

# Module 10

## "Cross-Platform Code Reuse"



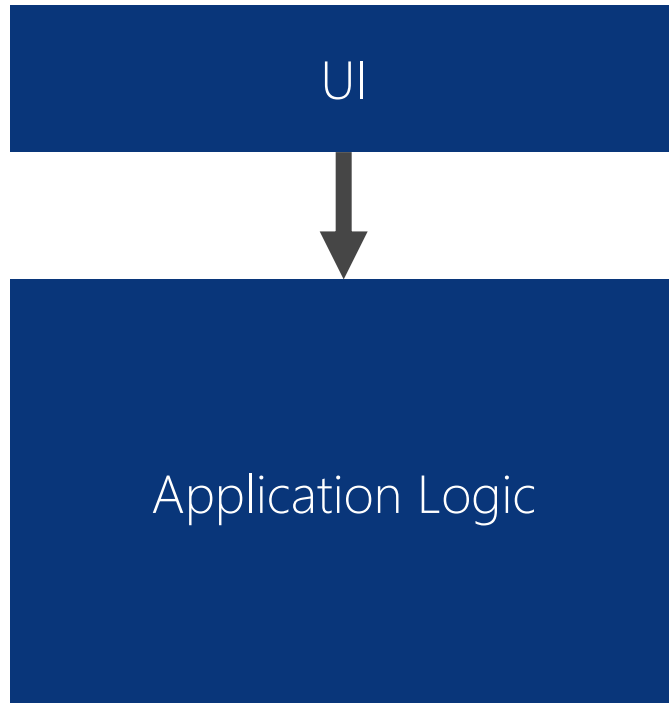
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# Agenda

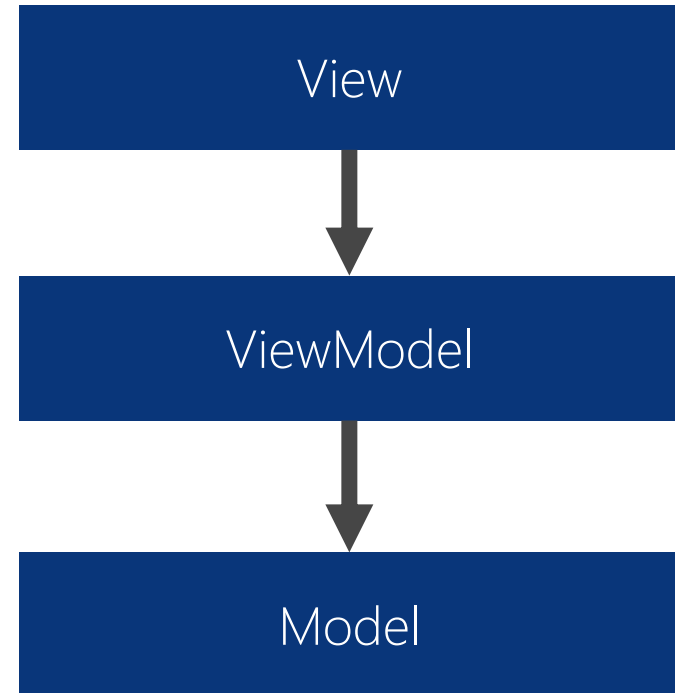
- ▶ **MVVM in Practice**
- ▶ Portable Class Libraries
- ▶ Creating a Cross-Platform Application



# Development Approaches



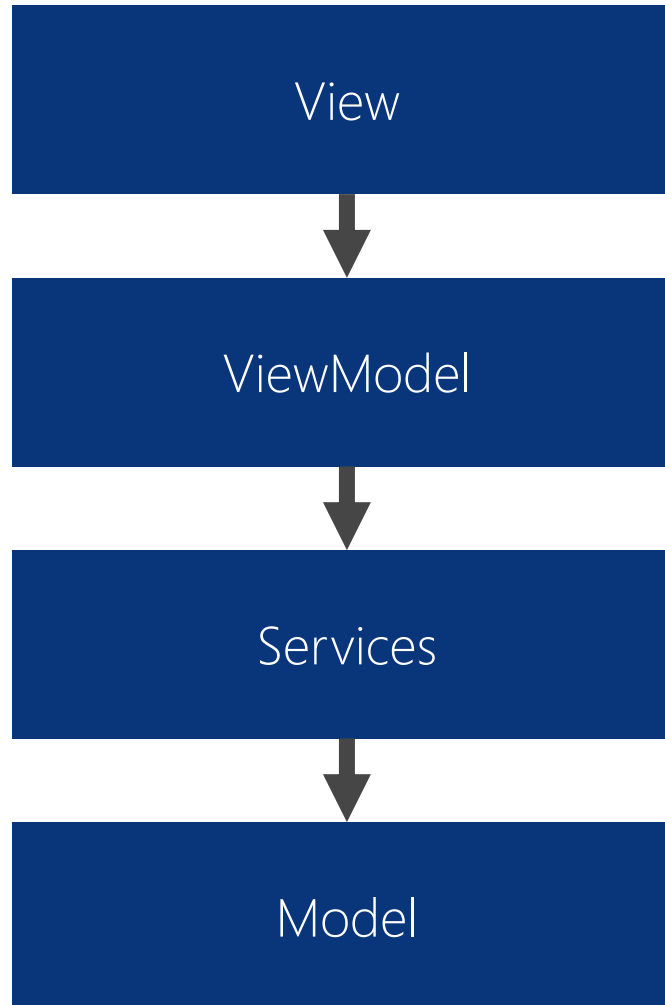
Traditional approach



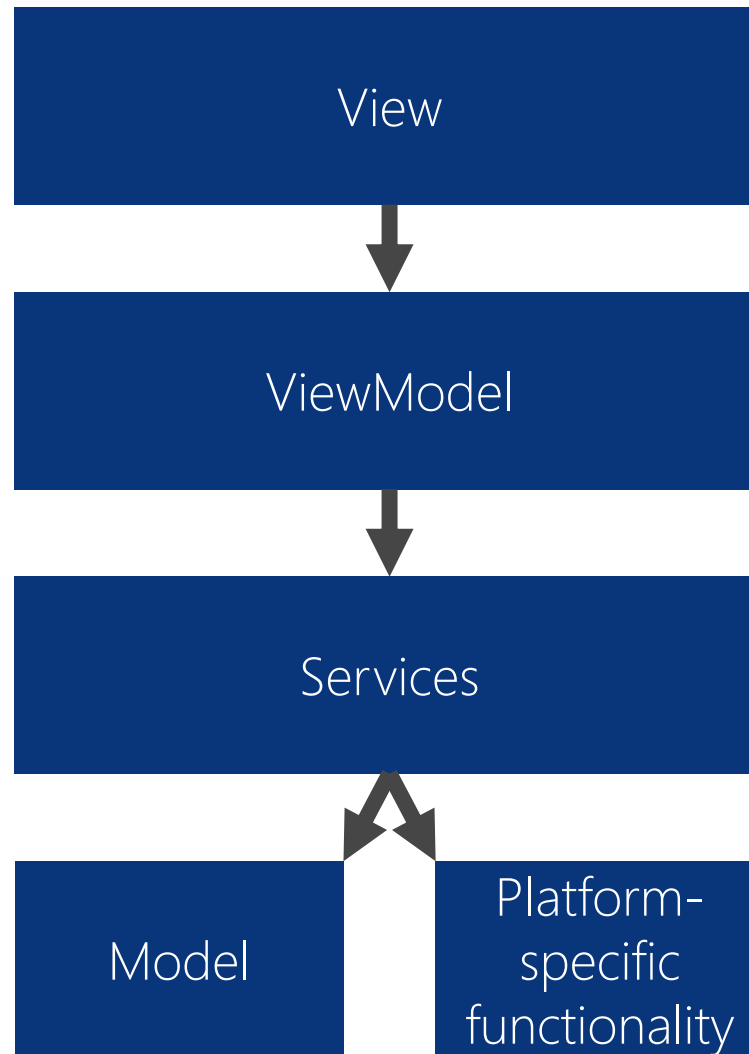
Model-View-ViewModel (MVVM)



# More Specific MVVM Pattern



# Cross-Platform Development



# Agenda

- ▶ MVVM in Practice
- ▶ **Portable Class Libraries**
- ▶ Creating a Cross-Platform Application



# Portable Class Library (PCL)

- ▶ *"Write code once – reuse across various platforms"*
- ▶ New addition to Visual Studio 2010
  - Contains common code
  - Forcing separation
  - Reuse binary-compatible assemblies across platforms
    - No conditional compiler directives **#ifdef** ... **#endif**
- ▶ Platforms include
  - .NET Framework
  - Windows Universal
  - Windows Phone (+ Silverlight) 8.1
  - ASP.NET Core 1.0
  - Silverlight 5
  - Xamarin.\*



# PCL-compliant Libraries

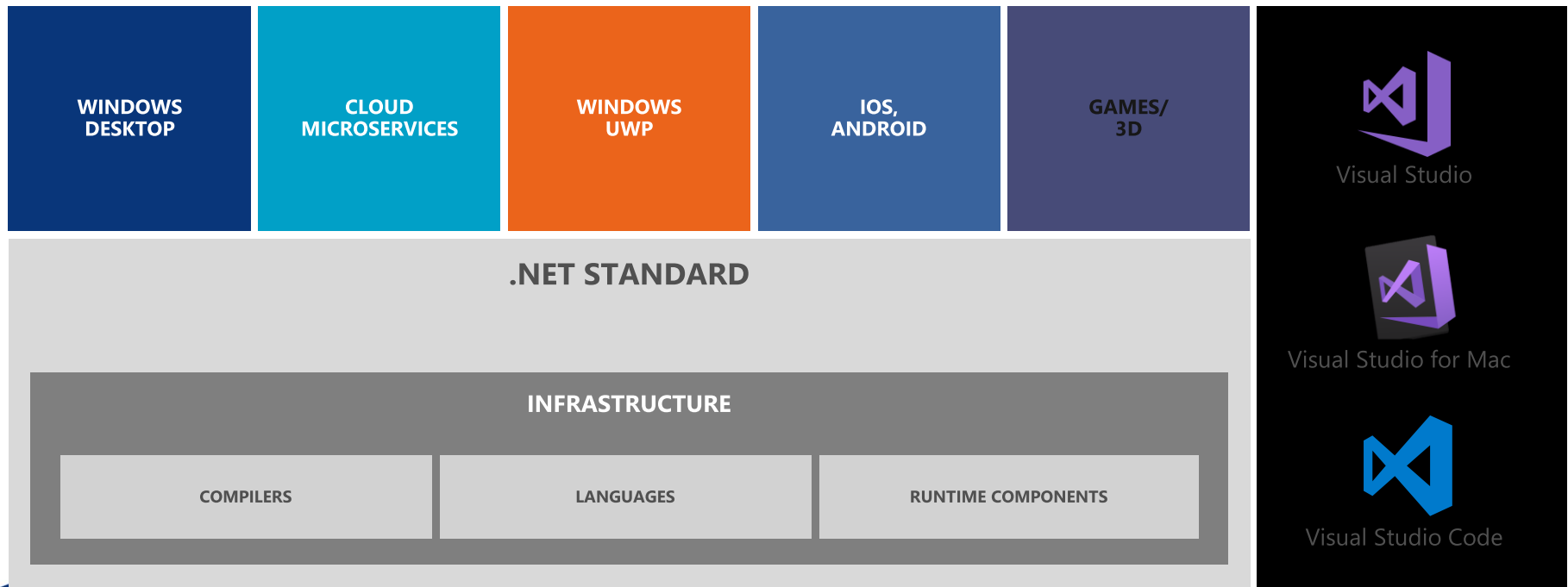
- ▶ `Microsoft.Bcl` BCL Portability Pack
- ▶ `Microsoft.Bcl.Async` Async and Await for PCL
- ▶ `Microsoft.Net.Http` HttpClient client libs
  
- ▶ `Portable.MVVMLightLibs` MVVM Light Toolkit PCL
  
- ▶ `WindowsAzure.MobileServices` WAMS client libs for PCL
  
- ▶ + many, many more
  
- ▶ See longer list at
  - <http://www.hanselman.com/blog/CrossPlatformPortableClassLibrariesWithNETAreHappening.aspx>





# Next Generation: .NET Standard

- ▶ .NET Standard is the evolvement of PCLs
  - <https://docs.microsoft.com/en-us/dotnet/articles/standard/library>



# APIs in .NET Standard 2.0

## **XML**

XLinq • XML Document • XPath • Schema • XSL

## **SERIALIZATION**

BinaryFormatter • Data Contract • XML

## **NETWORKING**

Sockets • HTTP • Mail • WebSockets

## **IO**

Files • Compression • MMF

## **THREADING**

Threads • Thread Pool • Tasks

## **CORE**

Primitives • Collections • Reflection • Interop • Linq

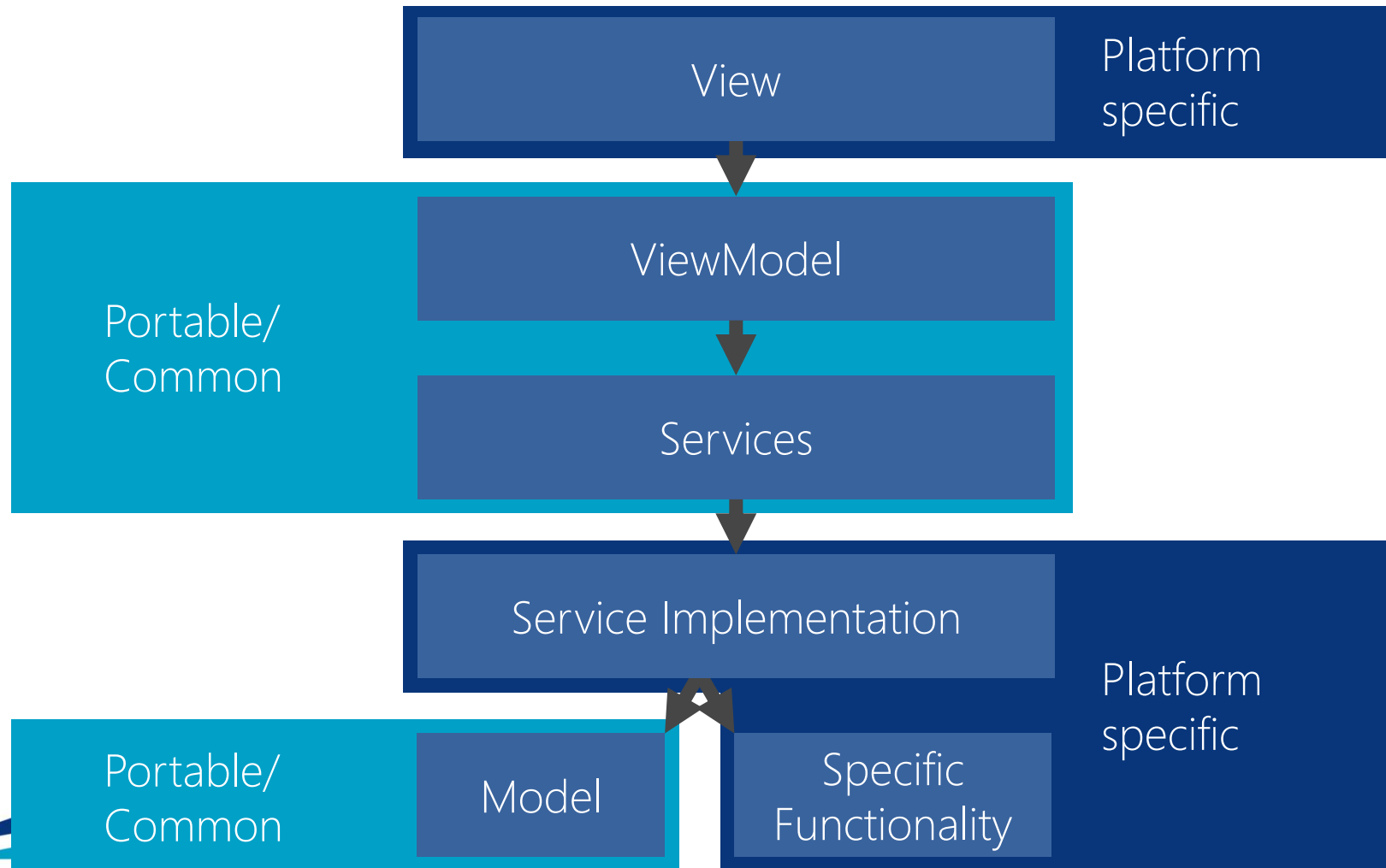


# Agenda

- ▶ MVVM in Practice
- ▶ Portable Class Libraries
- ▶ **Creating a Cross-Platform Application**



# Cross-Platform Architecture



# Initial Project Setup

- ▶ Create solution with
  - Portable Class Library
  - Windows Universal Project
  - Windows Presentation Foundation Project
  - ... + more
- ▶ Add references from platform-specific projects to PCL project
- ▶ Add **Portable.MVVMLightLibs** NuGet package to all projects



# Cross-platform MVVM Setup

- ▶ Add namespace references til PCL ViewModelLocator
- ▶ Bind UI to PCL ViewModel
- ▶ Implement platform-specific View
- ▶ Implement platform-specific services, if any
  - Register/unregister for Dependency Injection
- ▶ Occasionally
  - Add **Microsoft.Bcl.Async** or similar NuGet package
  - Visual Studio "Add As Link" and/or preprocessor defines



# Summary

- ▶ Practical MVVM
- ▶ Portable Class Libraries
- ▶ Creating a Cross-Platform Application





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