

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>

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



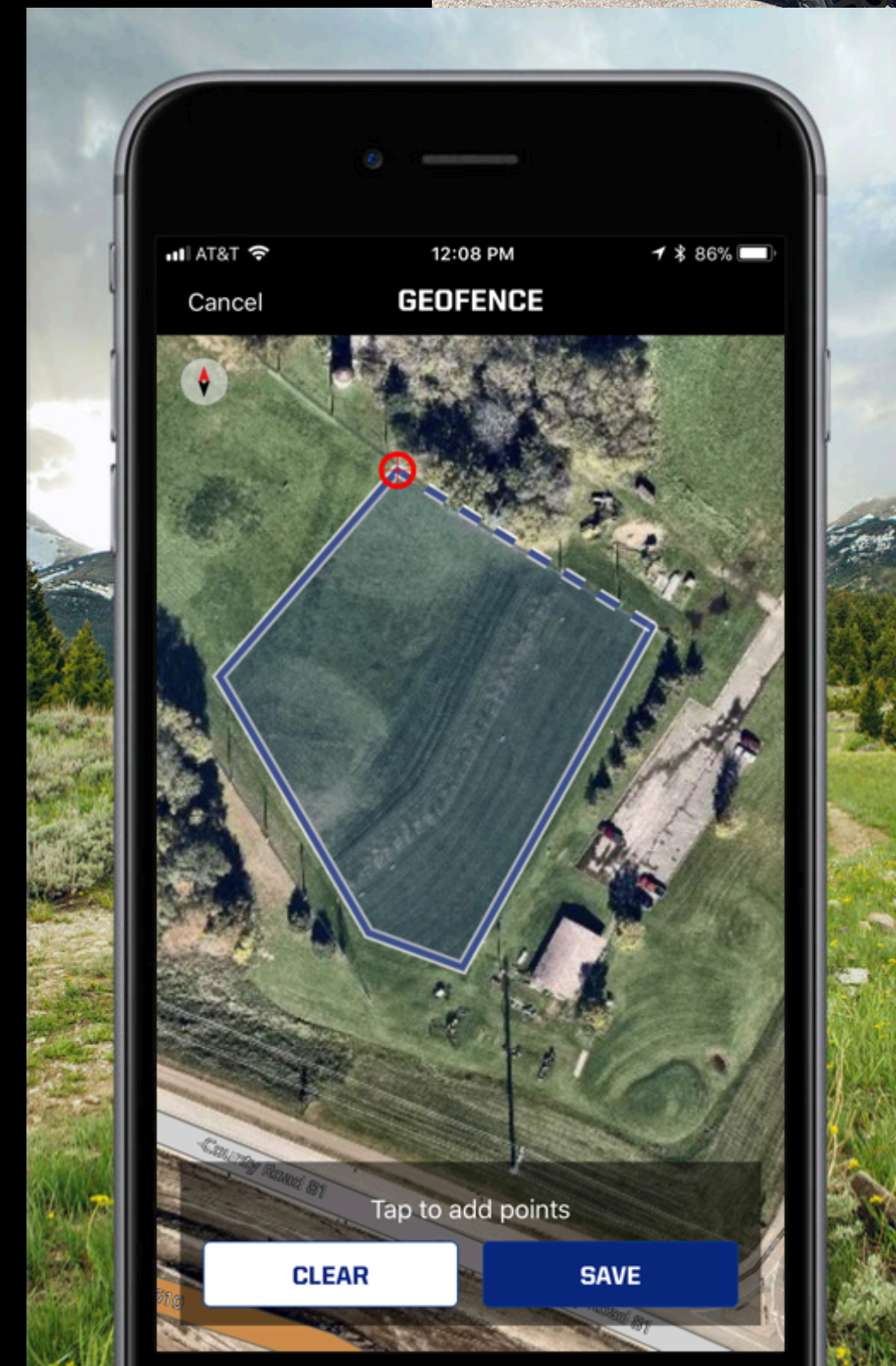
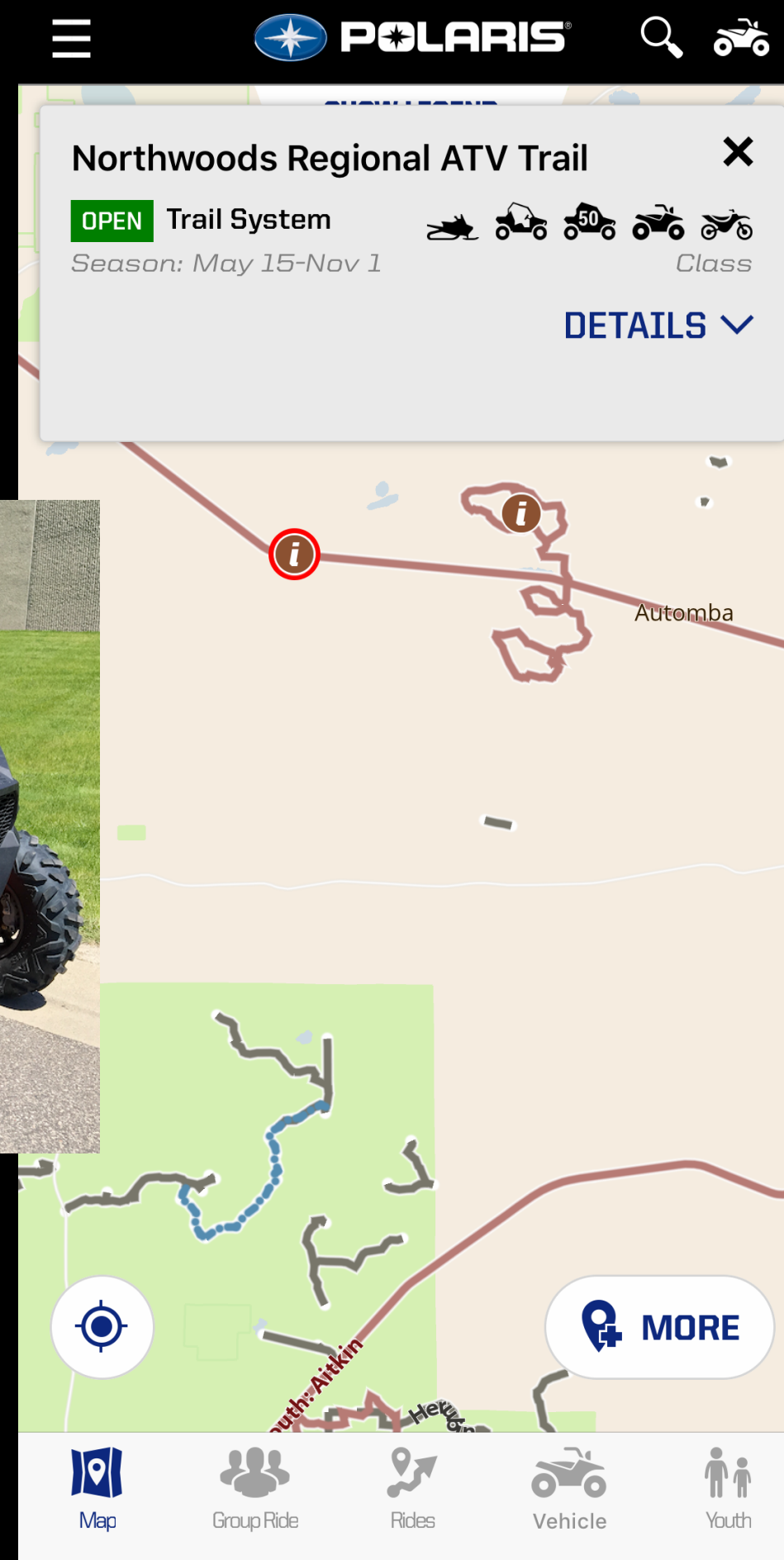
How Deep
Is It?



Pickster



Spaniel



THE PLAN

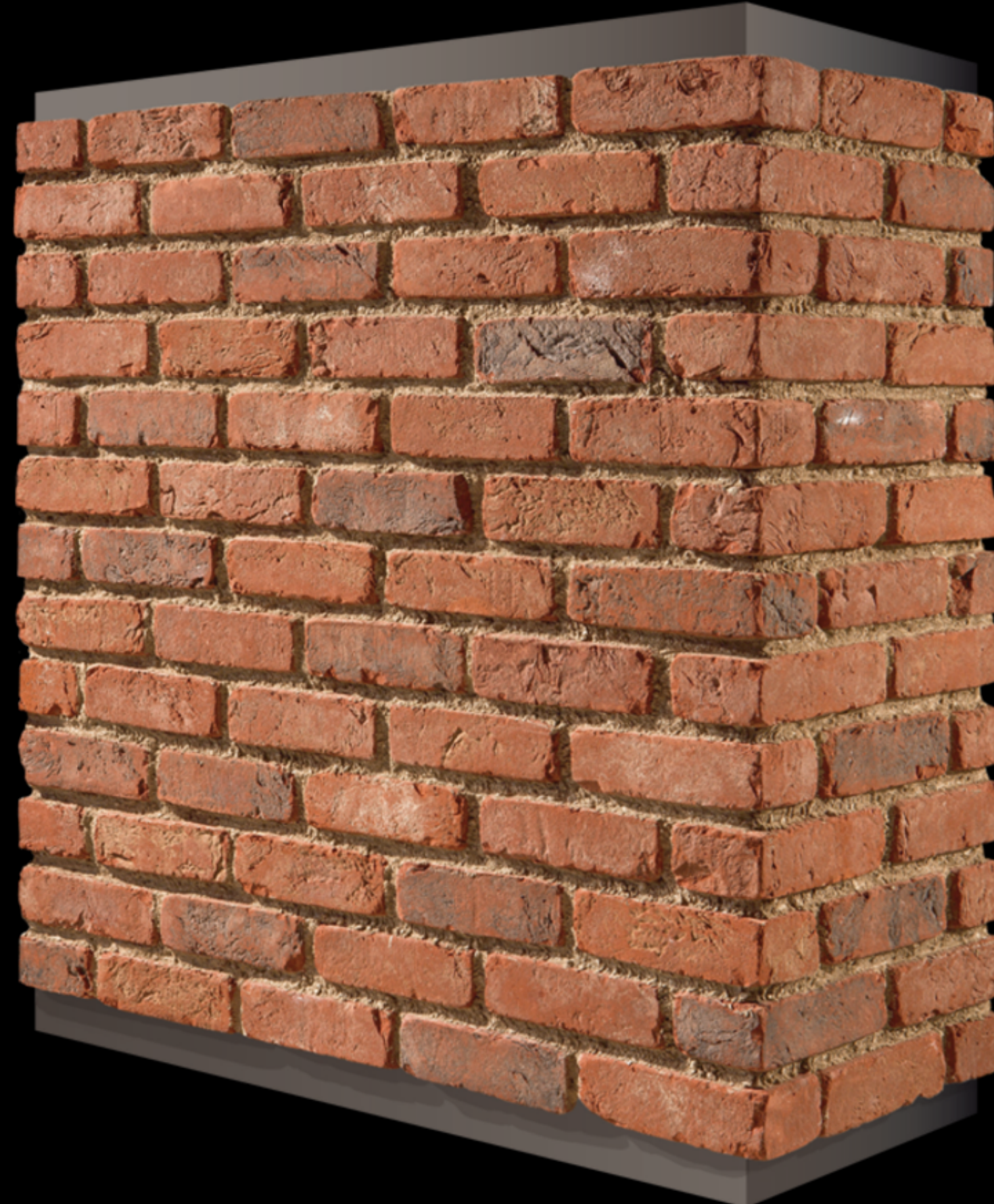
- Introduction: Why, What, and When
 - Overview of Xamarin.Forms Building Blocks
 - Building a Xamarin.Forms UI in XAML
 - Data Binding
 - View Customization
 - Next Steps & Resources
-
- Please ask any questions that come up!

THE PLAN

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

- WET: the soggy state of mobile app development
 - **W**rite **E**verything **T**wice



INTRODUCTION : WHY

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





iOS C# UI

Android C# UI

Windows C# UI

Shared C# logic

Traditional Xamarin shares
business logic



Shared C# logic

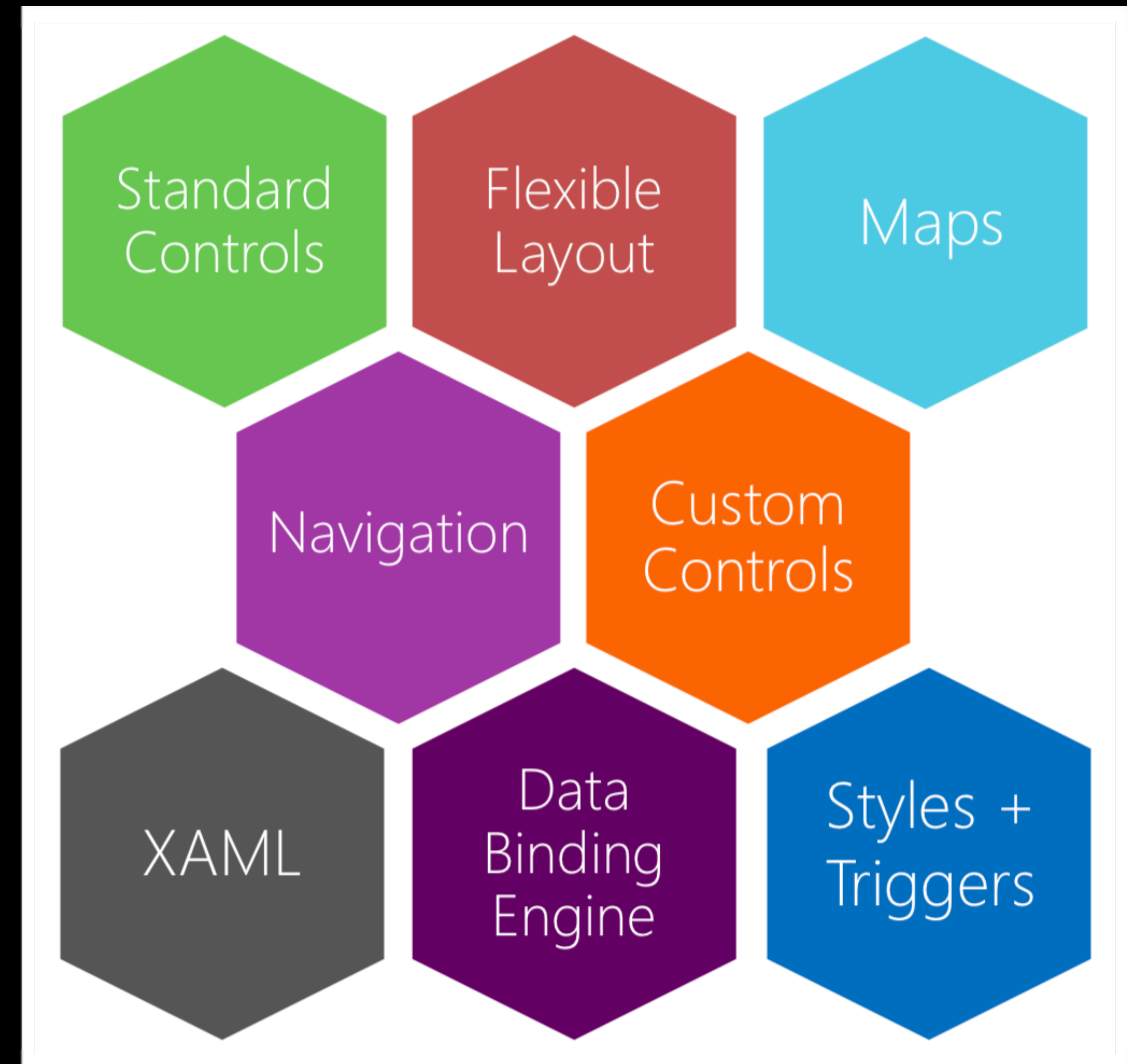
Shared C# logic

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

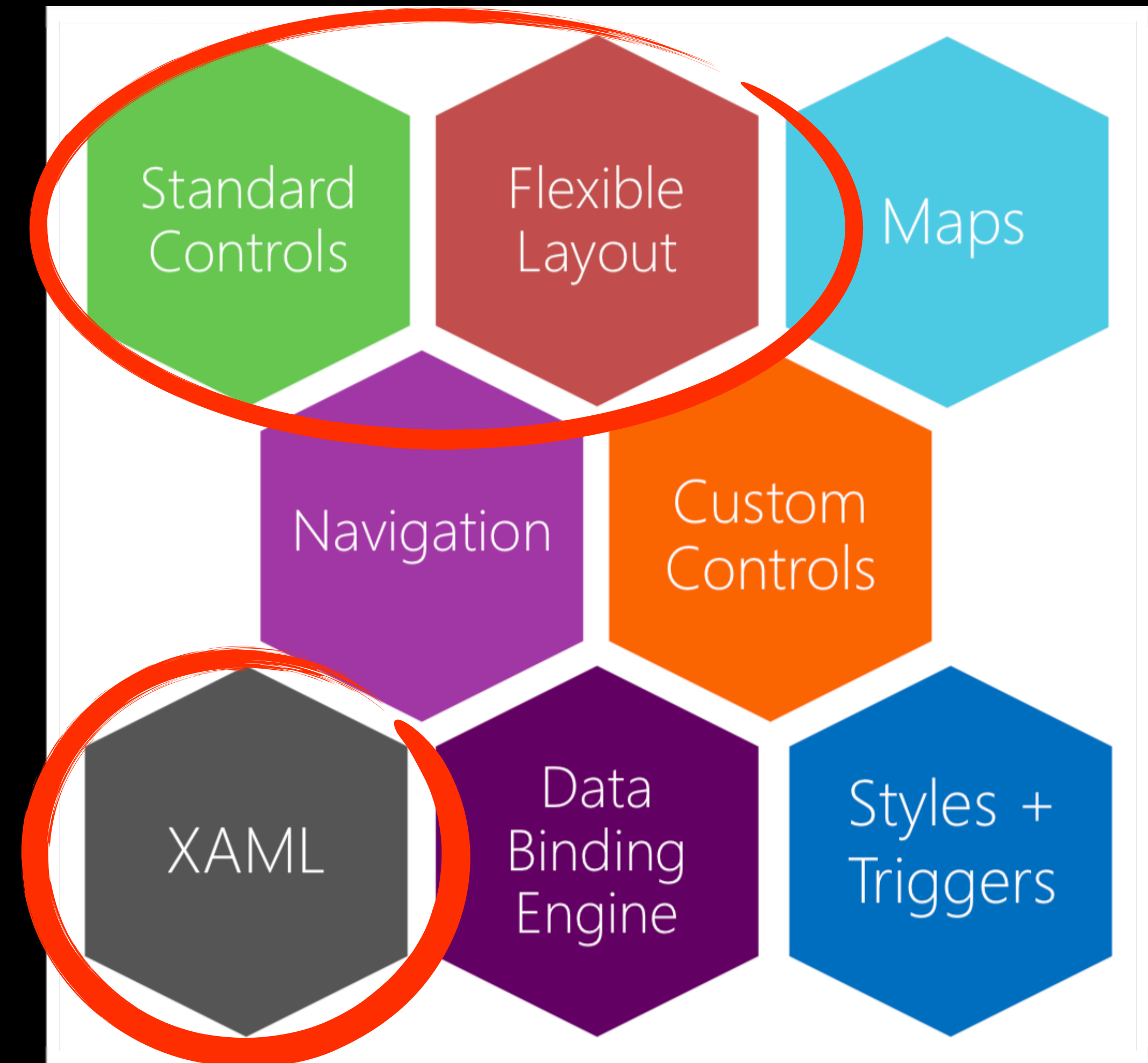
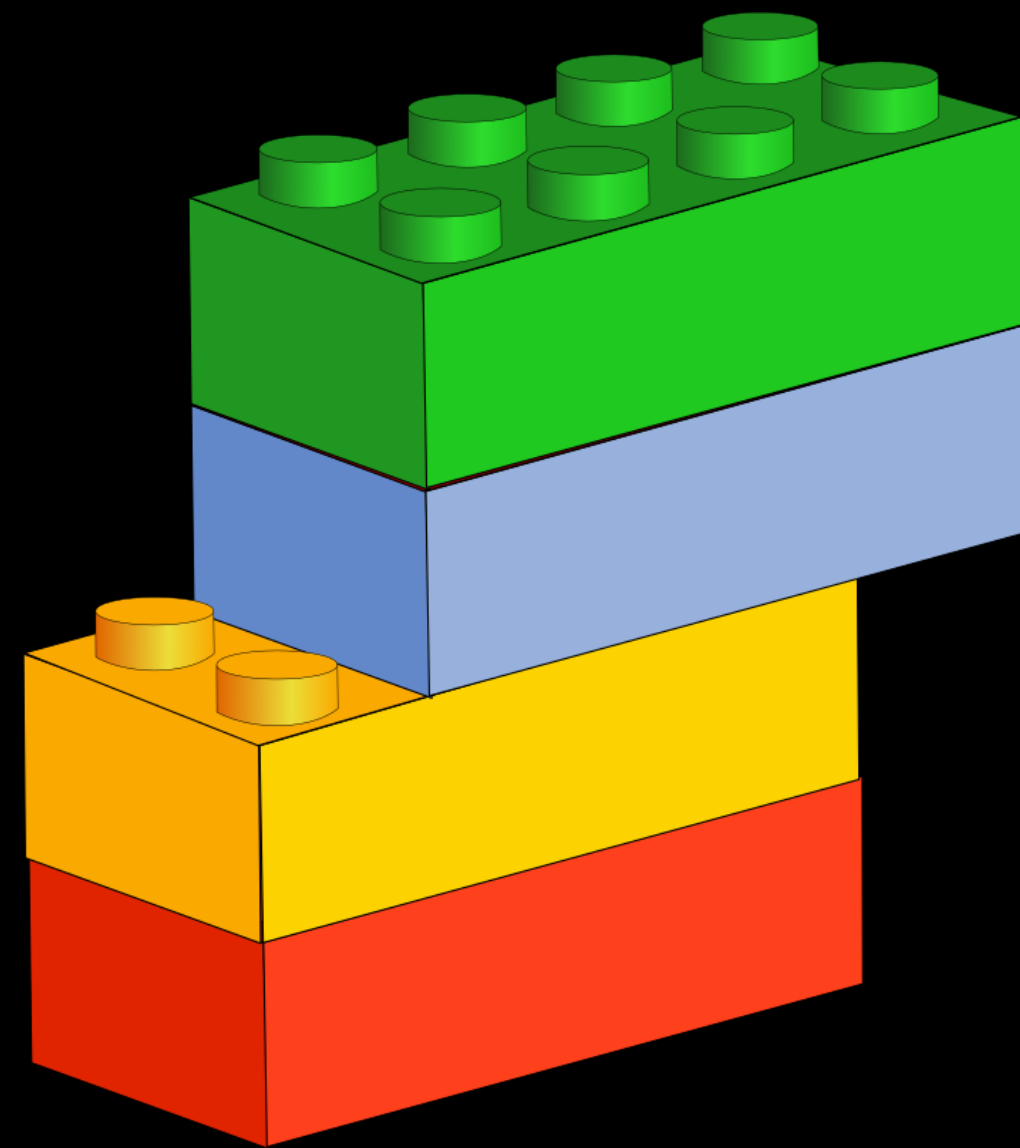
- When should I use Xamarin.Forms?
 - You or your team knows C# and .NET
 - You need apps for multiple-platforms
 - You want native app performance and/or look and feel
 - You're okay knowing that there are cheaper ways to make an app

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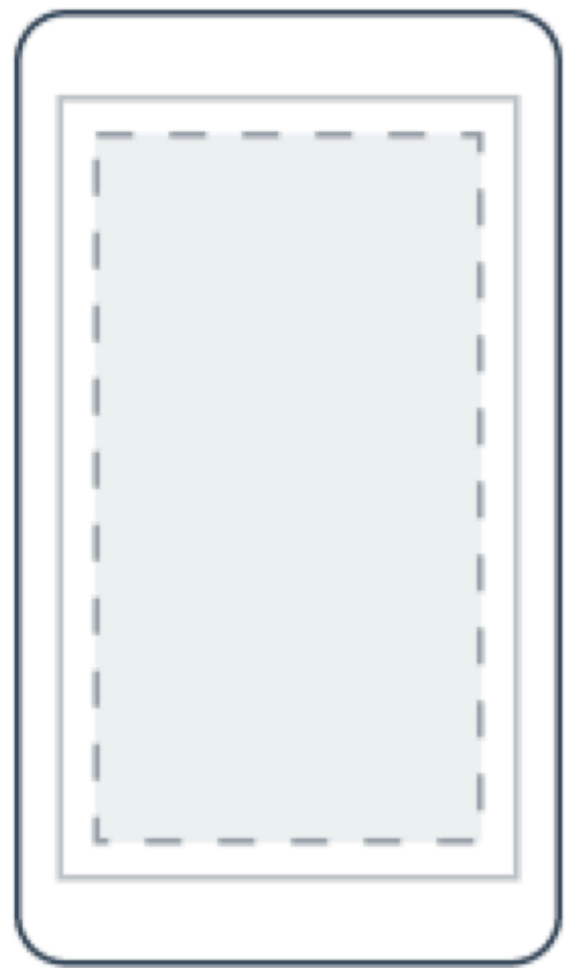
OVERVIEW OF XAMARIN.FORMS BUILDING BLOCKS

- Pages
- Layouts
- Views
- Cells

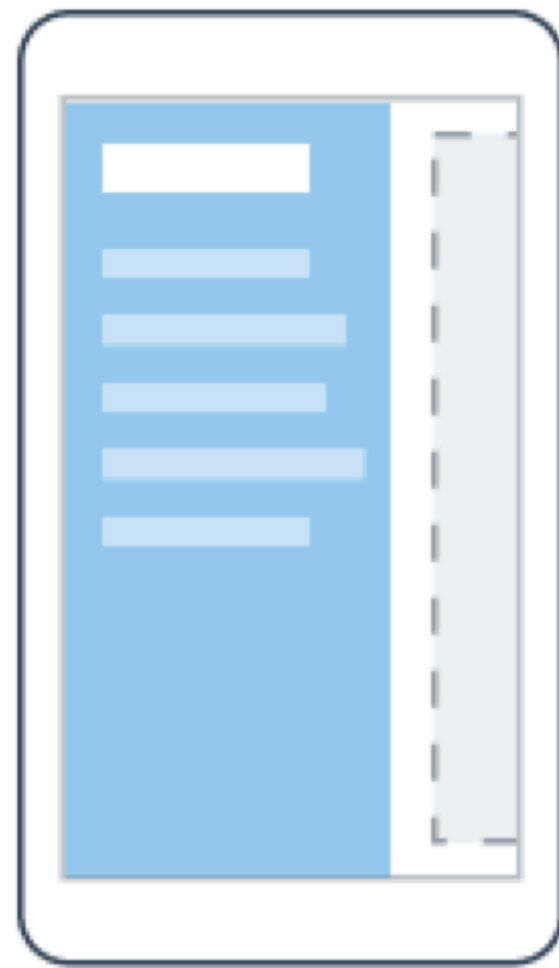


OVERVIEW OF XF BUILDING BLOCKS

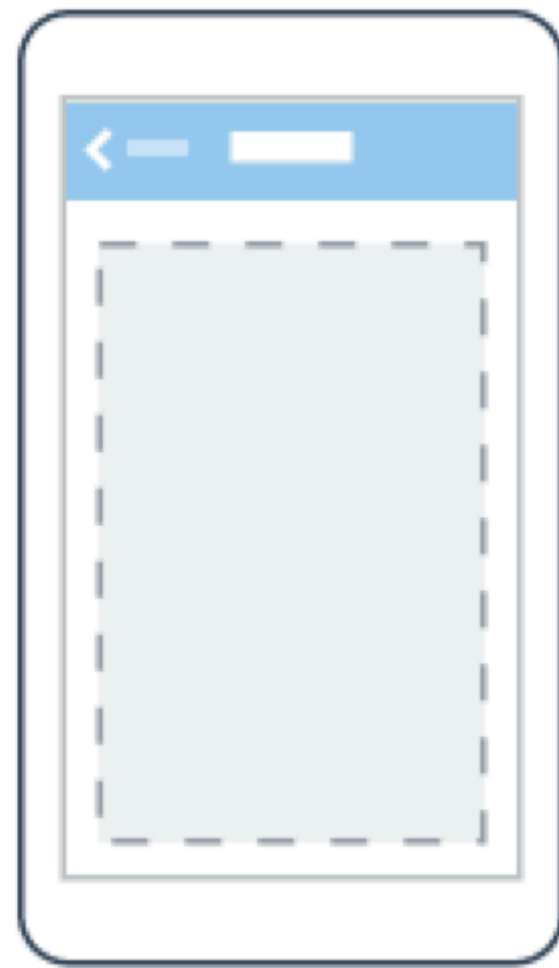
- Pages



ContentPage



MasterDetailPage



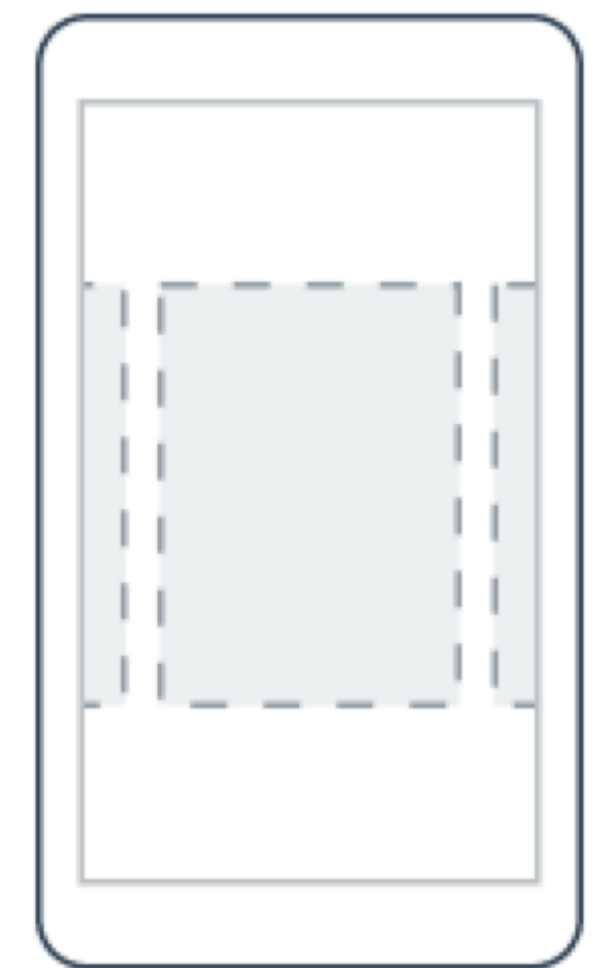
NavigationPage



TabbedPage



TemplatedPage



CarouselPage

OVERVIEW OF XF BUILDING BLOCKS

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

OVERVIEW OF XF BUILDING BLOCKS

- Views

Android

iOS

- Button

A screenshot of an Android button. It is a light gray rounded rectangle with the text "I AM A BUTTON" in black, uppercase letters centered inside.

I AM A BUTTON

A screenshot of an iOS button. It is a white rounded rectangle with the text "I am a button" in blue, lowercase letters centered inside.

I am a 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

A rectangular button with a light gray background and a thin black border. The text "I AM A BUTTON" is centered in a dark gray, sans-serif font.

I AM A BUTTON

A rectangular button with a white background and a thin blue border. The text "I am a button" is centered in a blue, sans-serif font.

I am a button

- Label

A white rectangular label with a thin gray border. The text "Welcome to Xamarin.Forms!" is centered in a gray, sans-serif font.

Welcome to Xamarin.Forms!

A white rectangular label with a thin black border. The text "Welcome to Xamarin.Forms!" is centered in a black, sans-serif font.

Welcome to Xamarin.Forms!

- Entry

A white rectangular entry field with a thin gray border. The text "Enter text here" is centered in a gray, sans-serif font. A horizontal line is positioned below the text.

Enter text here

A white rectangular entry field with a thin gray border. The text "Enter text here" is centered in a gray, sans-serif font. The text is contained within a rounded rectangular box.

Enter text here

- Switch



- ActivityIndicator

OVERVIEW OF XF BUILDING BLOCKS

- Views

Android

iOS

- Button



- Label



- Entry



- Switch



- ActivityIndicator



OVERVIEW OF XF BUILDING BLOCKS

- Views

- ListView



- TableView

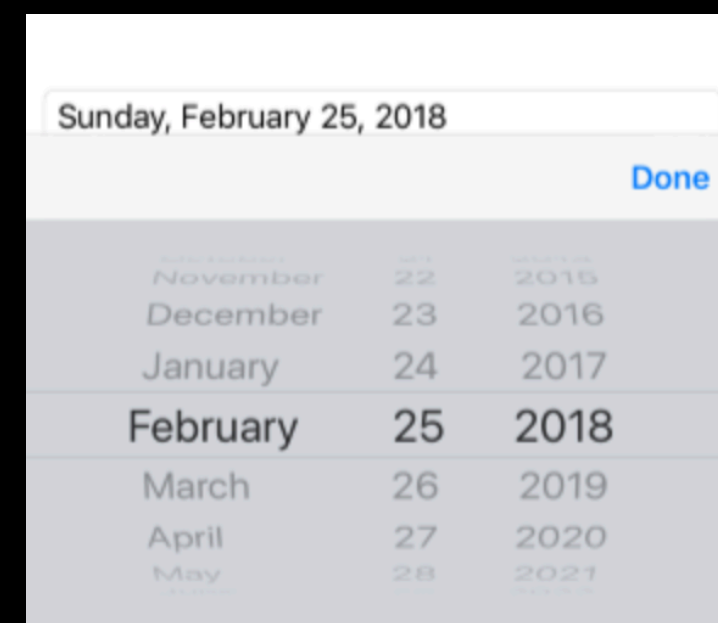
- Image

- Slider



- Picker

- DatePicker



- Editor

- ProgressBar

- SearchBar



- Map

- WebView

- OpenGLView

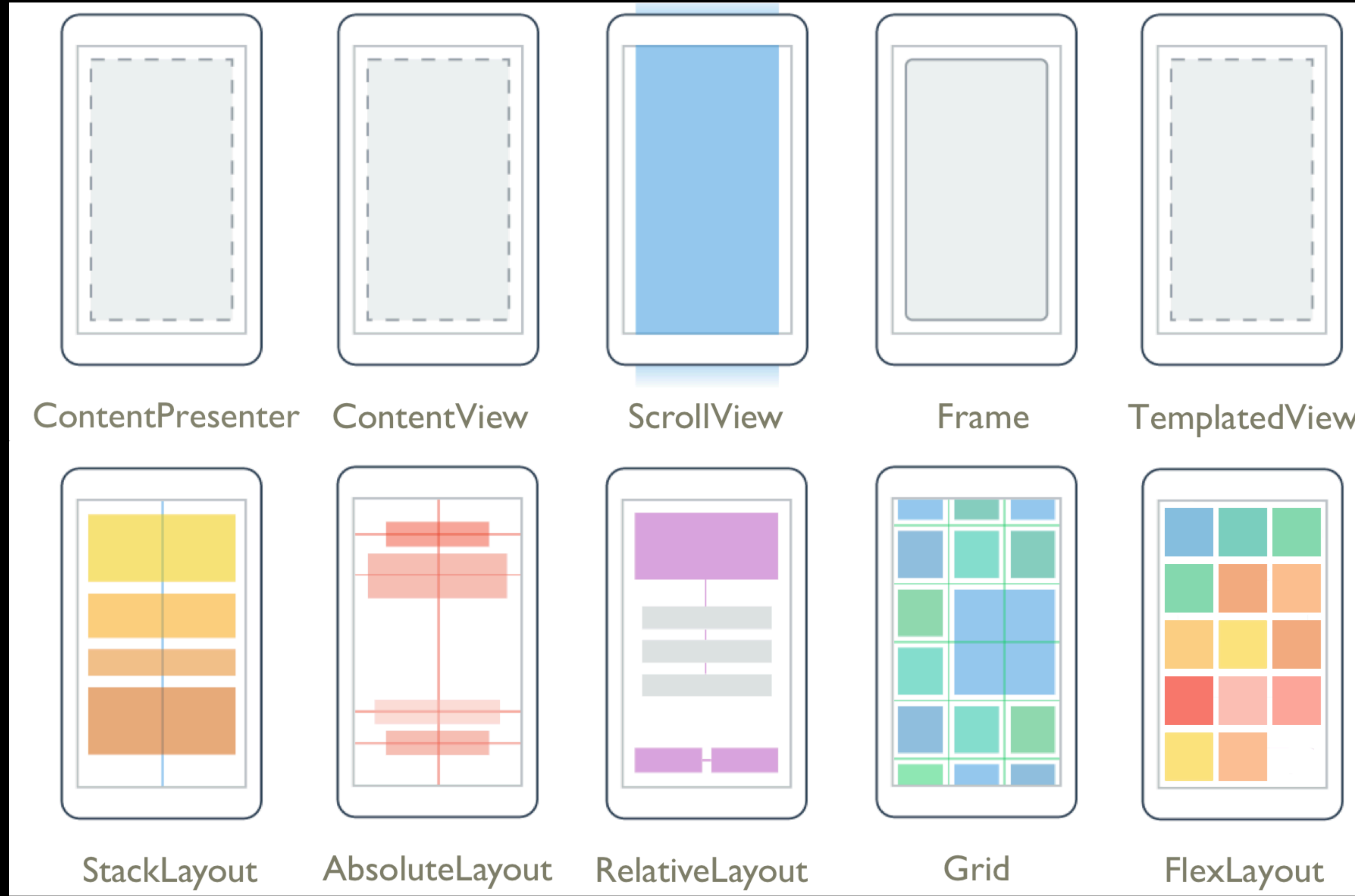
- Frame

- BoxView



OVERVIEW OF XF BUILDING BLOCKS

- Layouts



THE PLAN

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- **Building a Xamarin.Forms UI in XAML**
- Data Binding
- View Customization
- Next Steps & Resources

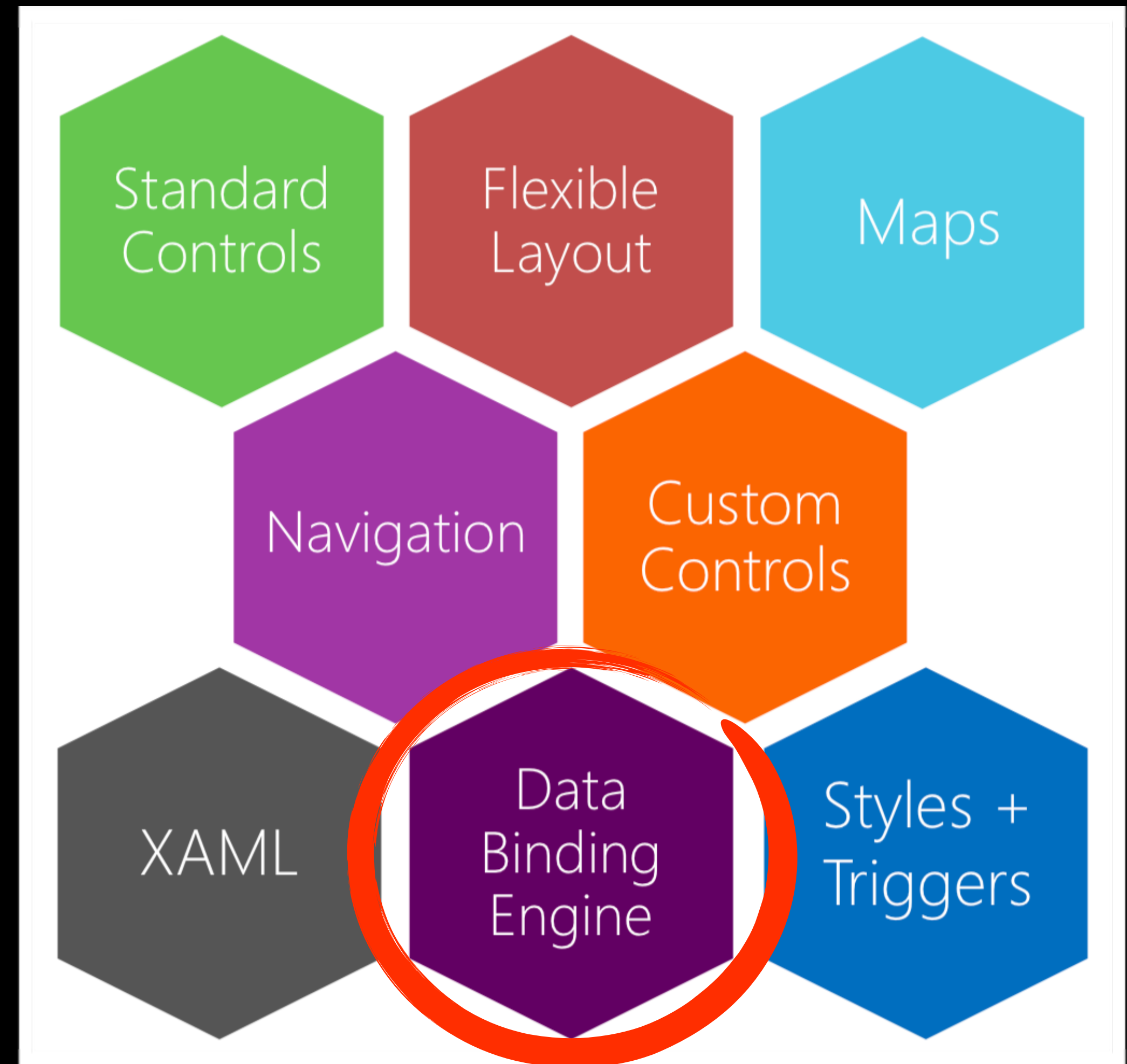
BUILDING A XAMARIN.FORMS UI IN XAML

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

THE PLAN

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DATA BINDING



DATA BINDING

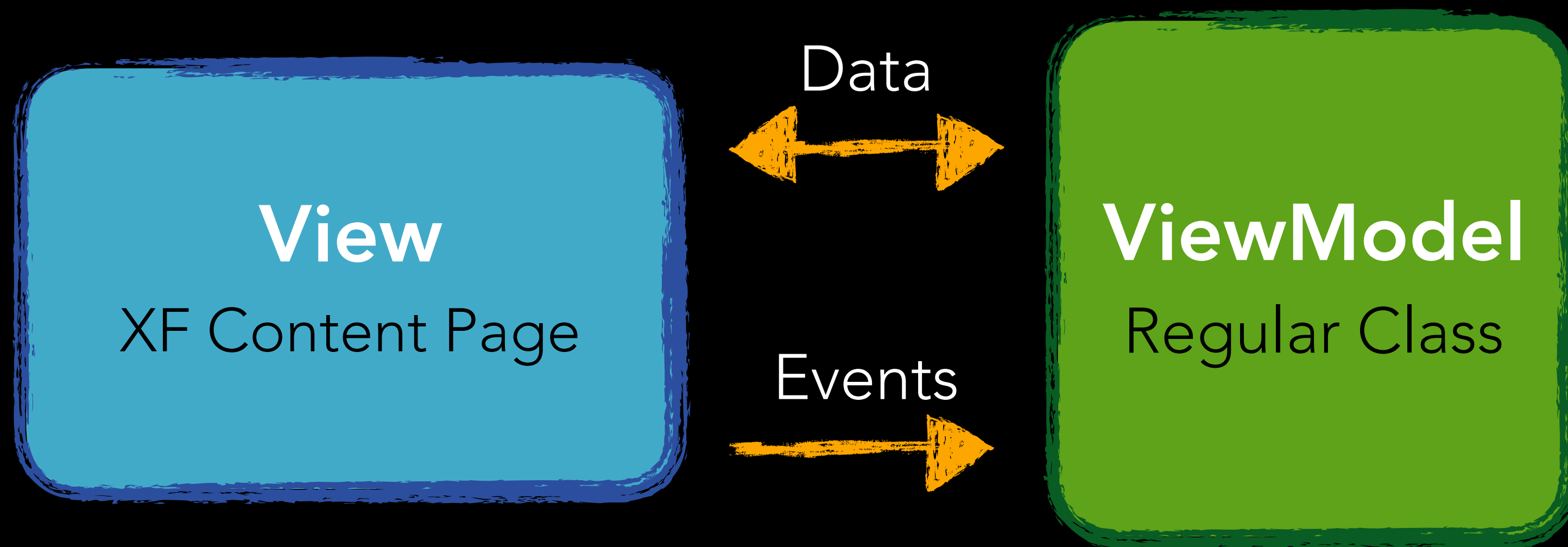
- Some basics of Model-View-ViewModel architecture (MVVM)
- **View**: knows **how** to display data

View

XF Content Page

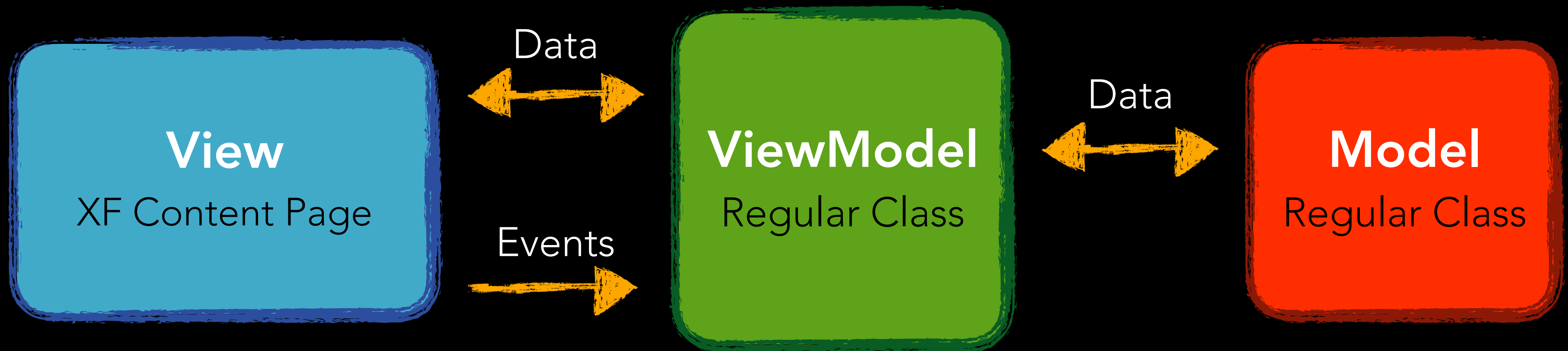
DATA BINDING

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



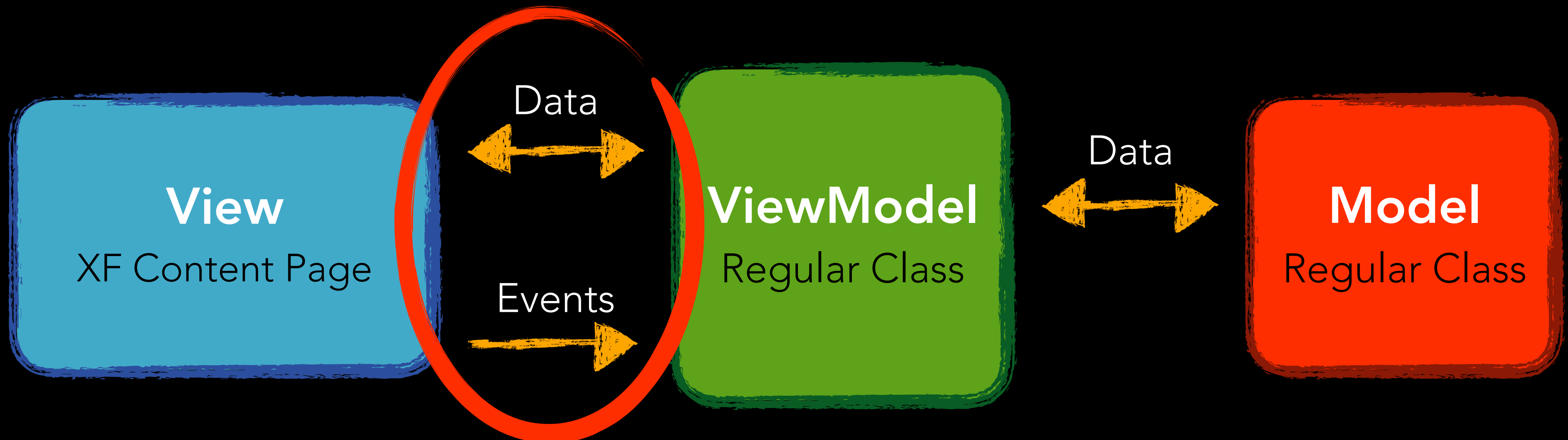
DATA BINDING

- 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



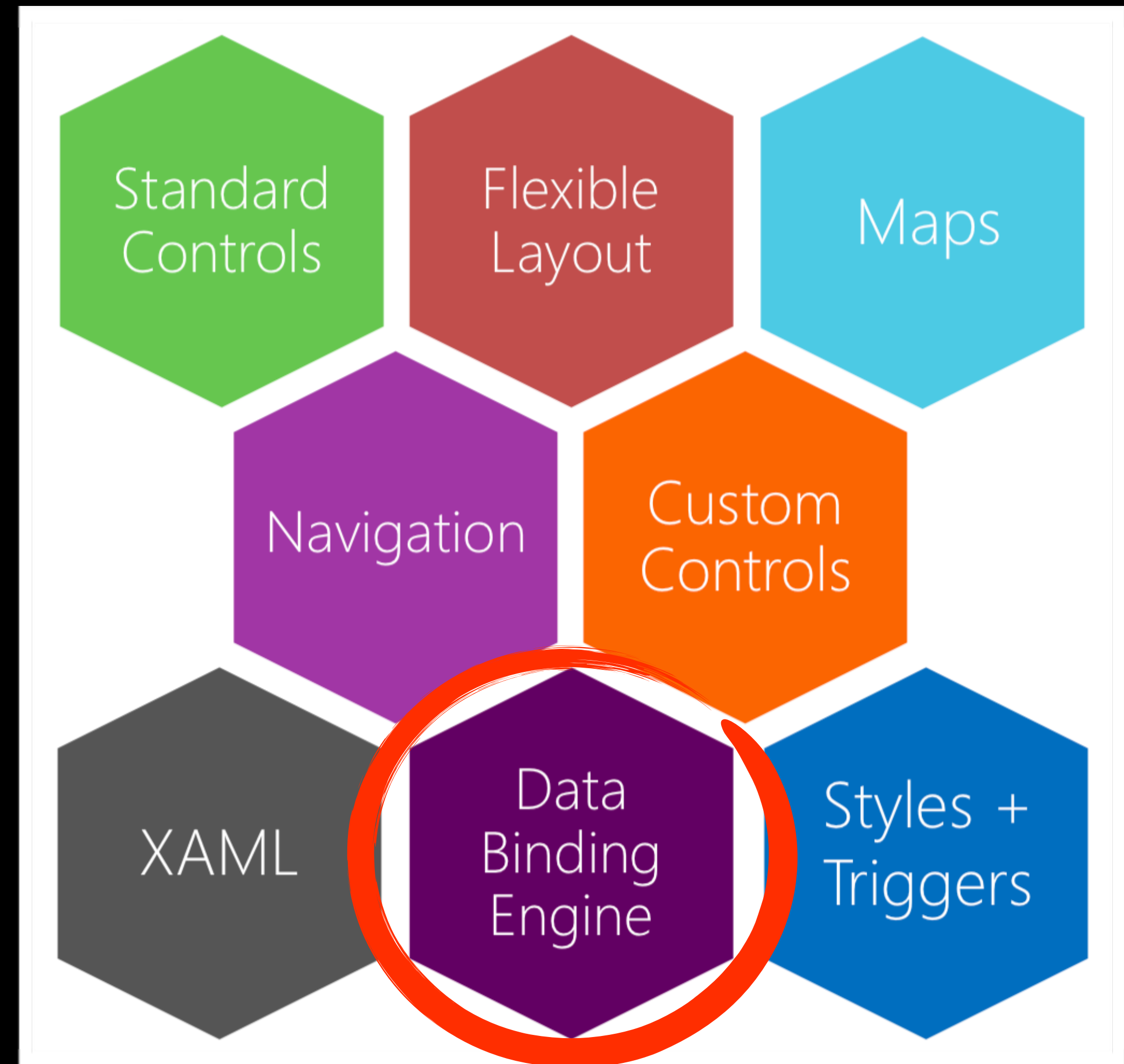
DATA BINDING

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

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

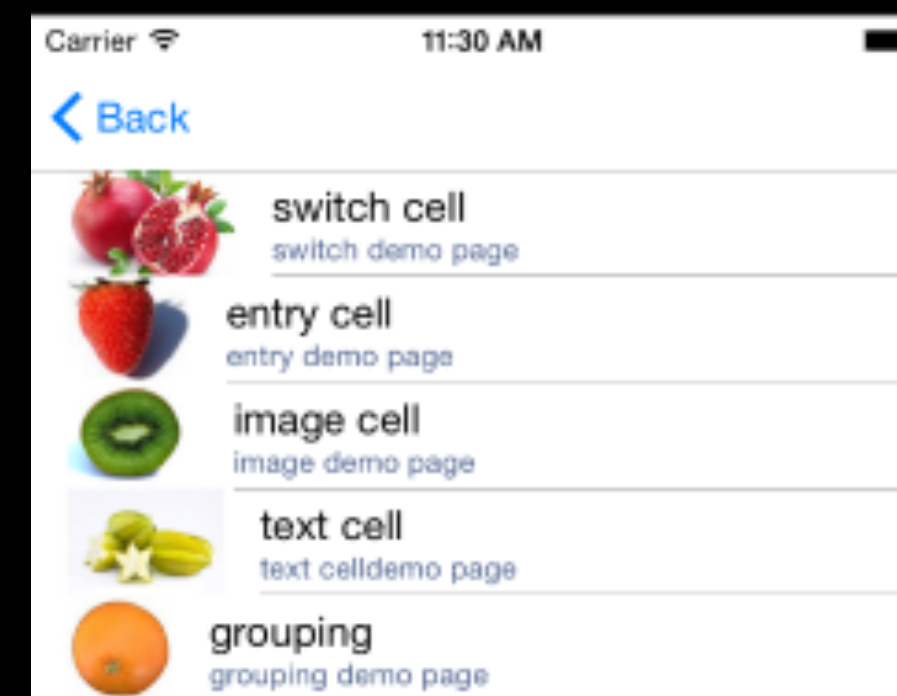
VIEW CUSTOMIZATION

- 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

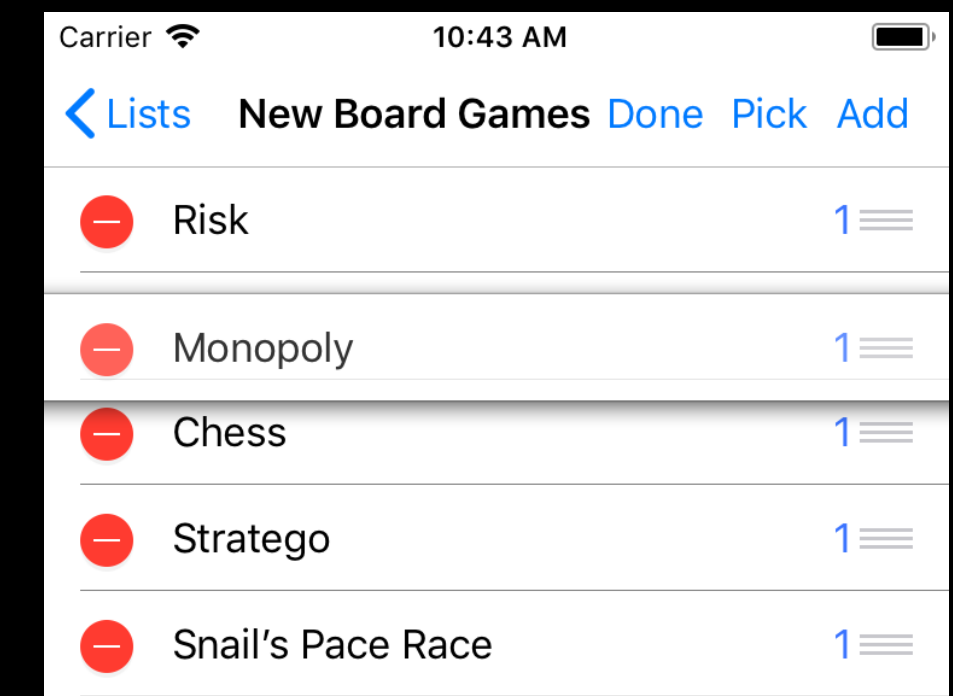
VIEW CUSTOMIZATION

- 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

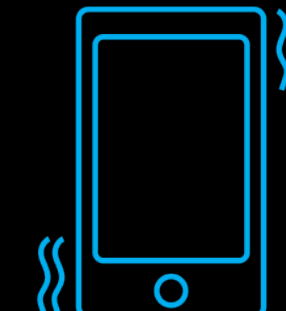
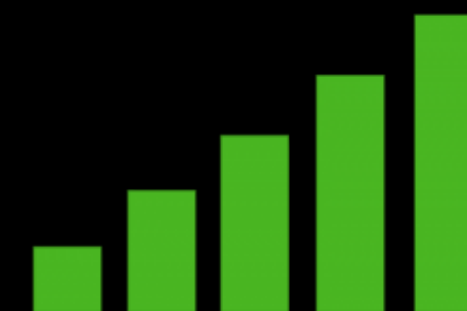


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NEXT STEPS

- 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)



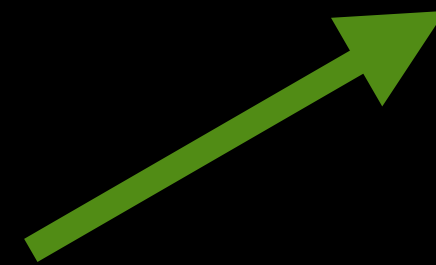
NEXT STEPS

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

To achieve the Mobile Developer certification, complete all of the required courses listed above and pass both the Professional Certification and Developer Certification exams. Note: You must be a Xamarin Certified Mobile Professional prior to gaining eligibility to take the Developer Certification Exam.



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>