

XAMARIN.FORMS FOR BEGINNERS

ABOUT ME

Tom Soderling

Sr. Mobile Apps Developer @ Polaris Industries; Ride Command

Xamarin.Forms enthusiast

DevOps hobbyist & machine learning beginner

4 year XCMD

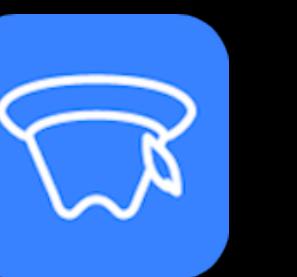
Blog: <https://tomsoderling.github.io>

GitHub: <https://github.com/TomSoderling>

Twitter: @[tom](https://twitter.com/tomsoderling)[soderling](https://twitter.com/soderling)



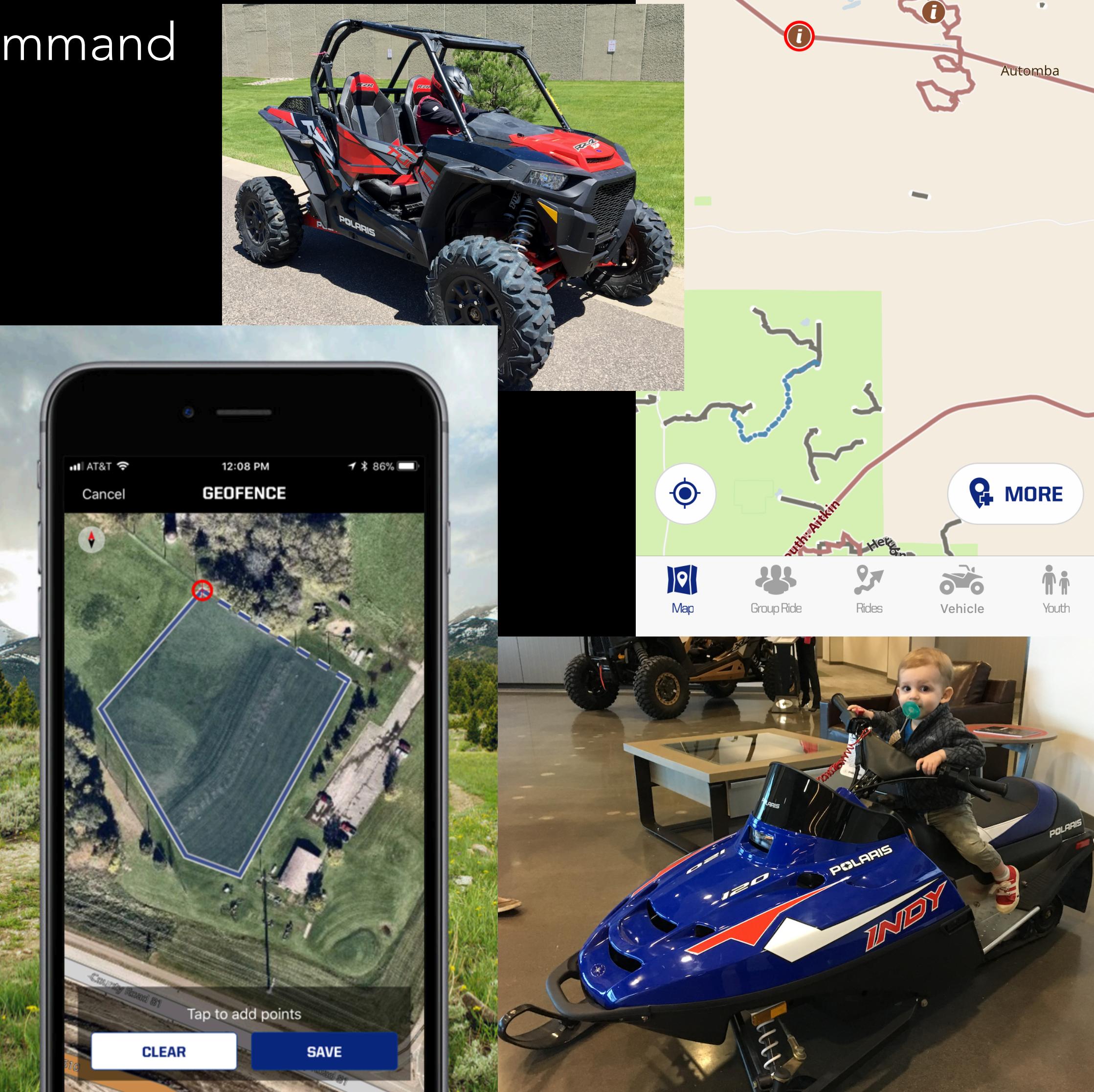
How Deep
Is It?



Pickster



Spaniel



THE PLAN

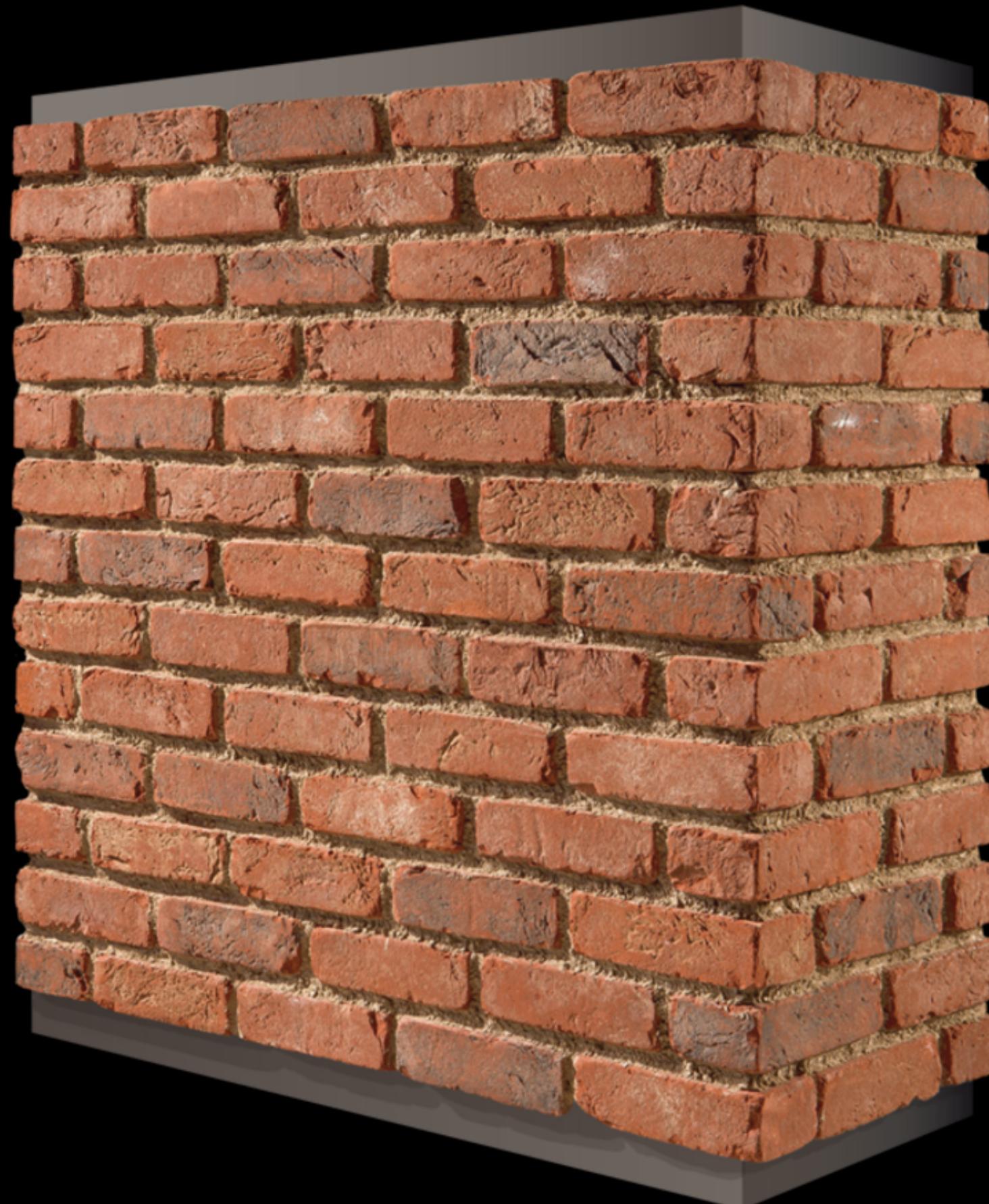
- Introduction: Why, What, and When
- Overview of Xamarin.Forms Building Blocks
- Building a Xamarin.Forms UI in XAML
- Data Binding
- View Customization
- Next Steps & Resources
- Please ask any questions that come up!

THE PLAN

- **Introduction: Why, What, and When**
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INTRODUCTION : WHY

- WET: the soggy state of mobile app development
 - Write Everything Twice



Objective-C



INTRODUCTION : WHY

- WET: the soggy state of mobile app development
- ~~Write Everything Twice~~



Objective-C





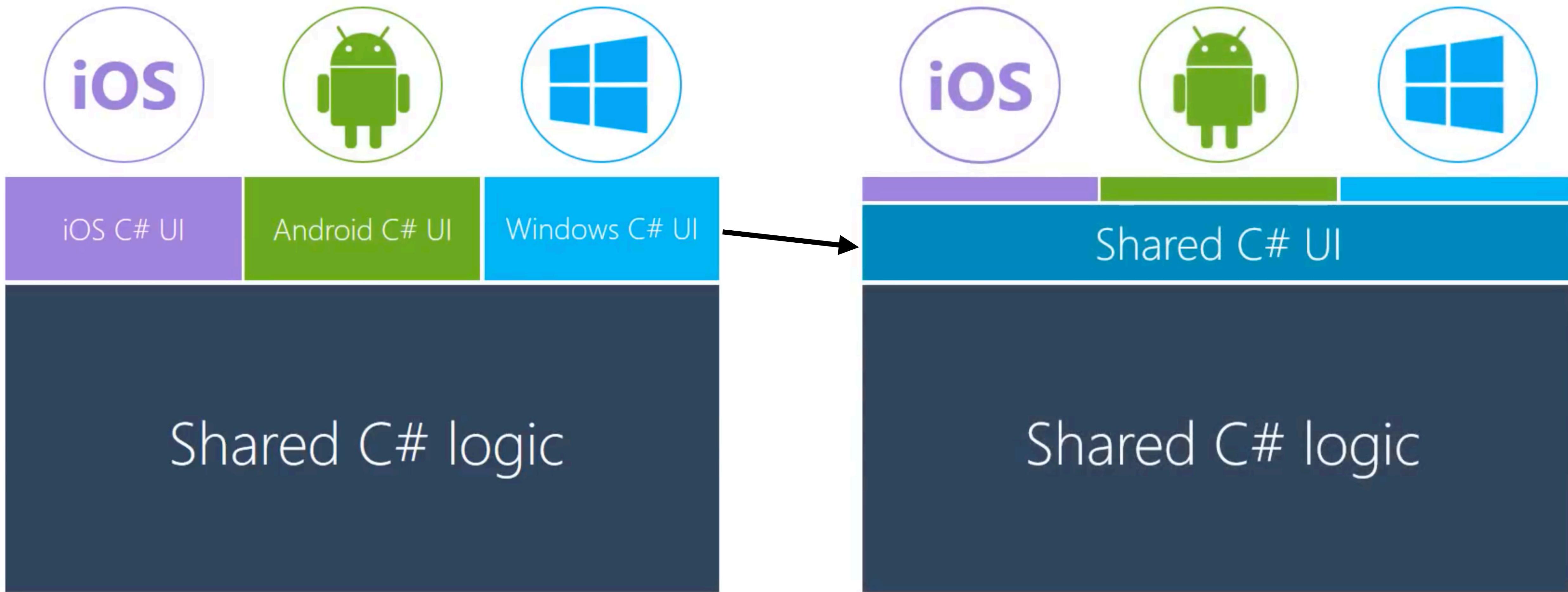
iOS C# UI

Android C# UI

Windows C# UI

Shared C# logic

Traditional Xamarin shares
business logic

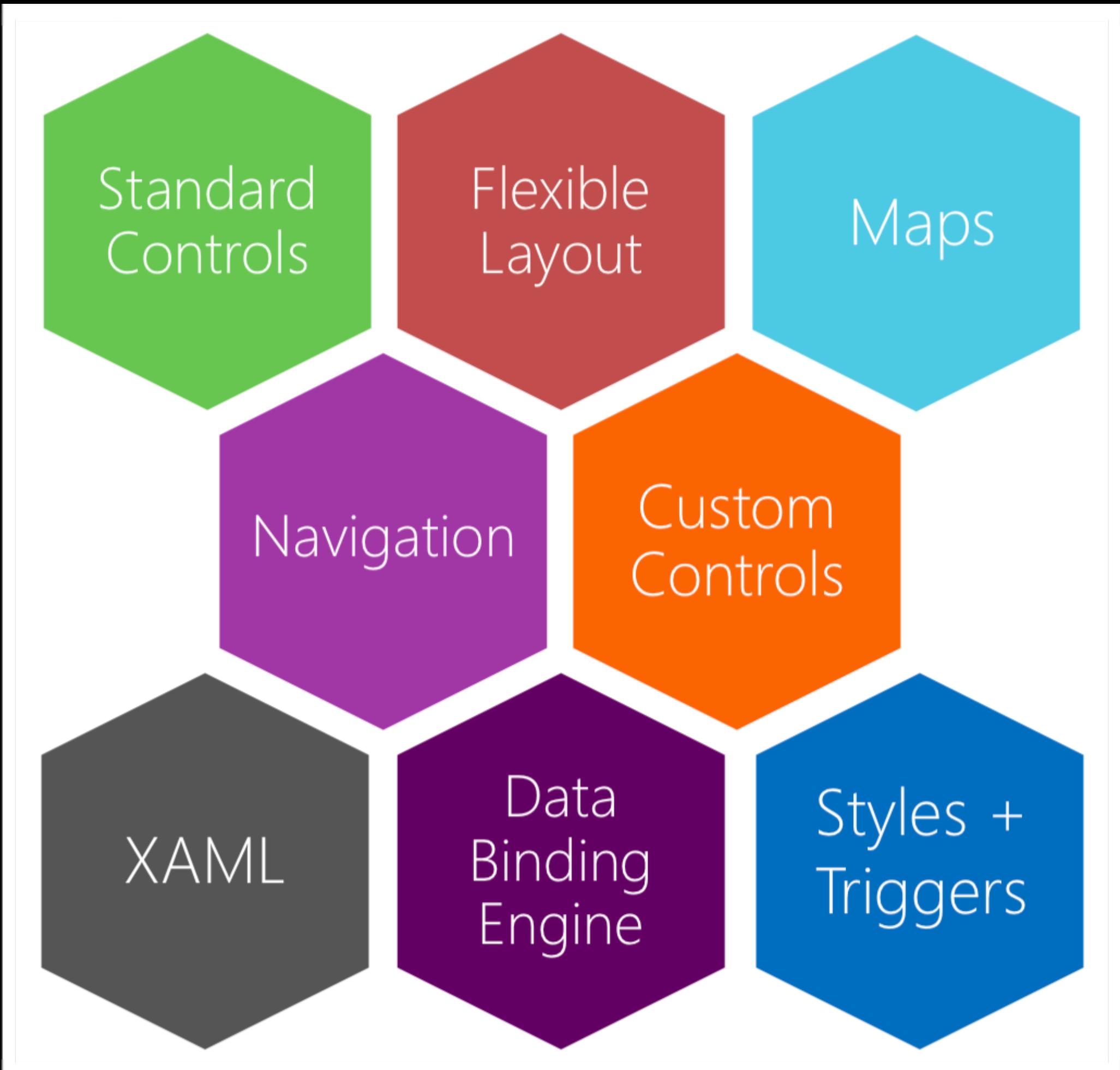


Traditional Xamarin shares
business logic

Xamarin.Forms can also share
the UI definition

INTRODUCTION : WHAT

- What is Xamarin.Forms?
 - Cross-platform UI framework
 - Platforms:
 - Mobile: iOS 8 and up, Android 4.0.3 (API 15)
 - Desktop: Windows 10 UWP, MacOS, WFP
 - Samsung Smart Devices: Tizen



INTRODUCTION : WHAT

- Brief History:
 - May 2011, Xamarin founded
 - MonoTouch and Mono for Android using MonoDevelop IDE
 - February 2013, release of Xamarin 2.0
 - Xamarin Studio IDE & integration with Visual Studio
 - Renamed to Xamarin.Android and Xamarin.iOS
 - May 2014, Xamarin.Forms released as part of Xamarin 3
 - February 24 2016, Xamarin acquired by Microsoft
- Owned, actively developed on, and supported by Microsoft
- Free and completely open-source on GitHub

INTRODUCTION : WHAT

- Develop on Mac or Windows
 - Visual Studio on Windows (2015 or 2017)
 - Visual Studio for Mac
- iOS development requires a Mac to build (somewhere)
 - Xamarin Mac Agent



INTRODUCTION : WHEN

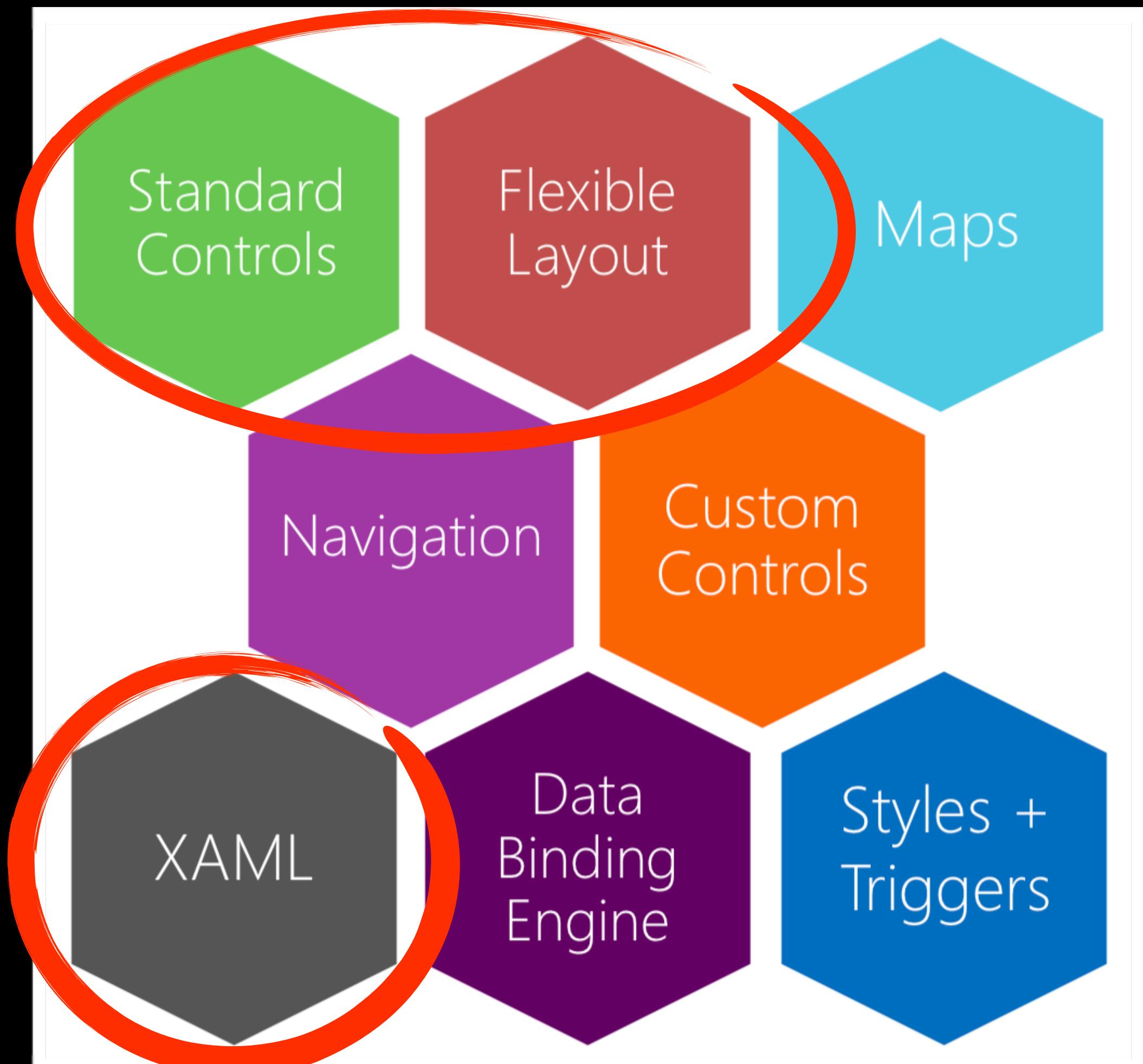
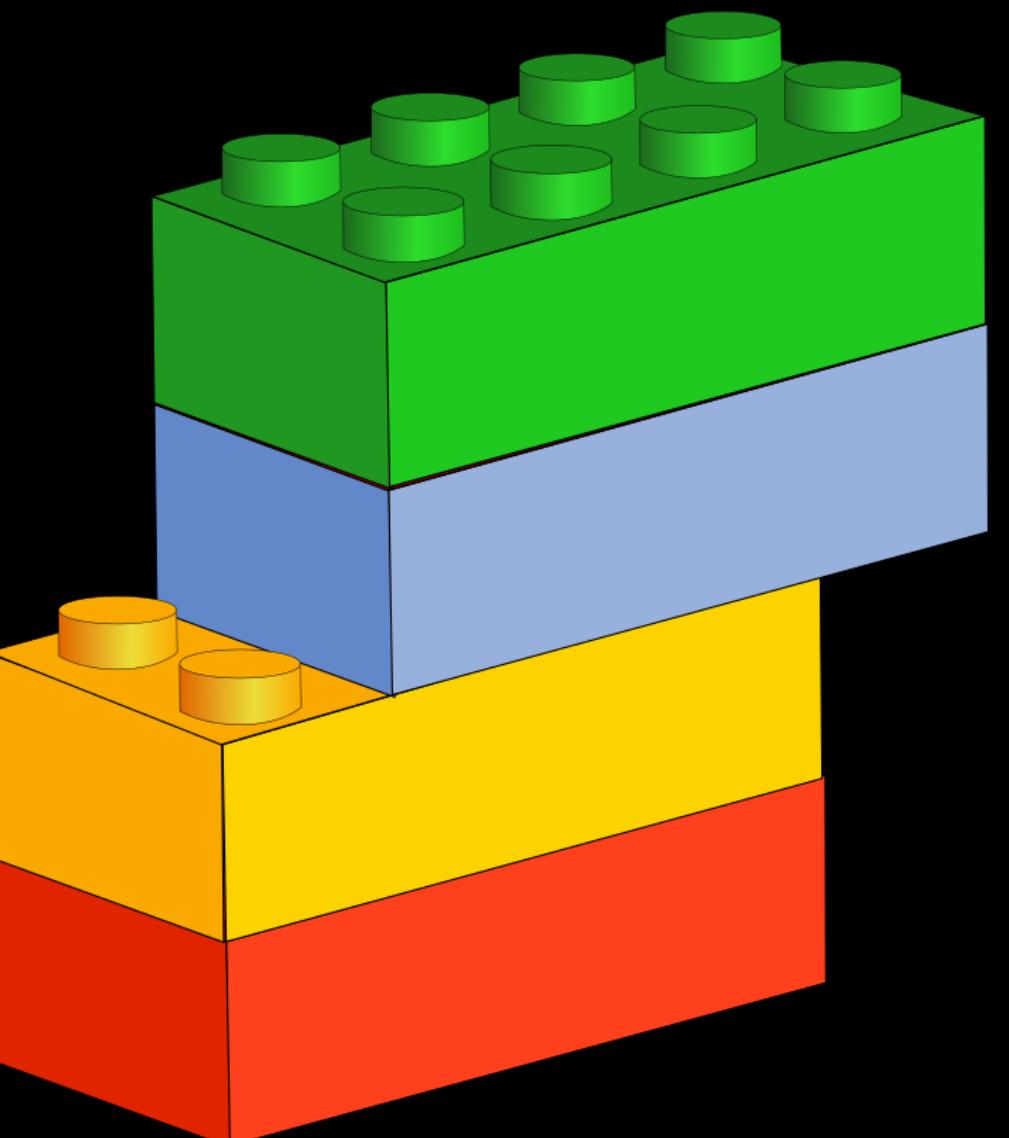
- When should I use Xamarin.Forms?
 - You or your team knows C# and .NET
 - You need apps for multiple-platforms
 - You want native app performance and/or look and feel
 - You're okay knowing that there are cheaper ways to make an app

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OVERVIEW OF XAMARIN.FORMS BUILDING BLOCKS

- Pages
- Layouts
- Views
- Cells



OVERVIEW OF XF BUILDING BLOCKS

- Pages



OVERVIEW OF XF BUILDING BLOCKS

- Views
 - Button
 - Label
 - Entry
 - Switch
 - ActivityIndicator

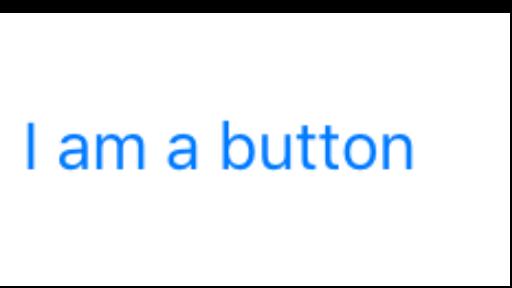
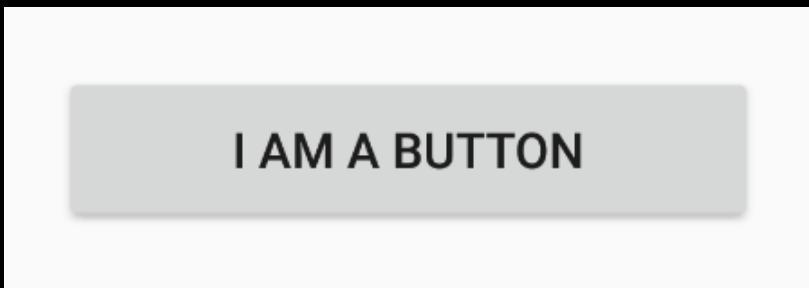
OVERVIEW OF XF BUILDING BLOCKS

- Views

Android

iOS

- Button



- Label

- Entry

- Switch

- ActivityIndicator

OVERVIEW OF XF BUILDING BLOCKS

- Views

Android

iOS

- Button

I AM A BUTTON

I am a button

- Label

Welcome to Xamarin.Forms!

Welcome to Xamarin.Forms!

- Entry

- Switch

- ActivityIndicator

OVERVIEW OF XF BUILDING BLOCKS

- Views

Android

iOS

- Button

I AM A BUTTON

I am a button

- Label

Welcome to Xamarin.Forms!

Welcome to Xamarin.Forms!

- Entry

Enter text here

Enter text here

- Switch

- ActivityIndicator

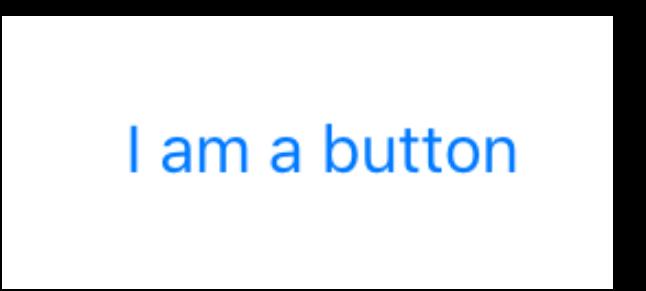
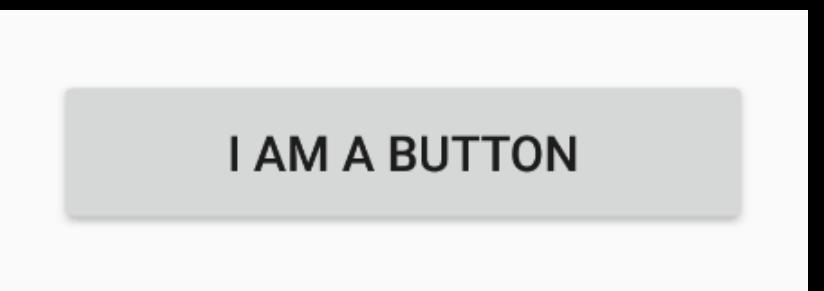
OVERVIEW OF XF BUILDING BLOCKS

- Views

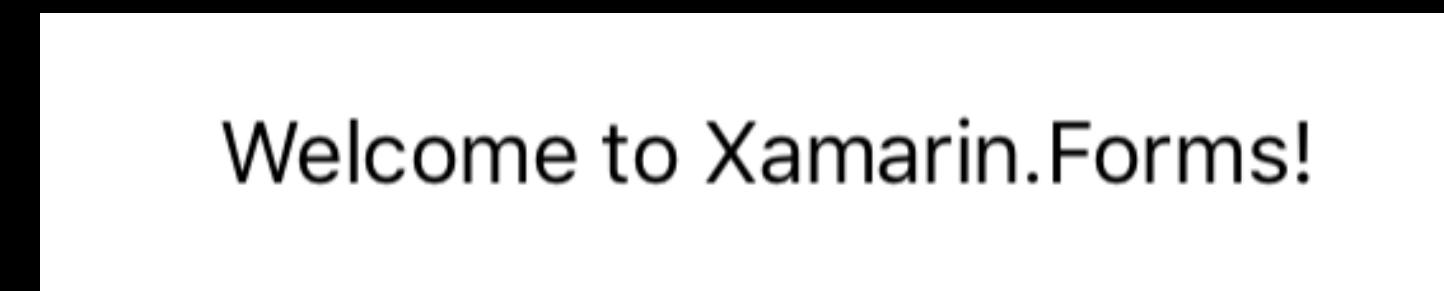
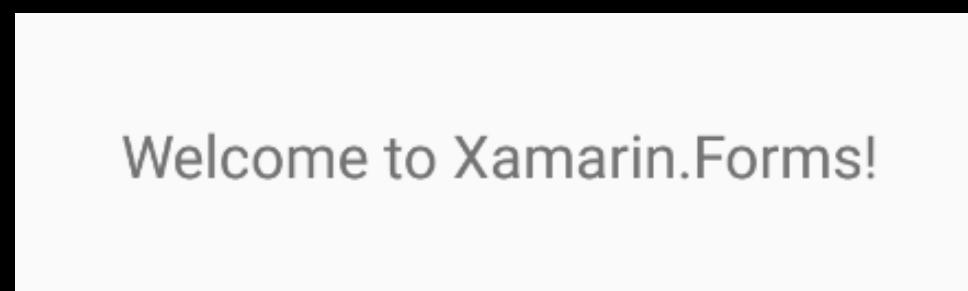
Android

iOS

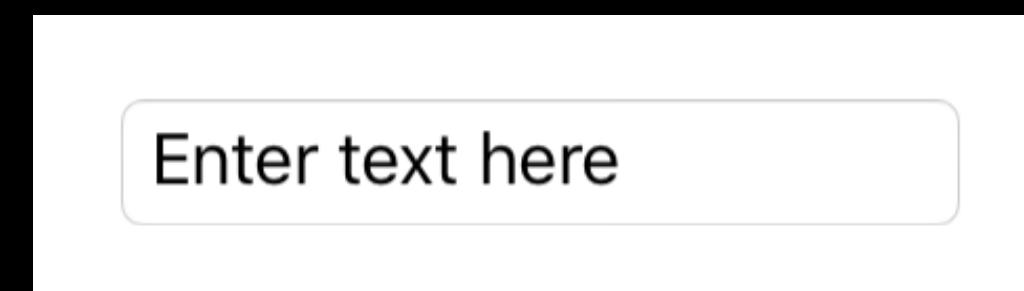
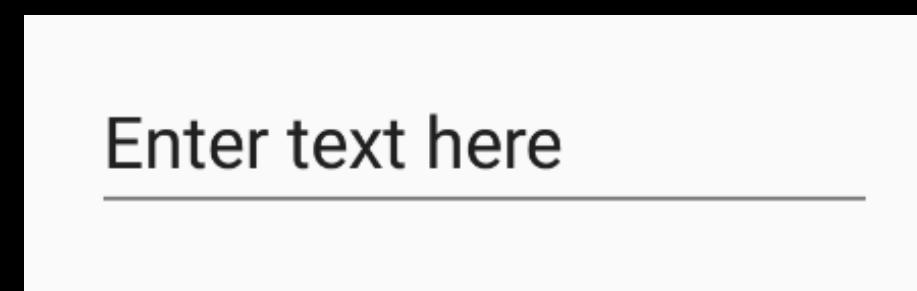
- Button



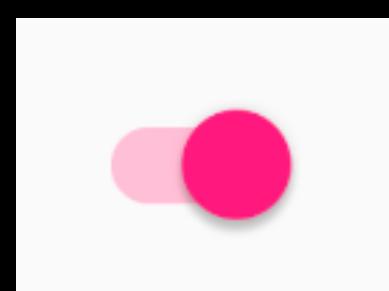
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- Entry



- Switch



- ActivityIndicator

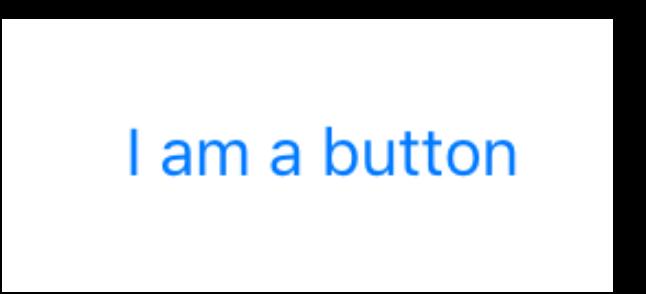
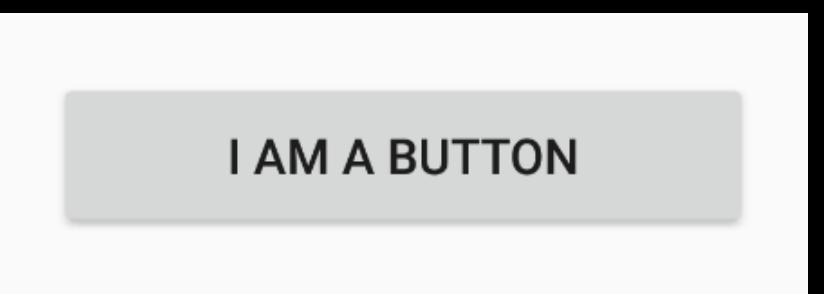
OVERVIEW OF XF BUILDING BLOCKS

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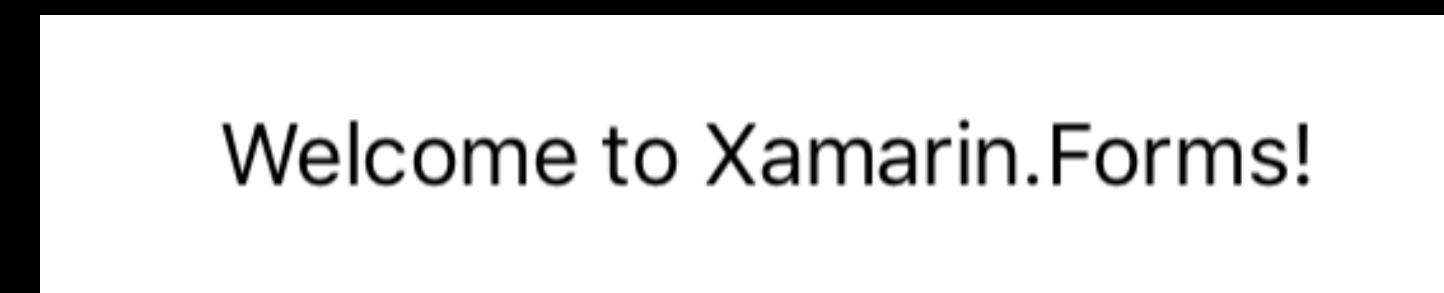
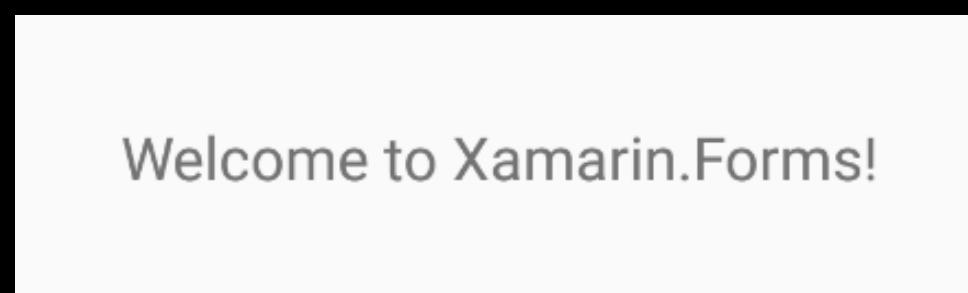
Android

iOS

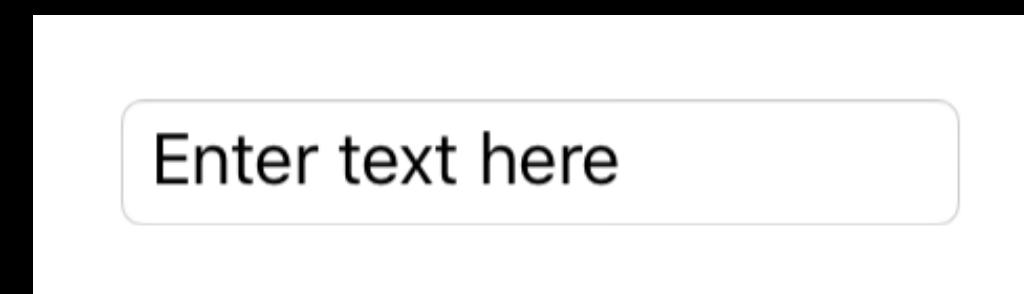
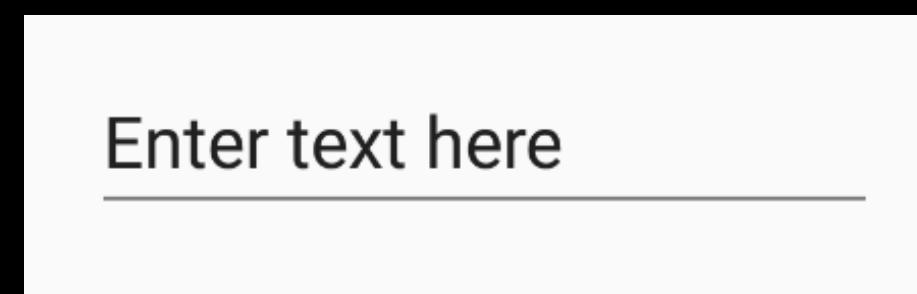
- Button



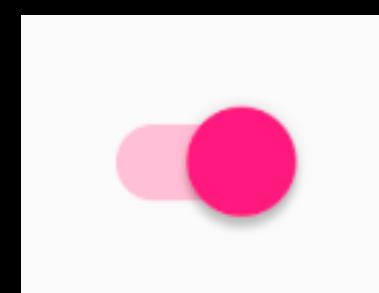
- Label



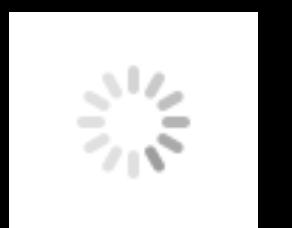
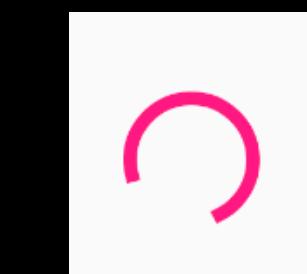
- Entry



- Switch



- ActivityIndicator



OVERVIEW OF XF BUILDING BLOCKS

- Views

- ListView



- TableView

- Image

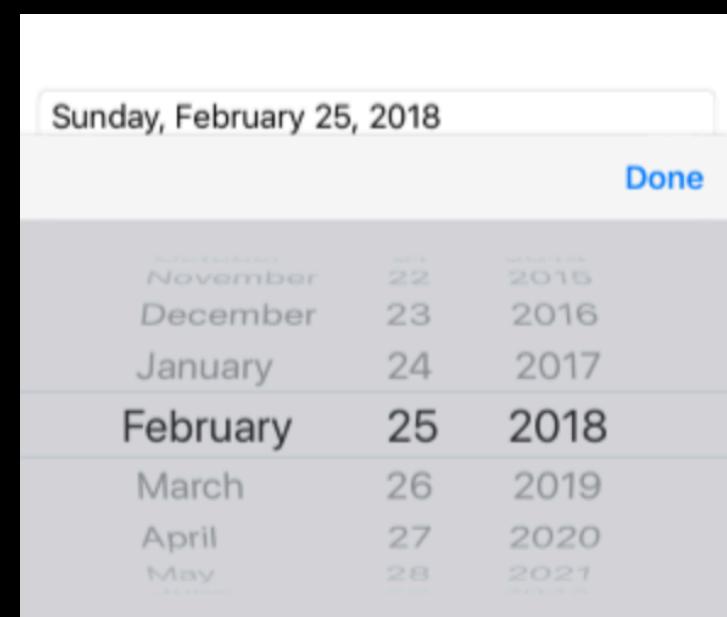
- Slider



- Picker

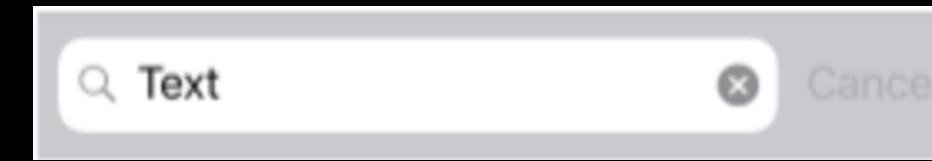
- DatePicker

- Editor



- ProgressBar

- SearchBar



- Map

- WebView

- OpenGLView

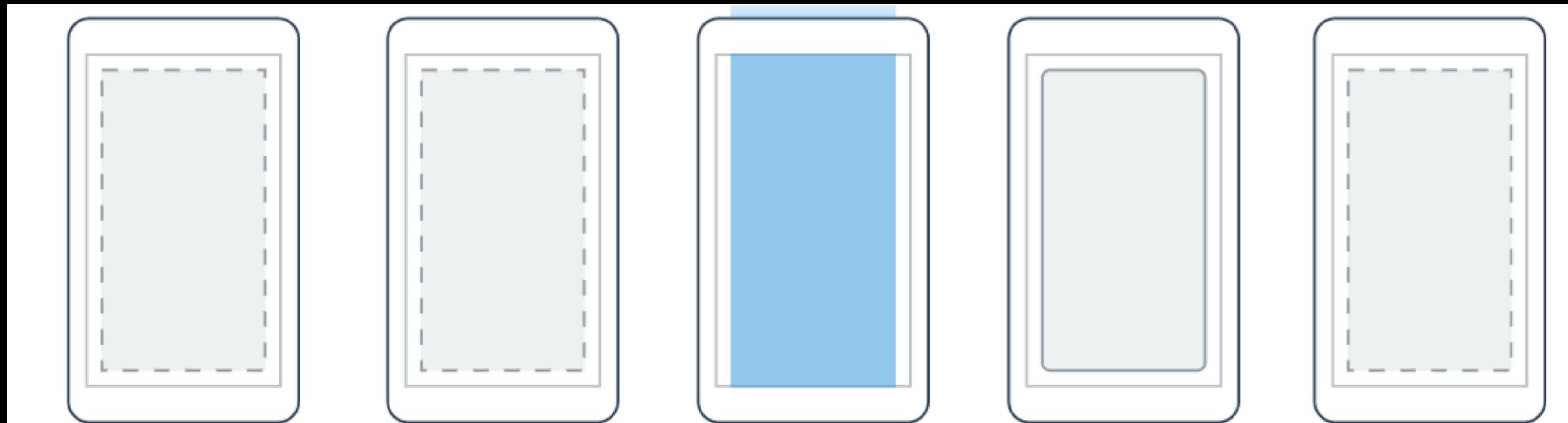
- Frame

- BoxView



OVERVIEW OF XF BUILDING BLOCKS

- Layouts



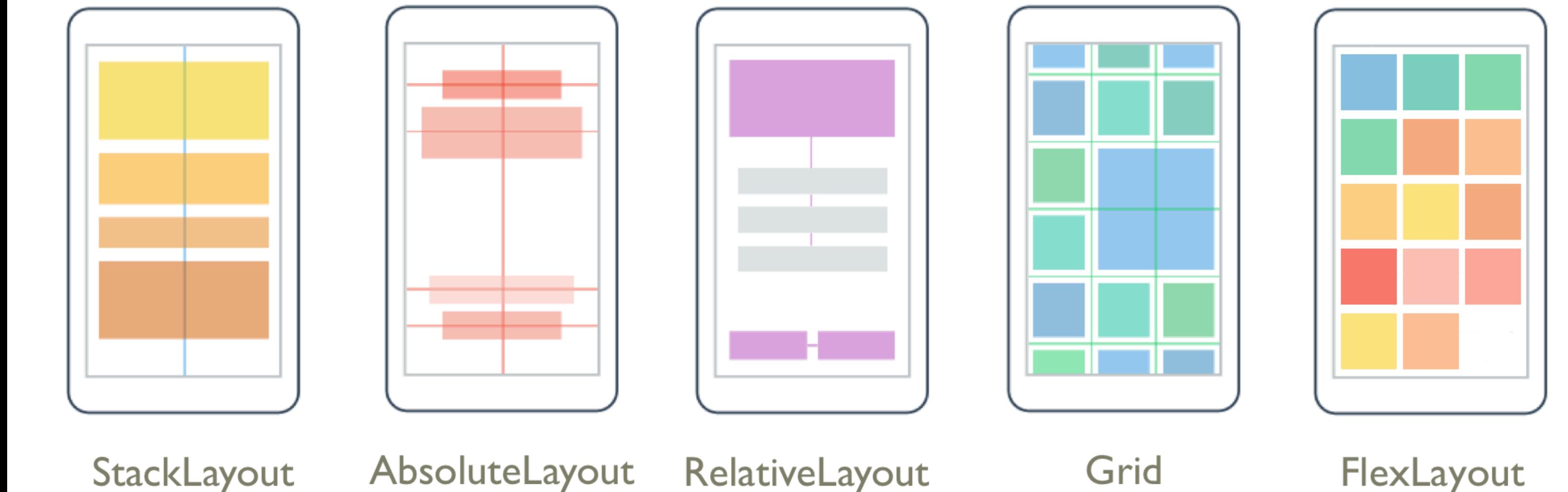
ContentPresenter

ContentView

ScrollView

Frame

TemplatedView



StackLayout

AbsoluteLayout

RelativeLayout

Grid

FlexLayout

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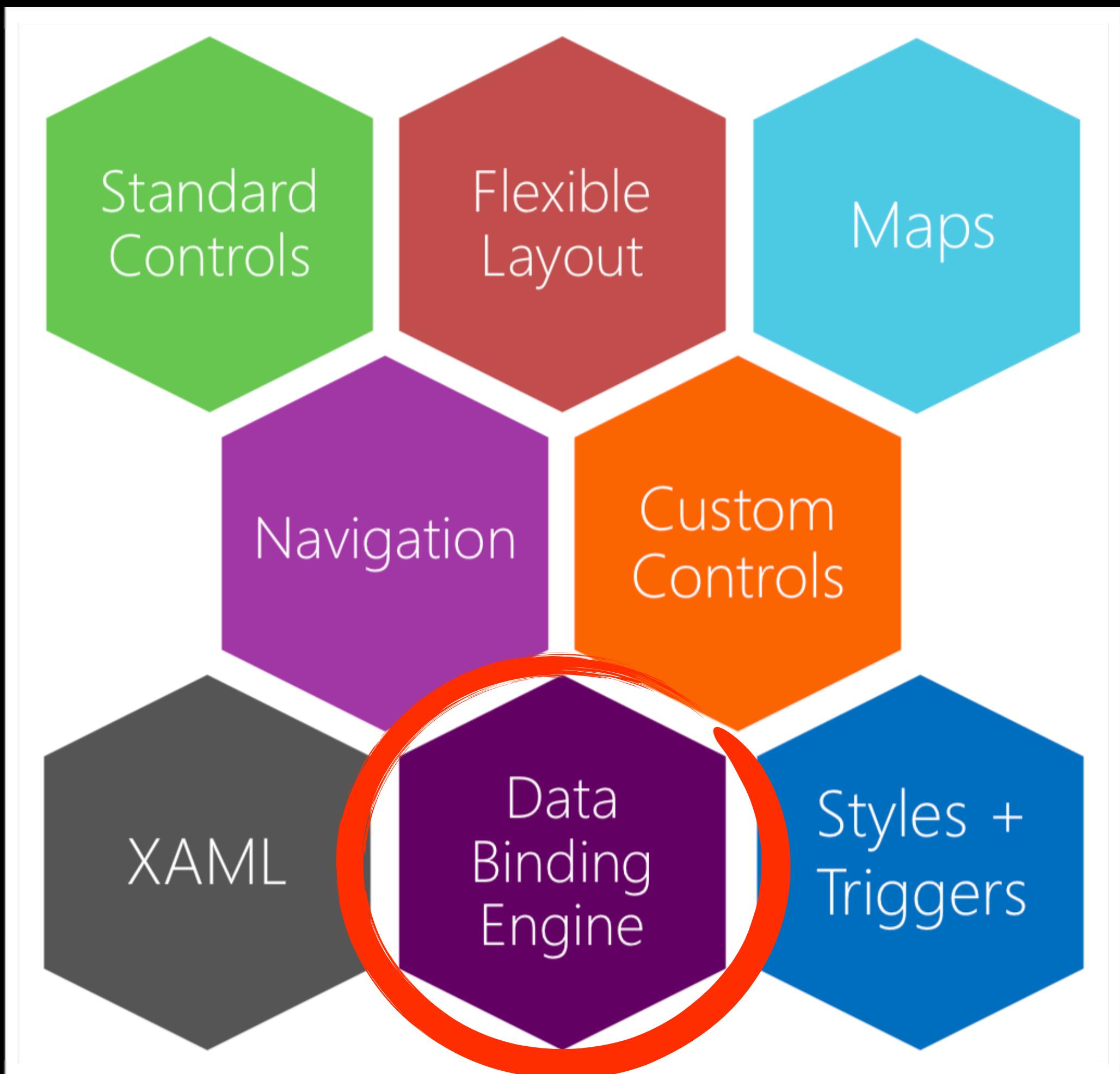
BUILDING A XAMARIN.FORMS UI IN XAML

- Let's look at some code!
 - Anatomy of a Xamarin.Forms app
 - ContentPage
 - Views
 - Layouts
 - StackLayout
 - Grid
 - AbsoluteLayout

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DATA BINDING



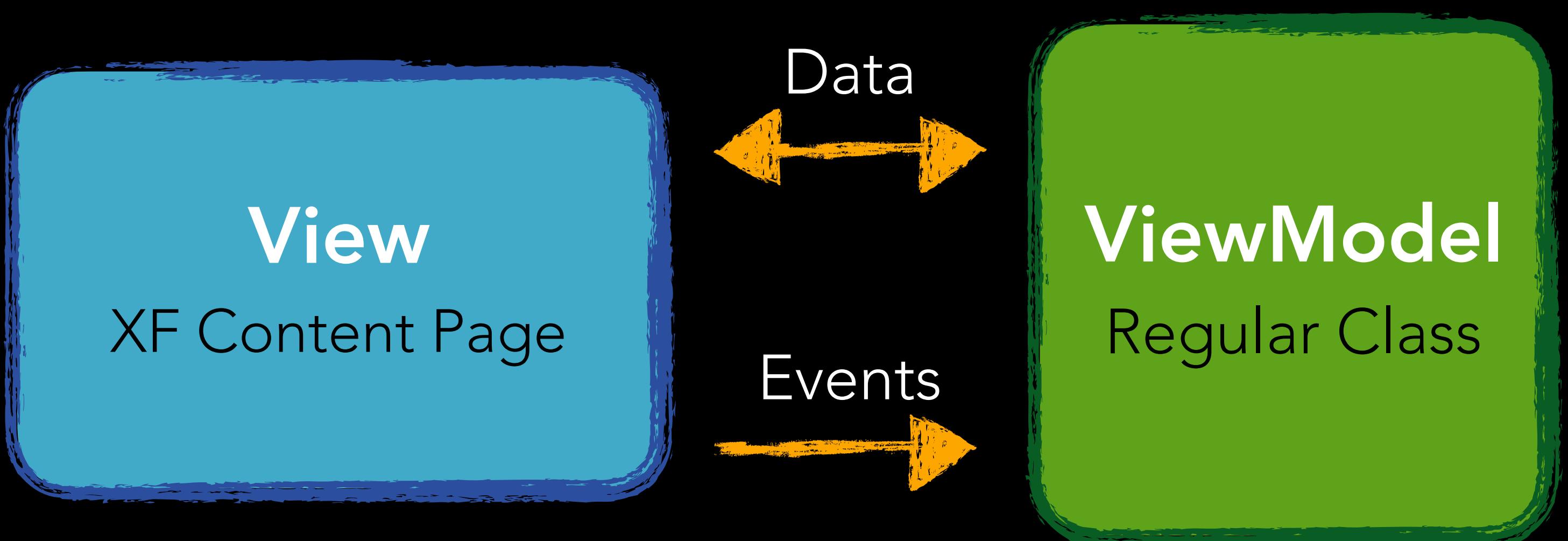
DATA BINDING

- Some basics of Model-View-ViewModel architecture (MVVM)
 - **View**: knows **how** to display data



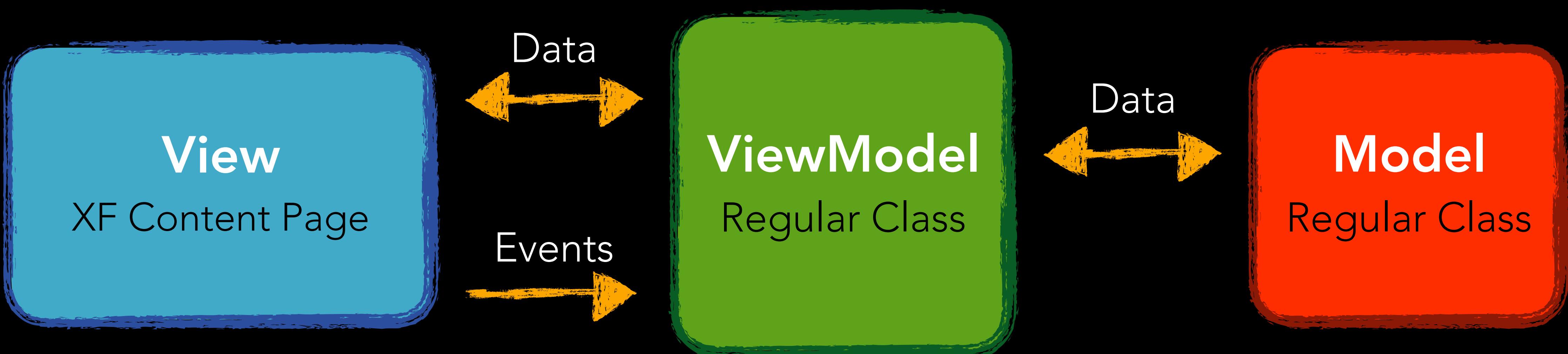
DATA BINDING

- Some basics of Model-View-ViewModel architecture (MVVM)
 - **View**: knows **how** to display data
 - **ViewModel**: knows **what** data to display



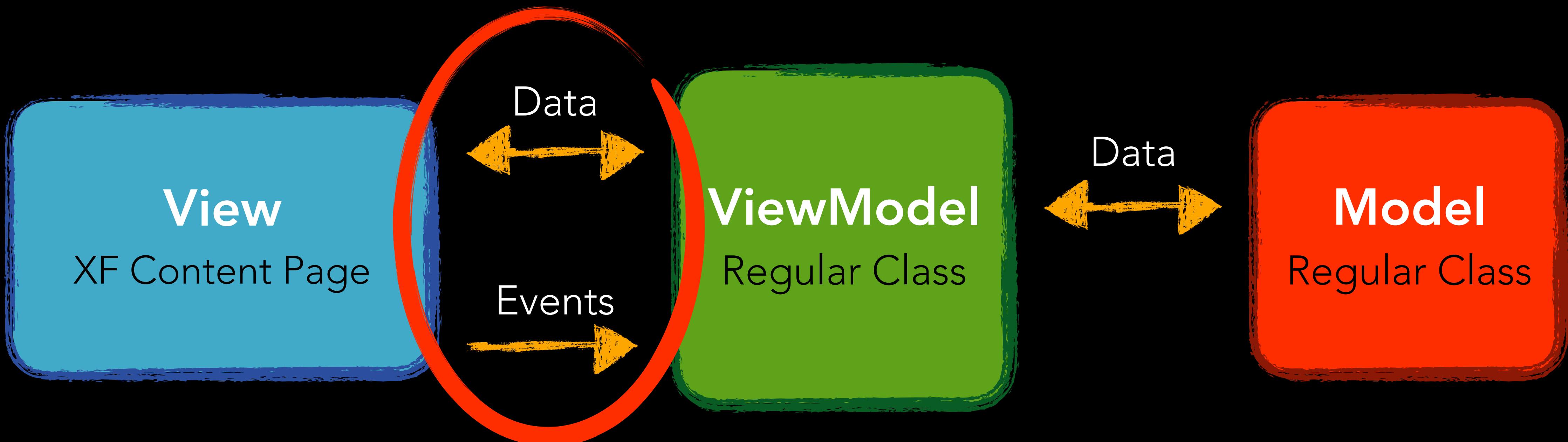
DATA BINDING

- Some basics of Model-View-ViewModel architecture (MVVM)
 - **View**: knows **how** to display data
 - **ViewModel**: knows **what** data to display
 - **Model**: The nouns of the system. Data objects



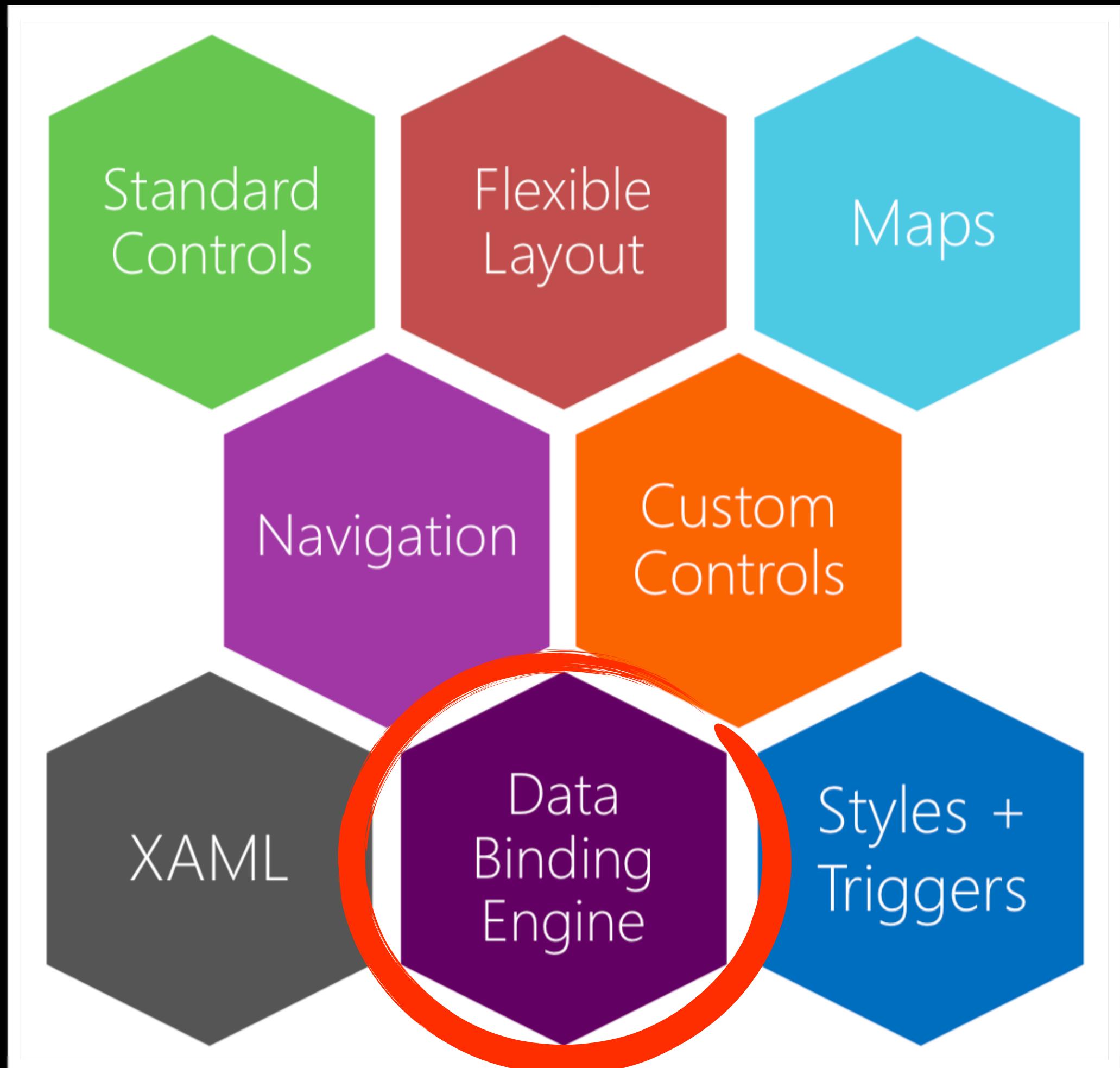
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DATA BINDING

- Let's look at some code!
 - Bindable Properties
 - Binding Context
 - Converters



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VIEW CUSTOMIZATION

- What if a Xamarin.Forms View doesn't look or behave how I want?
 - Platform-Specifics
 - Effects
 - Behaviors
 - Custom Renderers

VIEW CUSTOMIZATION

- Platform-Specifics
 - Use functionality that's only available on a specific platform.
 - Some examples:

iOS	Android
VisualElement.BlurEffect	VisualElement.Elevation
VisualElement.IsShadowEnabled	Button.UseDefaultPadding
Entry.AdjustsFontSizeToFitWidth	Button.UseDefaultShadow
Entry.CursorColor	Entry.ImeOptions (set user action button)
ListView.SeparatorStyle	ListView.IsFastScrollEnabled
NavigationPage.HideNavigationBarSeparator	NavigationPage.BarHeight

VIEW CUSTOMIZATION

- Effects
 - Allow the native controls on each platform to be customized
 - Typically used for small styling changes
- Benefits:
 - Simplify the customization of a control
 - Are reusable
 - Can be passed parameters to further increase reuse

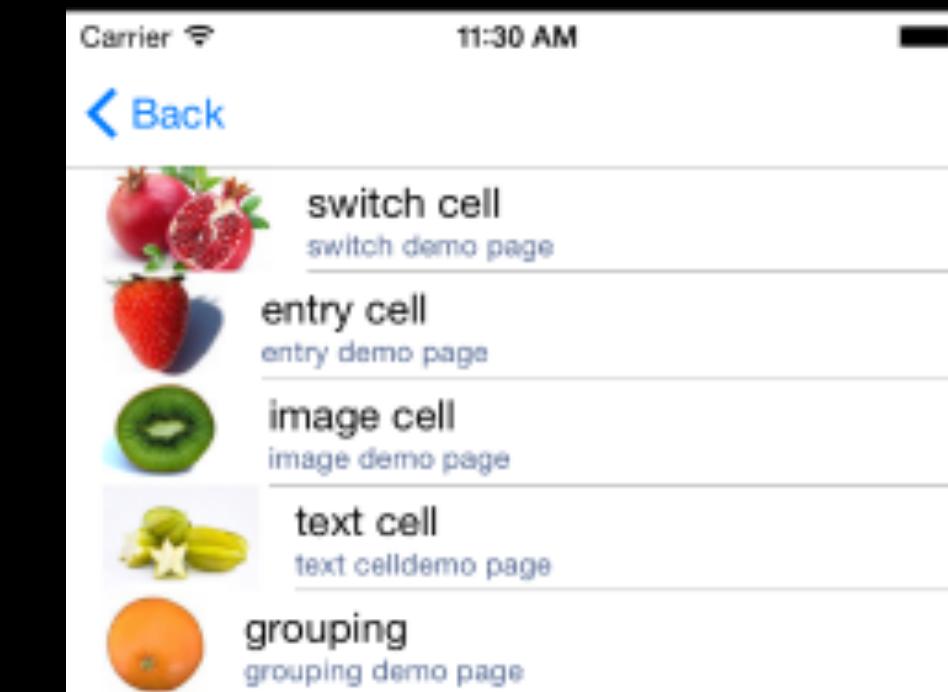
VIEW CUSTOMIZATION

- Behaviors
 - Attach additional functionality to any Xamarin.Forms View
 - Examples:
 - Only allow X number of characters to be entered into an Entry
 - Only allow integers to be entered into an Entry

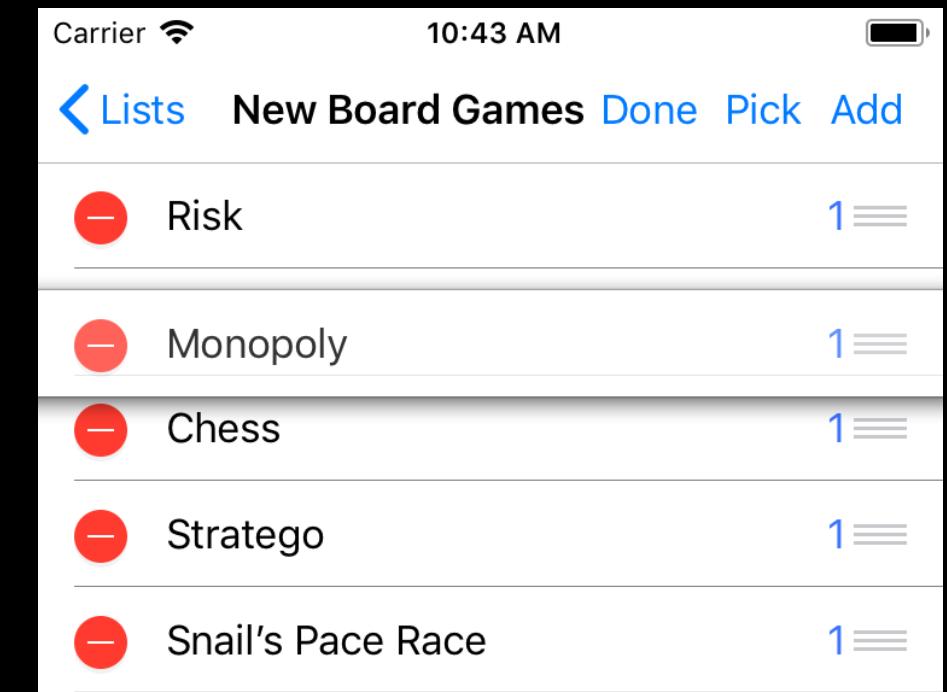
VIEW CUSTOMIZATION

- Custom Renderers
 - Let developers override the out-of-the-box renderers to customize the appearance and behavior of Xamarin.Forms controls on each platform
 - Think “can I do this with an Effect?” first
 - Extend a Xamarin.Forms View
 - Required when there's a need to override methods of a platform-specific control

out of the box



custom renderer



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NEXT STEPS

- Using mobile device hardware features
 - Accelerometer, Barometer, Battery, Compass, Connectivity state, Device Display Information, GPS, Gyroscope, Magnetometer, Phone Dialer, Power, Secure Storage, Text-to-Speech, Vibrate, many more!
- Using Plugins
 - NuGet packages that implement the platform features and provide an API for developers to use from shared code!
 - Xamarin.Essentials: a kit of essential API's for your apps (in preview)



NEXT STEPS

Xamarin University



New
Aug 28, 2017

FREE



Unlimited training
Live classes via Go to Meeting
1-on-1 office hours



Xamarin Certified Mobile Professional

To achieve the Mobile Professional certification, complete the list of required courses in green below and pass the Professional Certification exam.

XAM101 - Getting Started with Xamarin	XAM150 - Consuming REST-based Web Services	AND110 - ListViews and Adapters in Android	AND205 - Android Navigation
AND101 - Introduction to Xamarin.Android	XAM160 - SQLite and Mobile Data	XAM250 - Patterns for Cross Platform Mobile Development	IOS205 - Navigation Patterns
IOS102 - Introduction to the Xamarin Designer for iOS	XAM220 - Preparing for Publishing	IOS110 - Fundamentals of TableViews	XAM370 - Diagnosing Memory Management Issues
AND102 - Activities and Intents	XAM120 - Introduction to Xamarin.Forms	XAM270 - Data Binding in Xamarin.Forms	XAM330 - Xamarin.Forms Effects
IOS101 - Introduction to Xamarin.iOS	XAM130 - XAML in Xamarin.Forms	XAM280 - Using ListView in Xamarin.Forms	AND180 - Toolbar and App Bar
XAM110 - Introduction to Cross-Platform Mobile Development	XAM140 - Resources and Styles in Xamarin.Forms	IOS115 - Customizing TableViews	XAM301 - Mobile Application Architecture
	XAM135 - Layout in Xamarin.Forms		

Xamarin Certified Mobile Developer

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NEXT STEPS

- Documentation
 - All Xamarin documentation has moved to Microsoft Docs. Very well done
 - <https://docs.microsoft.com/en-us/xamarin>
- Xamarin Slack Channel
 - <https://xamarinchat.herokuapp.com>
- Look into using the MVVM pattern and a good framework
 - Help you build loosely coupled, maintainable, and testable apps
 - Prism MVVM Library (many others out there)
 - <http://prismlibrary.github.io>



RESOURCES

- Installing Xamarin: <https://docs.microsoft.com/en-us/xamarin/cross-platform/get-started/installation/index>
- Xamarin Documentation: <https://docs.microsoft.com/en-us/xamarin>
- XAM120 class - Intro to Xamarin.Forms <https://university.xamarin.com/videos/xam120-intro-to-xamarinforms>
- Building your first app with Xamarin.Forms: <https://www.youtube.com/watch?v=NGvn-pGZFPA>
- Xamarin.Forms Feature Roadmap: <https://github.com/xamarin/Xamarin.Forms/wiki/Feature-Roadmap>
- Reveal <https://revealapp.com>
- MFractor <https://www.mfractor.com>
- Prism MVVM Library <http://prismlibrary.github.io>
- All code, slides, resources: <https://github.com/TomSoderling/XF-for-Beginners>