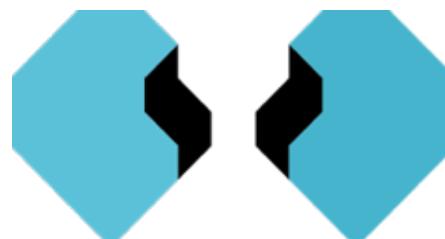


From Obj-C to C#

3 years with Xamarin

Gabor Furedi, Co-founder @Zen Heads



brief history

- first published apps back in 2008
- mobile games and apps only for iOS until 2013
- 2million+ downloads
- started Zen Heads in 2013

Xamarin experience

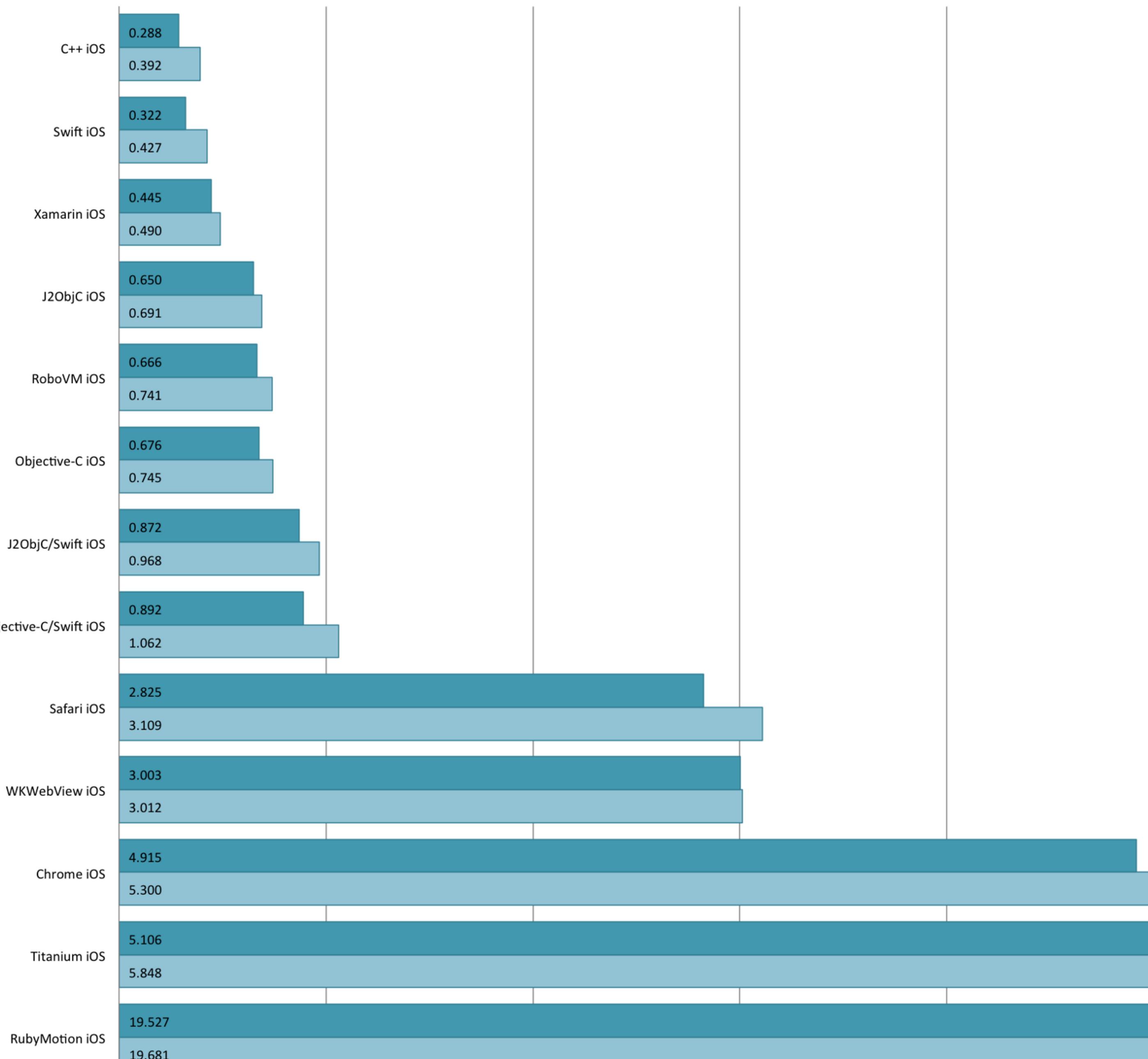
- 10 projects since 2014
- 4,000,000+ sessions
- 5000+ crashes :)

Xamarin sucks!

C# or F#,
.NET

iOS App Performance
(in seconds - lower is better)

iPad Air 2 iPhone 6



Xamarin Studio or Visual Studio

The screenshot shows the Xamarin Studio interface with the following components:

- Solution Explorer:** Displays the project structure for "ACALive" with various files and folders like "ACALive", "ACALive.Droid", "ACALive.iOS", and "Views".
- Code Editor:** The "RaceListView.cs" file is open, showing C# code for a Xamarin View Controller. A specific line of code is highlighted in yellow: `var set = this.CreateBindingSet<RaceListView<T>, T>();`. The code handles view loading and binding logic.
- Application Output:** Shows log entries from the application's runtime, including diagnostic messages and startup logs.
- Call Stack:** Displays the current call stack, starting with `ACALive.iOS.RaceListView<ACALive.ViewModels.CurrentRaceListViewModel>.ViewDidLoad()`.
- Preview:** A preview window shows the mobile application running on an iPhone SE with iOS 10.1. The screen displays a snowy mountain landscape with the text "LIVE TIMING" overlaid.

Frameworks, libraries

Xamarin.iOS, Xamarin.Mac,
Xamarin.Android



NuGet (like CocoaPods)

Obj-C Library Bindings (Objective Sharpie)

eg.

```
var attributedFriendString = new NSMutableAttributedString(myVM.FindFriendsBigText);
var friendAttribute = new UIStringAttributes {
    ParagraphStyle = new NSMutableParagraphStyle {LineSpacing = 0.5f, LineHeightMultiple = 0.75f, Alignment =
    UITextAlignment.Center}};

var friendRange = new NSRange(0, myVM.FindFriendsBigText.Length);
attributedFriendString.SetAttributes(friendAttribute, friendRange);

findFriendBigLabel.AttributedText = attributedFriendString;
```

eg.

```
public LocationService () {  
    locationManager = new CLLocationManager();  
    locationManager.LocationsUpdated += (object sender, CLLocationsUpdatedEventArgs e) => {  
        CLLocation newCLLocation = e.Locations[e.Locations.Length - 1];  
        LocationUpdate(this, CreateLocationFromCLLocation(newCLLocation));  
    };  
}
```

Xamarin.Forms



XAML

MVVM



Xamarin.UITest

[Test]

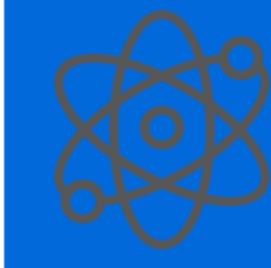
```
public void TestNormalLogin() {
    Func<AppQuery, AppQuery> loginButton = query => query.Marked("loginButton");
    Func<AppQuery, AppQuery> emailEntry = query => query.Marked("emailEntry");
    Func<AppQuery, AppQuery> passwordEntry = query => query.Marked("passwordEntry");
    app.Tap(emailEntry);
    app.EnterText("a@x.com");
    app.Tap(passwordEntry);
    app.EnterText("a");

    app.DismissKeyboard();
    app.Tap(loginButton);

    //wait 2 seconds and check if login button is still visible. if yes, something is not right
    Task.Delay(2000);
    AppResult[] loginButtonStillVisible = app.Query( c => c.Marked("loginButton"));
    Assert.IsFalse(loginButtonStillVisible.Any(), "Login button still visible after logging in!");
}
```

Xamarin Profiler

Available instruments



All Instruments

Includes all available instruments.



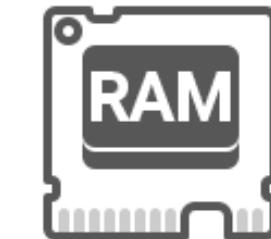
Allocations

Analyzes the memory usage by tracking object allocations.



Cycles

Detects reference cycles.



Memory

Find memory-related problems.



Performance

Find memory and CPU usage performance problems.



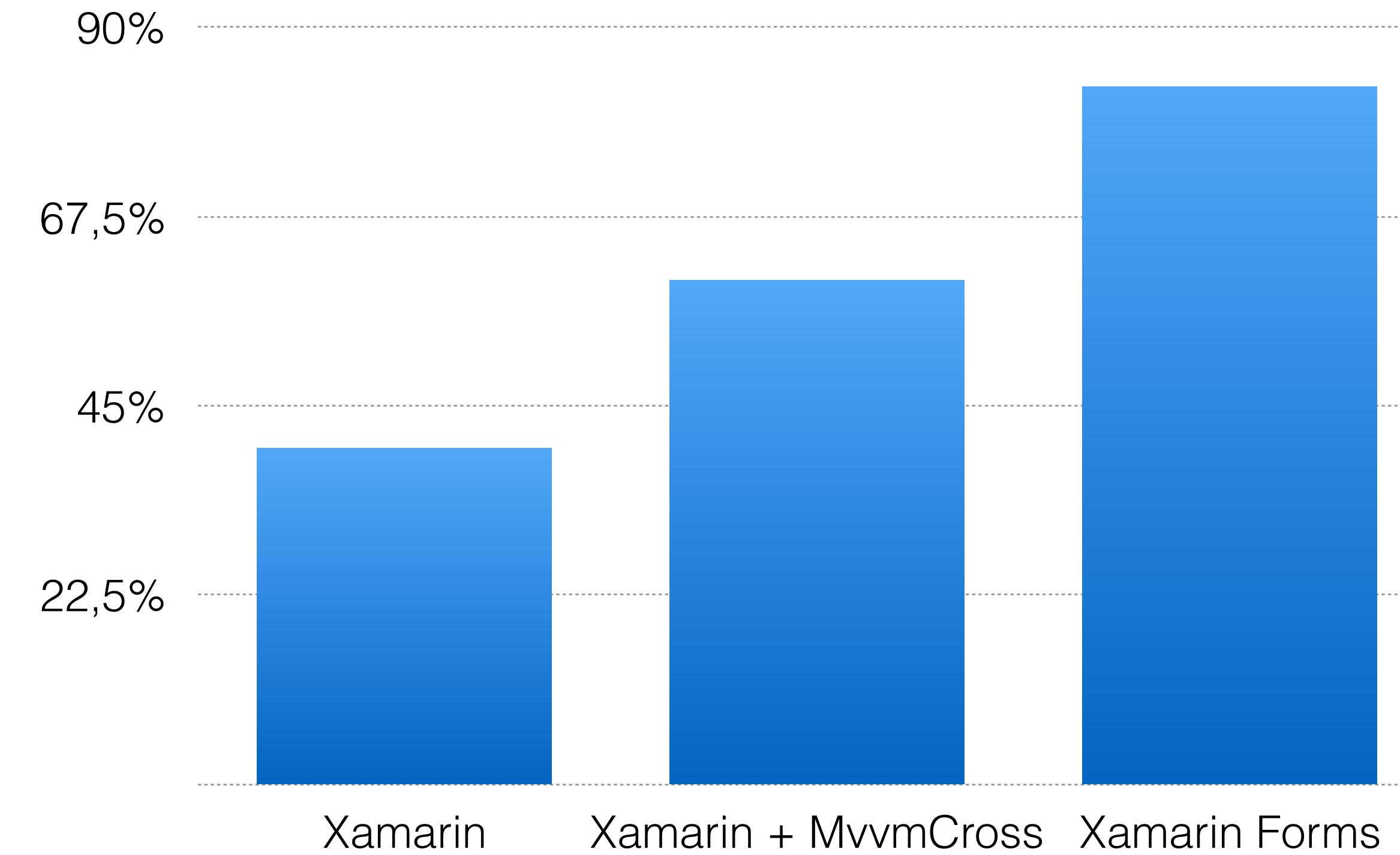
Time Profiler

Profiles a running program on all cores at regular intervals.

Xamarin strategies

- vanilla Xamarin
- Xamarin.Forms
- Xamarin + MVVM framework (eg. MvvmCross)

Code reuse



MVVM

- Model - View - ViewModel
- Bindings to Properties and Commands
- Events
- Converters
- Dependency Injection

Interfaces

- location manager
- initiate phone calls
- Facebook

Interface eg.

```
public interface IFacebookInterface {  
    void StartLogin(Action<string, string> callback, Action<string> failCallback, Action cancelCallback);  
    void Logout();  
    void Share(String message, String urlString);  
  
    bool IsLoggedIn();  
}
```

Interface eg.

```
public void Share (string message, string urlString) {  
    var shareLinkContent = new ShareLinkContent();  
    shareLinkContent.SetContentUrl(new NSUrl(urlString));  
    shareLinkContent.ContentDescription = message;  
    shareLinkContent.ContentTitle = "Let's get fit together!";  
  
    var window = UIApplication.SharedApplication.KeyWindow;  
    var activeViewController = window.RootViewController;  
    while (activeViewController.PresentedViewController != null) {  
        activeViewController = activeViewController.PresentedViewController;  
    }  
  
    ShareDialog.Show(activeViewController, shareLinkContent, null);  
}
```

Interface eg.

VM

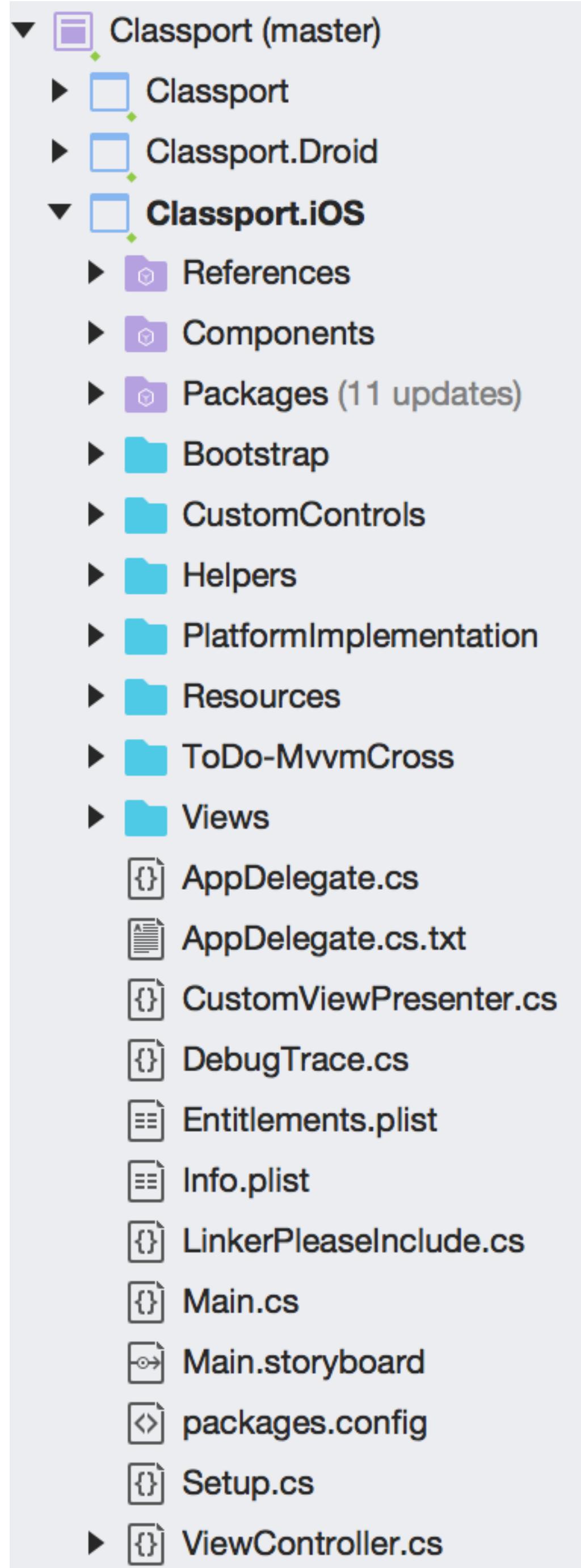
```
ReferFacebookFriendCommand = new MvxCommand(() =>  
    fbInterface.Share(facebookReferralString, "http://onelink.to/classport"));
```

View

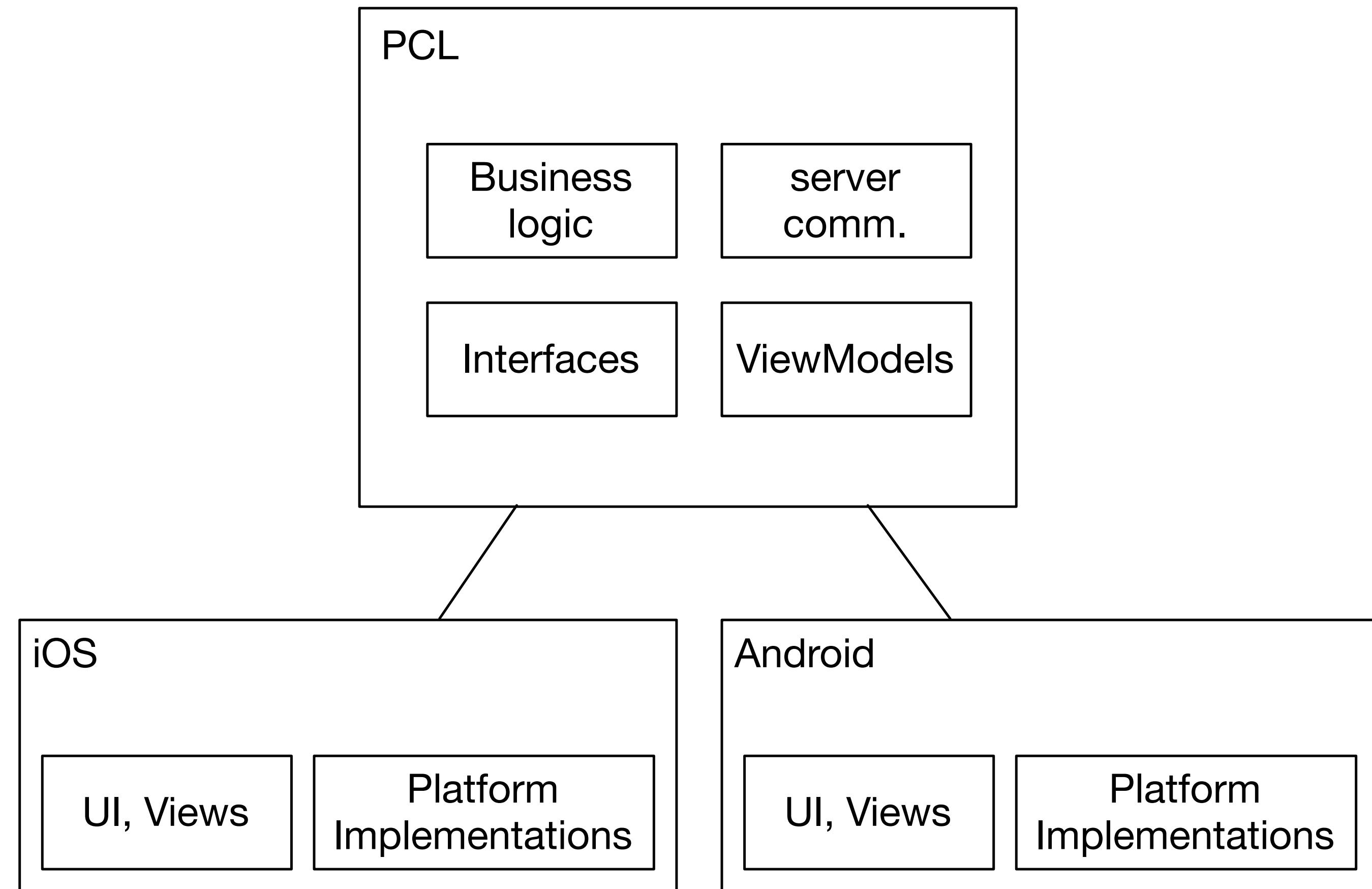
```
set.Bind(referFacebookButton).To(vm => vm.ReferFacebookFriendCommand);
```

Typical setup

- 4 projects
 - PCL
 - iOS
 - Android
 - UITests



Typical setup



Typical setup

- MvvmCross
 - DownloadCache, File
- Newtonsoft.Json
- Xamarin.Google.Analytics
- Xamarin.Auth
- Xamarin.Facebook

Xamarin + MvvmCross FTW