



CROSSPLATFORM MOBILE APP DEVELOPMENT WITH



# Who is this person?

**Subodh Sohoni**

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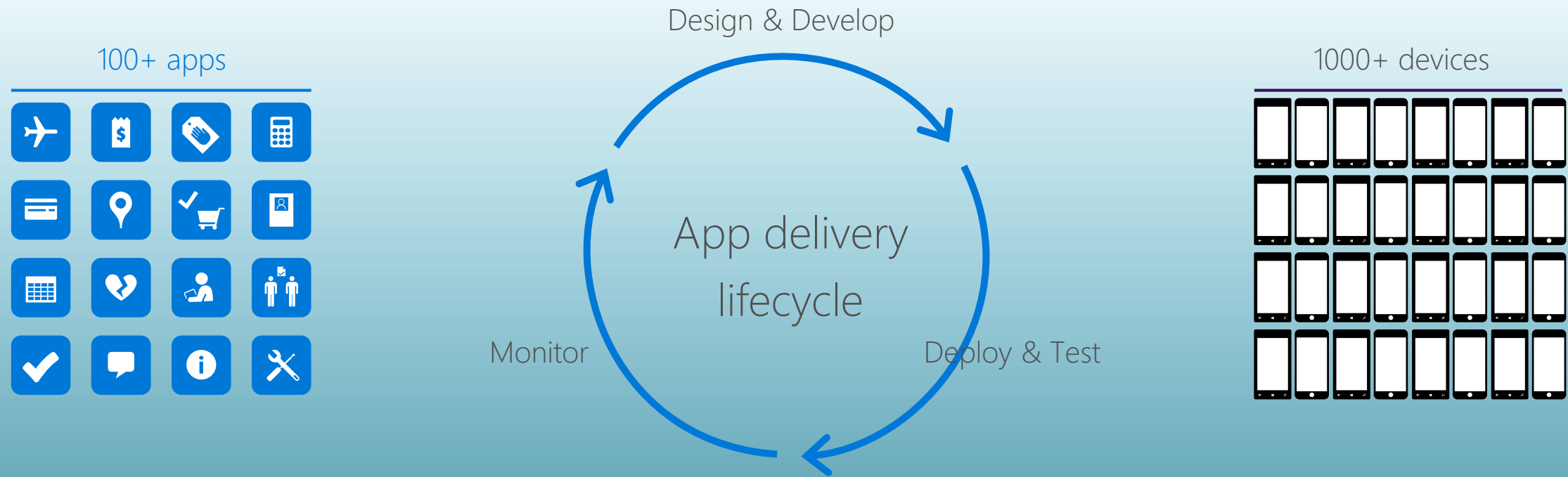
@subodhsohoni



Application Lifecycle Management

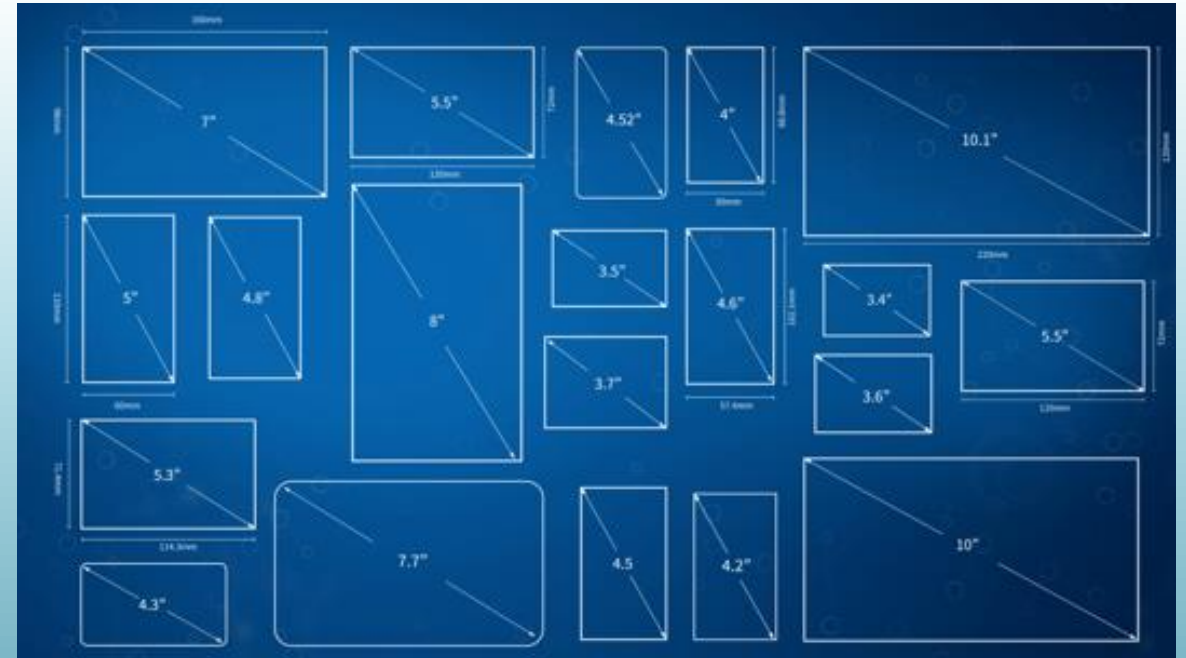


# Mobile development challenges

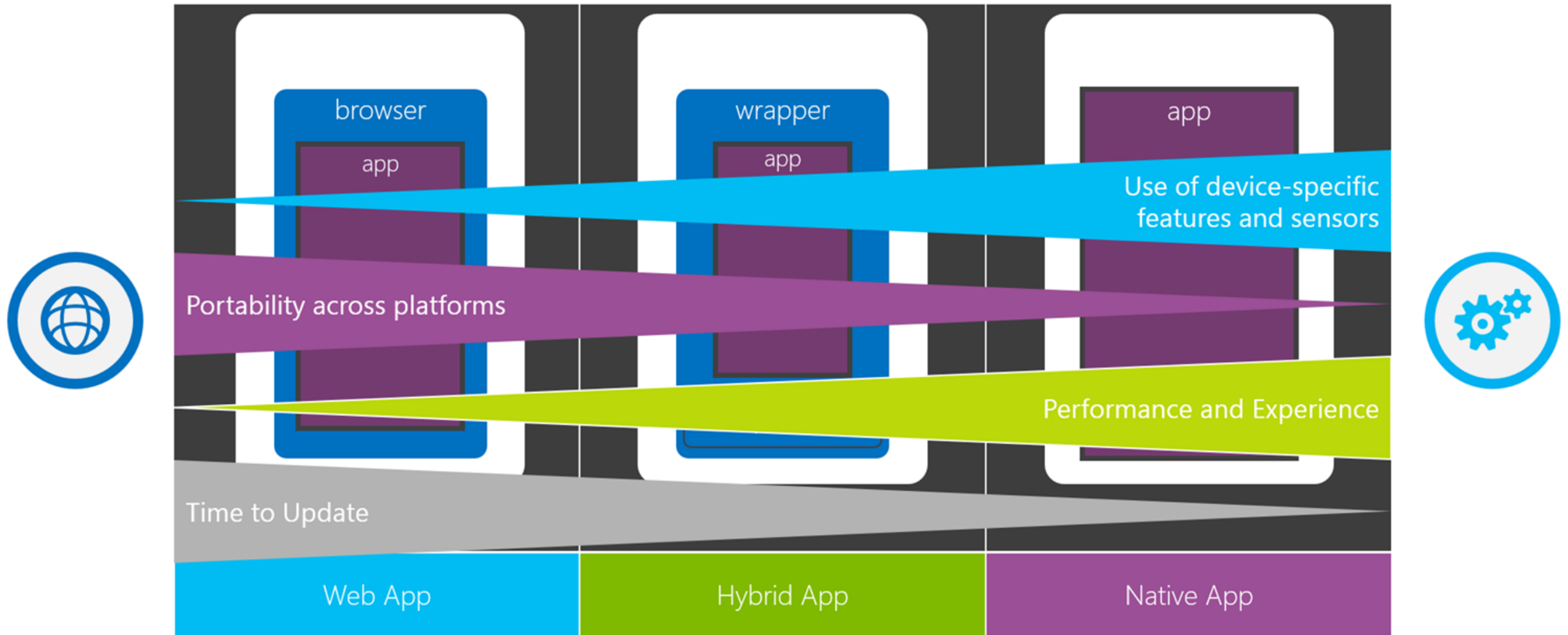


# Cross-Platform Mobile Development

- Building High quality apps is hard
  - Different presentation styles, interaction styles and software stack
  - Different screen sizes, input modes and hardware capabilities
  - New devices and OS versions are introduced multiple times per year
  - New consumer applications regularly extend and revise the standards and set the bar higher for good mobile applications



# Client Technology Choices



# Silo: Build App Multiple Times



No shared code • Many languages & development environments • Multiple teams

# Silo: Build App Multiple Times

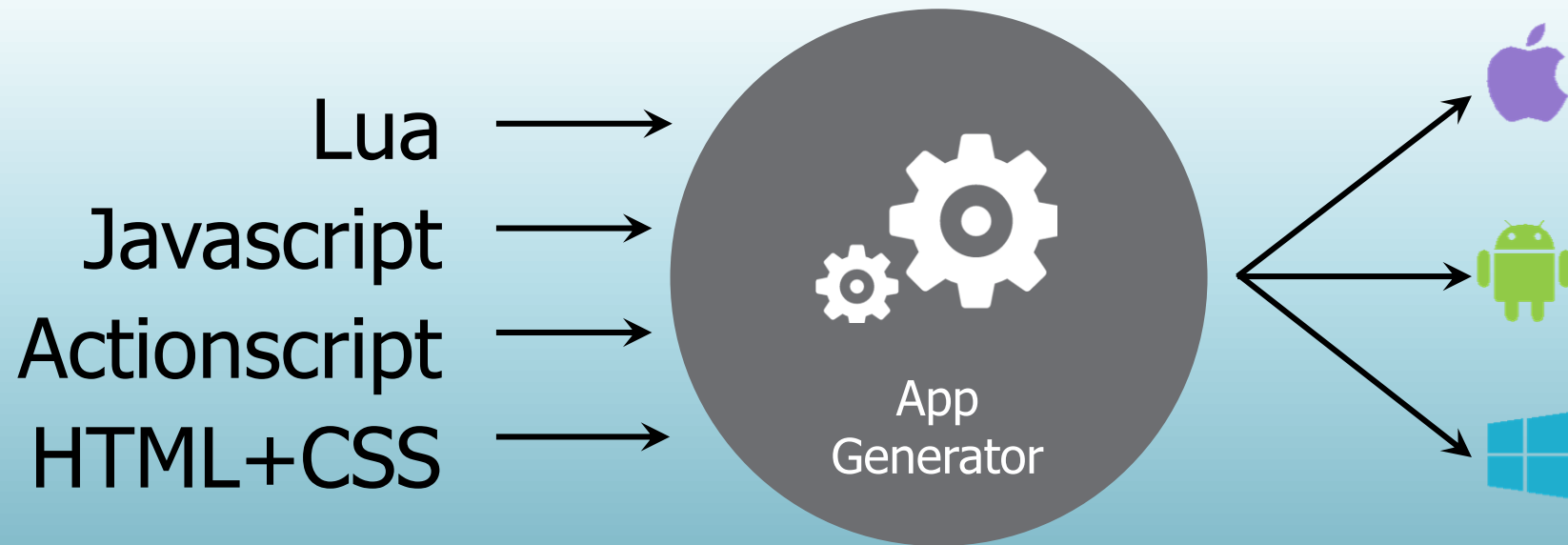
## Benefits

- Full native experience
- Total access to the device as provided by SDK
- Share Web API

## Challenges

- Minimal re-use mostly on back end Web API
- Higher development cost from multiple teams (silo teams) or expensive multi-device developers
- Multiple codebases to maintain and extend
- One platform rules the others are subservient

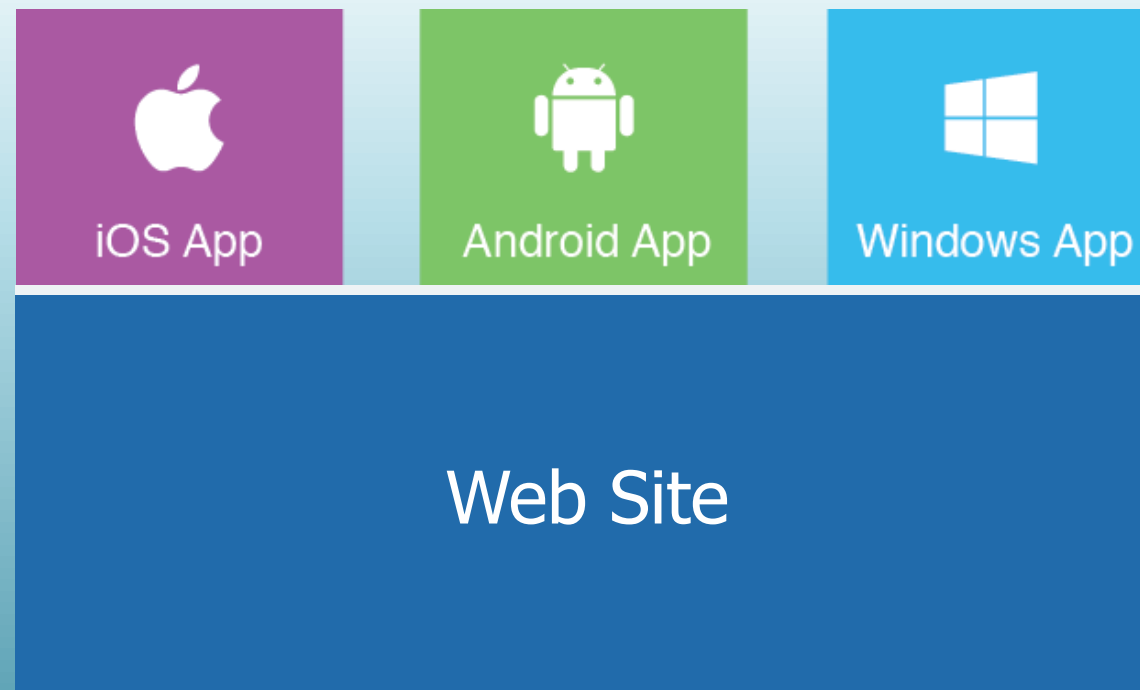
# HTML: Write Once, Run Everywhere



Limited native API access • Slow performance • Poor user experience



# Target Browser Not OS



# HTML: Write App using Mobile Web

## Benefits

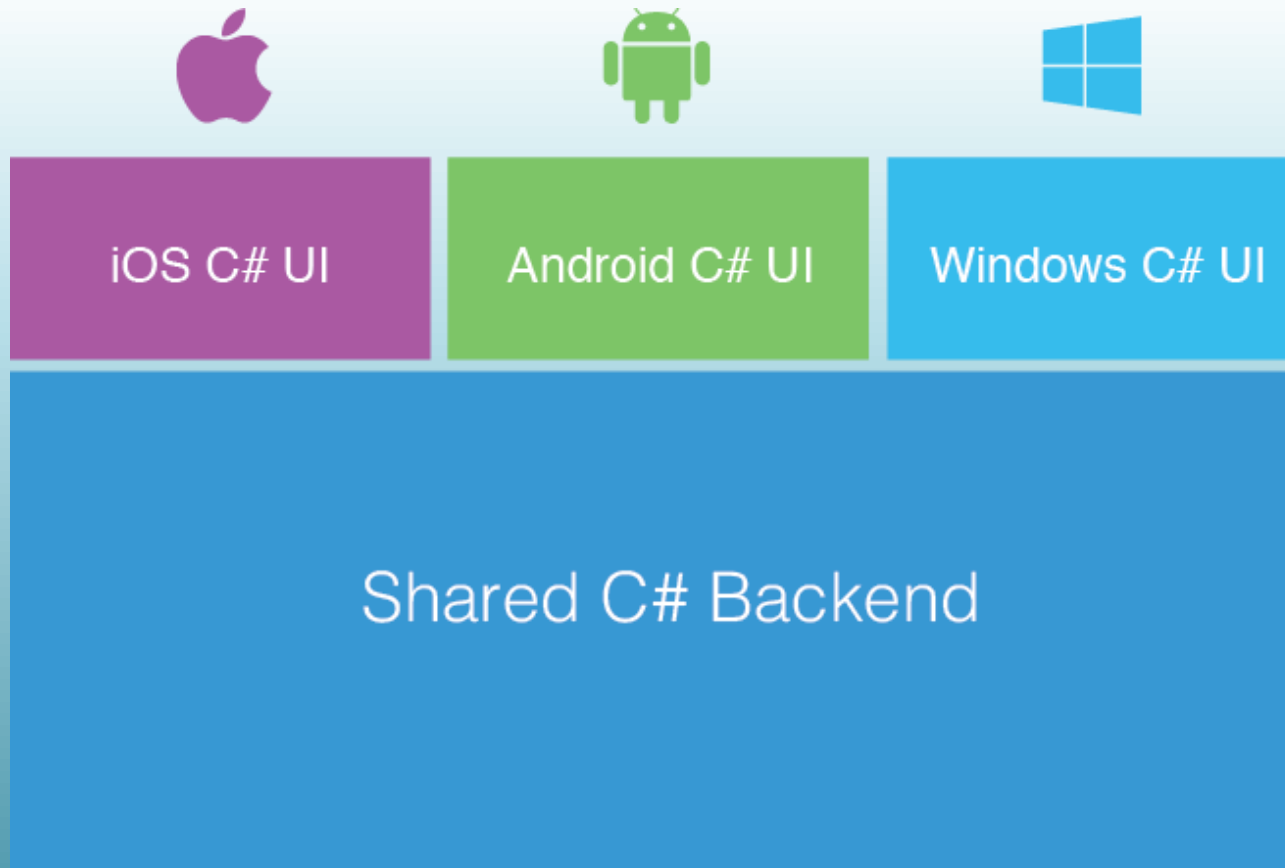
- Provide consist experience regardless of target
- Cheap as it is just HTML
- Single codebase to maintain and extend
- No need for revenue sharing as no need to be in app stores

## Challenges

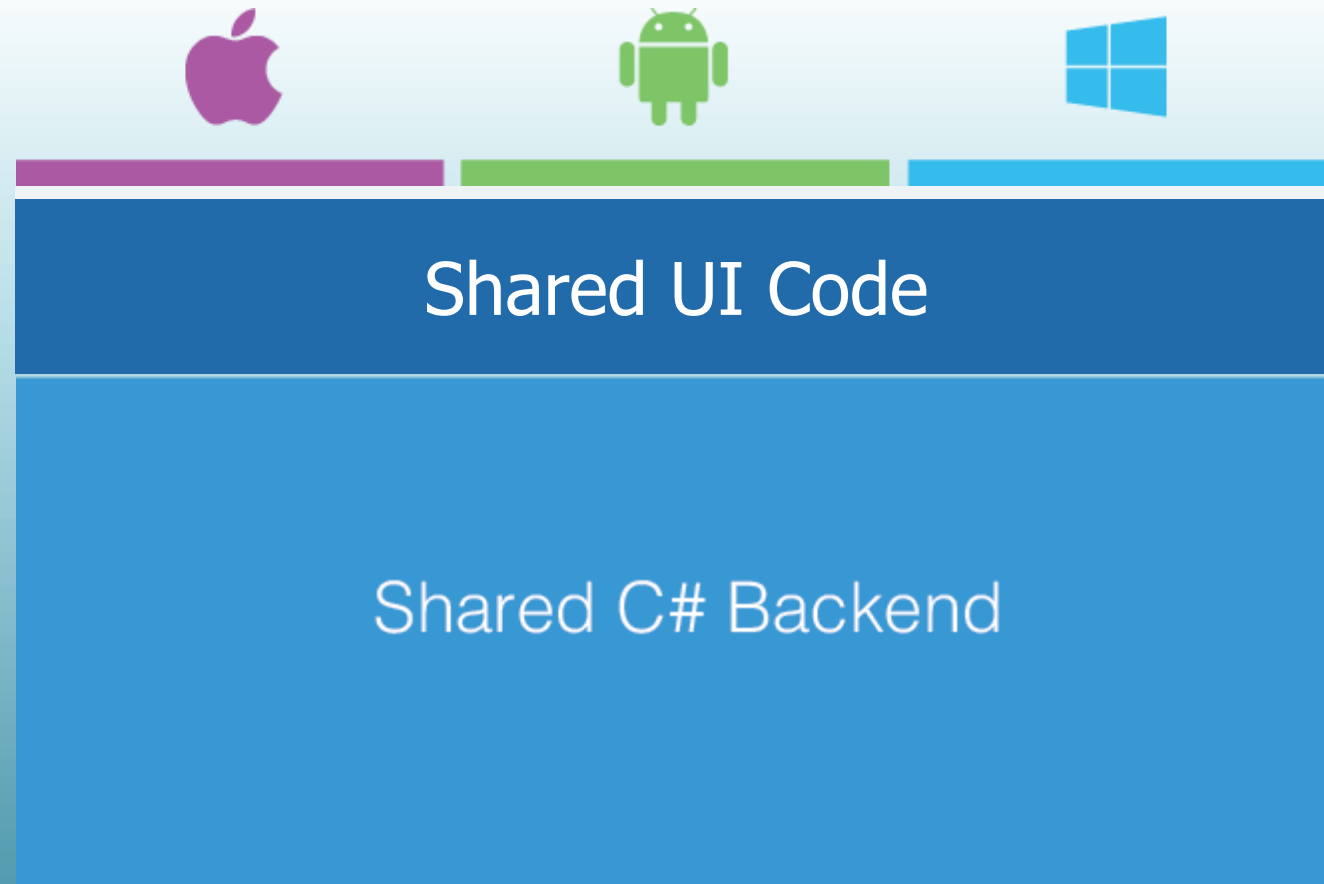
- User experience tends to be webish and not native
- Need to still test and debug multiple targets
- Features tend to be a subset common to all targets

# Microsoft Cross-Platform

# Xamarin Approach



# Xamarin Forms Approach



# Shared vs PCL (Portable Class Library)

## . Shared

- A Shared Project is not directly compiled (.dll is not generated), instead files are compiled into .dll of project that references it
- Can write platform specific code in a same file using compiler directives ***#ifdef***
- Cluttered implementation for large projects

## . PCL (Portable Class Library)

- PCL projects are compiled in portable assemblies that run in any .NET based runtime.
- Platform specific code cannot be implemented inside a PCL project
- Better manageability of code
- Better usability and compatibility across other .NET platforms

# Shared code implementation

```
public void PlatformSpecificMethod()  
{  
    #if __MOBILE__  
    // Android or iOS specific code  
    #endif  
  
    #if WINDOWS_PHONE  
    // Windows Phone specific code  
    #else  
  
    #if __ANDROID__  
    // Android specific code  
    #else  
  
    #if __ANDROID_16__  
    // Android specific code for SDK 16 or newer  
    #endif  
  
    #if __IOS__  
    // iOS specific code  
    #else  
  
}
```

# Shared vs PCL (Portable Class Library)

## Which suits better?

- Shared code restricted into compiling directives is more difficult to read, slowing down the development process.
- PCL code is much cleaner and maintainable but that is subjective to your development practices (you may end up writing too much boiler plate code)
- **If you are starting with Xamarin PCL is a better choice for better usability and compatibility across other .NET platforms**



More about Shared vs PCL  
<http://bit.do/xamsharedvspcl>

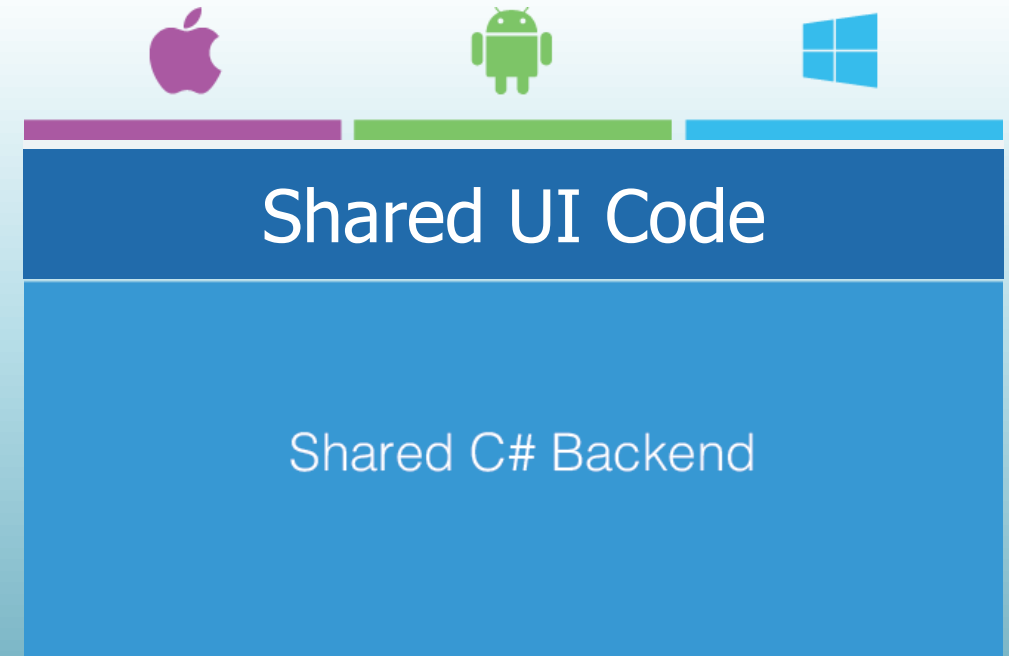
# Announcing Open sourcing Xamarin

Start contributing today

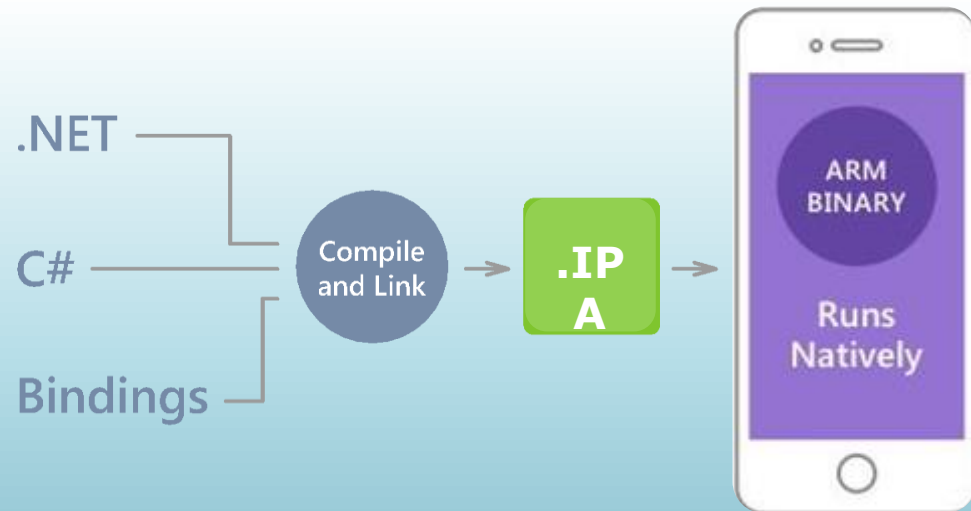
<https://open.xamarin.com/>

# Xamarin + Xamarin.Forms Approach

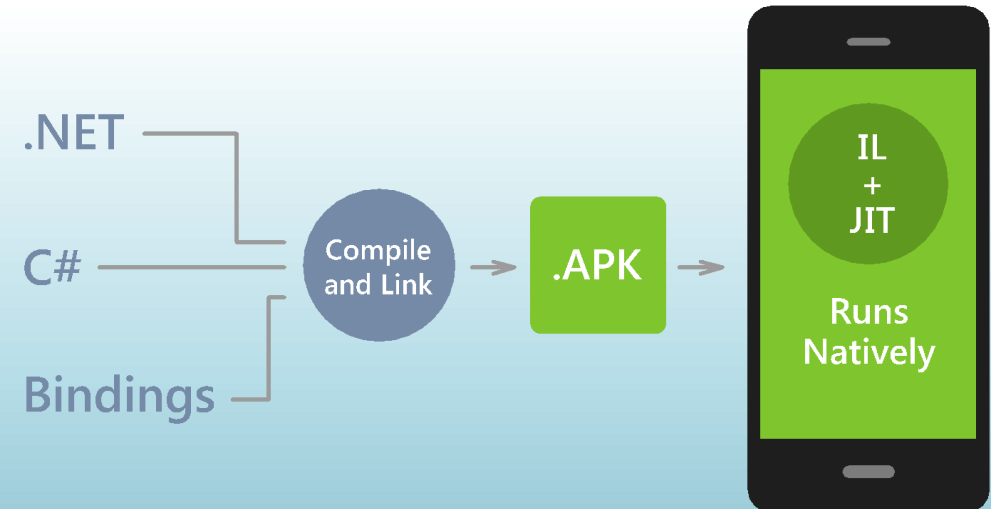
- Quickly and easily build native user interfaces using shared code
- Xamarin.Forms elements map to native controls and behaviors
- Mix-and-match Xamarin.Forms with native APIs



# Native Performance

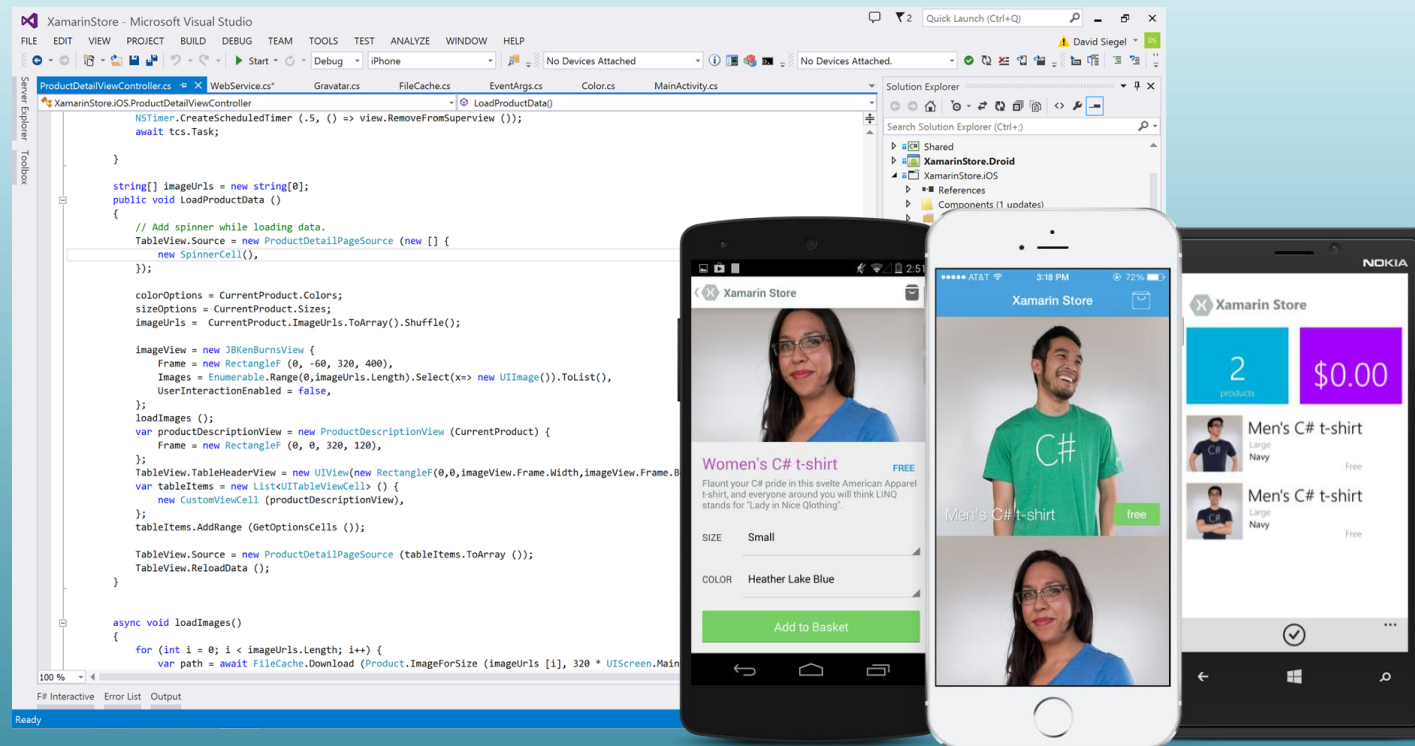


**Xamarin.iOS** does full Ahead Of Time (AOT) compilation to produce an ARM binary for Apple's App Store.



**Xamarin.Android** takes advantage of Just In Time (JIT) compilation on the Android device.

# Anything you can do in Objective-C, Swift, or Java can be done in **C# and Visual Studio with Xamarin.**

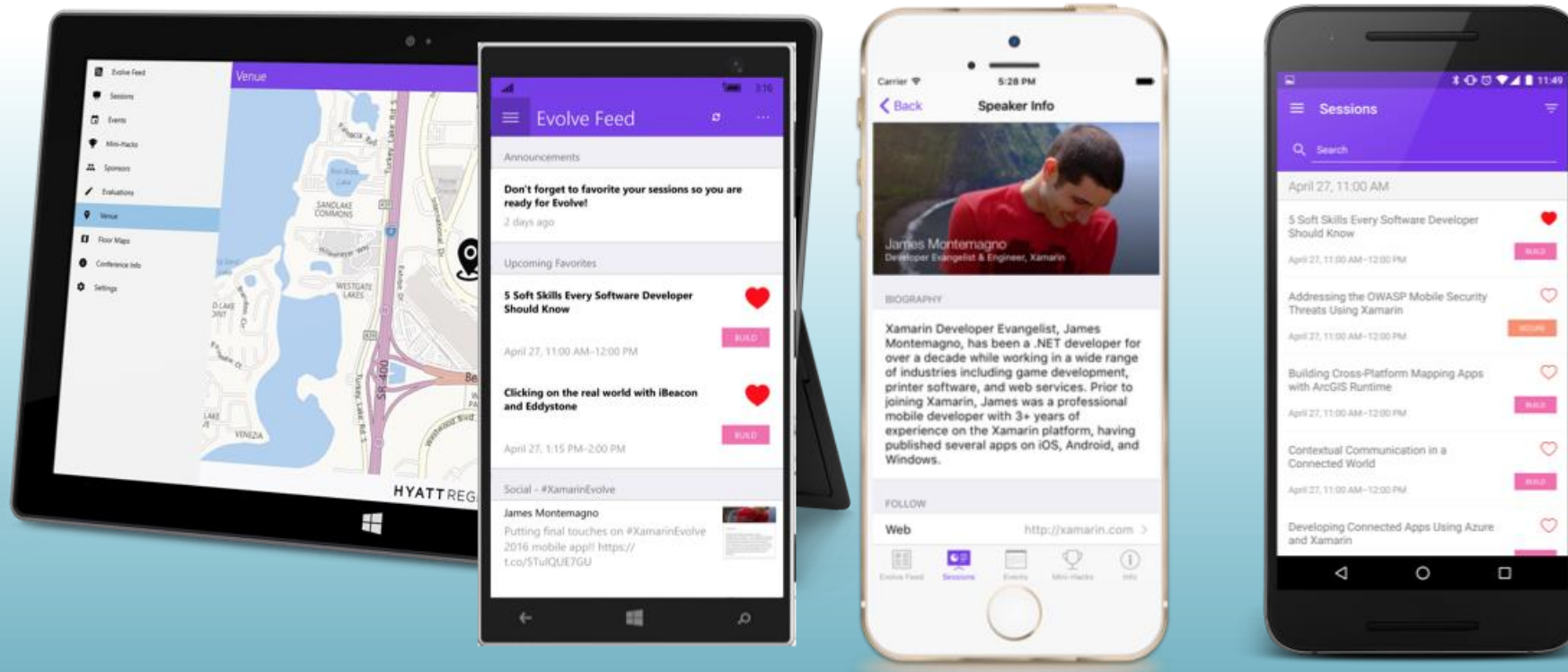


# Demo

## Xamarin: Native Weather

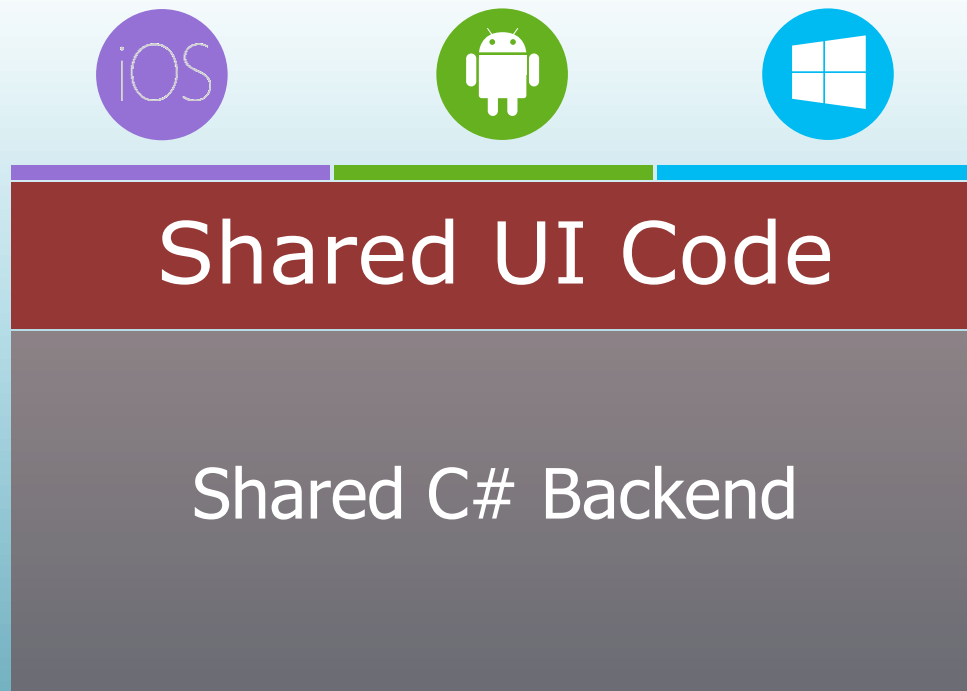
<http://bit.do/xamarin-native-weather>

# Meet Xamarin.Forms



Build native UIs for iOS, Android, and Windows from a single, shared C# codebase.

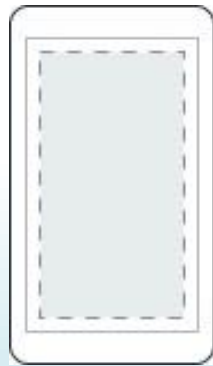
# What's included



- ✓ 40+ Pages, layouts, and controls  
(Build from code behind or XAML)
- ✓ Two-way data binding
- ✓ Navigation
- ✓ Animation API
- ✓ Dependency Service
- ✓ Messaging Center



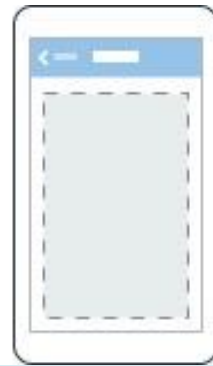
# Pages



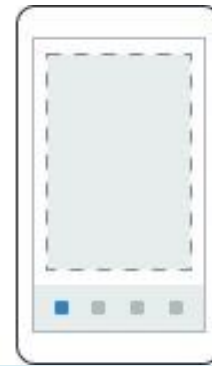
Content



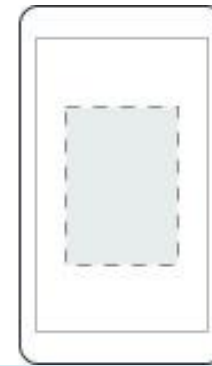
MasterDetail



Navigation

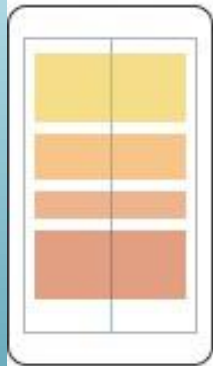


Tabbed

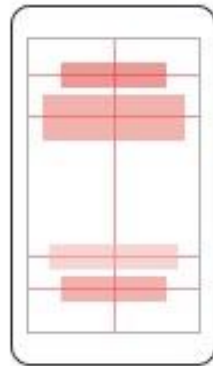


Carousel

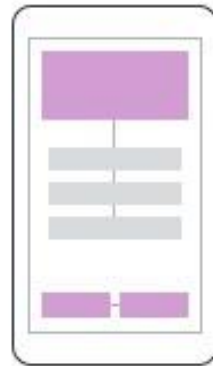
# Layouts



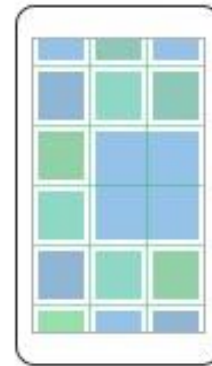
Stack



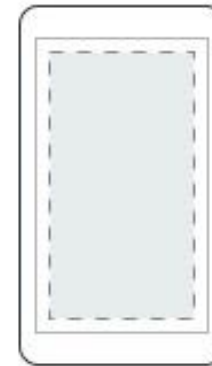
Absolute



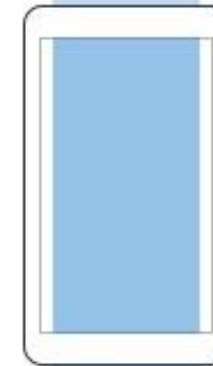
Relative



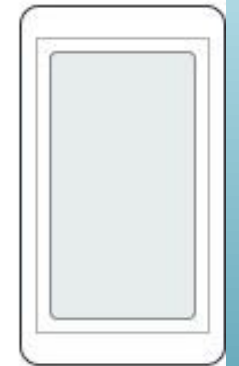
Grid



ContentView



ScrollView



Frame

# Controls

ActivityIndicator

BoxView

Button

DatePicker

Editor

Entry

Image

Label

ListView

Map

OpenGLView

Picker

ProgressBar

SearchBar

Slider

Stepper

TableView

TimePicker

WebView

EntryCell

ImageCell

SwitchCell

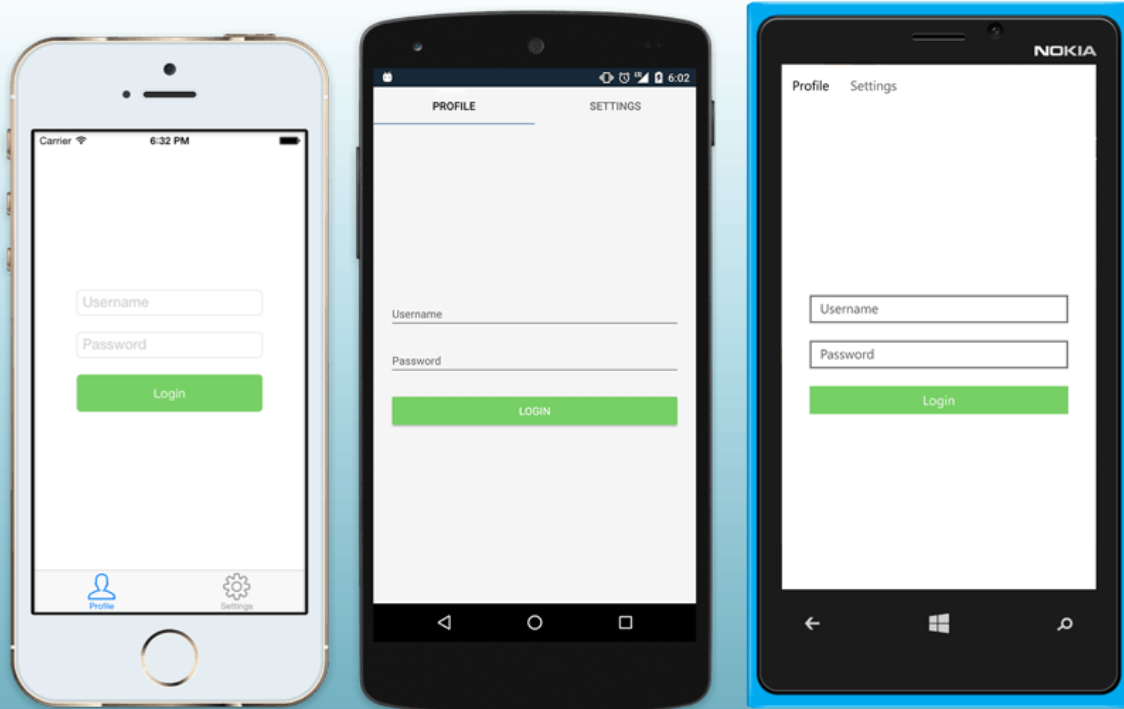
TextCell

ViewCell

# Xamarin.Forms Ecosystem



# Native UI from shared code



```
<?xml version="1.0" encoding="UTF-8"?>
<TabbedPage xmlns="http://xamarin.com/schemas/2014/forms"
             xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
             x:Class="MyApp.MainPage">
<TabbedPage.Children>
<ContentPage Title="Profile" Icon="Profile.png">
    <StackLayout Spacing="20" Padding="20"
                 VerticalOptions="Center">
        <Entry Placeholder="Username"
                 Text="{Binding Username}"/>
        <Entry Placeholder="Password"
                 Text="{Binding Password}"
                 IsPassword="true"/>
        <Button Text="Login" TextColor="White"
                 BackgroundColor="#77D065"
                 Command="{Binding LoginCommand}"/>
    </StackLayout>
</ContentPage>
<ContentPage Title="Settings" Icon="Settings.png">
    <!-- Settings -->
</ContentPage>
</TabbedPage.Children>
</TabbedPage>
```

# Demo

## Xamarin: Forms Weather

<http://bit.do/xamarin-forms-weather>

# Xamarin.Forms 1 Year of Open Source!

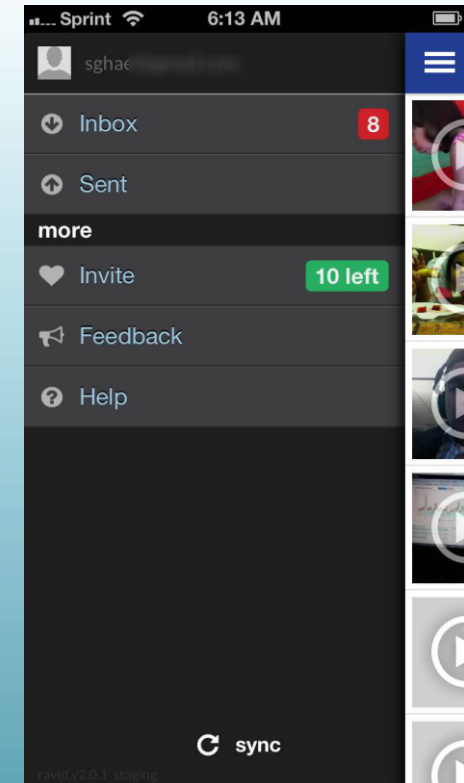
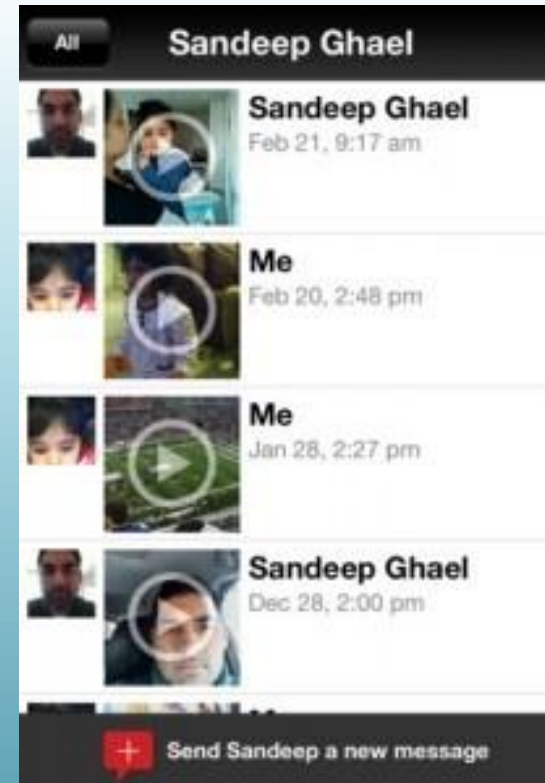
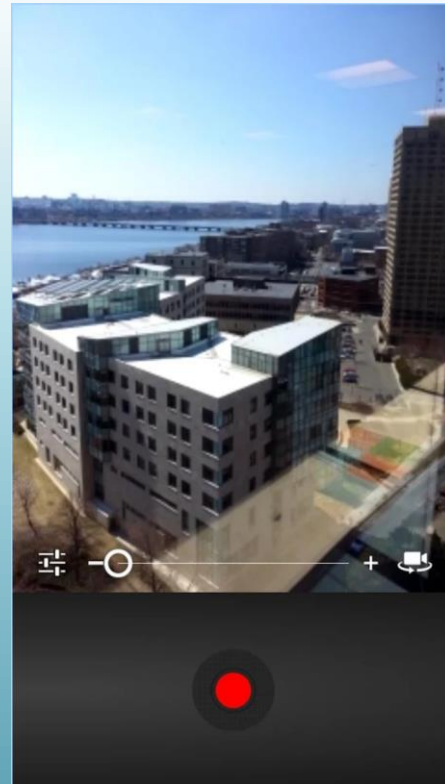
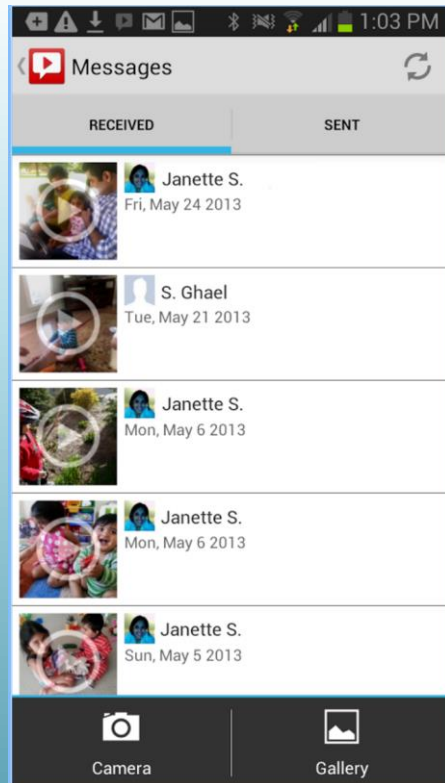


# Stay connected with Azure Mobile Apps



# Mobile DevOps Courage in Chaos!

# A Mobile-first startup: Ravid (2010)



# Our pipeline



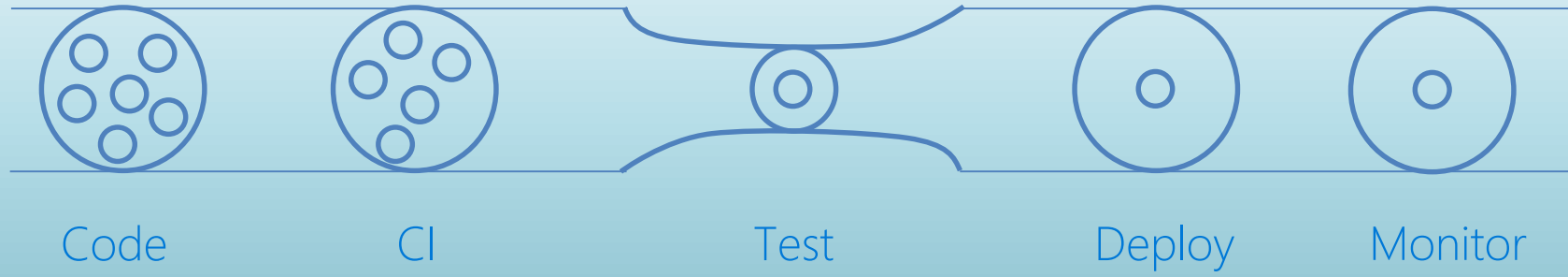
We are so agile

# Our pipeline



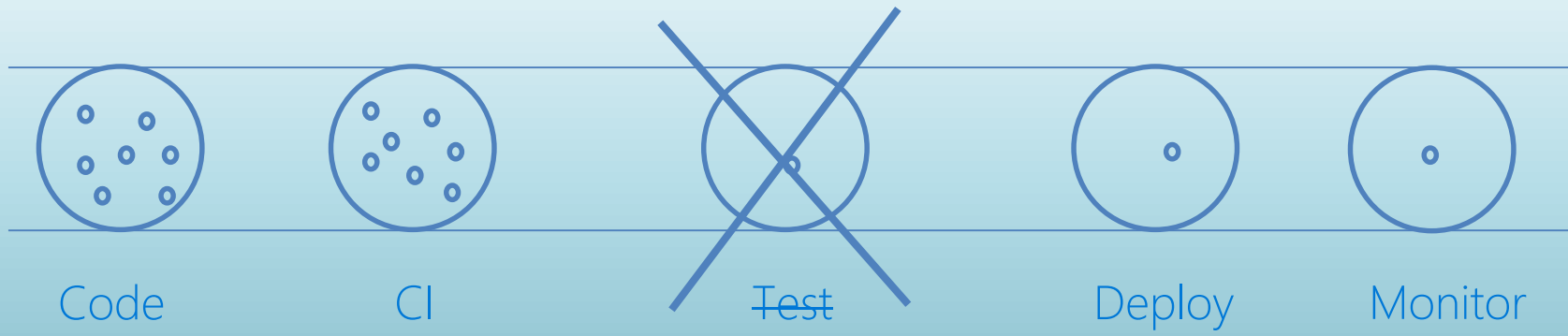
And slow

# Our pipeline



And slow

# Our pipeline



Let's speed it up

# When you remove testing, users notice



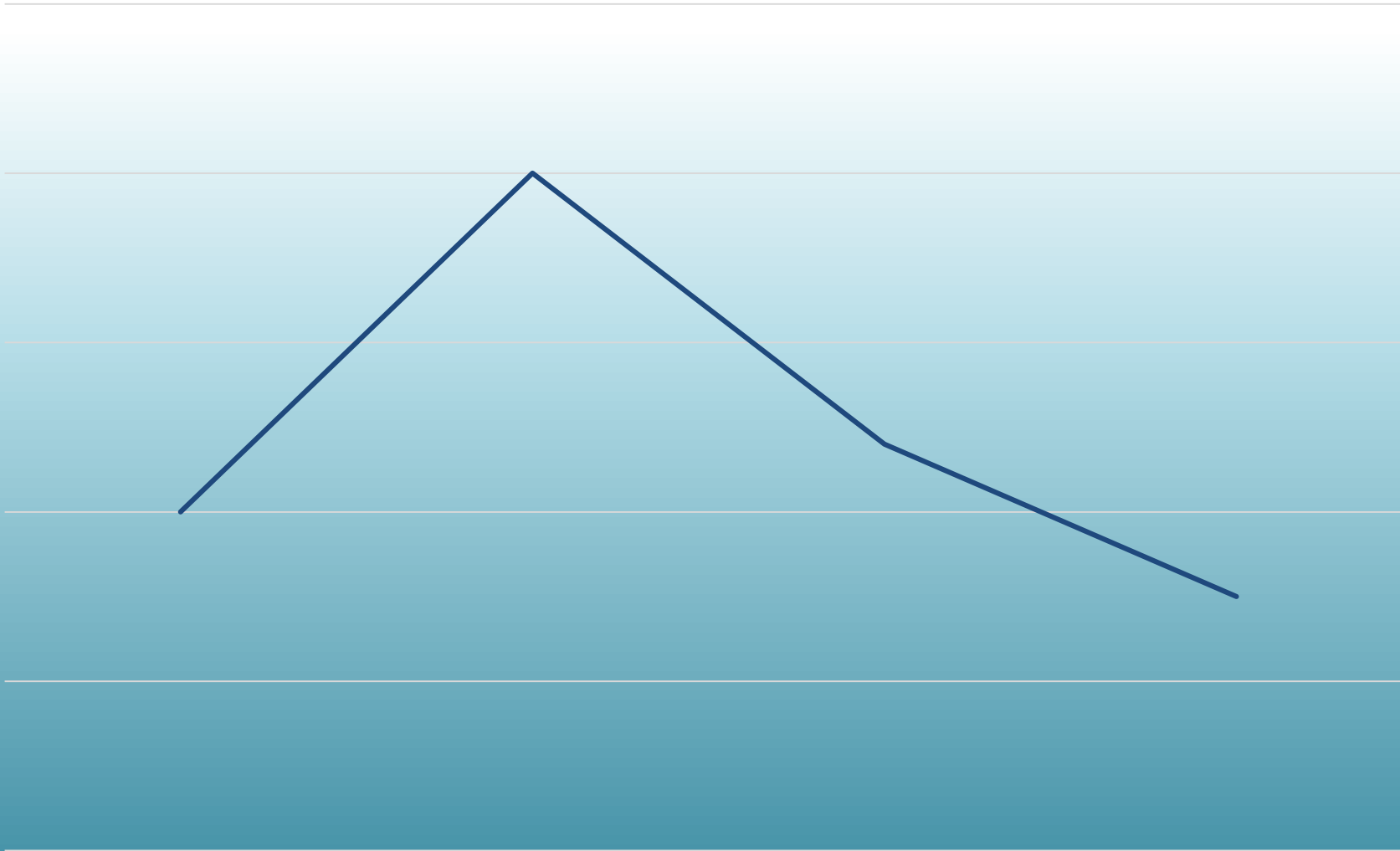
**Not working** Had ravid and worked fine...upgraded phone, now it won't load. Fix it



**Galaxy Note** Changed to 1 star. Will not sign in just sits loading. Doesnt matter if im on 4G or

# Growth stopped

Monthly Active Users



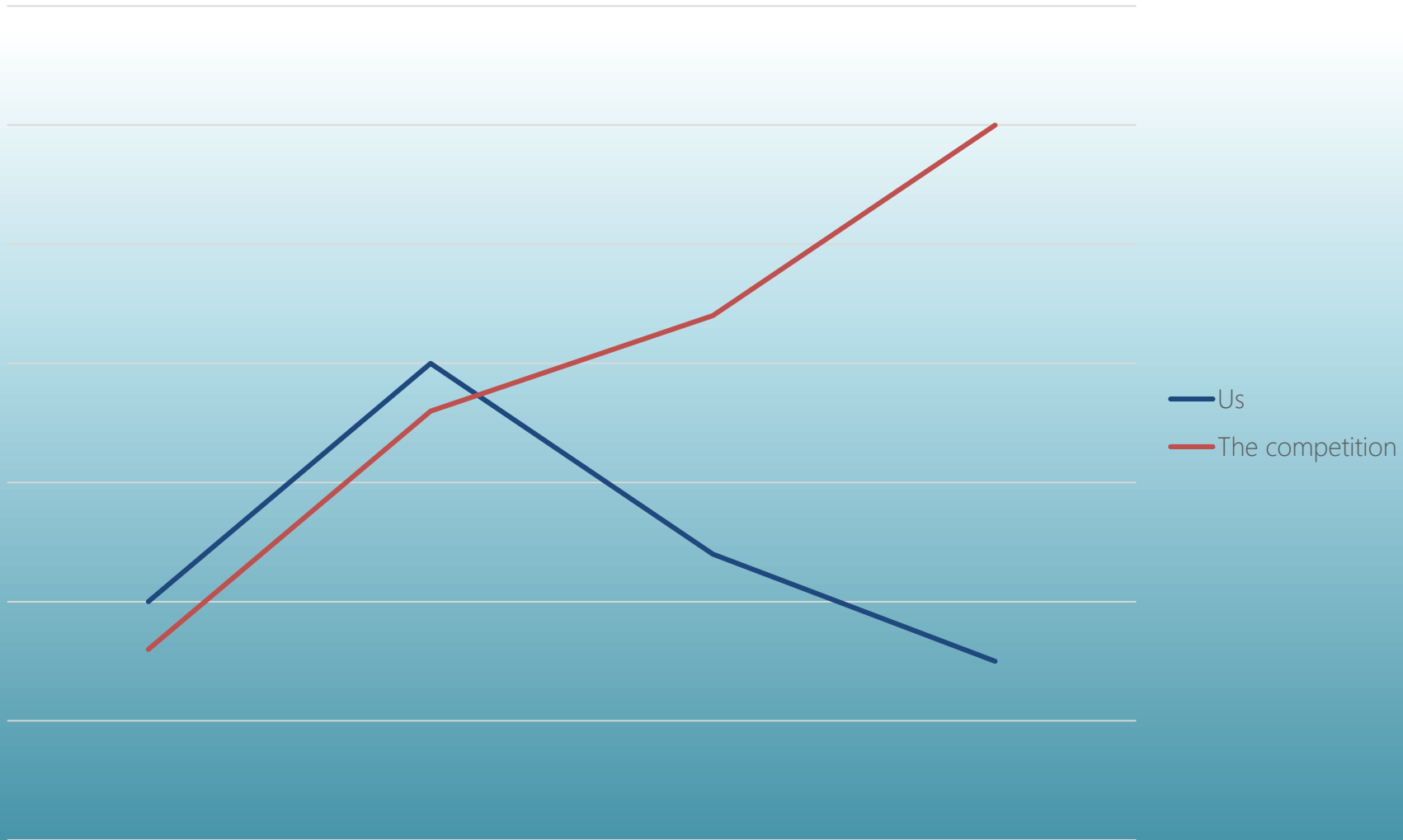


# Failure to learn, failure to succeed



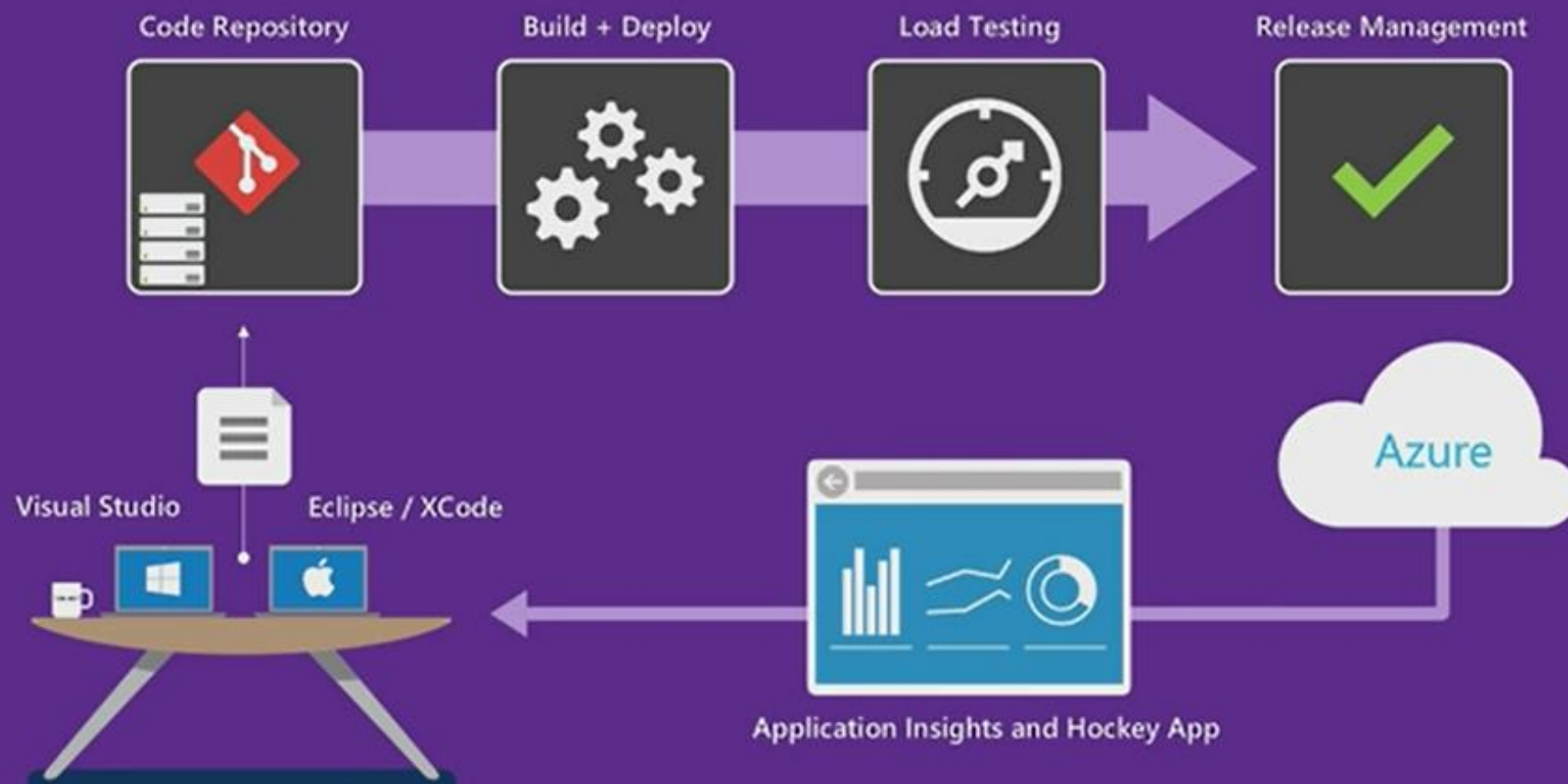
# Our competition was faster – and smarter

Monthly Active Users

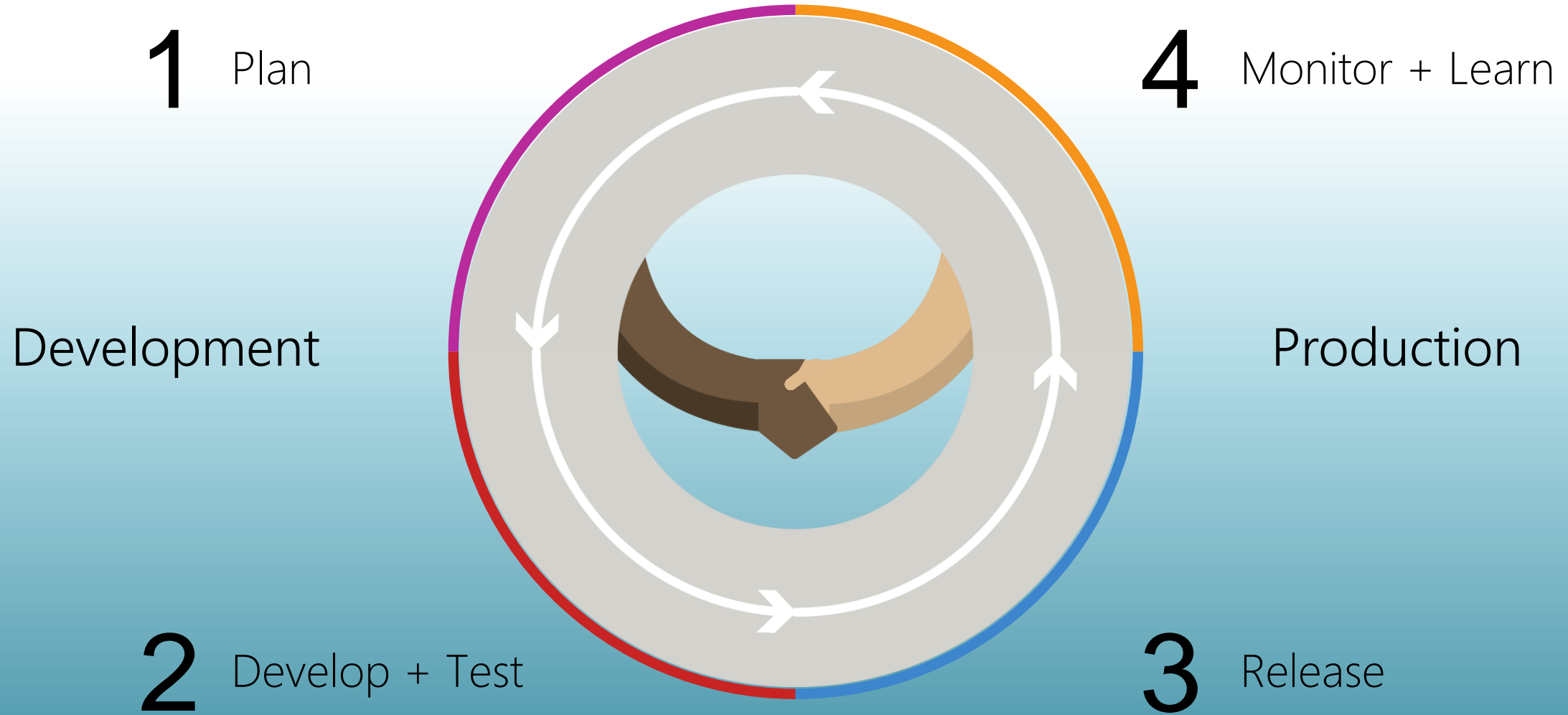


How do you solve this problem?

# Visual Studio Team Services



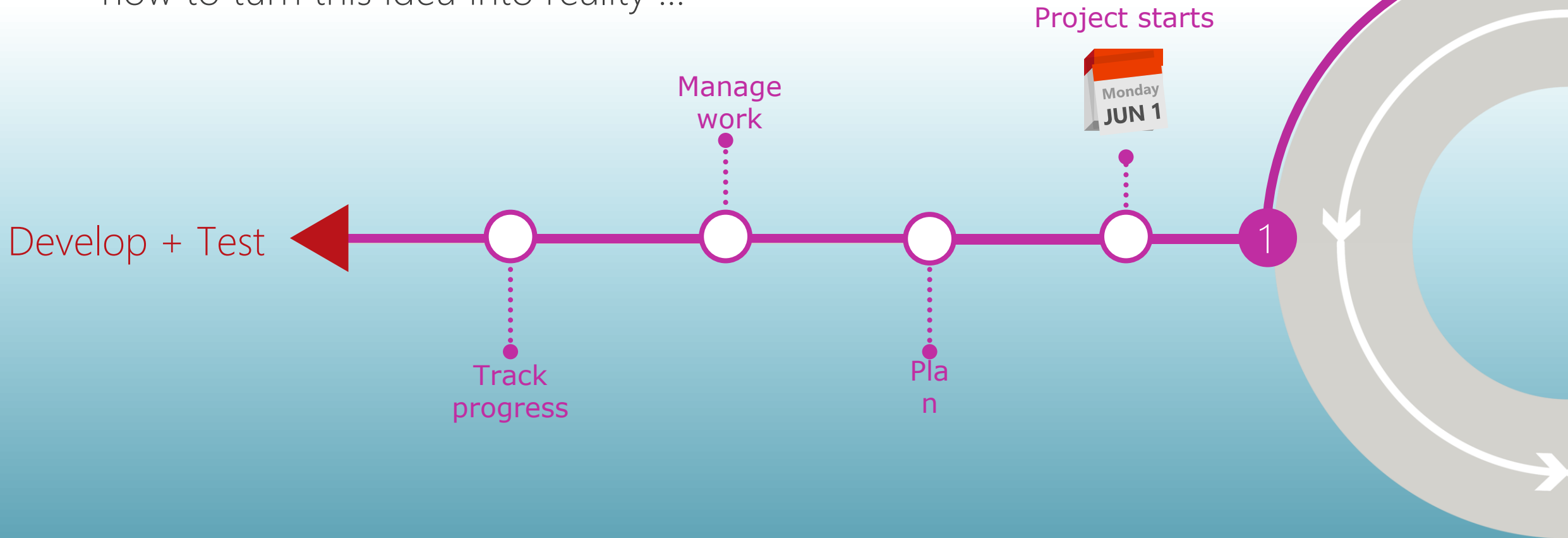
# DevOps





# Plan

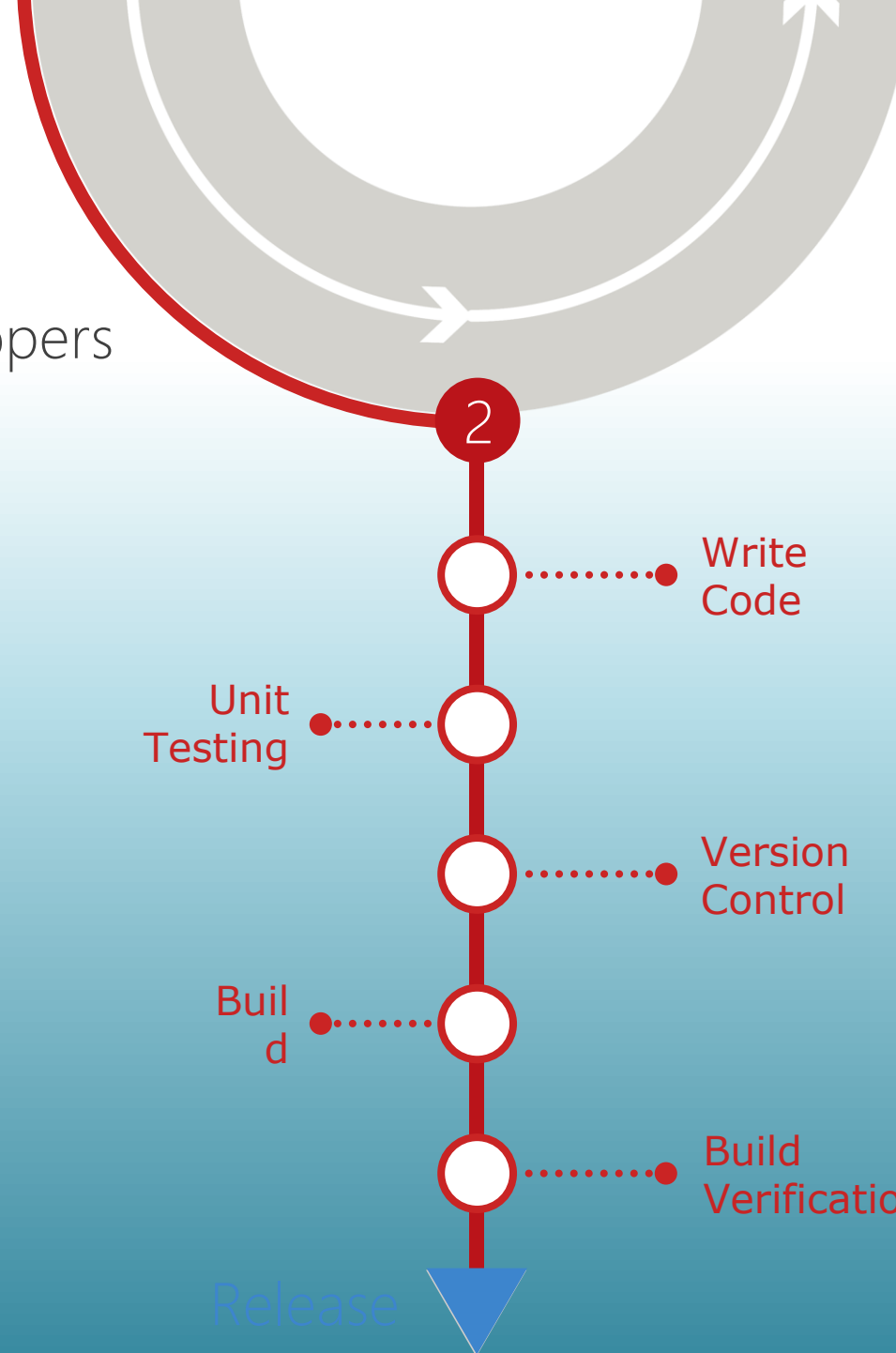
It starts with an idea – and a plan how to turn this idea into reality ...





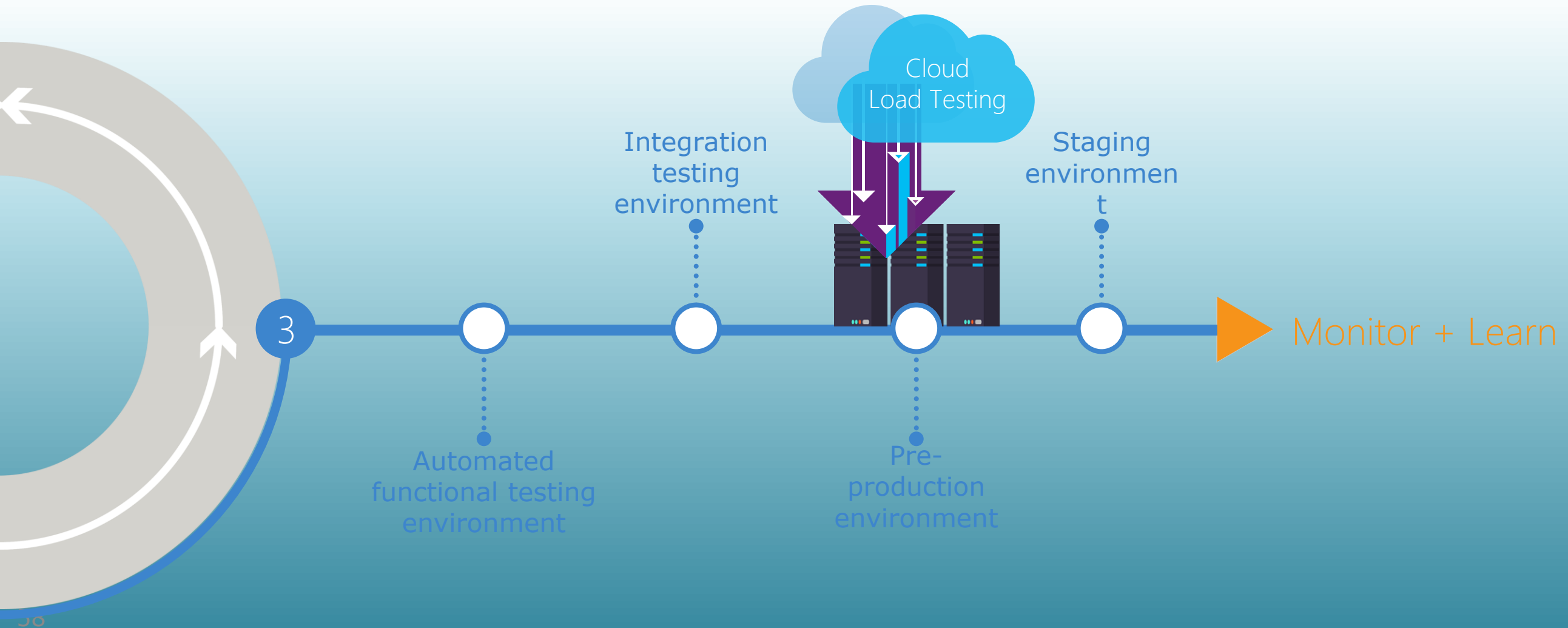
# Develop + Test

Once the iteration starts, developers turn great ideas into features ...



# Release

When all tests pass, the build is deployed to testing environments for each stage in the release process

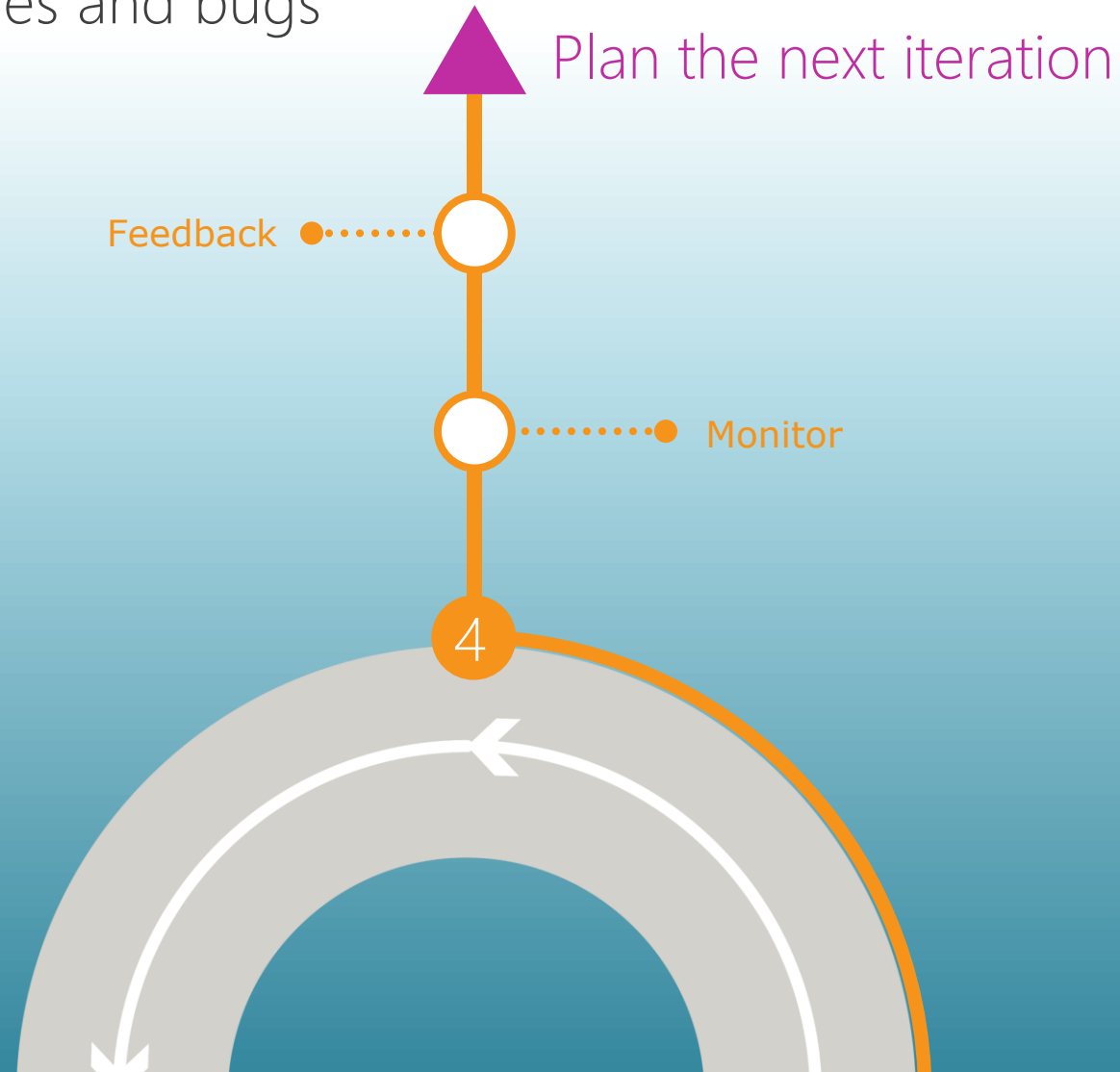






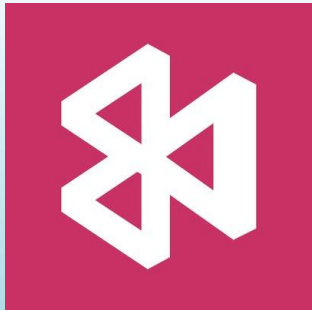
# Monitor + Learn

Learn and understand how users use your app, how it reacts and quickly fix issues and bugs





# Introducing



## App Center Mission Control for Apps







# Visual Studio App Center

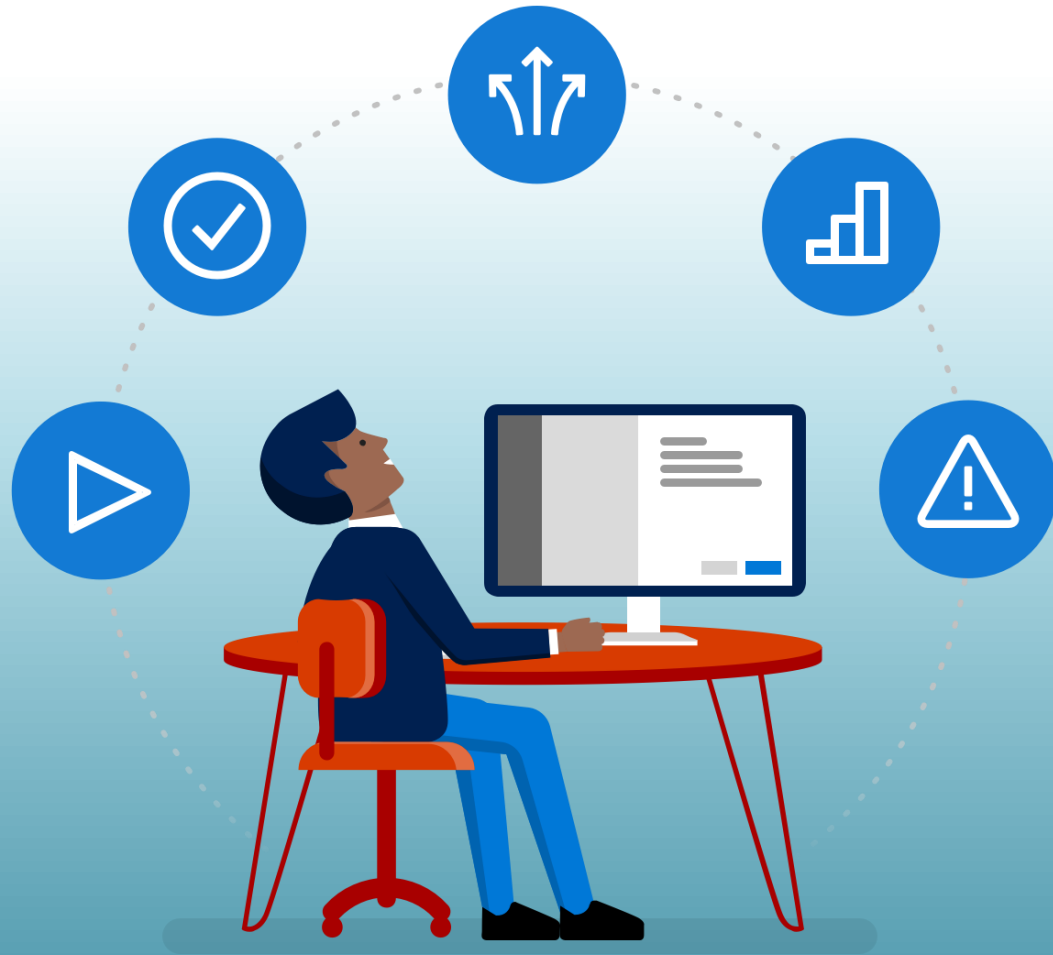
Continuous Everything – Build, Test, Deploy, Engage, Repeat.

Ship iOS, Android, Windows, and macOS apps faster and with greater confidence by automating their lifecycles. Connect your repository and, within minutes, build in the cloud, test on thousands of real devices, distribute to beta testers and app stores, and monitor real-world usage with crash and analytics data. All in one place.

Get started for free with App Center >

<https://appcenter.ms/create-account>

# Implement Continuous Everything



**Automate your entire  
mobile app lifecycle in a  
few easy steps**

# Build five star apps

**Deliver apps that keep  
users coming back for  
more**



# Retain Flexibility & Choice



Move faster and increase quality  
with the tools you already use.



 Test

 Analytics

 Build

 Distribute

 Live Update

 Crash Reporting



 Storage

 Push Notifications

 Tables

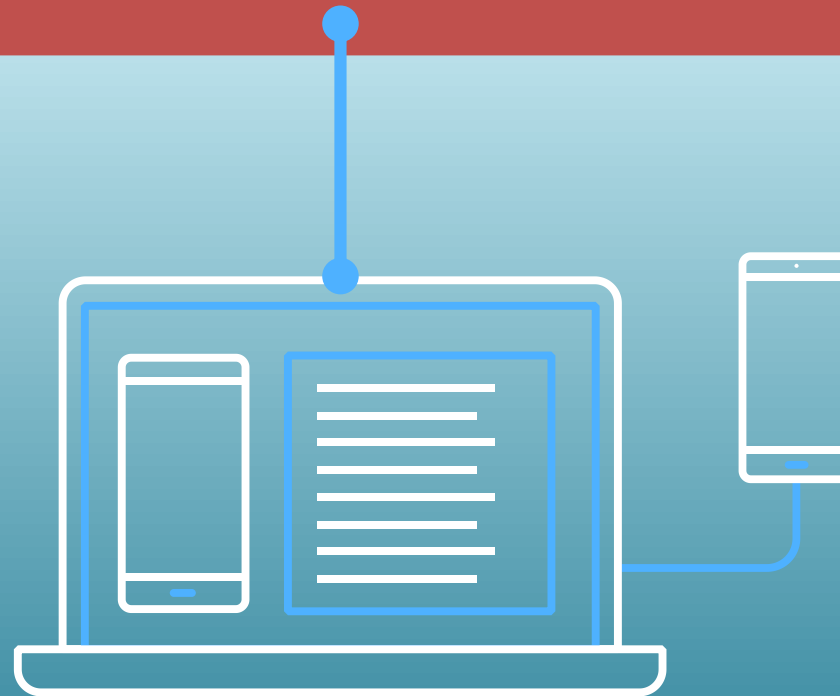
 Identity

▶ Build    ✓ Test    📊 Analytics    📄 Push Notifications    ↕ Distribute

# Visual Studio App Center

Mission control for mobile apps

⚠ Crash Reporting    📄 Tables    ↻ Live Update    🖐 Identity    📄 Storage





Delivering continuously means  
learning continuously

# Mobile DevOps

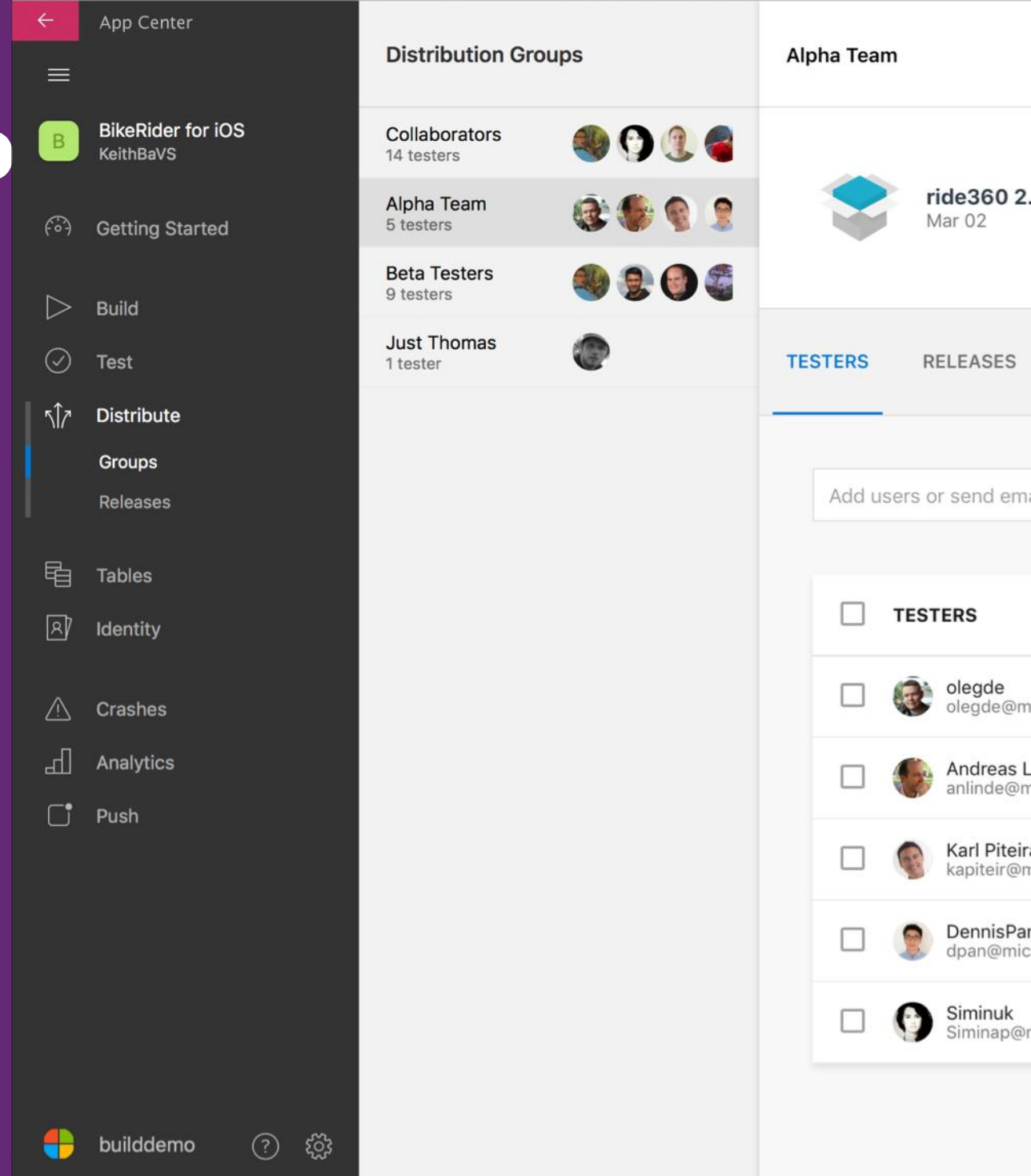
## Build and release management using AppCenter

# Visual Studio

Automate your entire mobile app lifecycle in a few easy steps

Deliver high-quality apps that keep users coming back for more

Move faster and increase quality with the tools you already use—we support a wide variety of platforms



[aka.ms/appce](https://aka.ms/appce)

Get started today!



# References

- <http://bit.do/xamuniyoutube>
- <http://bit.do/getxamarinuniveristy>
- <https://azure.microsoft.com>
- <https://docs.microsoft.com>







# Let's connect

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<http://www.ssgsonline.com/Company.htm>

# Subodh Sohoni

Subodh is Trainer and consultant on Visual Studio Team Services, App Center and Team Foundation Server.

Experience of above 30 years in team management, training, consulting, sales, production, software development and deployment.

Post-graduate from IIT, Madras.

He has conducted more than 300 corporate trainings on Microsoft technologies in India, USA, Malaysia, Australia, New Zealand, Singapore, UAE and Sri Lanka. He has also completed more than 80 consulting assignments some of which included entire TFS implementation for the organizations.

He has written more than 60 articles on TFS and VS ALM which are published on <http://www.dotnetcurry.com>.

Subodh is regular speaker at Microsoft events and roadshows including TechEd.



# Gouri Sohoni

Gouri is Trainer and consultant. She has experience of over two decades. She is a graduate from Pune University and PGDCA from Pune University.

Gouri is Microsoft Most Valuable Professional (MVP) and MCT. She has conducted more than 125 corporate trainings on various Microsoft technologies.

She is a speaker with Pune User Group and has conducted a session on SQL Server Business Intelligence and sessions on Visual Studio - ALM.

Gouri has written more than 40 articles on SQL Server Business Intelligence and SQL Azure which are published on <http://www.sqlservercurry.com> and also articles on Visual Studio 2010 - Application Lifecycle Management which are published on <http://www.dotnetcurry.com>.



# Mahesh Sabnis



**Microsoft**  
**CERTIFIED**  
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Mahesh, is B.E. Computer and having 20 years of experience of Software Development, Training and Consulting. He is Microsoft's Most Valuable Professional (MVP) from last 3 years and Microsoft Certified Training from last 12 years.

Mahesh is an experienced corporate trainer in Web Technologies for Full-Stack development using Microsoft technologies like ASP.NET, MVC and .NET Core, WEB API, etc. and in open source technologies like Angular, React, Express, Mongo, jQuery, etc.

Mahesh, regularly conducts trainings with various companies like, Microsoft, Synechron, Fiserv, etc.

Apart from his training activities, he is associated with product based company as Consultant Architects.

He regularly writes articles on [www.dotnetcurry.com](http://www.dotnetcurry.com)



# Saket Karnik

Co Founder & Director – OPTIMISTIK INFOSYSTEMS

[www.optimistikinfo.com](http://www.optimistikinfo.com)

## Skill Set:

1. Microsoft Azure Platform
2. Azure Service Fabric
3. Azure Container Services
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