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Xamarin

Intro to WatchKit using Xamarin

Yay advertising!

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The Xamarin devs r0x0r!

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March 6, 2015

Like Clockwork, Xamarin Releases Watch Kit Support

By Miguel de Icaza

We're very excited to announce official support for Apple's just-released Watch Kit.

To start building Watch apps with Xamarin immediately:

- Download the official Xcode 6.2 release from Apple.
- Update **Xamarin.iOS** to the latest version.

What you can do

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- Three primary Apple Watch interactions
  - WatchKit Application
  - Glances
  - Actionable Notifications
- Digital crown (scrolling only at the moment)
- Tap gestures
- Annnnnnd…

Force ~~Choke~~ Touch

* http://developer.xamarin.com/guides/ios/watch/controls/menu/

WatchKit Apps

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- Full screen user interface
- Able to launch and fully interact with UI
- One or more screens

Glances

- Timely read-only information
- Quick and lightweight view of your app
- Does not scroll
- Tapping a glance launches your WatchKit app
- Think of it as a widget

Actionable Notifications

- Quick view information of your app
- Take action right from the notification
- Short-Look interface
  - Does not scroll
  - Can not be customized, system template
- Long-Look interface
  - Scrollable
  - Can use customized interface, but not required

What you can't do

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- The App/Extension will not run without an active connection to an iPhone
- You cannot route notifications to the Watch only, or the iPhone only
- No access to the sensors and/or hardware on the Apple Watch
  - Taptic/Vibration
  - Sound
  - Digital Crown (scrolling only)
- The APIs that allow the Watch to control iTunes on the connected phone are private

What you can't do…continued

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- There is no access to the display graphics context on the Watch
  - You can use Core Graphics to render a bitmap, but it is expensive
  - The Watch App has a 20MB image cache (this limit cannot be changed, and must be managed by the developer)
- Apple will not allow 3rd-party custom watch faces.
- Watch Kit Extensions cannot perform any processing after being deactivated
  - Any pending asynchronous functions (e.g., data loading) will not execute.
  - Watch Kit Extensions cannot use background execution

Really???

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Trust Apple…more to come later in 2015

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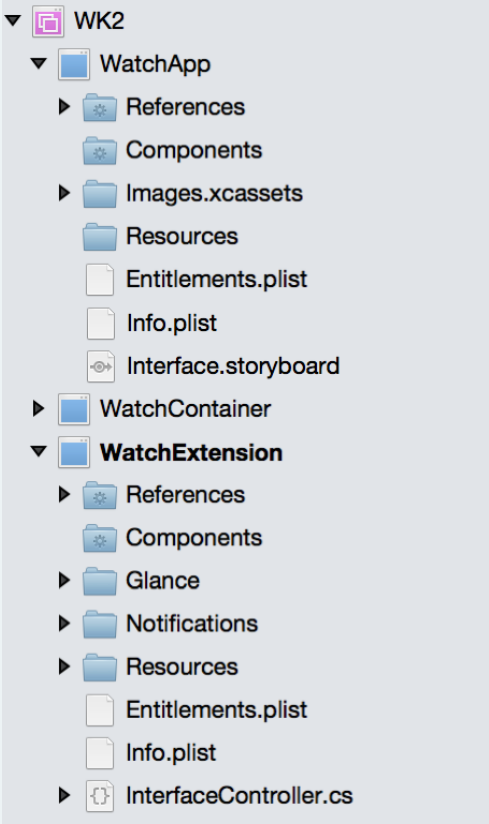
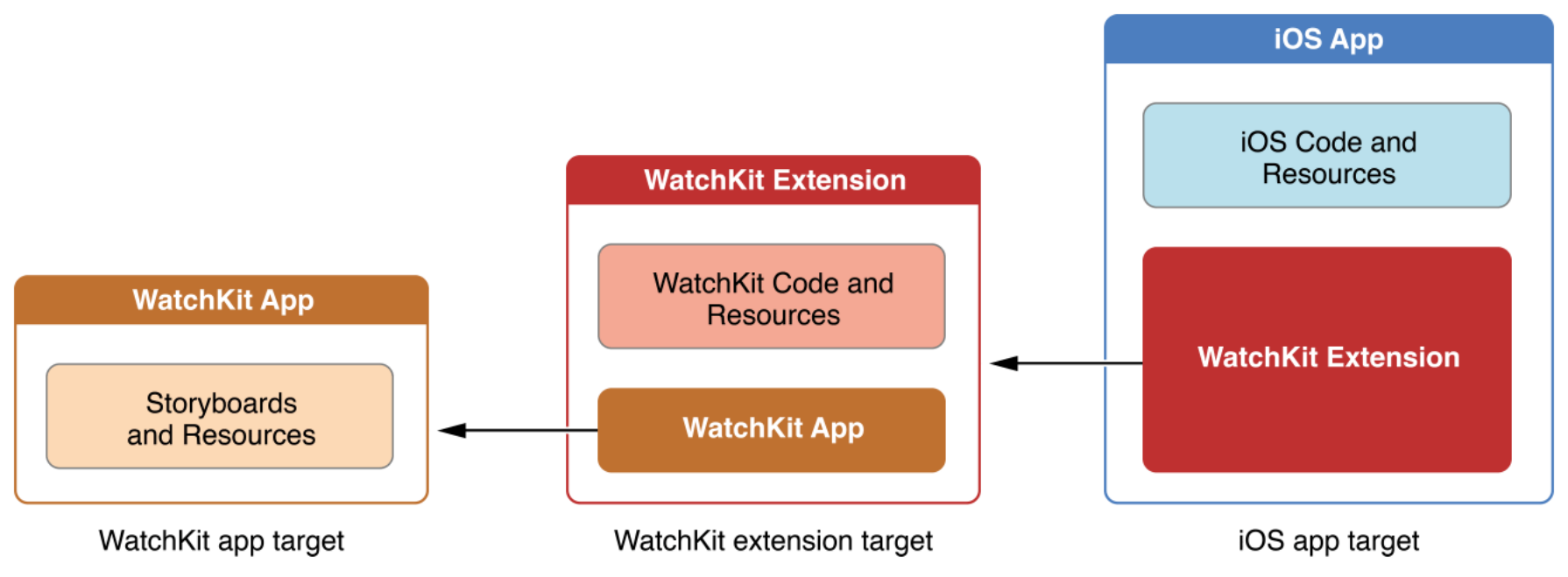
But really, come on now…

Solution Architecture

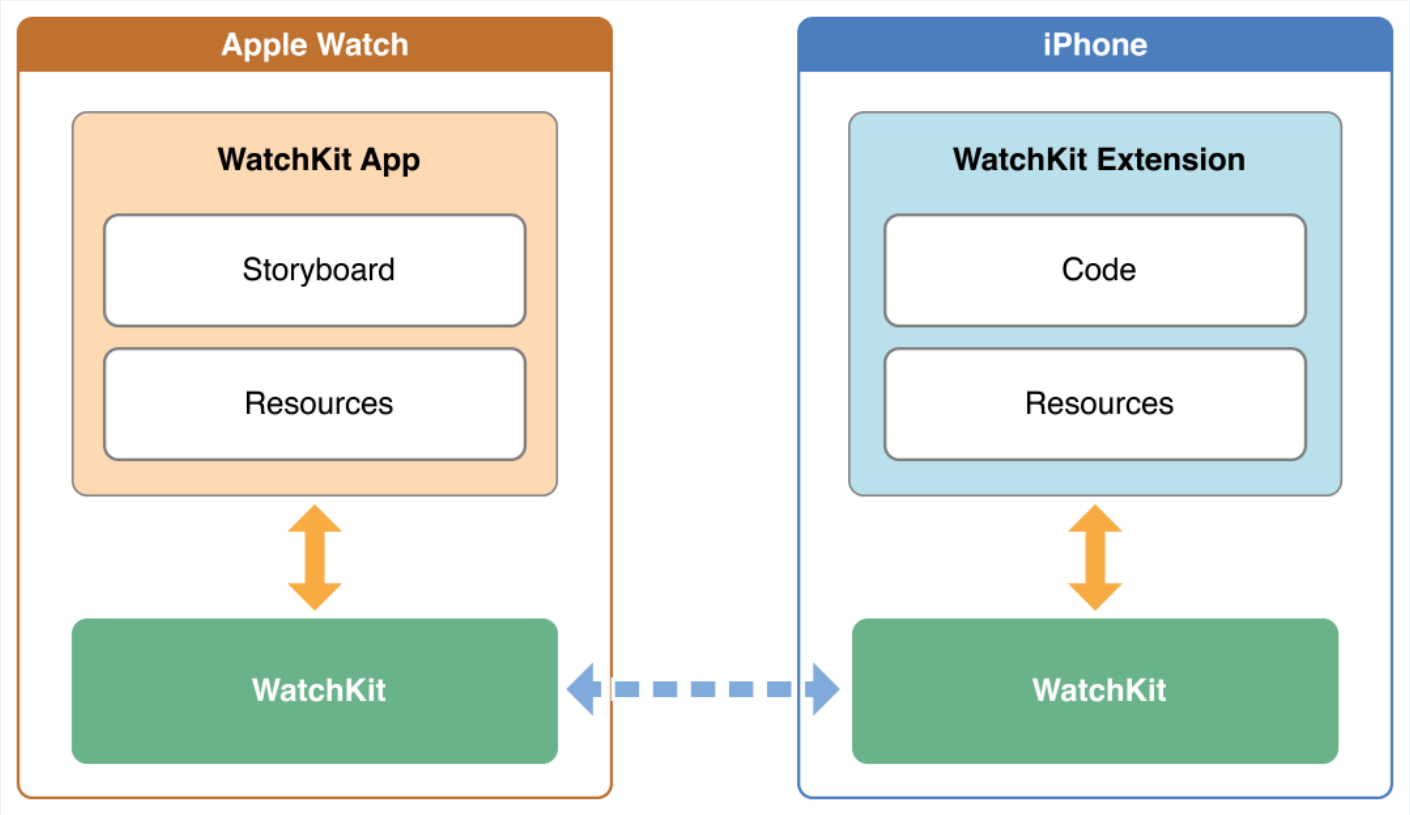
- Watch Container/Parent app
- Watch Extension
- Watch Application



Solution Architecture



Solution Architecture



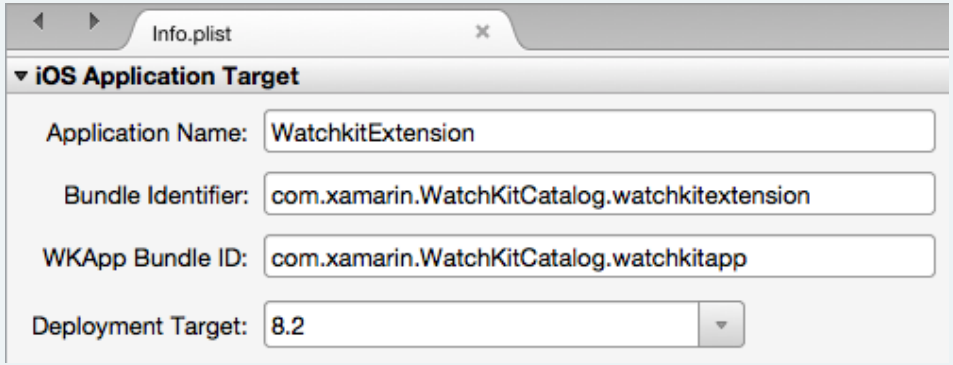
Solution Architecture

About Watch Kit

- iOS "Parent or Container" App
  - Watch Extension
  - Watch App (delivered to watch)
- Watch Extension and App communicate!
  - Code runs in Extension on iPhone
  - UI (storyboard, images) is loaded on the watch itself

Solution Architecture

- References
  - iPhone app references Watch **Extension**
  - Watch Extension references Watch **App**
- Bundle IDs



WKInterfaceController

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- Serves the same purpose as a View Controller in iOS
  - Presents and manages content on the screen
  - Responds to user interaction
- Unlike a View Controller, it does not manage the View
  - Handled by WatchKit

Leveraging iOS Technologies

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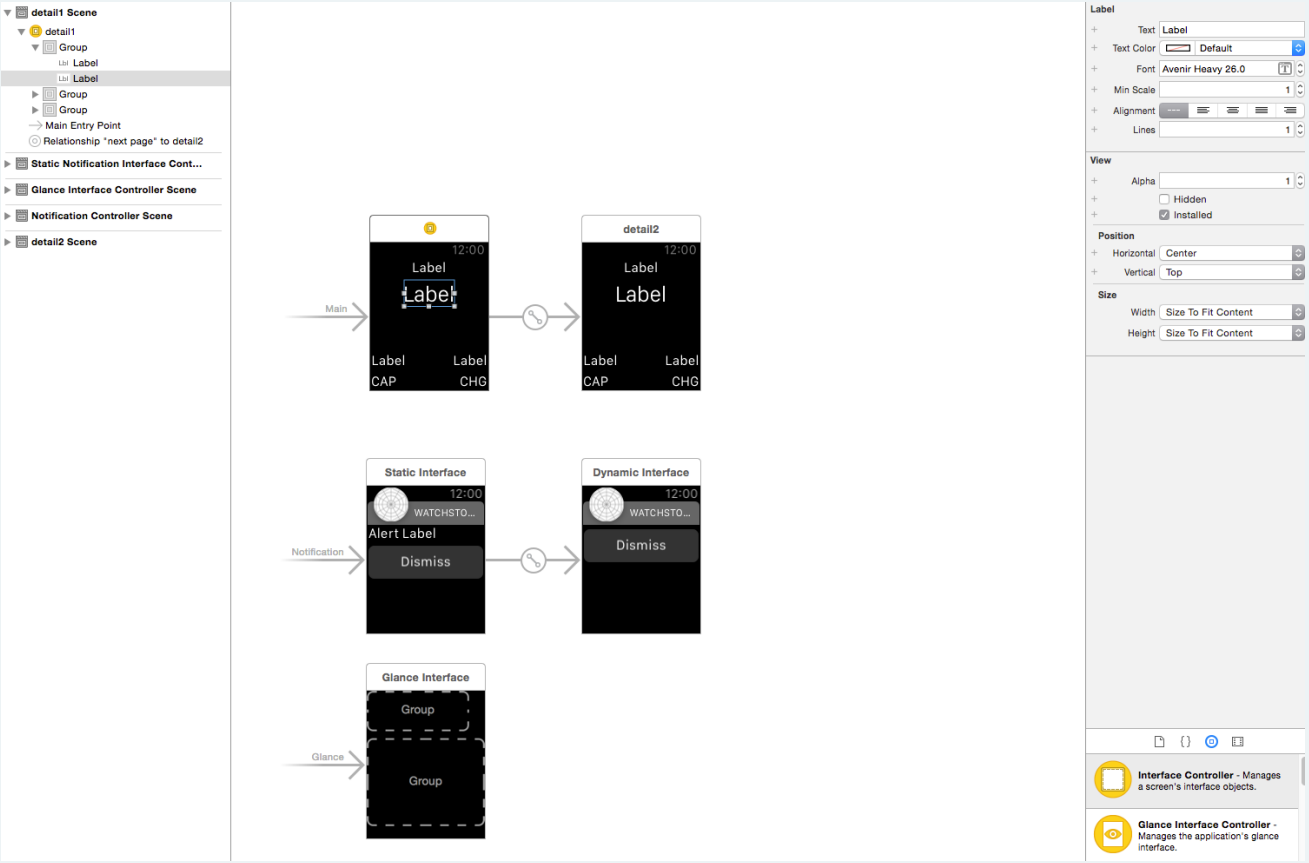
- Use of some iOS technologies may be restricted
- Some general guidelines:
  - Avoid using technologies that request user permission (e.g. Core Location)
  - Do not use background execution modes for a technology
  - Avoid performing long-running tasks with a technology
    - Perform any long-running tasks on your iOS app

Creating the User Interface

Xcode-Beta Interface Builder



Xamarin.iOS Designer

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Xamarin Studio File Edit View Search Project Build Run Version Control Tools Window Help

WatchApp - Interface.storyboard* - Xamarin Studio

Debug | iPhone 5s iOS 8.2 | Project saved. | Press '⌘.' to search

Unit Tests

Solution

- WatchBlog
  - WatchApp
    - References
    - Components
    - Resources
    - Entitlements.plist
    - Info.plist
    - Interface.storyboard
  - WatchBlog
  - **WatchExtension**
    - References
    - Components
    - Resources
    - Entitlements.plist
    - GlanceController.cs
    - Info.plist
    - InterfaceController.cs
    - ModalIC.cs
    - MyModalInterfaceController.cs
    - NotificationController.cs
    - PushedIC.cs
    - PushNotificationPayload.json

Interface.storyboard

Any Apple Watch | ZOOM

12:00
My First Watch
Push
Interface Contr...

12:00
Show Modal
Interface Contr...

12:00
Hello Watch!

Toolbox

Controls

- Button
- Date
- Group

Properties | Document Outline

Widget | Layout | Events

Identity

Class: MyModalInterfaceController
Localization ID: 60

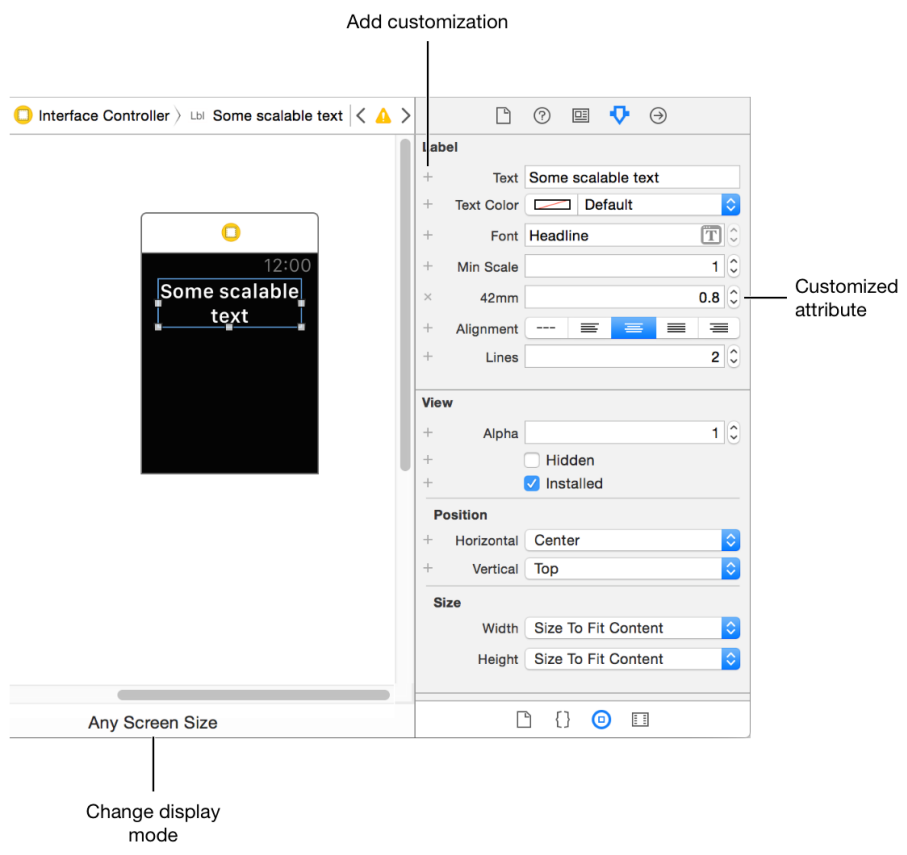
Interface Controller

Identifier:
Title:

Background: No Image
Mode: Scale To Fill
Animate: No
Color: Default

Errors | Tasks

Differences



Assembling Your Storyboard Scenes

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- WatchKit does not use the same layout model as iOS
- Xcode positions the items for you
  - Stacking UI elements vertically on different lines
- At runtime, WatchKit takes UI elements and lays them out for you based on the available space
- Size and position of most items can be configured using the Attributes inspector
- Groups are the primary tool for positioning items (horizontal and vertical positioning)

Assembling Your Storyboard Scenes

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- *** IMPORTANT ***
- You cannot dynamically add objects at runtime
- You can hide objects
- All objects need to be created through the Interface Builder / Xamarin.iOS Designer
- An app can only have one Glance interface controller

Available Interface Elements

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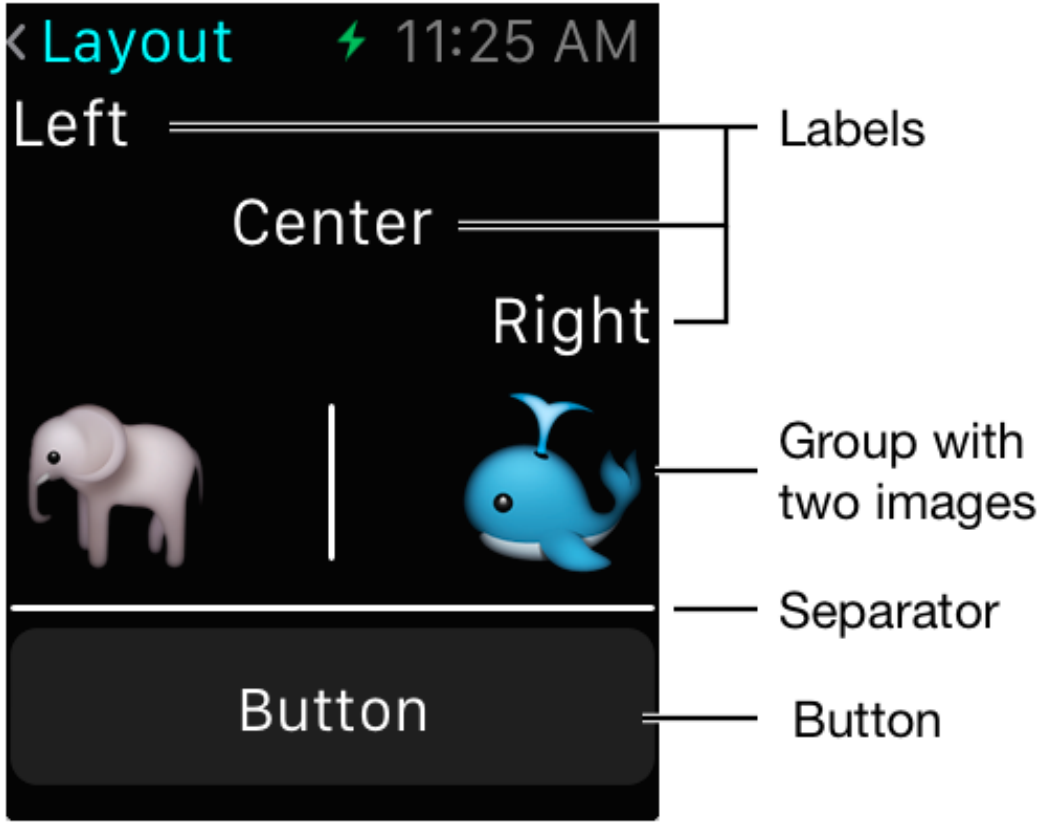
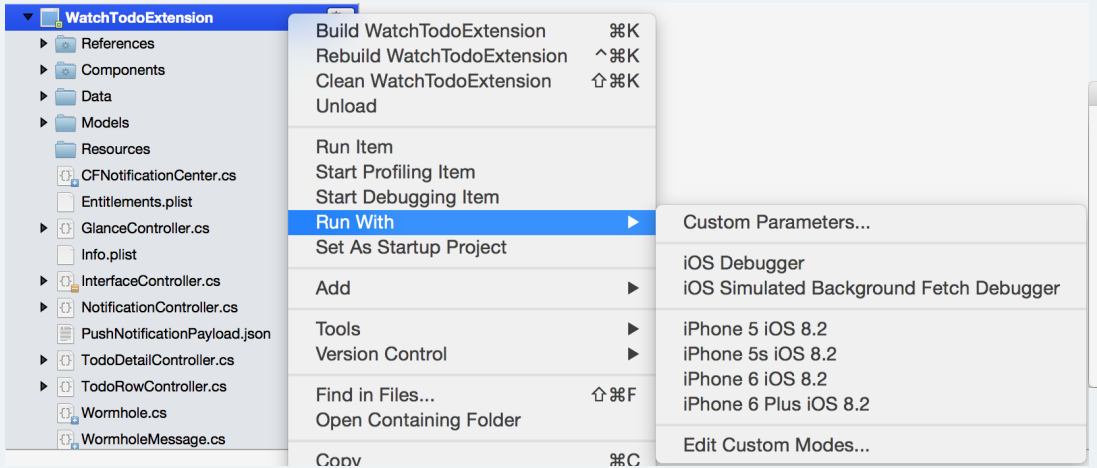
- You cannot subclass or customize interface elements
- These are the controls that are currently available to developers:
  - WKInterfaceLabel, WKInterfaceButton, WKInterfaceImage
  - WKInterfaceGroup, WKInterfaceSeparator, WKInterfaceTable
  - WKInterfaceSwitch, WKInterfaceMap, WKInterfaceSlider
  - WKInterfaceTimer

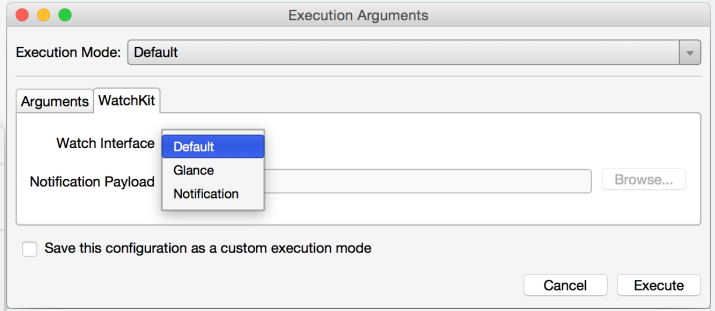
Assembling Your Storyboard Scenes



Launching in other modes

- Launching in Glance and Notification Modes
  - Run With -> Custom Parameters…





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DEMO

Get to the dang code already!

Useful Links

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- Apple's WatchKit Site - *THE* source (Programming Guide)
  - https://developer.apple.com/watchkit/
- Apple Watch Programming Guide
  - https://developer.apple.com/library/prerelease/ios/documentation/General/Conceptual/WatchKitProgrammingGuide/
- Craig Dunn's wealth of WatchKit knowledge
  - http://conceptdev.blogspot.com/2015/02/apple-watch-kit-round-up.html
- Xamarin's Developer Documentation
  - http://developer.xamarin.com/guides/ios/watch/intro-to-watchkit/
- Xamarin's Blog Post
  - http://blog.xamarin.com/xamarin-releases-watch-kit-support-like-clockwork/

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Thank You

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