQUIRED=NO \  
  CODE_SIGN_IDENTITY='' \  
  
  swiftc ... -enable-library-evolution
```

# XCFramework

```
$ xcodebuild archive \  
  -workspace TinkoffNetworkExample.xcworkspace \  
  -scheme TinkoffNetwork \  
  -configuration Release \  
  -sdk iphoneos \  
  -archivePath build/iphoneos.xcarchive \  
  SKIP_INSTALL=NO \  
  BUILD_LIBRARY_FOR_DISTRIBUTION=YES \  
  CODE_SIGNING_REQUIRED=NO \  
  CODE_SIGN_IDENTITY=''
```

<https://www.swift.org/blog/library-evolution/>

# XCFramework

...

```
$ xcodebuild -create-xcframework
```





































# XCFramework

```
...  
$ xcodebuild -create-xcframework \  
  -framework build/iphonesimulator.xcarchive/.../TinkoffNetwork.framework \  
  -framework build/iphoneos.xcarchive/.../TinkoffNetwork.framework \  
  -output output/TinkoffNetwork.xcframework
```

# Публикация XCFramework с CocoaPods

# Podfile

```
...  
  
source 'https://github.com/CocoaPods/Specs.git'  
  
platform :ios  
  
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

- ▼  Pods
  - ▼  Alamofire
    - ▼  Alamofire
      -  AFError.swift
      -  Alamofire.swift
      -  AlamofireExtended.swift
      -  CachedResponseHandler.swift
      -  DispatchQueue+Alamofire.swift
      -  EventMonitor.swift
      -  HTTPHeaders.swift
      -  HTTPMethod.swift
      -  MultipartFormData.swift
      -  MultipartUpload.swift
      -  NetworkReachabilityManager.swift
      -  Notifications.swift
      -  OperationQueue+Alamofire.swift
      -  ParameterEncoder.swift
      -  ParameterEncoding.swift
      -  Protector.swift
      -  RedirectHandler.swift
      -  Request.swift
      -  RequestInterceptor.swift
      -  RequestTaskMap.swift
      -  Response.swift
      -  ResponseSerialization.swift
      -  Result+Alamofire.swift
      -  RetryPolicy.swift
      -  ServerTrustEvaluation.swift
      -  Session.swift
      -  SessionDelegate.swift
      -  URLConvertible+URLRequestConvertible.swift
      -  URLEncodedFormEncoder.swift
      -  URLRequest+Alamofire.swift
      -  URLSessionConfiguration+Alamofire.swift
      -  Validation.swift
    - >  Support Files

▼ Pods

▼ Alamofire

▼ Alamofire

- 🔥 AFError.swift
- 🔥 Alamofire.swift
- 🔥 AlamofireExtended.swift
- 🔥 CachedResponseHandler.swift
- 🔥 DispatchQueue+Alamofire.swift
- 🔥 EventMonitor.swift
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- 🔥 Request.swift
- 🔥 RequestInterceptor.swift
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- 🔥 URLEncodedFormEncoder.swift
- 🔥 URLRequest+Alamofire.swift
- 🔥 URLSessionConfiguration+Alamofire.swift
- 🔥 Validation.swift

> Support Files



▼ Pods

▼ Alamofire

▼ Alamofire

▼ Frameworks

- 📦 Alamofire.xcframework

> Support Files

▼ Pods  
▼ Alamofire  
▼ Alamofire  
    🔥 AFError.swift  
    🔥 Alamofire.swift  
    🔥 AlamofireExtended.swift  
    🔥 CachedResponseHandler.swift  
    🔥 DispatchQueue+Alamofire.swift  
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    🔥 RetryPolicy.swift  
    🔥 ServerTrustEvaluation.swift  
    🔥 Session.swift  
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    🔥 URLConvertible+URLRequestConvertible.swift  
    🔥 URLEncodedFormEncoder.swift  
    🔥 URLRequest+Alamofire.swift  
    🔥 URLSessionConfiguration+Alamofire.swift  
    🔥 Validation.swift  
> Support Files



▼ Pods  
▼ Alamofire  
    ▼ Alamofire  
        ▼ Frameworks  
            🔧 Alamofire.xcframework  
        > Support Files



??

# Публикация XCFramework с CocoaPods

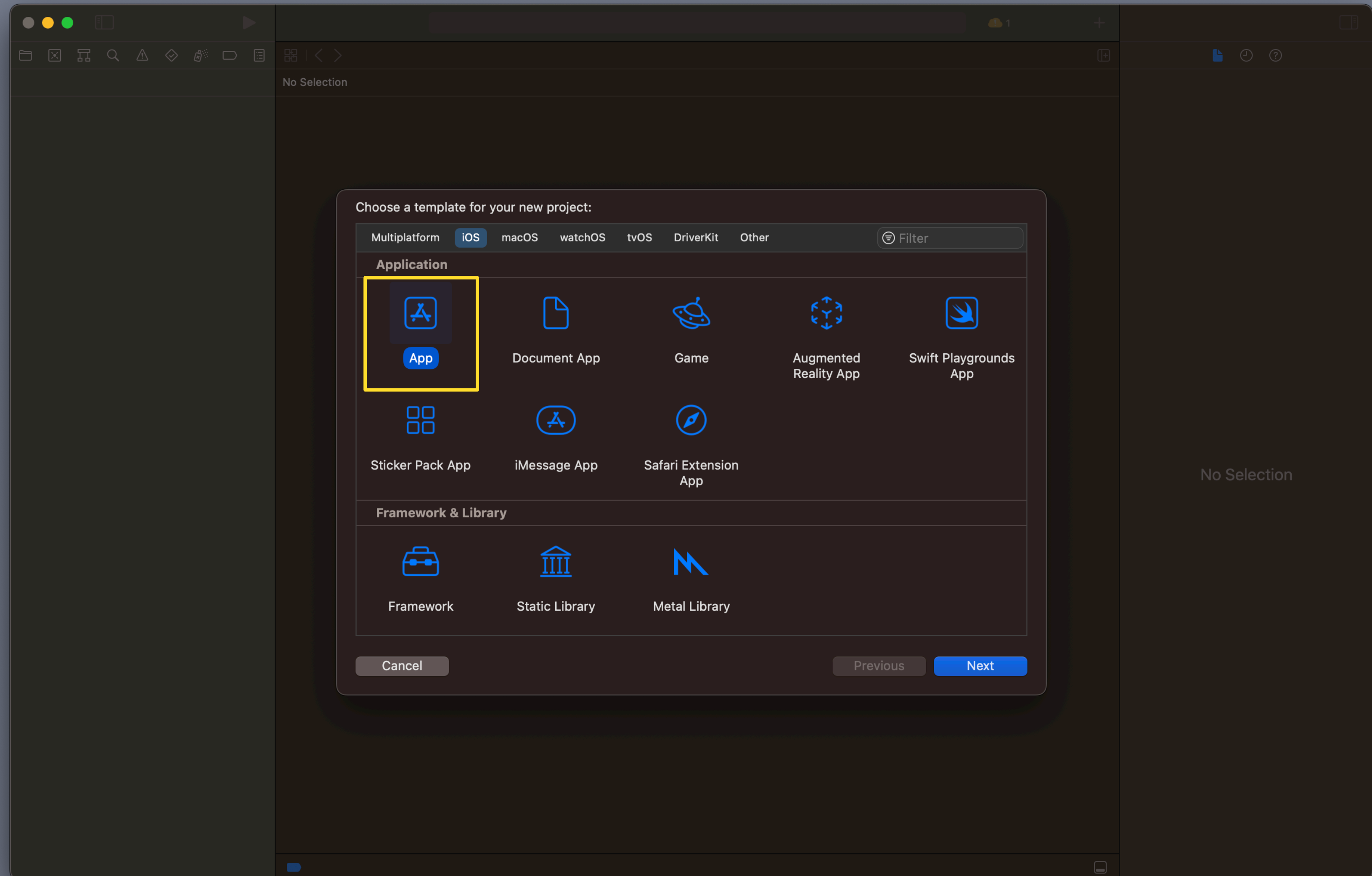
- Собрать xcframework
- Загрузить xcframework в s3\*
- Модифицировать podspec-y
- Запустить модифицированную podspec-y в приватный репозиторий (source)

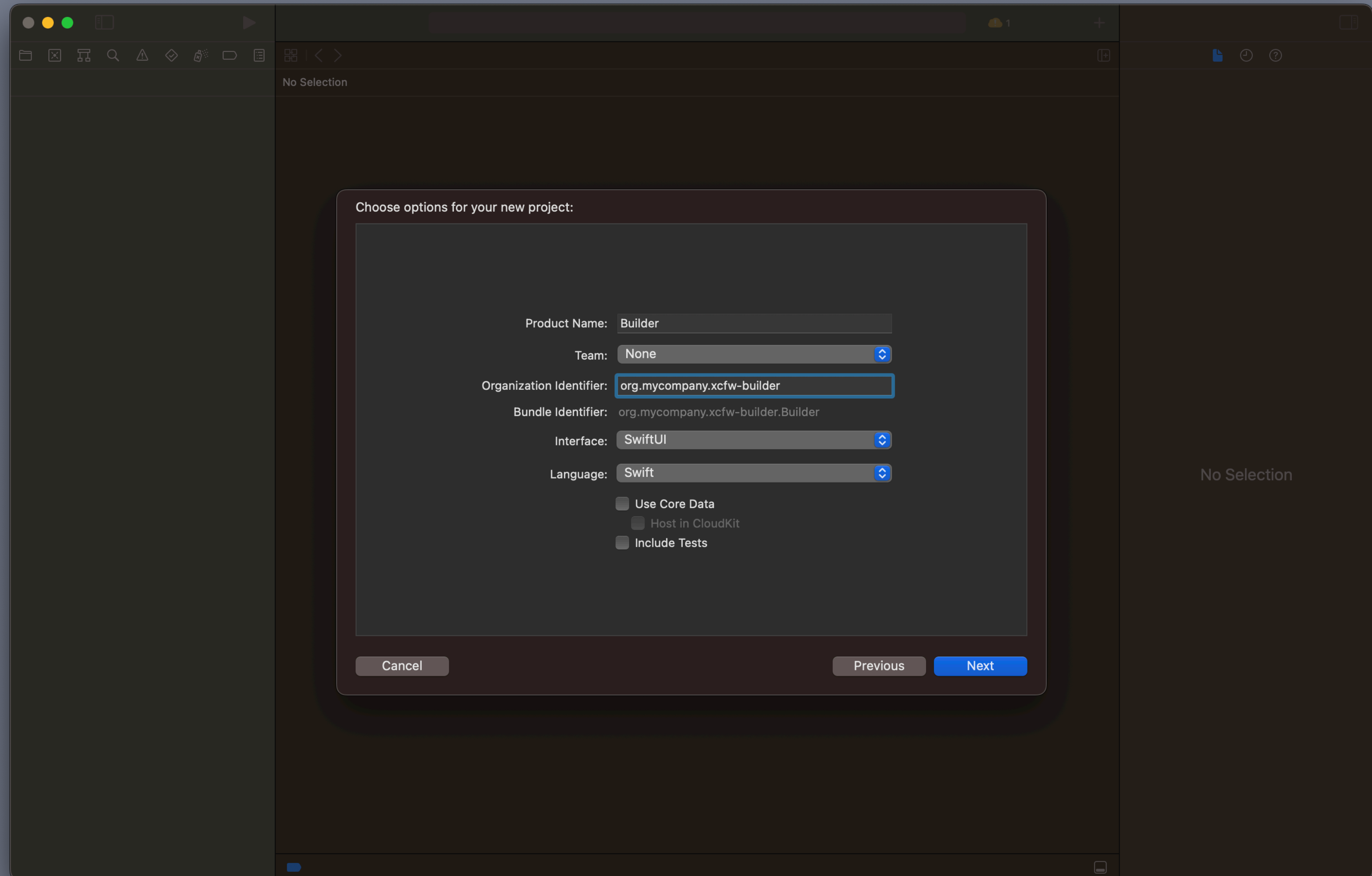




**Нужно больше  
проектов**







# Builder

...

```
# Builder/Podfile
```

```
platform :ios
```

```
target 'Builder' do
```

```
  pod ENV['POD_NAME'], ENV['POD_VERSION'], source: 'https://github.com/CocoaPods/Specs.git'
```

```
end
```

# Builder

```
...  
  
# Builder/Podfile
```

```
platform :ios
```

```
target 'Builder' do
```

```
  pod ENV['POD_NAME'], ENV['POD_VERSION'], source: 'https://github.com/CocoaPods/Specs.git'
```

```
end
```

```
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|
```

```
  ENV['POD_NAME'] = params[:pod_name]
```

```
  ENV['POD_VERSION'] = params[:pod_version]
```

```
  cocoapods
```

```
  #...
```

```
end
```

# Builder

```
...  
  
# Builder/Podfile
```

```
platform :ios
```

```
target 'Builder' do  
  pod ENV['POD_NAME'], ENV['POD_VERSION'], source: 'https://github.com/CocoaPods/Specs.git'  
end
```

```
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'] = params[:pod_name]  
  ENV['POD_VERSION'] = params[:pod_version]  
  cocoapods  
  #...  
end
```

```
bundle exec fastlane deploy_xcframework pod_name:'Alamofire' pod_version:'5.6.4'
```

# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile  
  
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'] = params[:pod_name]  
  ENV['POD_VERSION'] = params[:pod_version]  
  
  cocoapods  
end
```

# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'], name = params[:pod_name]  
  ENV['POD_VERSION'] = params[:pod_version]
```

```
  xcframework_path = "output/#{name}.xcframework"
```

```
  cocoapods
```

```
  build_xcframework(workspace: "Builder.xcworkspace", scheme: name, output_path: xcframework_path)
```

```
end
```

# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'], name = params[:pod_name]  
  ENV['POD_VERSION'] = params[:pod_version]  
  xcframework_path = "output/#{name}.xcframework"  
  
  cocoapods  
  build_xcframework(workspace: "Builder.xcworkspace", scheme: name, output_path: xcframework_path)  
  zip(path: xcframework_path, output_path: "output/xcframework.zip")  
end
```



# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'], name = params[:pod_name]  
  ENV['POD_VERSION'], version = params[:pod_version]  
  xcframework_path = "output/#{name}.xcframework"  
  
  cocoapods  
  build_xcframework(workspace: "Builder.xcworkspace", scheme: name, output_path: xcframework_path)  
  zip(path: xcframework_path, output_path: "output/xcframework.zip")  
  sh("s3cmd put 'output/xcframework.zip' s3://pods/#{name}/#{version}/xcframework.zip")  
end
```

# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'], name = params[:pod_name]  
  ENV['POD_VERSION'], version = params[:pod_version]  
  xcframework_path = "output/#{name}.xcframework"  
  podspec_path = "output/#{name}.podspec.json"
```

```
  cocoapods
```

```
  build_xcframework(workspace: "Builder.xcworkspace", scheme: name, output_path: xcframework_path)
```

```
  zip(path: xcframework_path, output_path: "output/xcframework.zip")
```

```
  sh("s3cmd put 'output/xcframework.zip' s3://pods/#{name}/#{version}/xcframework.zip")
```

```
  transform_podspec(  
    src_podspec_path: sh("pod spec which '#{name}' --version='#{version}'"),
```

```
    xcframework_path: "output/xcframework.zip",
```

```
    dst_podspec_path: podspec_path
```

```
  )
```

```
end
```

# deploy\_xcframework

```
...  
  
# Builder/fastlane/Fastfile
```

```
lane :deploy_xcframework do |params|  
  ENV['POD_NAME'], name = params[:pod_name]  
  ENV['POD_VERSION'], version = params[:pod_version]  
  xcframework_path = "output/#{name}.xcframework"  
  podspec_path = "output/#{name}.podspec.json"  
  private_podspec_repo = "https://gitlab.mycompany.org/private-specs.git"  
  
  cocoapods  
  build_xcframework(workspace: "Builder.xcworkspace", scheme: name, output_path: xcframework_path)  
  zip(path: xcframework_path, output_path: "output/xcframework.zip")  
  sh("s3cmd put 'output/xcframework.zip' s3://pods/#{name}/#{version}/xcframework.zip")  
  transform_podspec(  
    src_podspec_path: sh("pod spec which '#{name}' --version='#{version}'"),  
    xcframework_path: "output/xcframework.zip",  
    dst_podspec_path: podspec_path  
  )  
  sh("pod repo push '#{podspec_path}' #{private_podspec_repo}")  
end
```

# Alamofire.podspec

```
Pod::Spec.new do |s|
  s.name = 'Alamofire'
  s.version = '5.6.4'
  s.source = {
    git: 'https://github.com/Alamofire/Alamofire.git',
    tag: s.version
  }
  s.ios.deployment_target = '10.0'
  s.osx.deployment_target = '10.12'
  s.tvos.deployment_target = '10.0'
  s.watchos.deployment_target = '3.0'

  s.source_files = 'Source/*.swift'

  s.frameworks = 'CFNetwork'
end
```

# Alamofire.podspec.json

```
{
  "name": "Alamofire",
  "version": "5.6.4",
  "source": {
    "git": "https://github.com/Alamofire/Alamofire.git",
    "tag": "5.6.4"
  },
  "platforms": {
    "ios": "10.0",
    "osx": "10.12",
    "tvos": "10.0",
    "watchos": "3.0"
  },
  "source_files": "Source/*.swift",
  "frameworks": "CFNetwork"
}
```

# Alamofire.podspec.json\*

```
...  
  
{  
  "name": "Alamofire",  
  "version": "5.6.4",  
  "source": {  
-    "git": "https://github.com/Alamofire/Alamofire.git",  
-    "tag": "5.6.4"  
+    "http": "https://s3.mycompany.org/pods/Alamofire/5.6.4/xcframework.zip",  
+    "sha256": "727d2189b4d9016b9fc6b5a157bf4dd86ca4a9d5576deefd19e889f8b8eeaea9"  
  },  
  "platforms": {  
-    "ios": "10.0",  
-    "osx": "10.12",  
-    "tvos": "10.0",  
-    "watchos": "3.0"  
+    "ios": "10.0"  
  },  
-  "source_files": "Source/*.swift",  
+  "vendored_frameworks": "Alamofire.xcframework",  
  "frameworks": "CFNetwork"  
}
```

# Alamofire.podspec.json\*

```
{
  "name": "Alamofire",
  "version": "5.6.4",
  "source": {
    "http": "https://s3.mycompany.org/pods/Alamofire/5.6.4/xcframework.zip",
    "sha256": "adf273a9e2edb0b35d307f4bb166be98dfd253b98560eac9fd9c6e3058febcbf"
  },
  "platforms": {
    "ios": "10.0"
  },
  "frameworks": "CFNetwork",
  "vendored_frameworks": "Alamofire.xcframework"
}
```

# transform\_podspec

...

```
require 'cocoapods-core'  
require 'digest'
```

```
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  
end
```



# transform\_podspec

...

```
require 'cocoapods-core'
require 'digest'

def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)
  s = Pod::Spec.from_file(src_podspec_path)
end
```

# transform\_podspec

```
...  
  
require 'cocoapods-core'  
require 'digest'  
  
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  s = Pod::Spec.from_file(src_podspec_path)  
  s.source = {  
    http: "https://s3.mycompany.org/pods/#{s.name}/#{s.version}/xcframework.zip",  
    sha256: Digest::SHA256.hexdigest(File.read(xcframework_path))  
  }  
end
```

# transform\_podspec

```
...  
  
require 'cocoapods-core'  
require 'digest'  
  
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  s = Pod::Spec.from_file(src_podspec_path)  
  s.source = {  
    http: "https://s3.mycompany.org/pods/#{s.name}/#{s.version}/xcframework.zip",  
    sha256: Digest::SHA256.hexdigest(File.read(xcframework_path))  
  }  
  s.vendored_framework = "#{s.name}.xcframework"  
end
```

# transform\_podspec

```
...  
  
require 'cocoapods-core'  
require 'digest'  
  
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  s = Pod::Spec.from_file(src_podspec_path)  
  s.source = {  
    http: "https://s3.mycompany.org/pods/#{s.name}/#{s.version}/xcframework.zip",  
    sha256: Digest::SHA256.hexdigest(File.read(xcframework_path))  
  }  
  s.vendored_framework = "#{s.name}.xcframework"  
  s.attributes_hash.delete('source_files')  
end
```

# transform\_podspec

```
...  
  
require 'cocoapods-core'  
require 'digest'  
  
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  s = Pod::Spec.from_file(src_podspec_path)  
  s.source = {  
    http: "https://s3.mycompany.org/pods/#{s.name}/#{s.version}/xcframework.zip",  
    sha256: Digest::SHA256.hexdigest(File.read(xcframework_path))  
  }  
  s.vendored_framework = "#{s.name}.xcframework"  
  s.attributes_hash.delete('source_files')  
  s.attributes_hash['platforms'].delete_if { |platform, version| platform != 'ios' }  
end
```

# transform\_podspec

```
...  
  
require 'cocoapods-core'  
require 'digest'  
  
def transform_podspec(src_podspec_path, xcframework_path, dst_podspec_path)  
  s = Pod::Spec.from_file(src_podspec_path)  
  s.source = {  
    http: "https://s3.mycompany.org/pods/#{s.name}/#{s.version}/xcframework.zip",  
    sha256: Digest::SHA256.hexdigest(File.read(xcframework_path))  
  }  
  s.vendored_framework = "#{s.name}.xcframework"  
  s.attributes_hash.delete('source_files')  
  s.attributes_hash['platforms'].delete_if { |platform, version| platform != 'ios' }  
  File.write(dst_podspec_path, s.to_pretty_json)  
end
```

# Интеграция

```
...  
  
source 'https://github.com/CocoaPods/Specs.git'  
  
platform :ios  
  
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

# Интеграция

```
...  
-source 'https://github.com/CocoaPods/Specs.git'  
+source 'https://gitlab.mycompany.org/private-specs.git'  
  
platform :ios  
  
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```



# Интеграция

```
...  
  
source 'https://gitlab.mycompany.org/private-specs.git'  
  
platform :ios  
  
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

# Интеграция

```
...  
  
source 'https://gitlab.mycompany.org/private-specs.git'  
  
platform :ios  
  
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

```
$ cd ~/Developer/Builder↵
```

# Интеграция

```
source 'https://gitlab.mycompany.org/private-specs.git'
```

```
platform :ios
```

```
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

```
cd ~/Developer/Builder  
$ bundle exec fastlane deploy_xcframework pod_name:Alamofire pod_version:5.6.4↵
```

# Интеграция

```
source 'https://gitlab.mycompany.org/private-specs.git'
```

```
platform :ios
```

```
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

```
cd ~/Developer/Builder  
bundle exec fastlane deploy_xcframework pod_name:Alamofire pod_version:5.6.4  
$ cd ~/Developer/App
```

# Интеграция

```
source 'https://gitlab.mycompany.org/private-specs.git'
```

```
platform :ios
```

```
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

```
cd ~/Developer/Builder  
bundle exec fastlane deploy_xcframework pod_name:Alamofire pod_version:5.6.4  
cd ~/Developer/App  
$ bundle exec pod update Alamofire
```

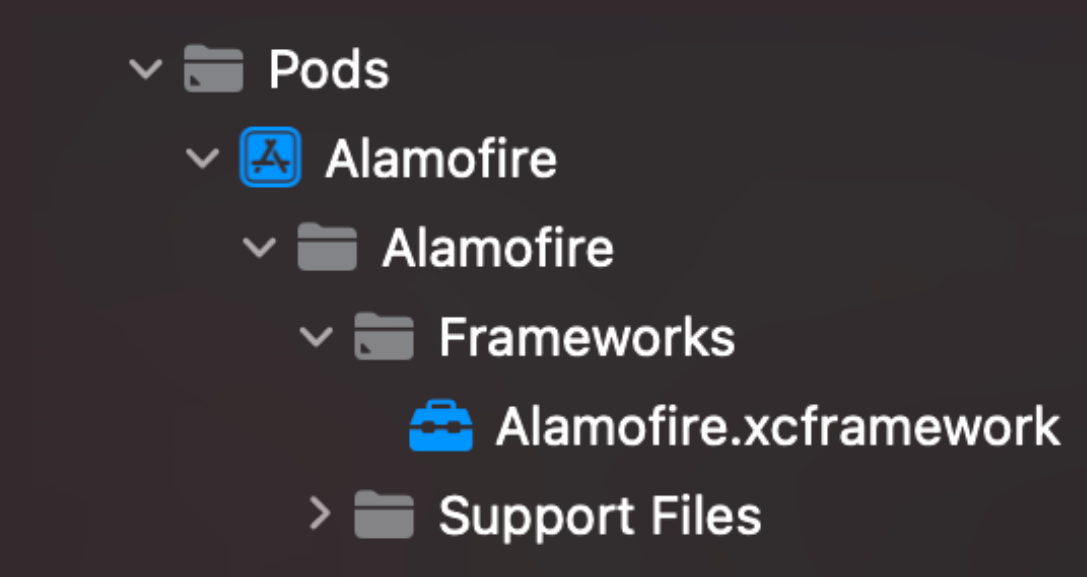
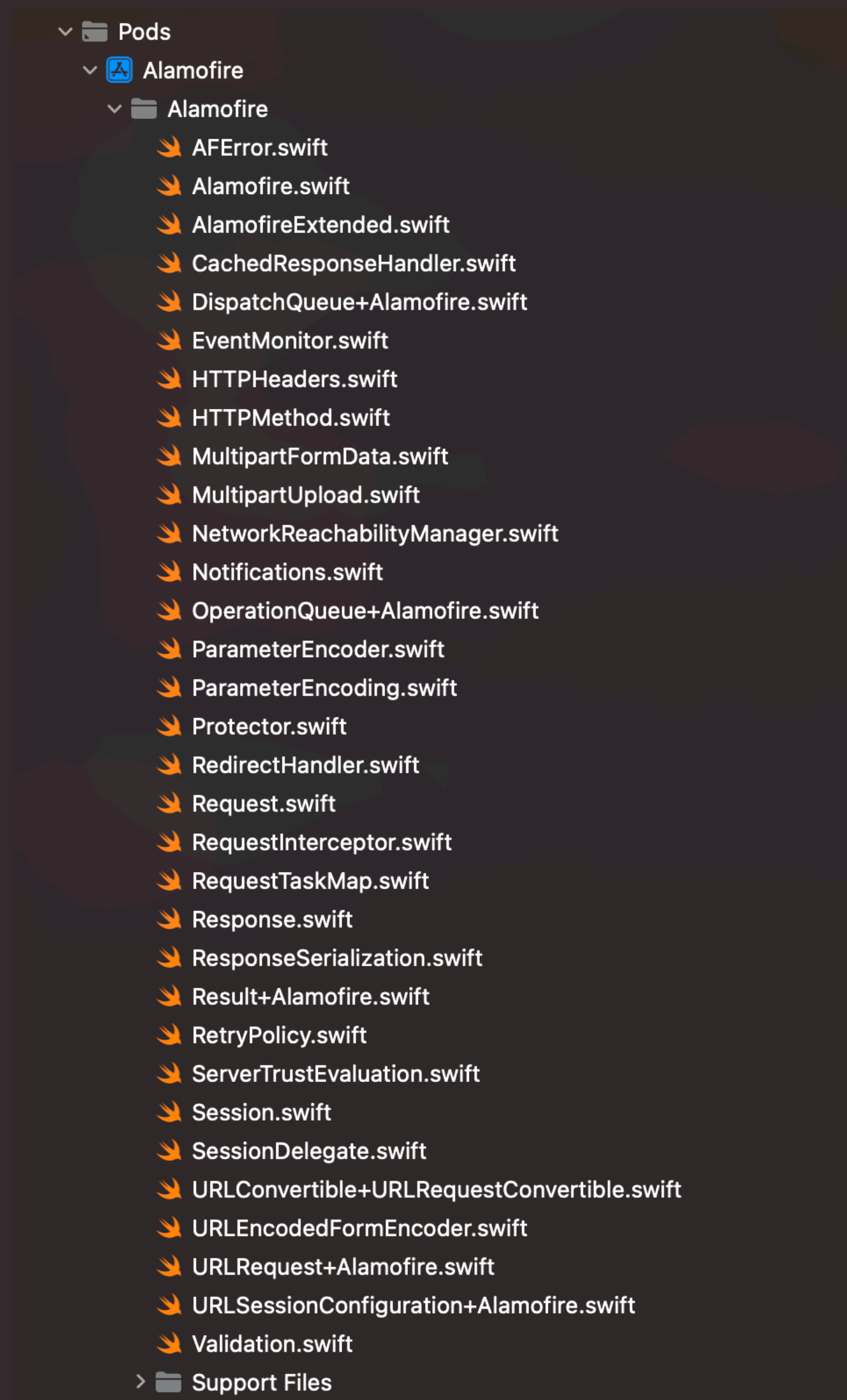
# Интеграция

```
source 'https://gitlab.mycompany.org/private-specs.git'
```

```
platform :ios
```

```
target 'App' do  
  pod 'Alamofire', '5.6.4'  
end
```

```
cd ~/Developer/Builder  
bundle exec fastlane deploy_xcframework pod_name:Alamofire pod_version:5.6.4↵  
cd ~/Developer/App  
bundle exec pod update Alamofire  
$
```



# Семантическое версионирование

**[semver.org](https://semver.org)**



# Семантическое версионирование

**1.2.3**

Патч версия (исправление багов)

# Семантическое версионирование

**1.2.3**

Минорная версия  
(обратно совместимая новая  
функциональность)

# Семантическое версионирование

**1.2.3**

Мажорная версия  
(изменения ломающие обратную  
совместимость)

# Совместимость ABI



# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework  
  
import Foundation  
  
public func hello() -> String {  
    "Hello"  
}
```

```
// PrintHello.swift  
// PrintHelloKit.xcframework  
  
import HelloKit  
  
public func printHello() {  
    print(hello())  
}
```

# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {  
    "Hello"  
}
```

**1.0.0**

```
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {  
    "Hello!"  
}
```

**?.?.?**

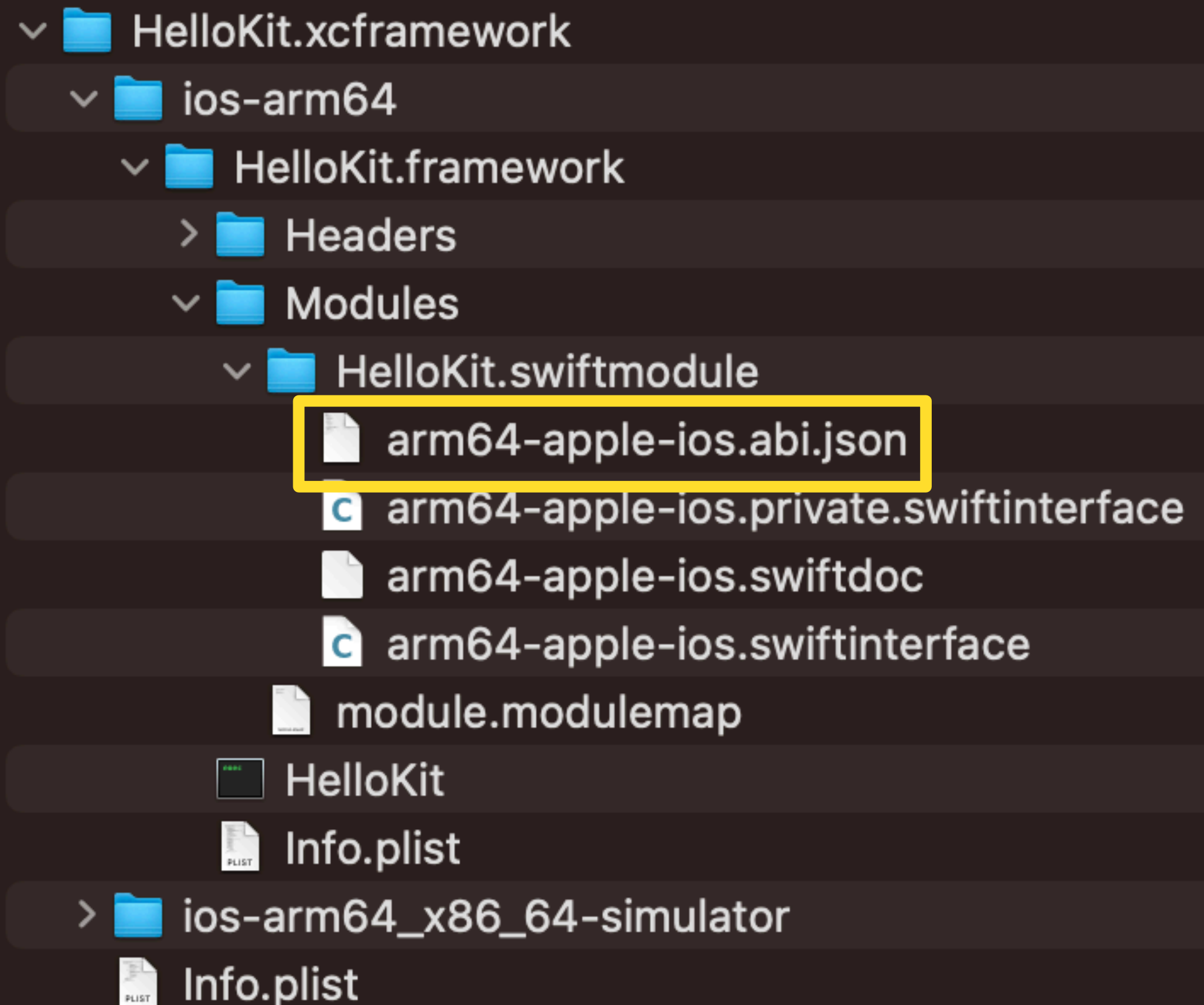
>

# Совместимость ABI



**swift-api-digester**

# Совместимость ABI





# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {  
    "Hello"  
}
```

**1.0.0**

```
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {  
    "Hello!"  
}
```

**?..?..?**

```
> xcrun swift-api-digester \  
    -diagnose-sdk \  
    -input-paths HelloKit-1.0.0.abi.json \  
    -input-paths HelloKit-?..?..?.abi.json \  
    -compiler-style-diags \  
    -abi ↵  
  
>
```

# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework  
  
import Foundation  
  
public func hello() -> String {  
    "Hello"  
}
```

**1.0.0**

```
// Hello.swift  
// HelloKit.xcframework  
  
import Foundation  
  
public func hello() -> String {  
    "Hello!"  
}
```

**1.0.1**

```
> xcrun swift-api-digester \  
    -diagnose-sdk \  
    -input-paths HelloKit-1.0.0.abi.json \  
    -input-paths HelloKit-?..?.abi.json \  
    -compiler-style-diags \  
    -abi ↵  
  
>
```

# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {  
    "Hello"  
}
```

**1.0.0**

```
// Hello.swift  
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello(_ n: String = "") -> String {  
    n.isEmpty ? "Hello!" : "Hello \n(n)!"  
}
```

**?.?.?**

>

# Совместимость ABI

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {
    "Hello"
}
```

1.0.0

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello(_ n: String = "") -> String {
    n.isEmpty ? "Hello!" : "Hello \(n)!"
}
```

?.?.?

```
> xcrun swift-api-digester \
    -diagnose-sdk \
    -input-paths HelloKit-1.0.0.abi.json \
    -input-paths HelloKit-?.?.?.abi.json \
    -compiler-style-diags \
    -abi ↵
```

```
<unknown>:0: warning: ABI breakage: func hello() has mangled name changing from
'HelloKit.hello() -> Swift.String' to 'HelloKit.hello(Swift.String) -> Swift.String'
```

```
<unknown>:0: error: ABI breakage: func hello() has been renamed to func hello(_:)
```

```
>
```

# Совместимость ABI

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {
    "Hello"
}
```

1.0.0

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello(_ n: String = "") -> String {
    n.isEmpty ? "Hello!" : "Hello \n(n)!"
}
```

2.0.0

```
> xcrun swift-api-digester \
    -diagnose-sdk \
    -input-paths HelloKit-1.0.0.abi.json \
    -input-paths HelloKit-?.?.?.abi.json \
    -compiler-style-diags \
    -abi ↵
```

```
<unknown>:0: warning: ABI breakage: func hello() has mangled name changing from
'HelloKit.hello() -> Swift.String' to 'HelloKit.hello(Swift.String) -> Swift.String'
```

```
<unknown>:0: error: ABI breakage: func hello() has been renamed to func hello(_:)
```

```
>
```

# Совместимость ABI

```
...  
dyld[91346]: Symbol not found: _$s8HelloKit5helloSSyF  
  Referenced from: <0BA53E07-C10A-37E1-995E-3715A3B223E6> <...>/PrintHelloKit.framework/PrintHelloKit  
  Expected in:      <789EB4FB-D957-3C9F-81C0-FF9D7C48EBE6> <...>/HelloKit.framework/HelloKit  
Message from debugger: Terminated due to signal 6
```

# Совместимость ABI

```
dyld[91346]: Symbol not found: _$s8HelloKit5helloSSyF
  Referenced from: <0BA53E07-C10A-37E1-995E-3715A3B223E6> <...>/PrintHelloKit.framework/PrintHelloKit
  Expected in:      <789EB4FB-D957-3C9F-81C0-FF9D7C48EBE6> <...>/HelloKit.framework/HelloKit
Message from debugger: Terminated due to signal 6
```

```
> swift demangle '_$s8HelloKit5helloSSyF' ↵
_$s8HelloKit5helloSSyF ---> HelloKit.hello() -> Swift.String
```

# Совместимость ABI

```
...  
  
// Hello.swift  
// HelloKit.xcframework  
  
import Foundation  
  
public func hello() -> String {  
    "Hello"  
}
```

1.0.0

```
// Hello.swift  
// HelloKit.xcframework  
  
public func hello() -> String {  
    hello("")  
}  
  
public func hello(_ n: String) -> String {  
    n.isEmpty ? "Hello!" : "Hello \ \(n)!"  
}
```

?.?.?

>



# Совместимость ABI

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {
    "Hello"
}
```

1.0.0

```
// Hello.swift
// HelloKit.xcframework
```

```
public func hello() -> String {
    hello("")
}
```

```
public func hello(_ n: String) -> String {
    n.isEmpty ? "Hello!" : "Hello \n(n)!"
}
```

?.?.?

```
> xcrun swift-api-digester \
    -diagnose-sdk \
    -input-paths HelloKit-1.0.0.abi.json \
    -input-paths HelloKit-?.?.?.abi.json \
    -compiler-style-diags \
    -abi ↵
```

```
<unknown>:0: warning: ABI breakage: func hello(_:) is a new API without @available attribute
>
```

# Совместимость ABI

```
// Hello.swift
// HelloKit.xcframework
```

```
import Foundation
```

```
public func hello() -> String {
    "Hello"
}
```

**1.0.0**

```
// Hello.swift
// HelloKit.xcframework
```

```
public func hello() -> String {
    hello("")
}
```

```
public func hello(_ n: String) -> String {
    n.isEmpty ? "Hello!" : "Hello \n(n)!"
}
```

**1.1.0**

```
> xcrun swift-api-digester \
    -diagnose-sdk \
    -input-paths HelloKit-1.0.0.abi.json \
    -input-paths HelloKit-?.?.?.abi.json \
    -compiler-style-diags \
    -abi ↵
```

```
<unknown>:0: warning: ABI breakage: func hello(_:) is a new API without @available attribute
>
```

# Совместимость ABI

```
spec.dependency 'HelloKit', '~> 1.0'
```

# Ограничения

# Ограничения

## 1. Фиксированный тип линковки

# Фиксированный тип линковки

use\_frameworks!

use\_frameworks! :linkage => :static

use\_frameworks! :linkage => :dynamic



# Ограничения

**1. Фиксированный тип линковки**

**2. Условная компиляция**

# Условная компиляция

```
#if os(iOS)
    // ... ✓
#endif
```

```
#if targetEnvironment(simulator)
    //... ✓
#endif
```

```
#if DEBUG
    // ... ✗
#endif
```



# Ограничения

1. Фиксированный тип линковки
2. Условная компиляция
3. `@testable import`

# @testable import

✖ Module '...' was not compiled for testing

ENABLE\_TESTABILITY=YES



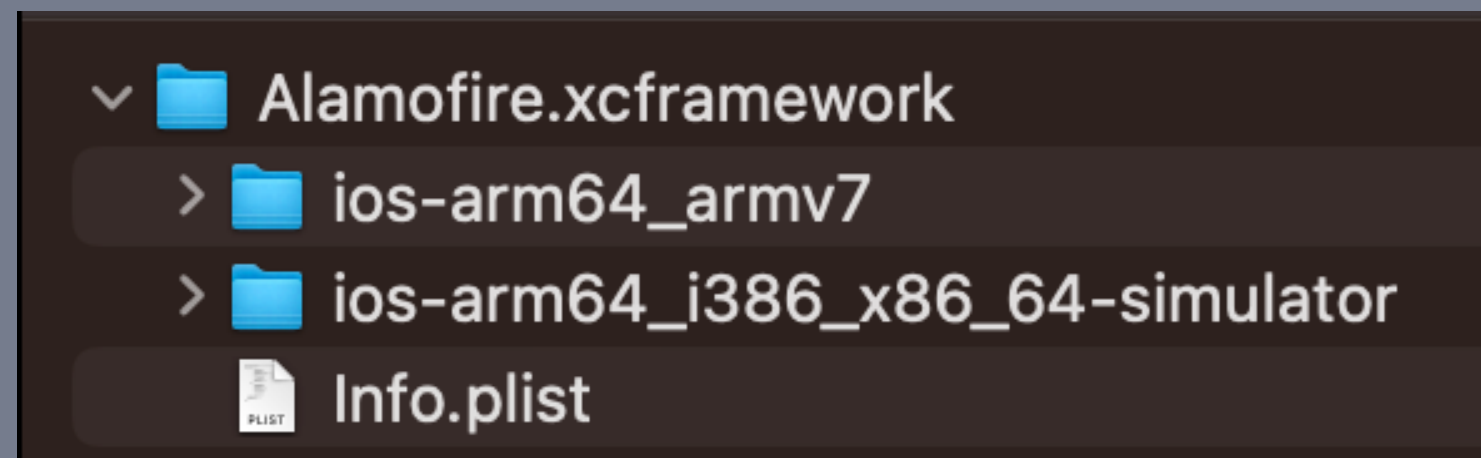
# Советы

# Советы

1. iOS  $\geq$  12.0

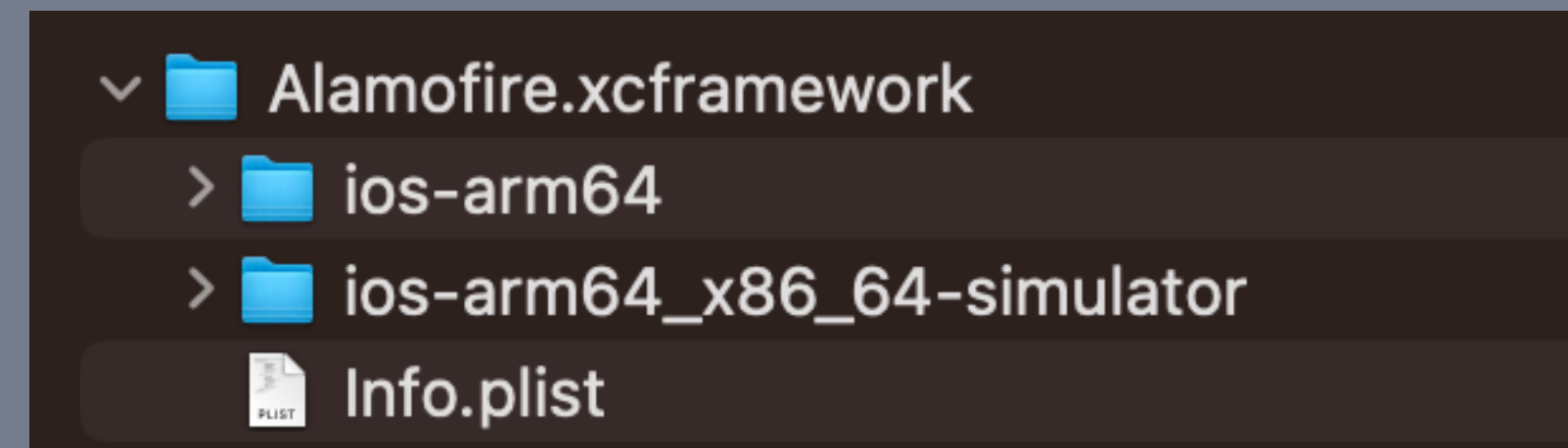
# ios >= 12.0

IPHONEOS\_DEPLOYMENT\_TARGET=11.0



43.9 MB

IPHONEOS\_DEPLOYMENT\_TARGET=12.0



25.5 MB

# Советы

1. iOS  $\geq$  12.0

2. Статическая линковка

# Советы

1. iOS  $\geq$  12.0

2. Статическая линковка

3. @frozen + @inlinable = 🚀

# Советы

1. iOS  $\geq$  12.0

2. Статическая линковка

3. @frozen + @inlinable = 

4. Именованное публичных типов (как пропатчить KDE swiftinterface)



# Именованние публичных типов (как пропатчить KDE swiftinterface)

```
extension SMEMBUnitTests.SMETestUtils where Target : XCTest.XCTestCase {  
    public func assertSnapshot(_ value: UIKit.UIView, precision: Swift.Float = 1.0, named name: Swift.String? = nil,  
        usesDrawViewHierarchyInRect: Swift.Bool = false, userInterfaceStyle: SMEMBUnitTests.SnapshotUserInterfaceStyle = .all,  
        record recording: Swift.Bool = CommandLine.isRecordMode, snapshotDirectoryPath: Swift.String? = nil, timeout:  
        Foundation.TimeInterval = 5, file: Swift.StaticString = #file, line: Swift.UInt = #line)  
}
```

⊗ 'XCTestCase' is not a member type of class 'XCTest.XCTest'

 fix-swiftinterface-SMEMBUnitTests.yml  251 bytes

```
1 - replace: XCTest\XC  
2   with: XC  
3 - replace: FBSnapshotTestCase\FBSnapshotTestCase  
4   with: FBSnapshotTestCase  
5   # 'NSInvocation' is unavailable in Swift: NSInvocation and related APIs not available  
6 - replace: '[^\n]+\.\NSInvocation[^\n]+\n'  
7   with: ''  
8
```

# Именованние публичных типов (как пропатчить KDE swiftinterface)

```
775 [16:53:34]: ▶ extension SMEMBUnitTests.SMETestUtils where Target : [-XCTest.XCTestCase-]{+XCTestCase+} {
776 [16:53:34]: ▶ public func assertSnapshot(_ value: [-XCTest.XCUICollection,-]{+XCUICollection,+} precision: Swift.Float = 1.0, named name: Swift.String? = nil, record
    recording: Swift.Bool = CommandLine.isRecordMode, snapshotDirectoryPath: Swift.String? = nil, timeout: Foundation.TimeInterval = 5, file: Swift.StaticString = #f
    ile, line: Swift.UInt = #line)
777 [16:53:34]: ▶ }
778 [16:53:34]: ▶ @objc @_inheritsConvenienceInitializers open class BaseSnapshotUnitTest : [-FBSnapshotTestCase.FBSnapshotTestCase-]{+FBSnapshotTestCase+} {
779 [16:53:34]: ▶ @objc public var window: UIKit.UIWindow! {
780 [16:53:34]: ▶ get
781 [16:53:34]: ▶ }
782 [16:53:34]: ▶ @@ -55,14 +55,12 @@ extension SMEMBUnitTests.SMETestUtils where Target : XCTestCase {
783 [16:53:34]: ▶ @objc public func hideKeyboard()
784 [16:53:34]: ▶ public func verifyView(_ view: UIKit.UIView, identifier: Swift.String = "", file: Swift.StaticString = #file, line: Swift.UInt = #line)
785 [16:53:34]: ▶ public func verifyViewController(_ viewController: UIKit.UIViewController, identifier: Swift.String = "", file: Swift.StaticString = #file, line:
    Swift.UInt = #line)
786 [16:53:34]: ▶ [- @objc override dynamic public init(invocation: Foundation.NSInvocation?)-]
787 [16:53:34]: ▶ @objc override dynamic public init(selector: ObjectiveC.Selector)
788 [16:53:34]: ▶ @objc override dynamic public init()
789 [16:53:34]: ▶ @objc deinit
790 [16:53:34]: ▶ }
791 [16:53:34]: ▶ @objc @_inheritsConvenienceInitializers open class BaseUnitTest : [-XCTest.XCTestCase-]{+XCTestCase+} {
792 [16:53:34]: ▶ @objc override dynamic open func setUp()
793 [16:53:34]: ▶ [- @objc override dynamic public init(invocation: Foundation.NSInvocation?)-]
794 [16:53:34]: ▶ @objc override dynamic public init(selector: ObjectiveC.Selector)
795 [16:53:34]: ▶ @objc override dynamic public init()
796 [16:53:34]: ▶ @objc deinit
```

# Именованние публичных типов (как пропатчить KDE swiftinterface)

<https://github.com/apple/swift/pull/61941>

apple / swift Public

Watch 2.5k Fork 10k Star 62.4k

Code Issues 5k+ Pull requests 683 Security Insights

## [ModuleInterface] Avoid ambiguities in swiftinterfaces by writing aliases for module names #61941

Code

Merged xymus merged 7 commits into apple:main from xymus:module-alias-disambiguate on Nov 7, 2022

# Советы

1. iOS  $\geq$  12.0
2. Статическая линковка
3. @frozen + @inlinable = 🚀
4. Именованное публичных типов  
(как пропатчить KDE  
swiftinterface)
5. На swift-api-digester надейся,  
а сам не плошай

# На swift-api-digester надейся, а сам не плошай

```
public final class A {  
    public init() {}  
}
```



```
public final class A {  
    public init(x: Int) {}  
  
    public convenience init() {  
        self.init(x: 0)  
    }  
}
```

<unknown>:0: **warning:** ABI breakage: constructor A.init(x:) is a new API without @available attribute

**Применяем на практике**

# Публикация сторонних модулей

## lottie-ios 3.4.3

[Edit](#)[Code ▾](#)

Merged **Ерохин Сергей** requested to merge [s.erokhin/external-podspec...](#) into [master](#) 3 months ago

Overview **0** Commits **1** Pipelines **1** **Changes 1**

Compare [master ▾](#) and [latest version ▾](#)

1 file **+3 -0**



Search (e.g. \*.vue) (⌘P)

BuildConfig/Unreleased/lottie-ios

**3.4.3.yml** **+3 -0**

▾ **BuildConfig/Unreleased/lottie-ios/3.4.3.yml** 0 → 100644

**+3 -0** ☐ Viewed



```
1 + subspecs: []
2 + platforms:
3 +   - ios
```

# Публикация сторонних модулей

Pipeline

Needs

Jobs 5

Tests 0

build



xcframework:lottie-ios:3.4.3

deploy



s3:lottie-ios:3.4.3

lint



lint:lottie-ios:3.4.3

release



podspec-release



# Проверка совместимости ABI

## lint

✓ danger ↻

✓ rubocop ↻

✓ spec:smecards ↻

✓ yamllint ↻

## build

✓ build-tests:smecards ↻

✓ xcframework:smecards ↻

## test

✗ check-abi:smecards ↻

✓ test:smecards ↻

## publish

✓ abi-breakage-report ↻

✓ allure-s3 ↻

Changelog/SMECards/Unreleased/SMECARD-2892.yml0 → 100644+6 -0Viewed

1

+ ---

2

+ ticket: SMECARD-2892

3

+ bump\_type patch

4

+ changelog\_section added

5

+ title: Move to issueConditionsV3 additionally to UPI

6

+ author: a.g.sidenko

lint

- ✓

danger

↺
- ✓

rubocop

↺
- ✓

spec:smecards

↺
- ✓

yamllint

↺

build

- ✓

build-tests:smecards

↺
- ✓

xcframework:smecards

↺

test

- ✗

check-abi:smecards

↺
- ✓

test:smecards

↺

publish

- ✓

abi-breakage-report

↺
- ✓

allure-s3

↺

Changelog/SMECards/Unreleased/SMECARD-2892.yml 0 → 100644 +6 -0 Viewed

```
1 + ---
2 + ticket: SMECARD-2892
3 + bump_type: patch
4 + changelog_section: added
5 + title: Move to issueConditionsV3 additionally to UPI
6 + author: a.g.sidenko
```

 danger 



 rubocop

spec:smecards

 yamllint 

✓ build-tests:smecards ↺

xcframework:smecards

 check-abi:smecards 

test:smearns

abi-breakage-report

allure-s3

```

3626 [17:36:19]: -----
3627 [17:36:19]: --- Step: swift_api_diff ---
3628 [17:36:19]: -----
3629 [17:36:19]: $ xcrun swift-api-digester -diagnose-sdk -input-paths '/var/folders/hf/r9_cj_3s3hlgrt6v5wdwyjl80000gp/T/d20230412-88704-z
98nia/abi-iphonesimulator.json' -input-paths '/Users/ios_builder_65/gitlab-runner/builds/T_BTynSh/0/sme-ios/smeplatformmonorepo/output/
abi-iphonesimulator.json' -disable-fail-on-error -compiler-style-diags -abi 2>/var/folders/hf/r9_cj_3s3hlgrt6v5wdwyjl80000gp/T/d2023041
2-88704-1uws\xy/breakage-report.log
3630 [17:36:19]: ▶ ⚠️ ABI breakage: var CardsFeature.issueConditionsV3 is a new API without @available attribute
3631 +-----+
3632 |                               Lane Context                               |
3633 +-----+
3634 | DEFAULT_PLATFORM      | ios |
3635 | PLATFORM_NAME         |     |
3636 | LANE_NAME             | check_abi_changes |
3637 | KEYCHAIN_PATH         | ~/Library/Keychains/fastlane_tmp_keychain |
3638 | ORIGINAL_DEFAULT_KEYCHAIN | "/Users/ios_builder_65/Library/Keychains/login.keychain-db" |
3639 +-----+
3640 [17:36:19]: Wrong bump_type 'patch' specified for SMECards. Suitable bump_type is 'minor'.

```

Changelog/SMECards/Unreleased/SMECARD-2892.yml0 → 100644+6 -0Viewed

1

+ ---

2

+ ticket: SMECARD-2892

3

+ bump\_type: patch

4

+ changelog\_section: added

5

+ title: Move to issueConditionsV3 additionally to UPI

6

+ author: a.g.sidenko

Service bot @group\_6028\_bot · 3 days agoDeveloper

ABI breakage detected

= minor, = major

ABI breakage can be avoided in some cases (see [documentations](#))

SMECards (1 change)

ABI breakage: var CardsFeature.issueConditionsV3 is a new API without @available attribute

Generated by Danger

lintbuildtestpublish

✓ danger

✓ rubocop

✓ spec:smeCards

✓ yamllint

✓ build-tests:smeCards

✓ xcframework:smeCards

✗ check-abi:smeCards

✓ test:smeCards

✓ abi-breakage-report

✓ allure-s3

```
3626 [17:36:19]: -----
3627 [17:36:19]: --- Step: swift_api_diff ---
3628 [17:36:19]: -----
3629 [17:36:19]: $ xcrun swift-api-digester -diagnose-sdk -input-paths '/var/folders/hf/r9_cj_3s3hlgrrt6v5wdwyjl80000gp/T/d20230412-88704-z98nia/abi-iphonesimulator.json' -input-paths '/Users/ios_builder_65/gitlab-runner/builds/T_BTynSh/0/sme-ios/smeplatformmonorepo/output/abi-iphonesimulator.json' -disable-fail-on-error -compiler-style-diags -abi 2>/var/folders/hf/r9_cj_3s3hlgrrt6v5wdwyjl80000gp/T/d20230412-88704-1uwslyx/breakage-report.log
3630 [17:36:19]: > ⚠️ ABI breakage: var CardsFeature.issueConditionsV3 is a new API without @available attribute
3631 +-----+-----+
3632 |                                     Lane Context                                     |
3633 +-----+-----+
3634 | DEFAULT_PLATFORM      | ios |
3635 | PLATFORM_NAME         |     |
3636 | LANE_NAME              | check_abi_changes |
3637 | KEYCHAIN_PATH          | ~/Library/Keychains/fastlane_tmp_keychain |
3638 | ORIGINAL_DEFAULT_KEYCHAIN | "/Users/ios_builder_65/Library/Keychains/login.keychain-db" |
3639 +-----+-----+
3640 [17:36:19]: Wrong bump_type 'patch' specified for SMECards. Suitable bump_type is 'minor'.
```

Changelog/SMECards/Unreleased/SMECARD-2892.yml0 → 100644+6 -0Viewed

```
1 + ---
2 + ticket: SMECARD-2892
3 + bump_type patch
4 + changelog_entry: added
5 + title: Move to issueConditionsV3 additionally to UPI
6 + author: a.g.sidenko
```

Service bot @group\_6028\_bot · 3 days agoDeveloper

ABI breakage detected

= minor, = major

ABI breakage can be avoided in some cases (see [documentations](#))

SMECards (1 change)

ABI breakage: var CardsFeature.issueConditionsV3 is a new API without @available attribute

Generated by Danger

lint

danger

rubocop

spec:smecards

yamllint

build

build-tests:smecards

xcframework:smecards

test

check-abi:smecards

test:smecards

publish

abi-breakage-report

allure-s3

```
3626 [17:36:19]: -----
3627 [17:36:19]: --- Step: swift_api_diff ---
3628 [17:36:19]: -----
3629 [17:36:19]: $ xcrun swift-api-digester -diagnose-sdk -input-paths '/var/folders/hf/r9_cj_3s3hlgtrt6v5wdwyjl80000gp/T/d20230412-88704-z98nia/abi-iphonesimulator.json' -input-paths '/Users/ios_builder_65/gitlab-runner/builds/T_BTynSh/0/sme-ios/smeplatformmonorepo/output/abi-iphonesimulator.json' -disable-fail-on-error -compiler-style-diags -abi 2>/var/folders/hf/r9_cj_3s3hlgtrt6v5wdwyjl80000gp/T/d20230412-88704-1uwslyx/breakage-report.log
3630 [17:36:19]: > ABI breakage: var CardsFeature.issueConditionsV3 is a new API without @available attribute
3631 +-----+
3632 |                               Lane Context                               |
3633 +-----+
3634 | DEFAULT_PLATFORM      | ios |
3635 | PLATFORM_NAME         |     |
3636 | LANE_NAME              | check_abi_changes |
3637 | KEYCHAIN_PATH          | ~/Library/Keychains/fastlane_tmp_keychain |
3638 | ORIGINAL_DEFAULT_KEYCHAIN | "/Users/ios_builder_65/Library/Keychains/login.keychain-db" |
3639 +-----+
3640 [17:36:19]: Wrong bump_type 'patch' specified for SMECards. Suitable bump_type is 'minor'.
```

# Релизный пайплайн

lint

✓ spec:smecards



build

✓ build-tests:smecards



✓ xcframework:smecards



test

✓ check-abi:smecards



✓ test:smecards



deploy

✓ xcframework-to-s3:smecards



release

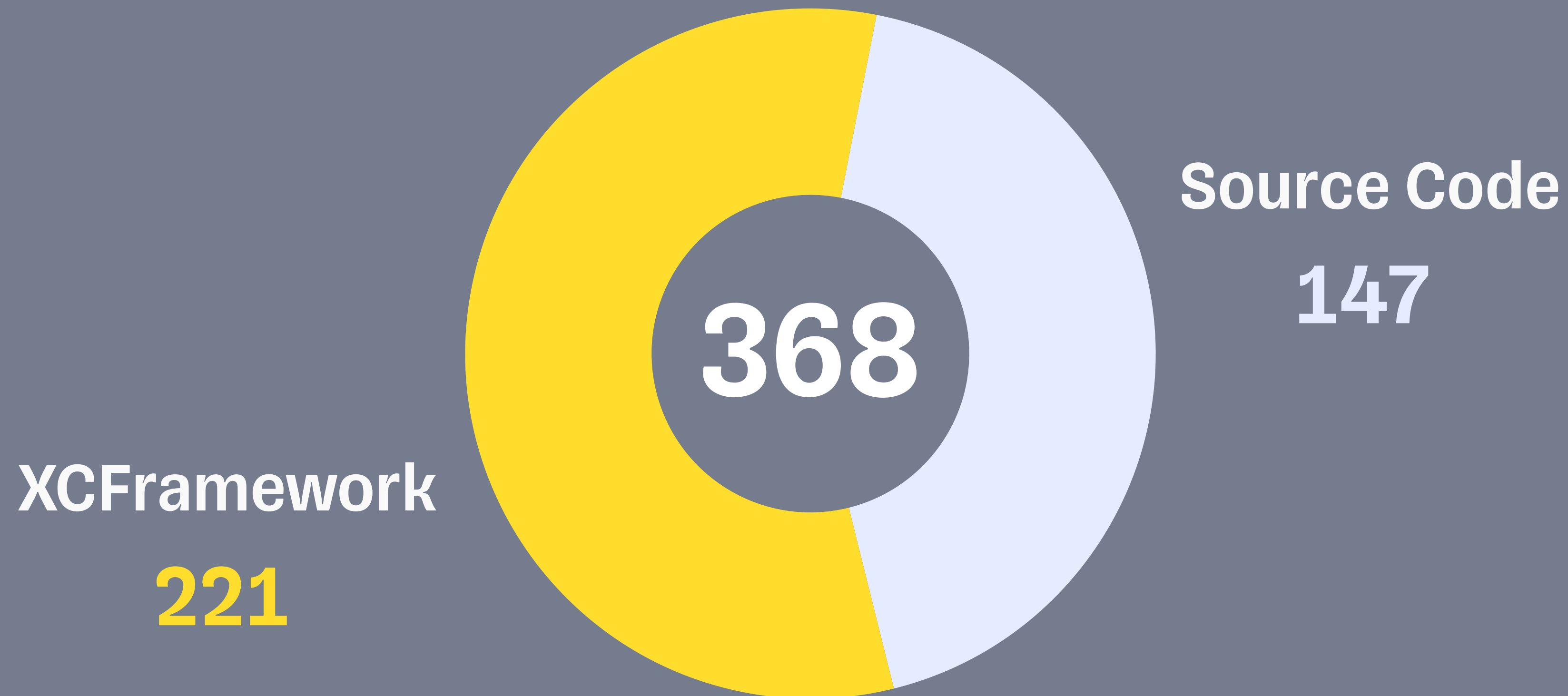
✓ publish-podspec



# Что стало с проектом

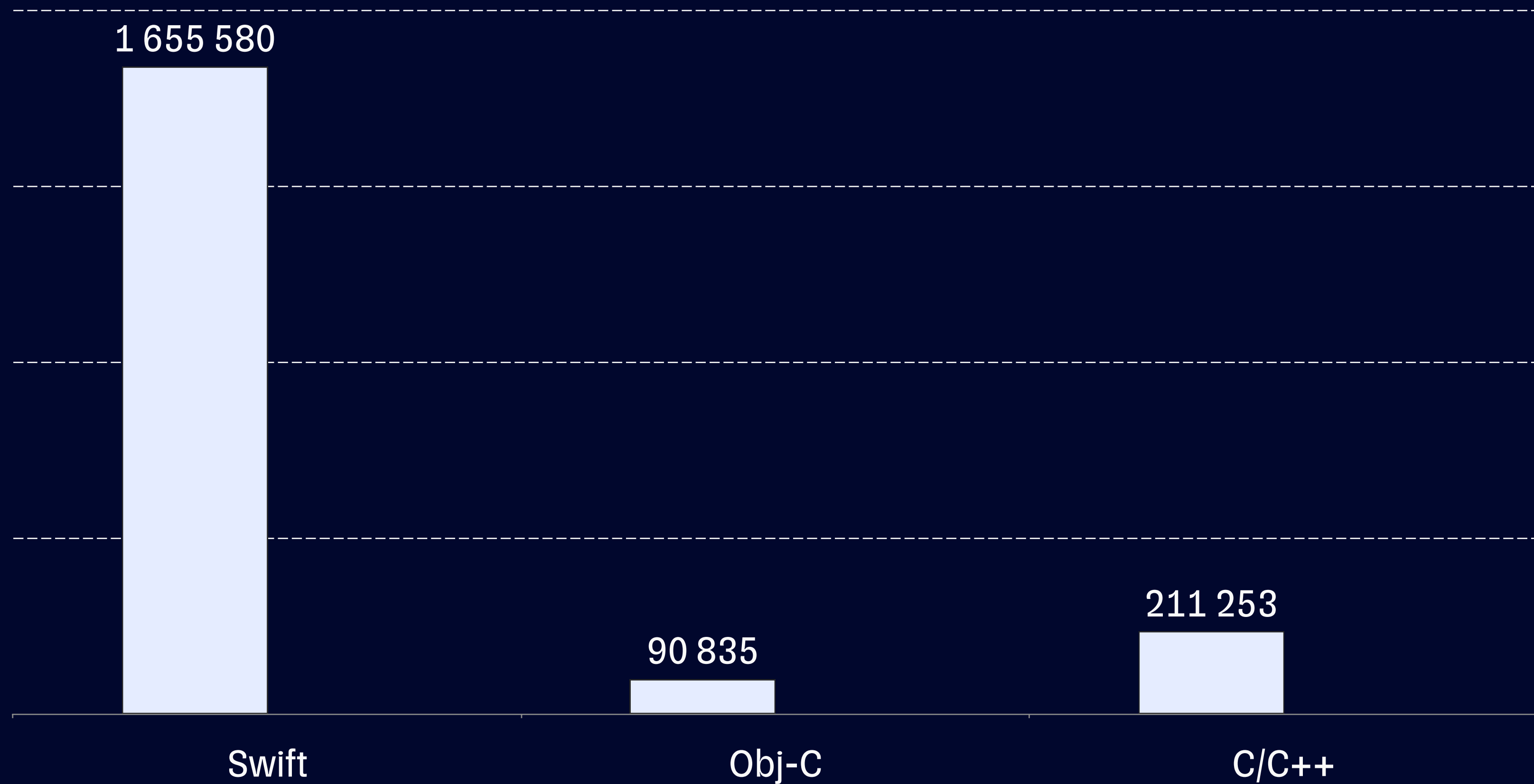


# Модули

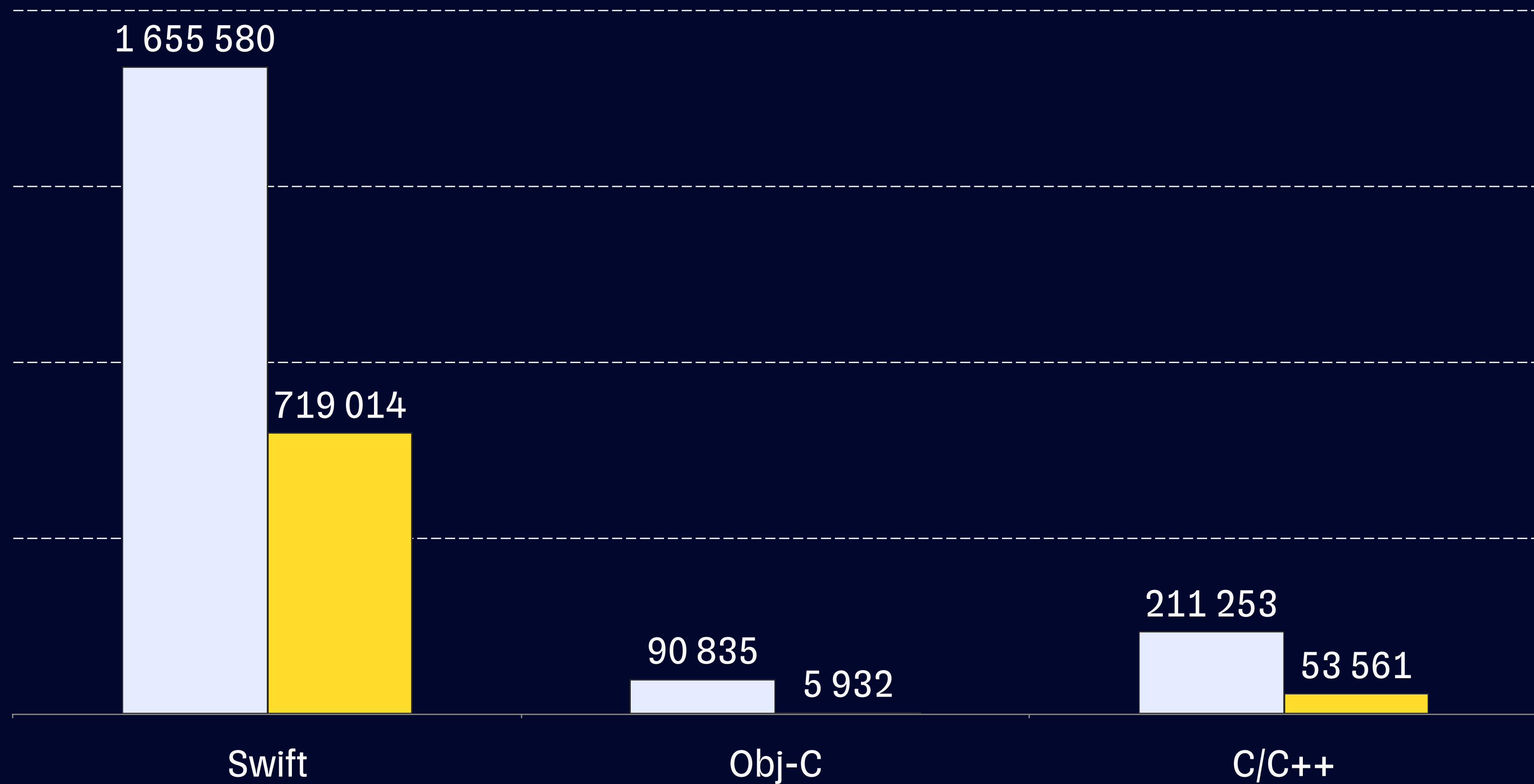




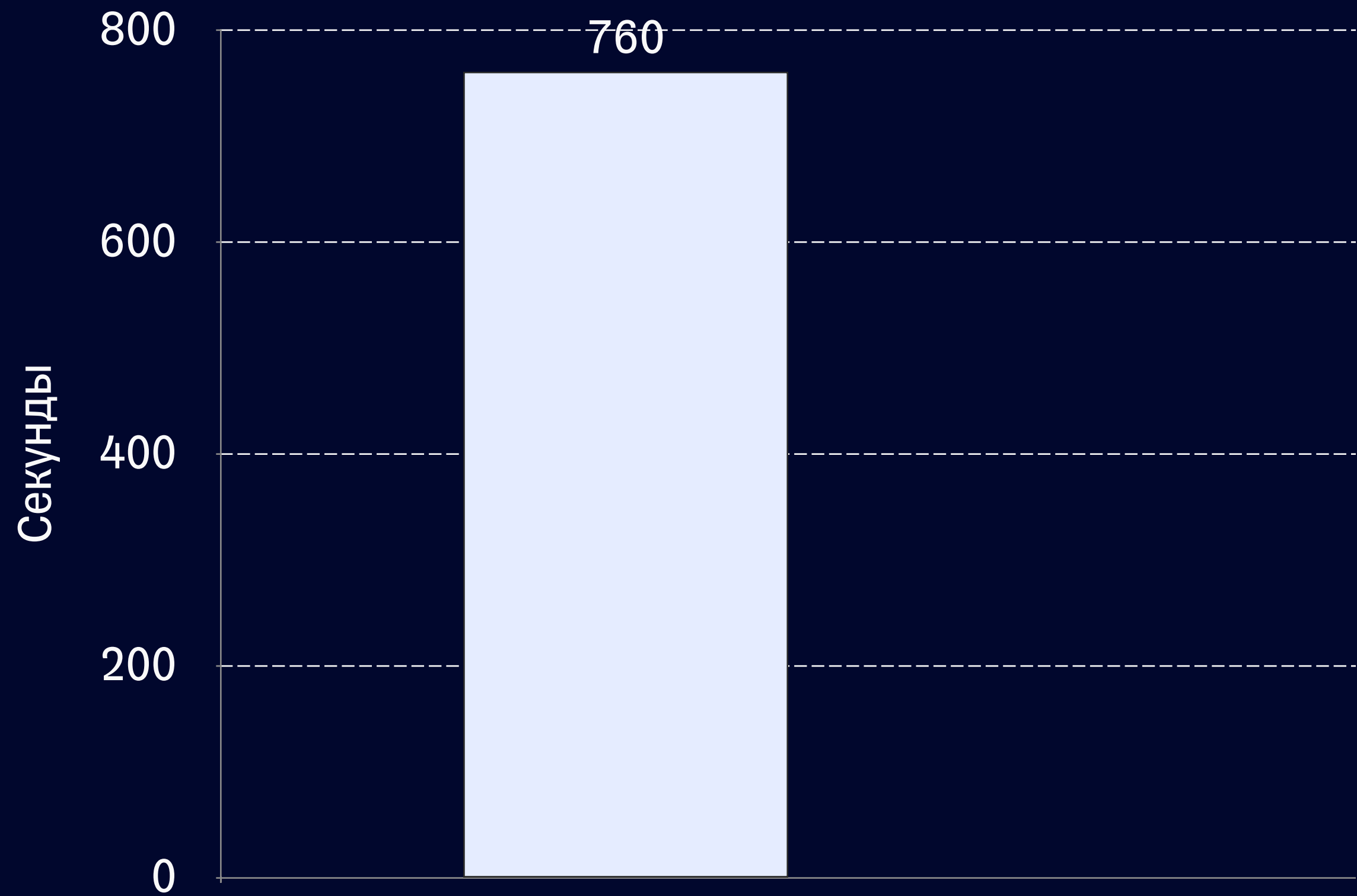
# Количество строк кода



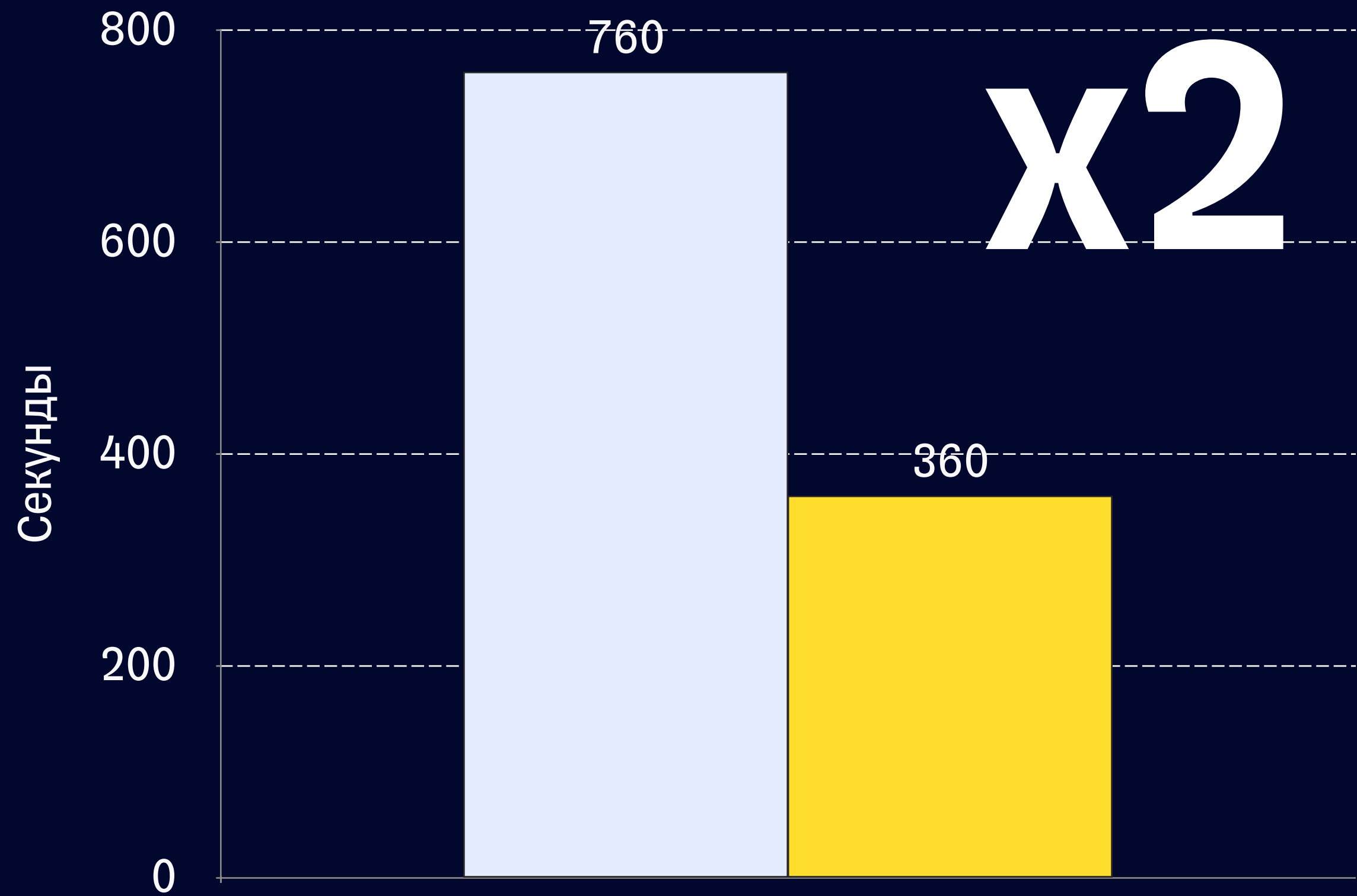
# Количество строк кода



# Холодная сборка



# Холодная сборка





Полезные  
ССЫЛКИ



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