

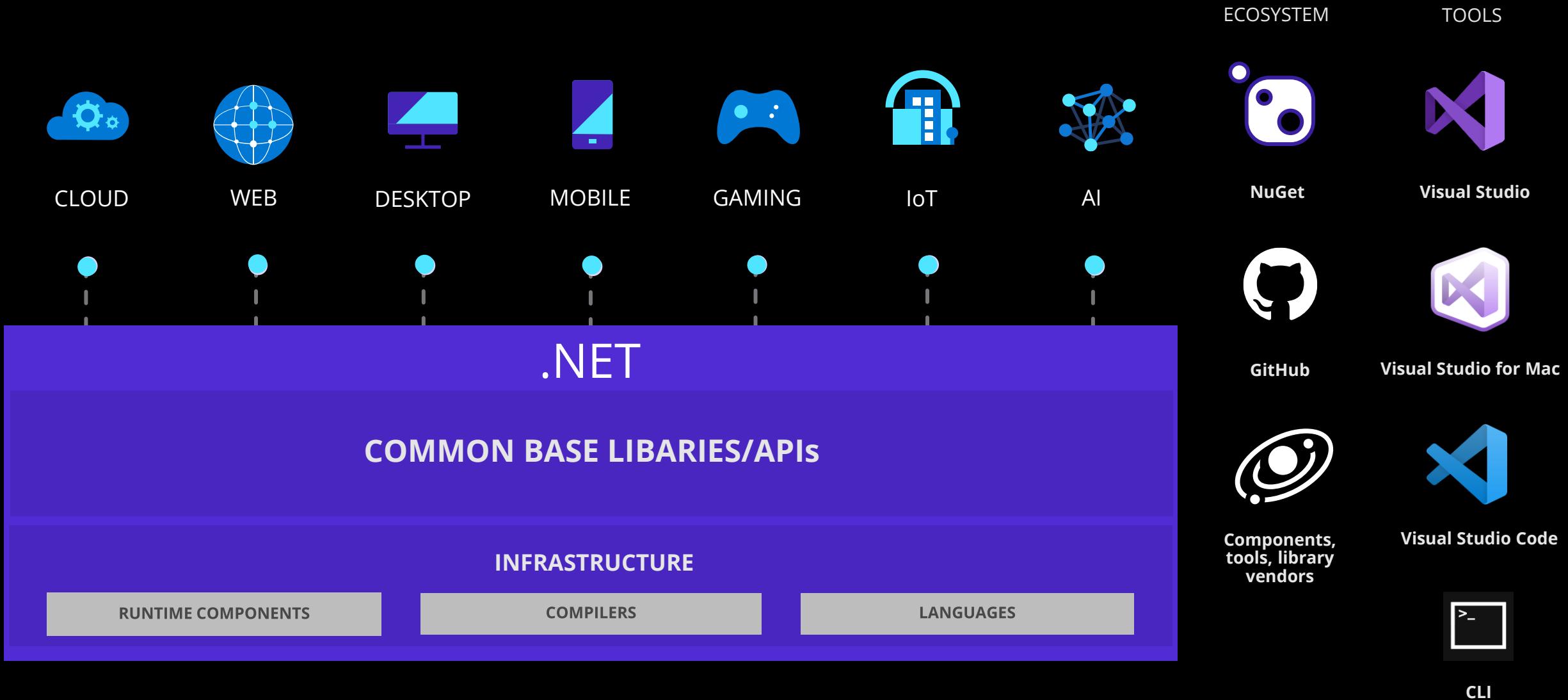
.NET MAUI: Next Generation Multi-platform App Development

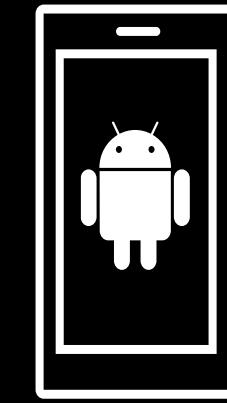
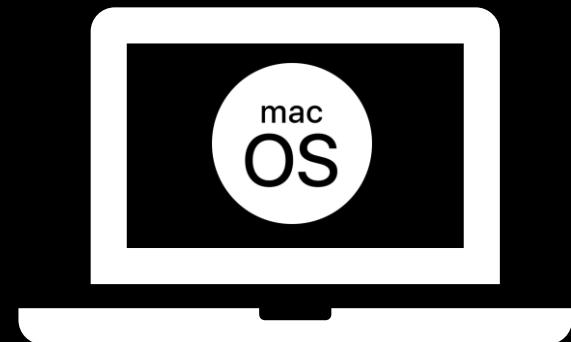
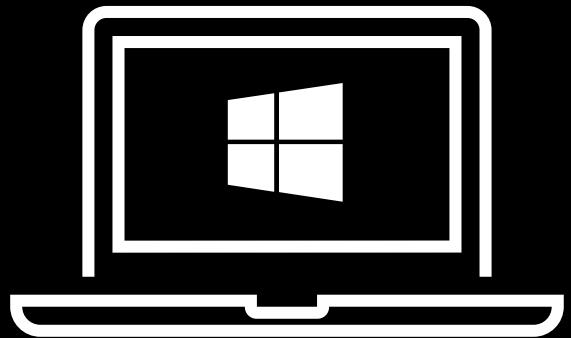


James Montemagno
Program Manager, Microsoft

@JamesMontemagno
 /JamesMontemagno

.NET - A unified development platform

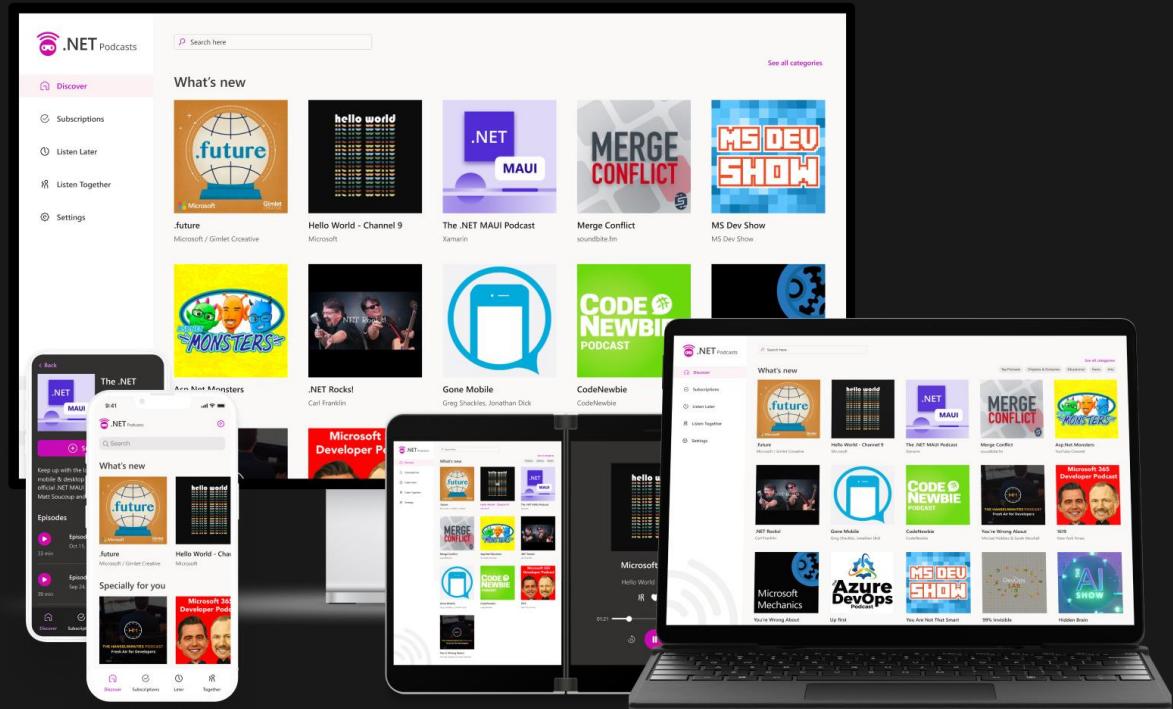




.NET

MAUI

.NET Multi-platform App UI is the most productive way to develop native apps with a **single codebase** that perform great on any consumer device.



.NET MAUI in .NET

Unified .NET

One Base Class Library
Type Unification
CLI Support
SDK Style Projects
Modern Support Lifecycle

Mobile, desktop, hybrid

Android
iOS
WinUI
Mac Catalyst
Blazor WebView

Productive development

Single Project
Microsoft.Extensions
.NET Hot Reload
XAML Hot Reload
Visual Diagnostics

.NET

.NET MAUI

WinUI

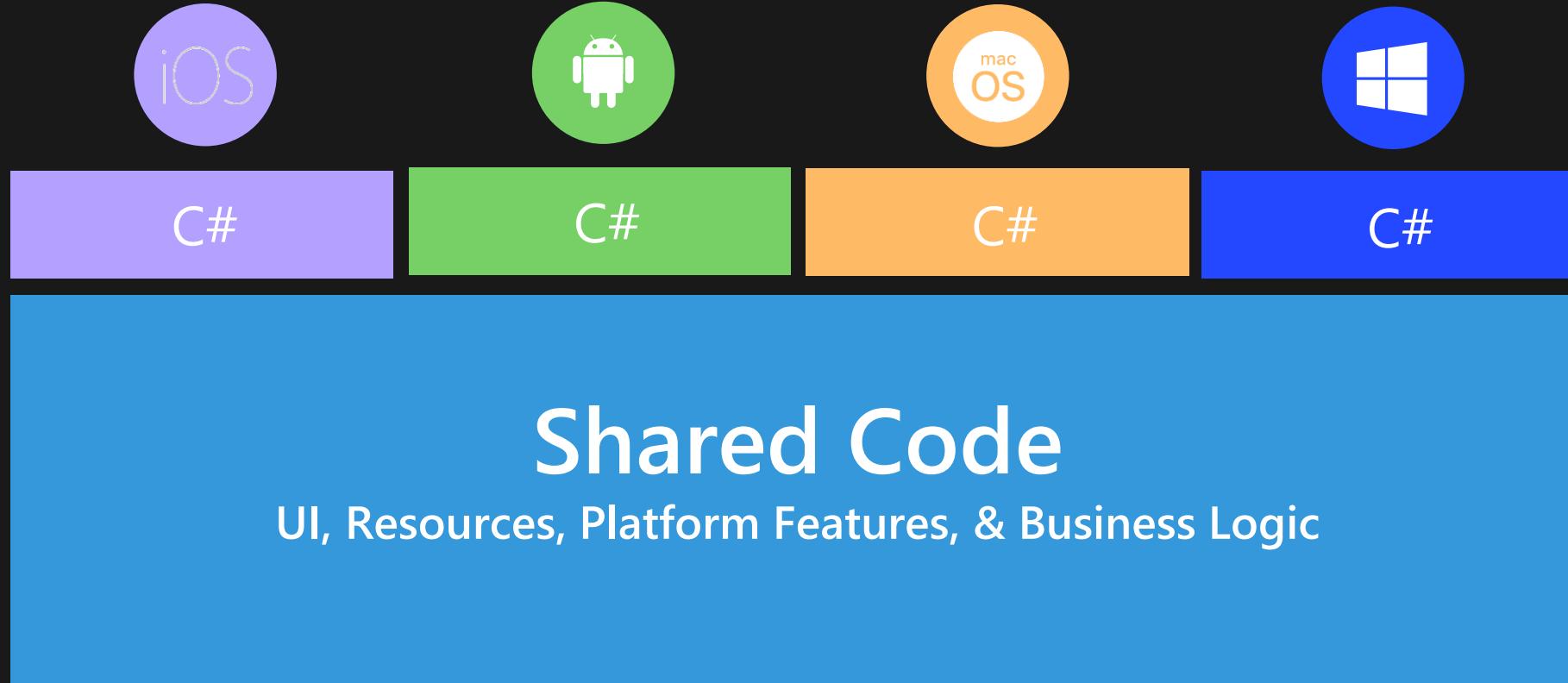
Mac Catalyst

iOS

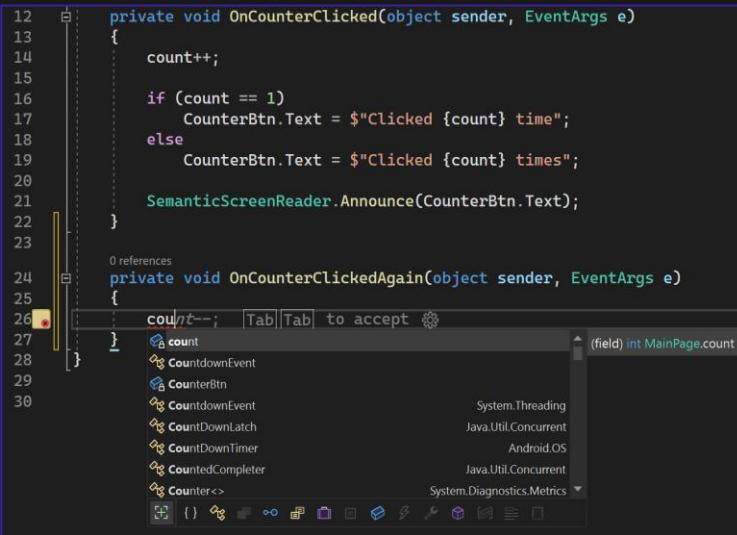
Android



.NET MAUI App Architecture

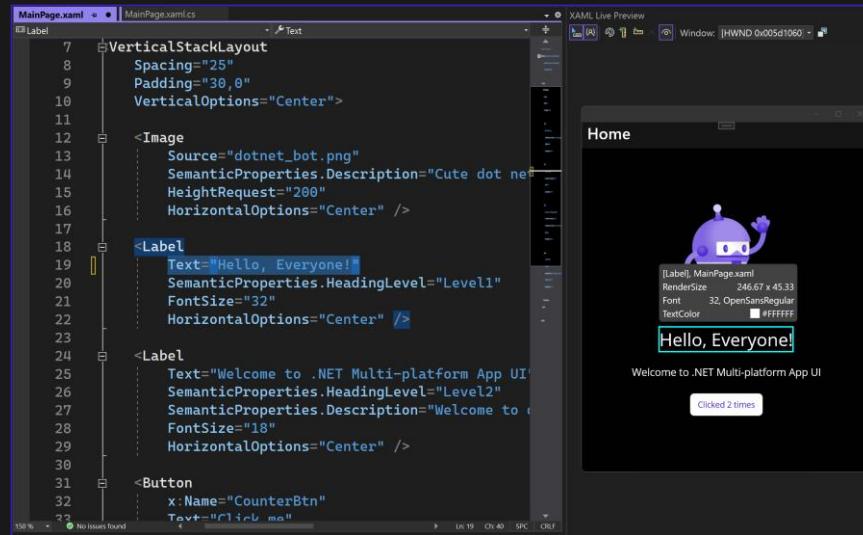


Visual Studio 2022 productivity



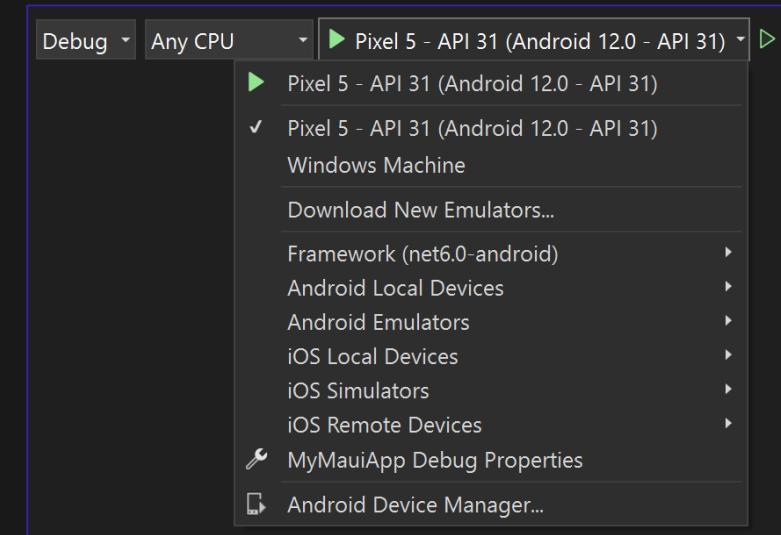
Intelligent code editing

AI-assisted development
Live Share remote collaboration
C#, XAML, Razor IntelliSense



Rapid iteration

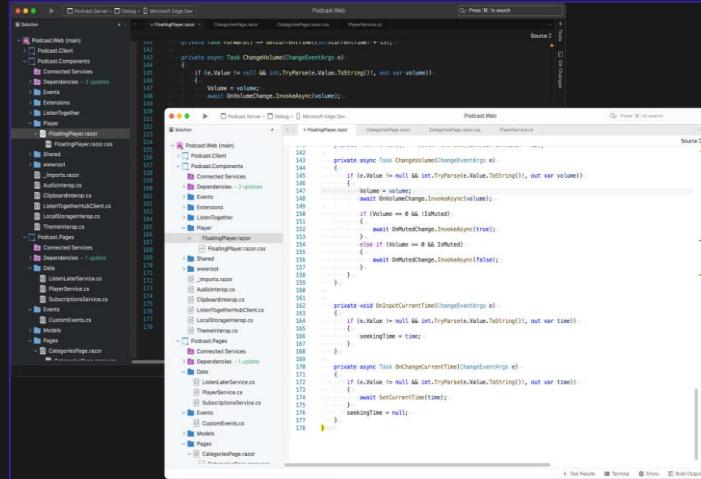
Hot reload XAML, C#, Razor, CSS, and more
Preview and Inspect UI at debug time



Develop for anything, anywhere

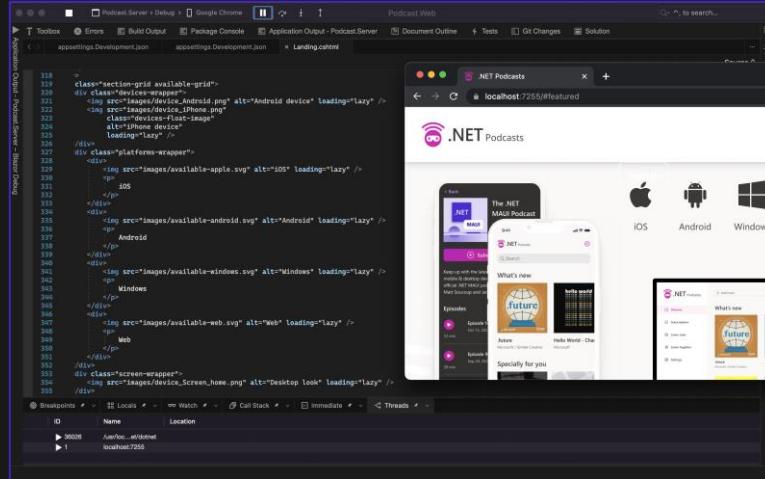
Use Android emulators, devices, or WSA
Develop iOS directly from Windows
Use iOS simulators via Xcode
Visual Studio for Mac and Windows

Visual Studio 2022 for Mac



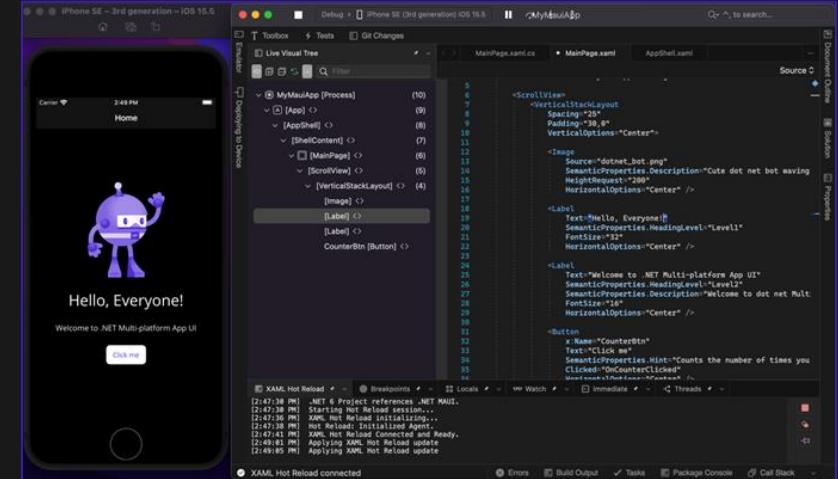
Fast & fluid IDE

Fully native macOS UI
Native support for Apple M1
Built on .NET 6



Modern .NET 6 development

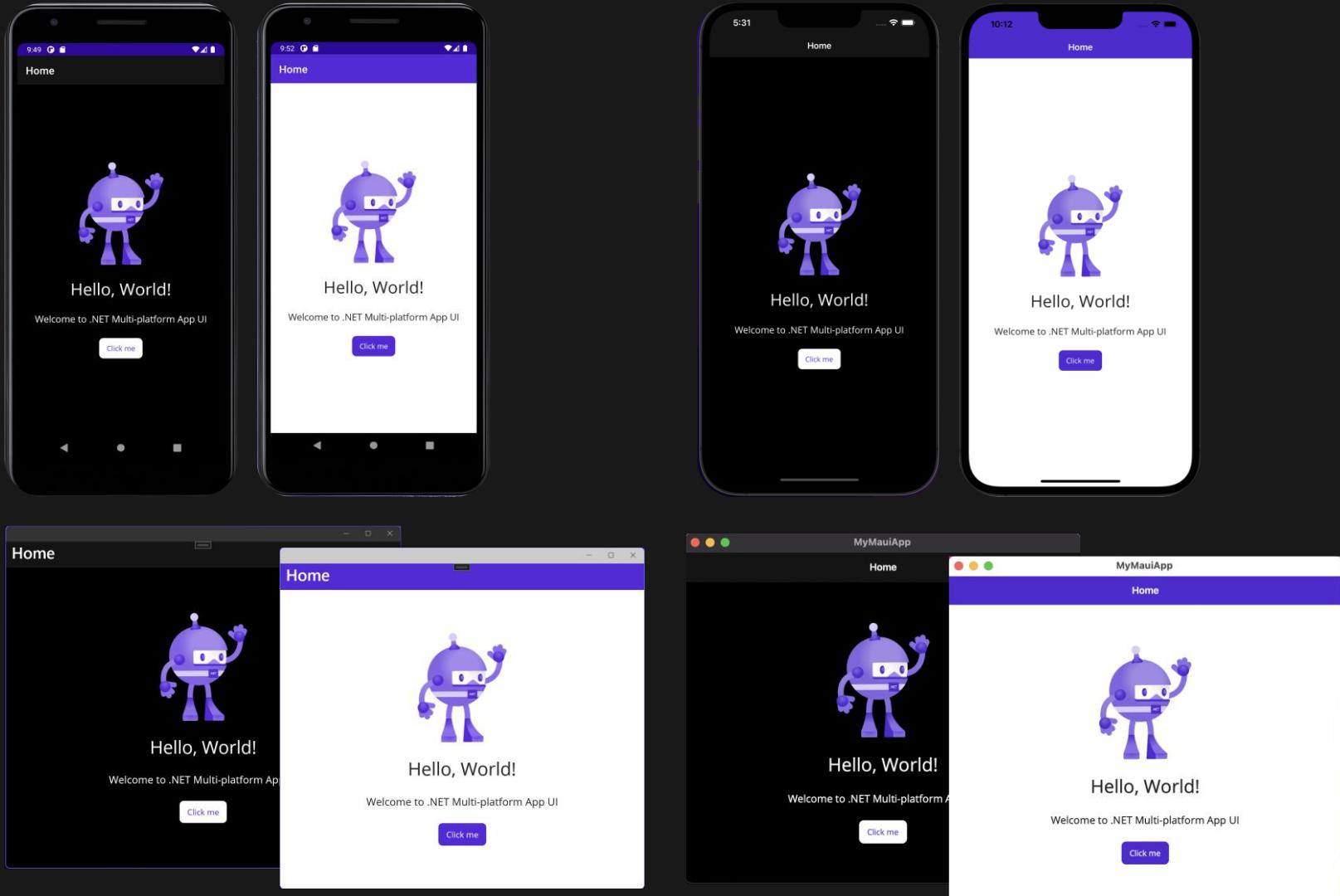
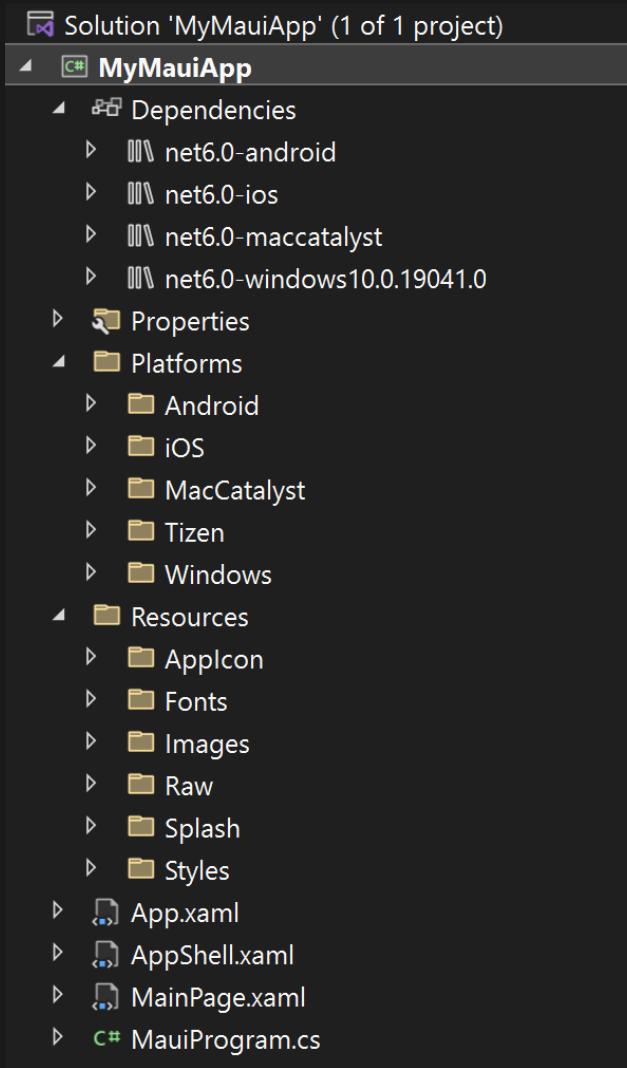
Native iOS, macOS & Android apps
Responsive web UIs
Web, cloud, & container development



Integrated Tools

Hot reload XAML and live update UI
Fast deploy to iOS simulators & Android emulators
Powerful debugging, refactoring, IntelliSense

One codebase, single project, multi target

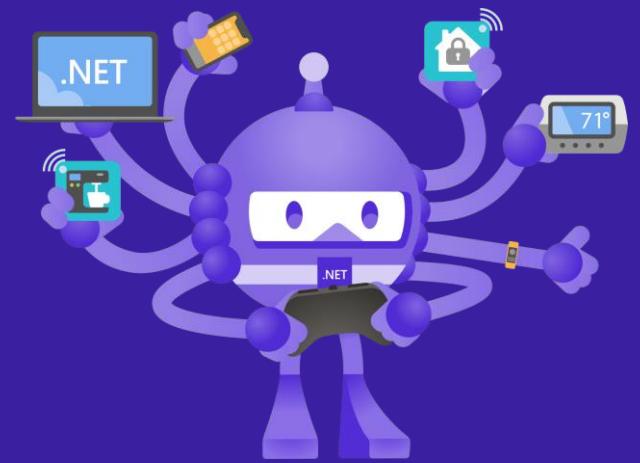


Demo

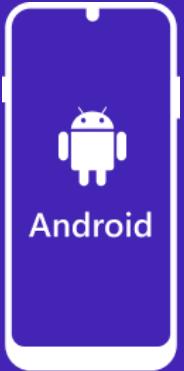
Exploring .NET MAUI

Native

Platform experiences are the best experiences.



Native



- android.widget
- AndroidX libraries
- Java/Kotlin APIs



- UIKit
- ARKit, AVKit, CarPlay, and dozens more
- Obj-C/Swift APIs

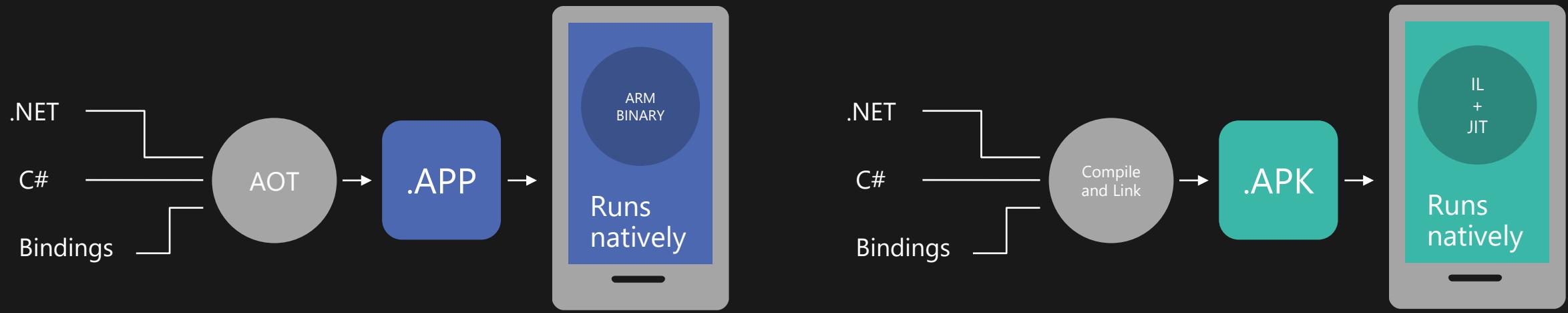


- Mac Catalyst
- UIKit + AppKit
- Dozens of frameworks
- Obj-C/Swift APIs



- Windows App SDK
- WinUI 3
- C++ APIs

Optimized Compilation



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

.NET for Android takes advantage of Just In Time (JIT) & Ahead of Time (AOT) compilation on the Android device.

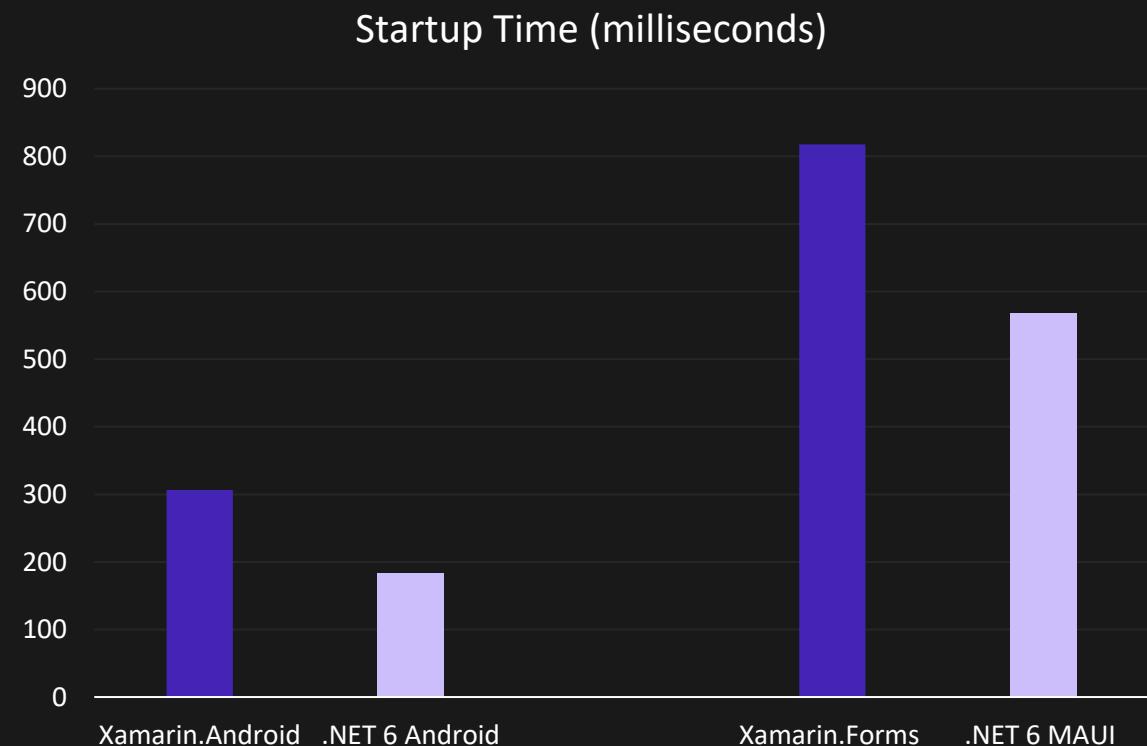
.NET MAUI perf improvements

68%

Faster than Xamarin.Android

44%

Faster than Xamarin.Forms



What's “in the box” and nearby?

Features

MVVM & XAML
Android, iOS, macOS, Windows
7 Layouts
44 Views
Maui.Essentials
Maui.Graphics
Xamarin.Forms Compat
CommunityToolkit.
Maui
Maui.Markup
Mvvm

New Capabilities

BlazorWebView
Border
Shadows
GraphicsView
MenuBar
Window/Multi-Window
Default theme
AppIcon
SplashScreen
Fonts
Images
Shell flyout templates

Changes from Xamarin

Color/Colors
Zero'd defaults
Namespace
More XAMLC
App Startup
Lifecycle Events
.NET workloads

Over 50 Controls, Layouts and Views

Activity Indicator

Editor

Default

Progress Bar

Default

Shapes

Image

SearchBar

Enter keyword

Button

Placeholder

Placeholder

Disabled

I am disabled

Switch

Default

Image Button

CarouselView

Read-only

I am read only

With error message

BackgroundColor

Disabled and untagged

Label

Font name: OpenSans Regular
Version: 1.00
Digitally Signed, TrueType Outlines
abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890,-+*/=

12 The quick brown fox jumps over the lazy dog. 1234567890
18 The quick brown fox jumps over the lazy dog. 1234567890
24 The quick brown fox jumps over the lazy dog. 1234567890
30 The quick brown fox jumps over the lazy dog. 1234567890
36 The quick brown fox jumps over the lazy dog. 1234567890
42 The quick brown fox jumps over the lazy dog. 1234567890
48 The quick brown fox jumps over the lazy dog. 1234567890
54 The quick brown fox jumps over the lazy dog. 1234567890
60 The quick brown fox jumps over the lazy dog. 1234567890
66 The quick brown fox jumps over the lazy dog. 1234567890
72 The quick brown fox jumps over the lazy dog. 1234567890

Multiline

AutoSize

Placeholder

Primary outline

Fixed Height

Placeholder

Shadow

On a label

I Have A Shadow

Image

Disabled and toggled

On

OnColor

On

ThumbColor

Date Picker

5/18/2022

ListView

Red

Green

Blue

Secondary outline

Placeholder

Tertiary outline

Stepper

Default

CollectionView

Bindable Layout

Borderless

Entry

Basic

Slider

Default

Date Picker

5/18/2022

Frame

WebView

Checkbox

Unchecked

Checked

Disabled

Disabled checked

Accent

With Placeholder

Placeholder

Placeholder color

Picker

Select a color

Stepper

Default

Card Title

Lorum ipsum dolor sit amet, consectetur adipiscing elit. Nulla elit dolor, convallis non interdum.

AbsoluteLayout

Clipping

Clip with Shape

Clip with Path

With Text

Text

Text

ThumbColor

BackgroundColor

BackgroundColor

StackLayout

VerticalStackLayout

Horizontal Wrap Layout

Font Image

Cascade Layout

FlexLayout

HorizontalStackLayout

AbsoluteLayout

Grid

Horizontal Stack Layout

Vertical Stack Layout

HorizontalWrapLayout

VerticalWrapLayout

Grid



UIActivityIndicator



ProgressBar



UISlider



SeekBar

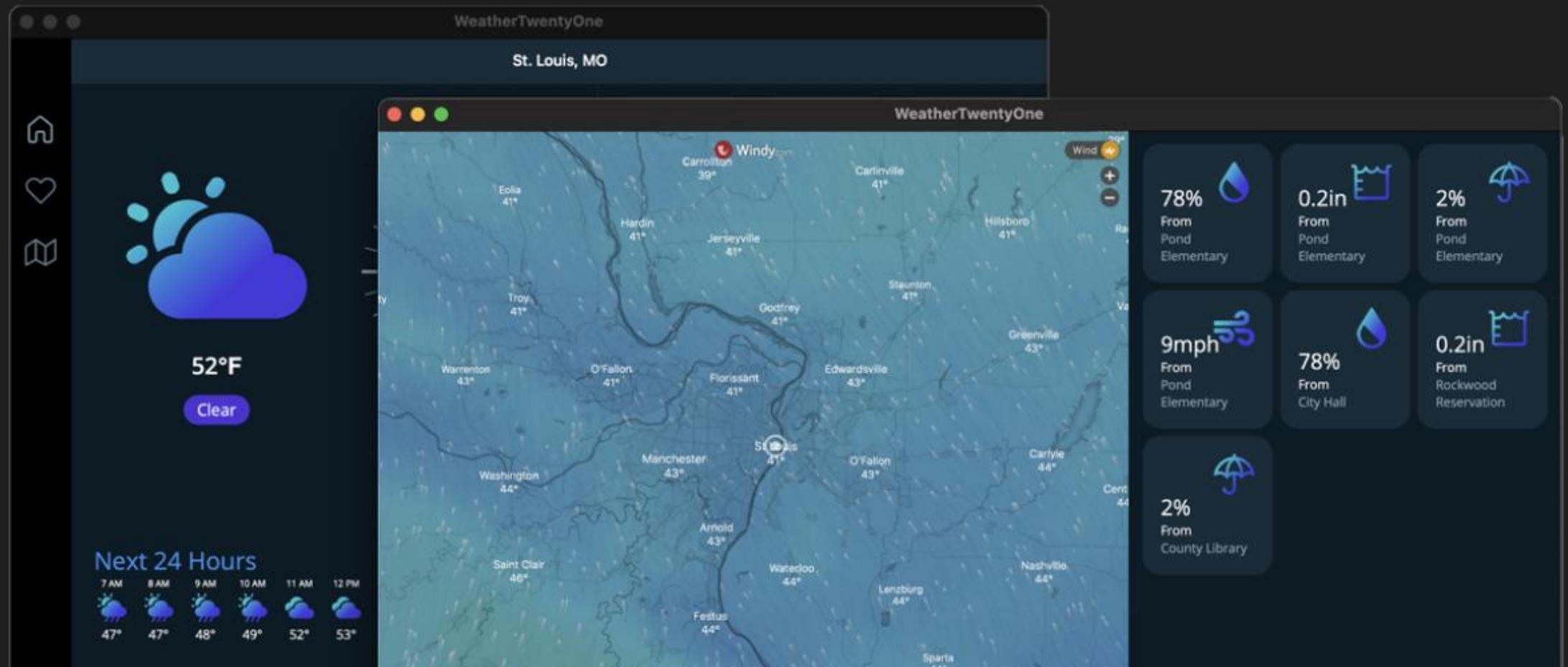


ActivityIndicator

Slider

Multi-window

```
var secondWindow = new Window { Page = new NewPage1 { } };
Application.Current.OpenWindow(secondWindow);
```



iOS

MapKit	UIKit	SiriKit	ARKit	CoreML
System.Net	System	System.IO	System.Linq	System.Xml
System.Data	System.Windows	System.Numerics	System.Core	System.ServiceModel

C#

Android

Fingerprint	Bluetooth	Picture-in-Picture	Geolocation	NFC
System.Net	System	System.IO	System.Linq	System.Xml
System.Data	System.Windows	System.Numerics	System.Core	System.ServiceModel

C#

APIs Beyond UI

Simple access to APIs

Access services and features of each platform

App actions

Clipboard

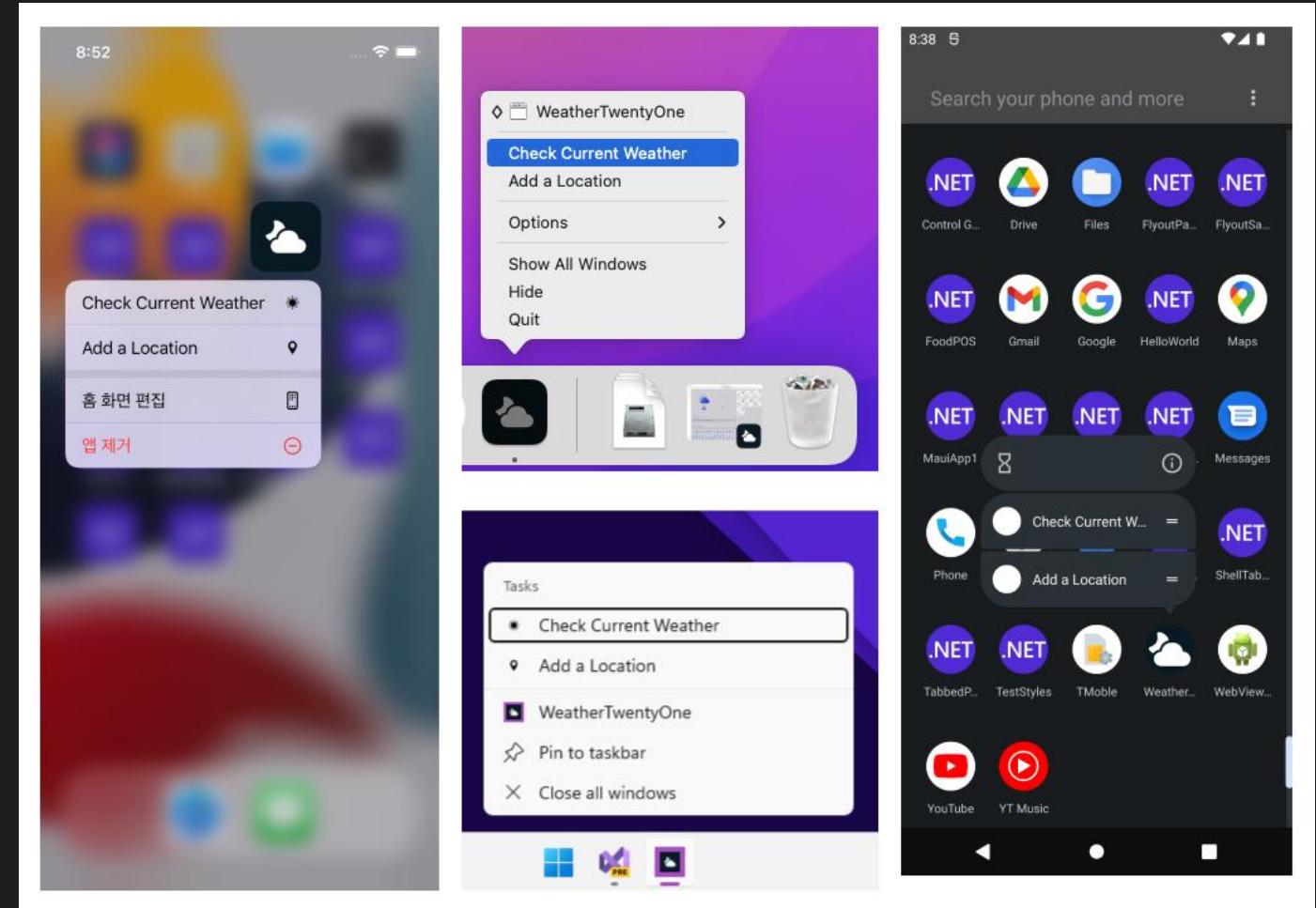
Device sensors

File system

Network

Notifications

+More



```
AppActions.SetAsync(  
    new AppAction("current_info", "Check Current Weather", icon: "current_info"),  
    new AppAction("add_location", "Add a Location", icon: "add_location")  
);
```

Geolocation Example

```
// Get cached location, else get real location.  
var location = await Geolocation.GetLastKnownLocationAsync();  
  
if (location == null)  
{  
    location = await Geolocation.GetLocationAsync(new GeolocationRequest  
    {  
        DesiredAccuracy = GeolocationAccuracy.Medium,  
        Timeout = TimeSpan.FromSeconds(30)  
    });  
}
```

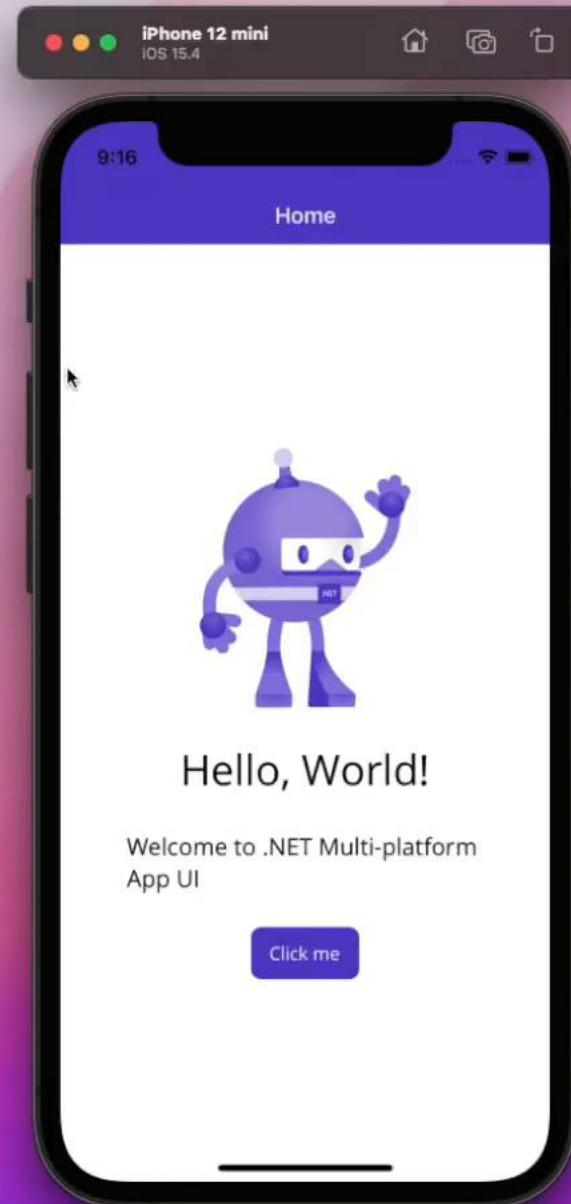
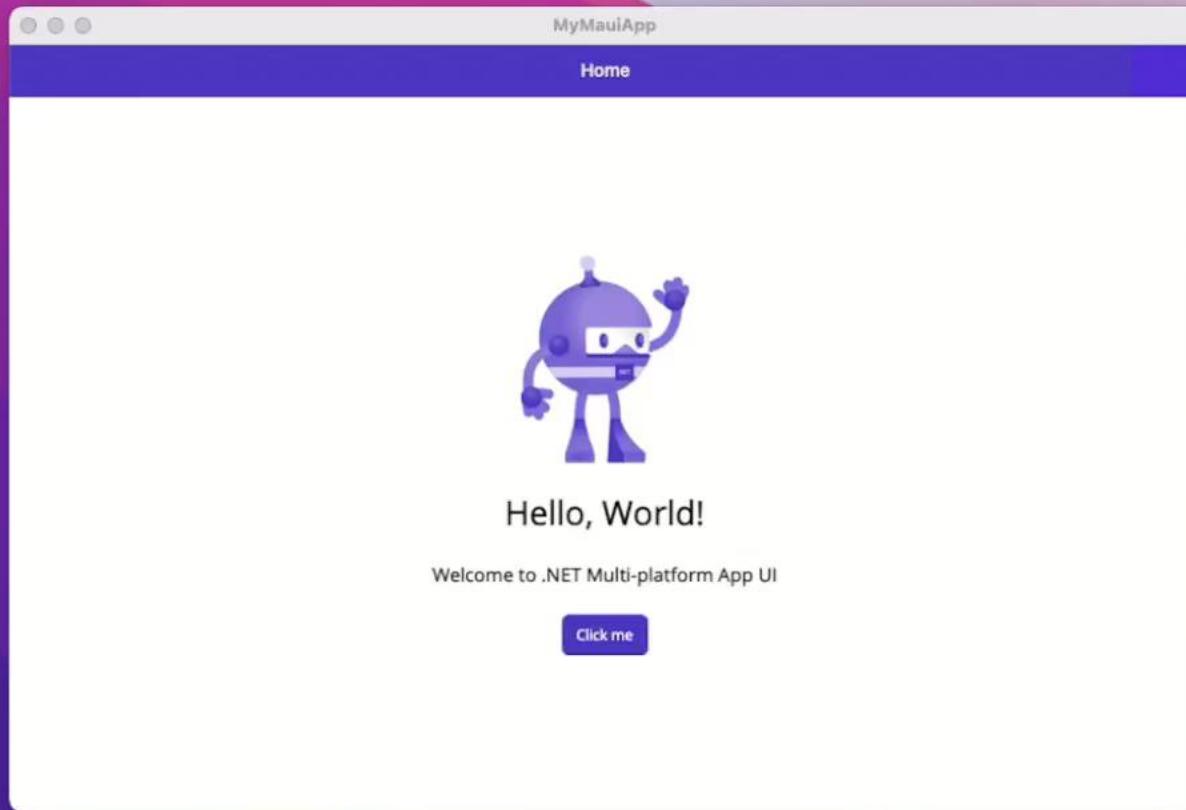
Geolocation Example

```
// Register service
builder.Services.AddSingleton<IGeolocation, Geolocation.Default>();

// Inject service
IGeolocation geolocation;
public MyViewModel(IGeolocation geolocation)
{
    this.geolocation = geolocation;
}
```

Demo

Accessing platform features



Ecosystem

Let's build this together!



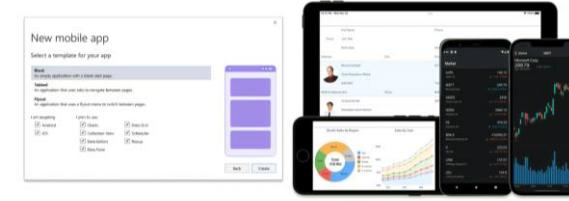
Controls, components, plugins, libraries and more...



Progress®



Syncfusion®



DevExpress®



[AndroidX](#)
[AlohaKit](#)
[CommunityToolkit.MVVM](#)
[CommunityToolkit.Maui](#)
[CommunityToolkit MauiCompat](#)
[CommunityToolkit Markup.MauiCompat](#)
[DevExpress](#)
[Facebook](#)
[FreshMvvm.Maui](#)
[Google APIs for iOS](#)

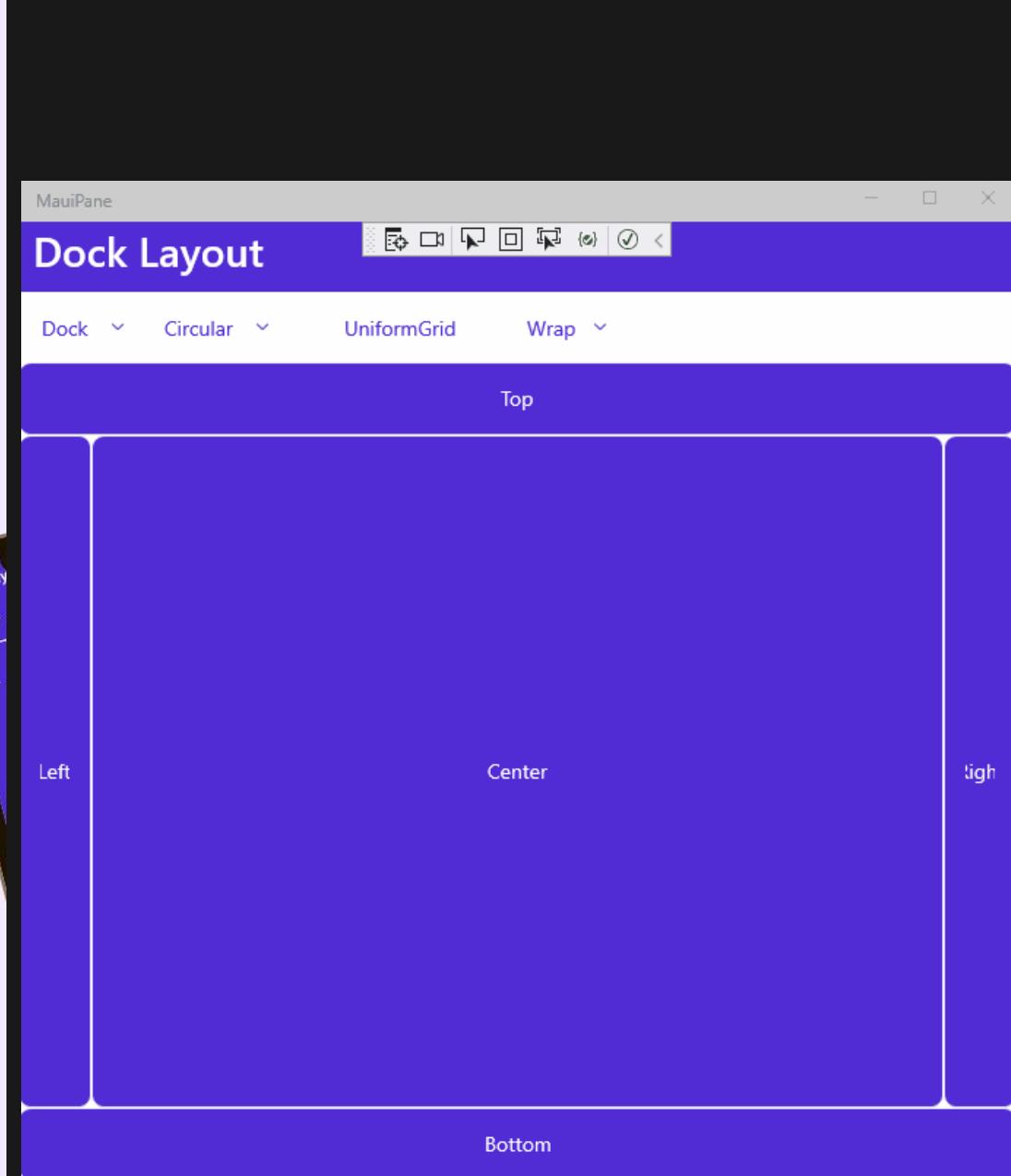
[Google Play Services Client Libraries](#)
[GrialKit](#)
[MauiAnimation](#)
[Microsoft.Maui.Graphics](#)
[MR.Gestures](#)
[MSAL](#)
[Prism.Maui](#)
[Plugin.Fingerprint](#)
[Plugin.InAppBilling](#)
[Plugin.StoreReview](#)

[Plugin.ValidationRules](#)
[Progress Telerik UI for .NET MAUI](#)
[ReactiveUI.Maui](#)
[Realm by MongoDB](#)
[Sentry](#)
[Shiny](#)
[SkiaSharp & Skottie](#)
[Syncfusion .NET MAUI Controls](#)
[TemplateUI](#)
[User Dialogs](#)

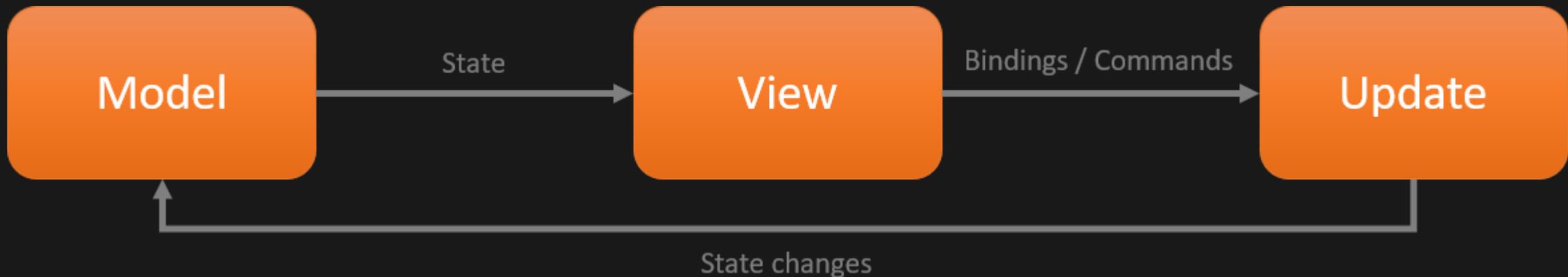


.NET MAUI Layouts Library

MAUIPANE



Comet



```
public class MyPage : View {

    readonly State<int> clickCount = 1;
    readonly State<string> text = "Hello World";

    public MyPage() {
        Body = () => new VStack {
            new Text (text),
            new Button("Update Text", () => state.Text = $"Click Count: {clickCount.Value++}")
        };
    }

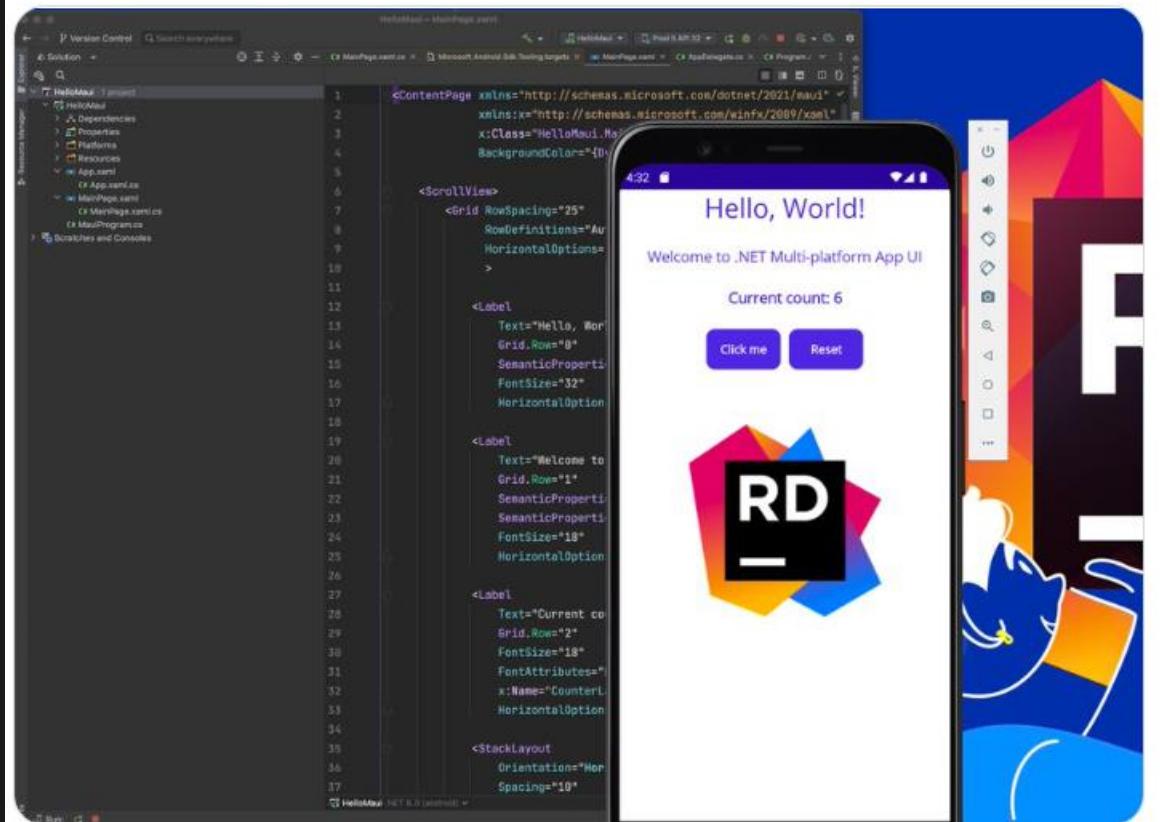
}
```



Khalid 😊
@buhakmeh

I also got an #Android app powered by #MAUI to run using the latest @JetBrainsRider #EAP. #dotnet #mobile #development

jetbrains.com/rider/nextvers...

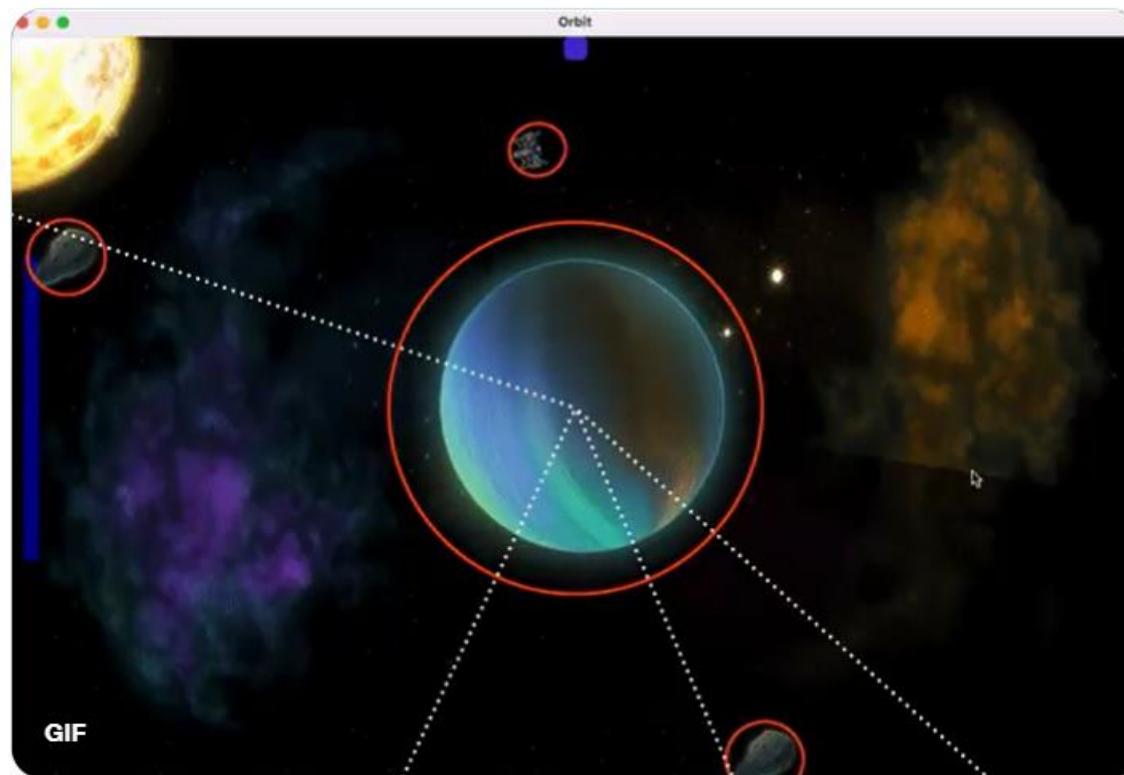




Shaun Lawrence
@Bijington

...

I finally have spawning working in my [#dotnetmaui](#) game! It isn't as accurate as I had intended (my maths sucks) but I think I quite like that the asteroids might have slightly inconsistent trajectories.

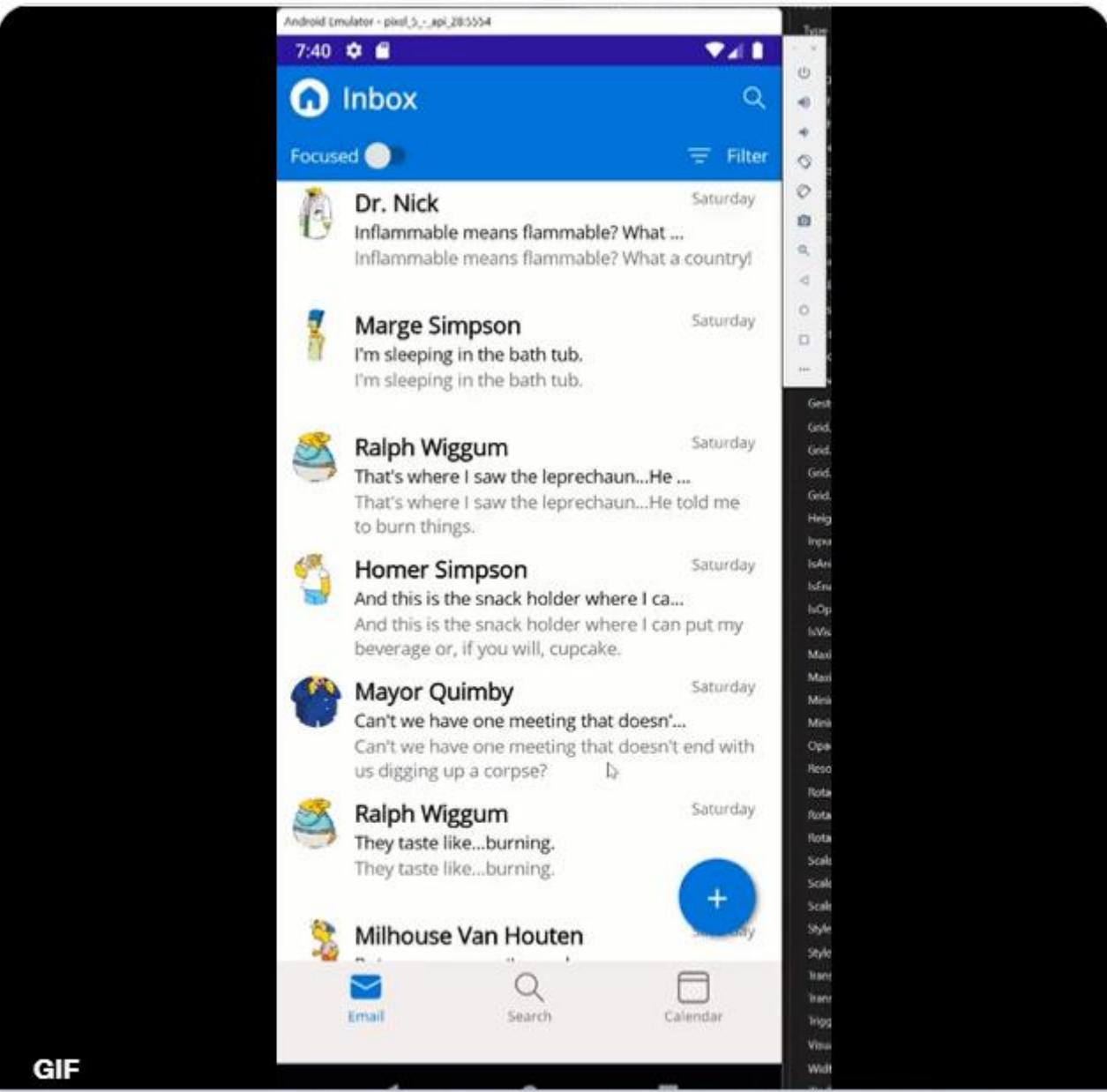




Matt Goldman #BlackLivesMatter @mattgoldman · May 16

Replicating @Outlook UI in #dotnetmaui

...



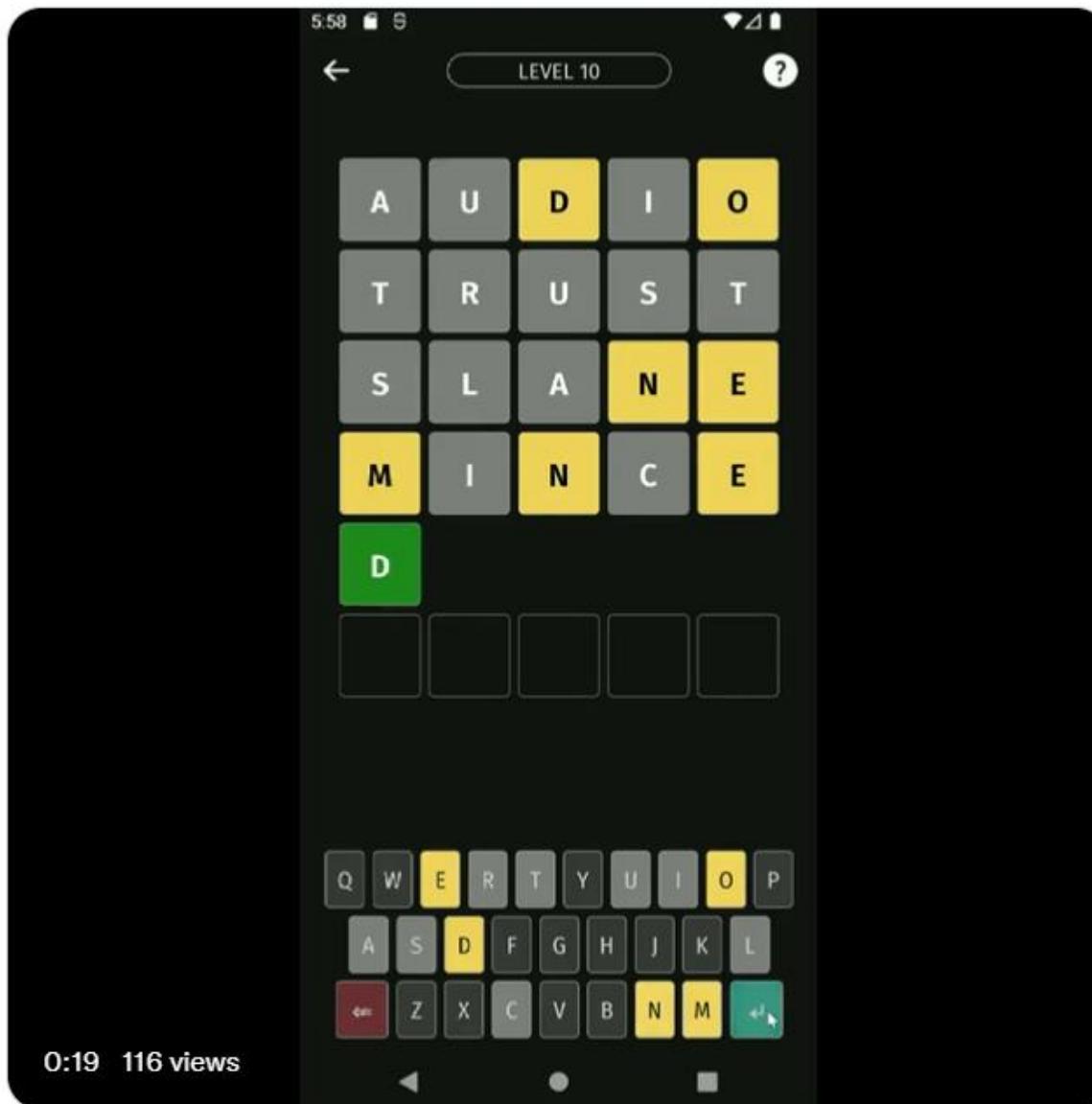
GIF



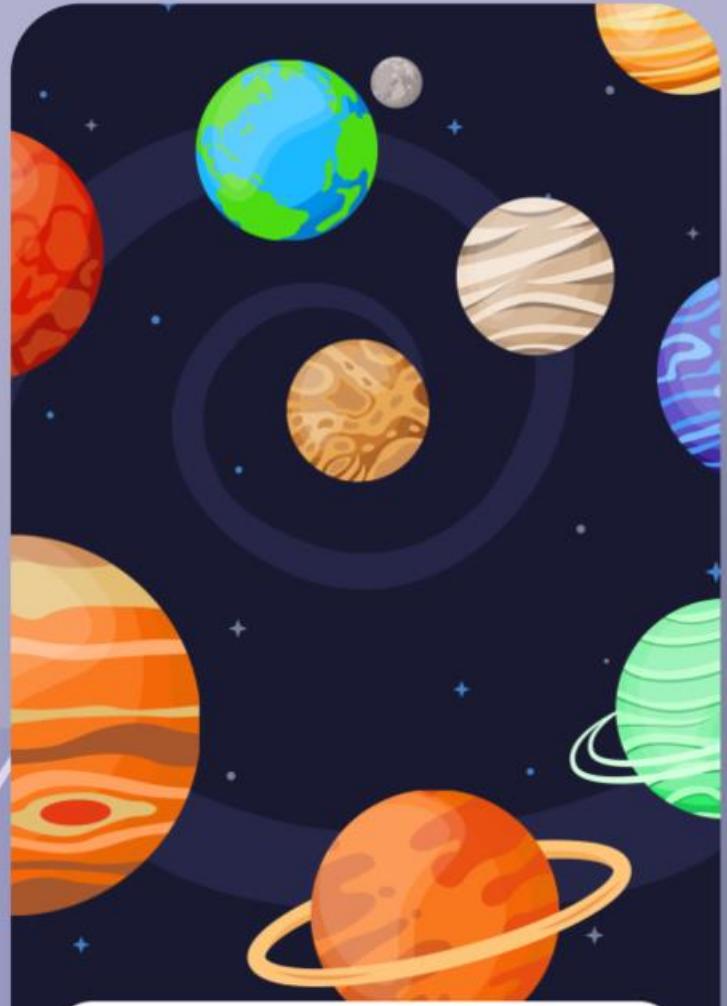
Naweed Akram @xgeno · May 14

...

95% of re-writing completed. Just one more page to re-write (Stats page) and then I am good to release to App Stores. Very stable #dotnetmaui RC2 and RC3 (of course encountered a few small issues - but nothing that I couldn't handle). + [@davidortinau](#) [@dotnet_maui](#) [@jfversluis](#)



0:19 116 views



Hello!

Want to know and explore all things about the planets in the Milky Way galaxy?

Let's Explore

The milky way galaxy

Search for your favorite planet

Most Popular →

Pluto
The minor planet

Neptune
Eight & farthest-

You may also like →

Uranus

Venus

Jupiter

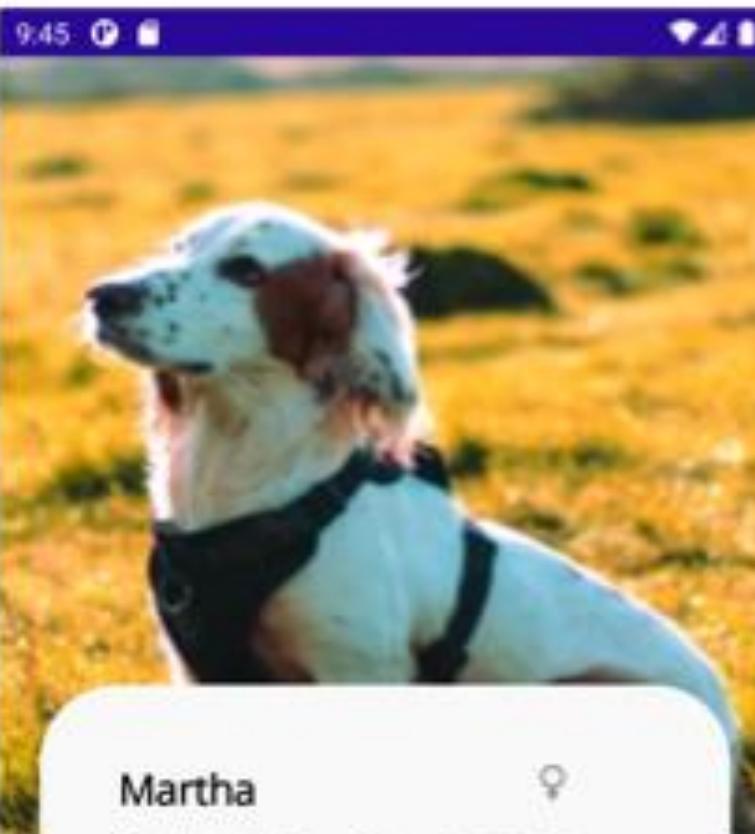
← ...

Pluto

The minor planet

Pluto (minor planet designation: 134340 Pluto) is a dwarf planet in the Kuiper belt, a ring of bodies beyond the orbit of Neptune. It was the first and the largest Kuiper belt object to be discovered. After Pluto was discovered in 1930, it was declared to be the ninth planet from the Sun.

Gallery



Martha



Border collie ♂ 1 year old

📍 120 N 4th St, Brooklyn, NY, USA

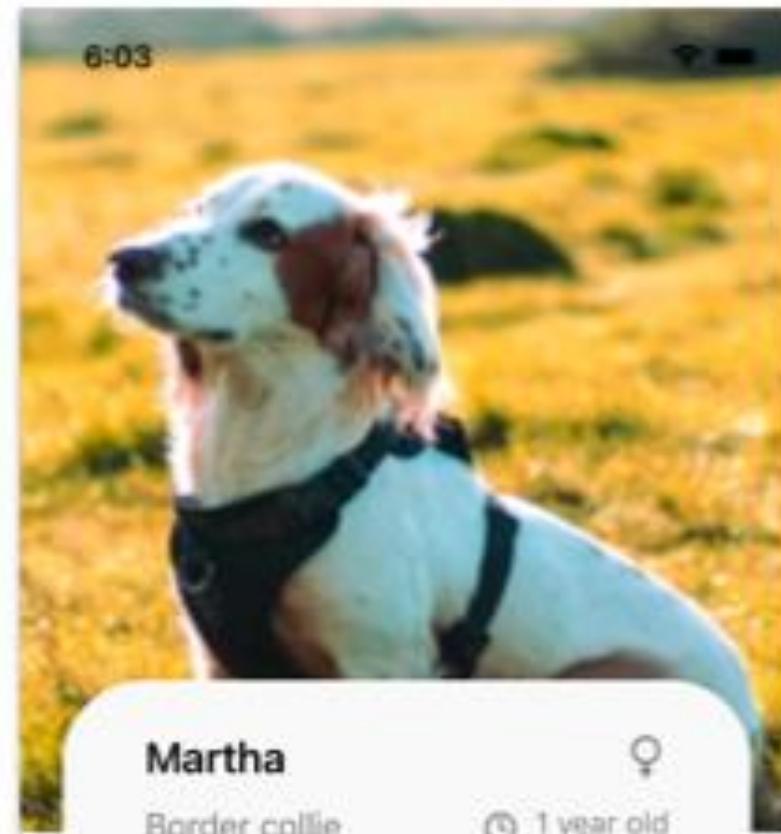


Harry Jones

Owner

24.01.2022

Hi! Martha has impeccable manners when I first met her, most of which I've since undone. She's also become very 'chatty' with a full range of Scooby Doo noises when she doesn't feel she's getting the attention she deserves.



Martha



Border collie

♂ 1 year old

📍 120 N 4th St, Brooklyn, NY, USA



Harry Jones

Owner

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UX Challenge #04

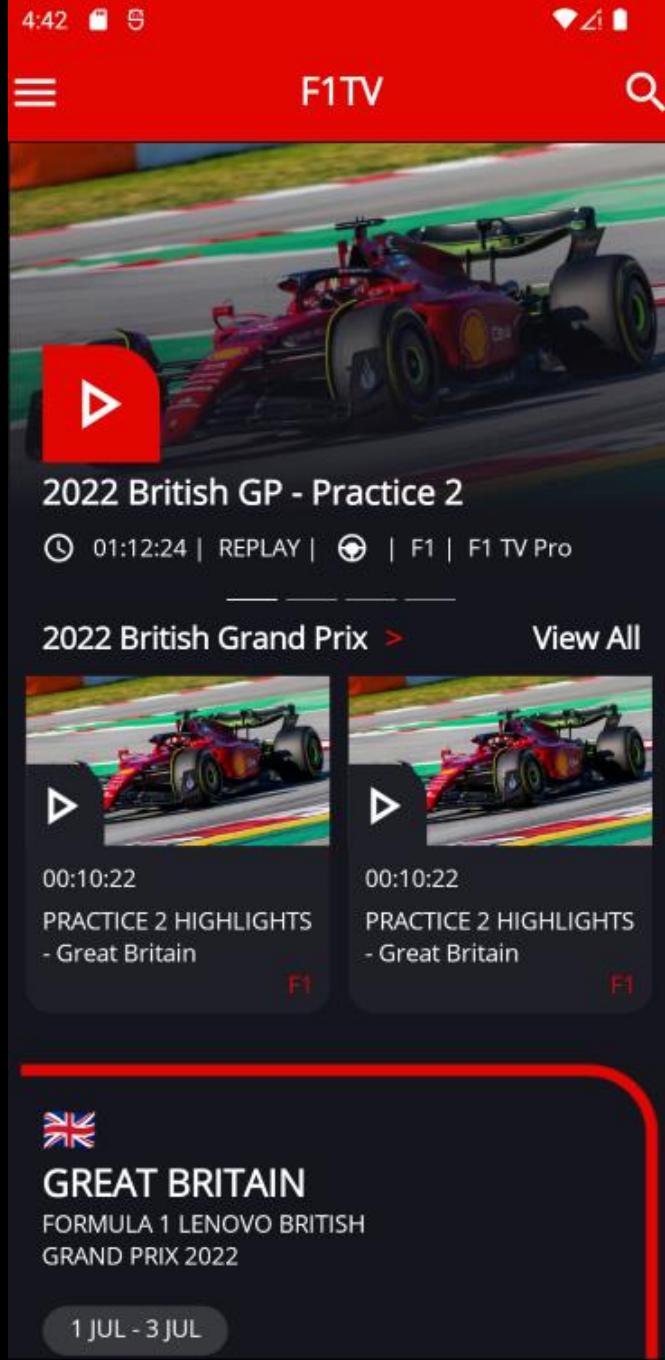
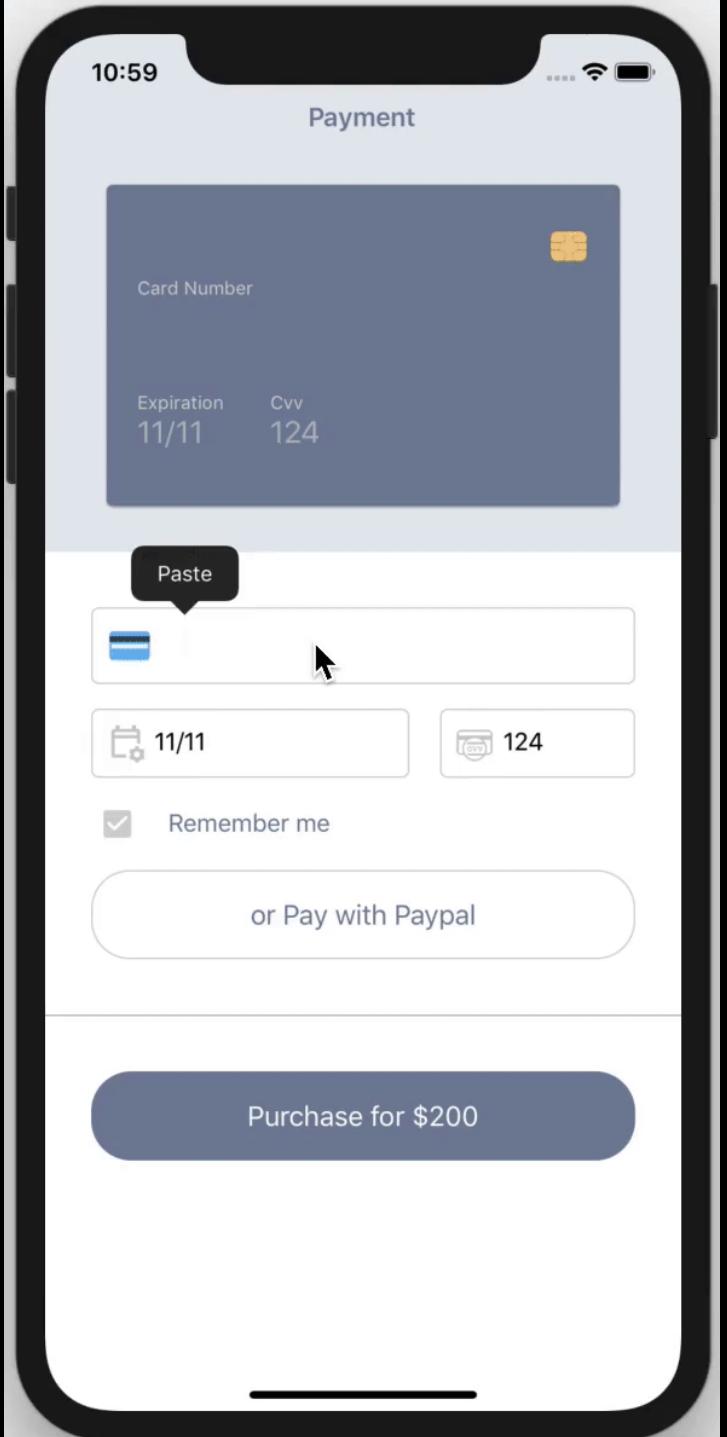
(Sci)Calculator

The only scientific calculator
you'll ever need on your phone.

Designed: rlndsgn

- Trackpad selection
- Advanced Placeholders
- Graphs and more!



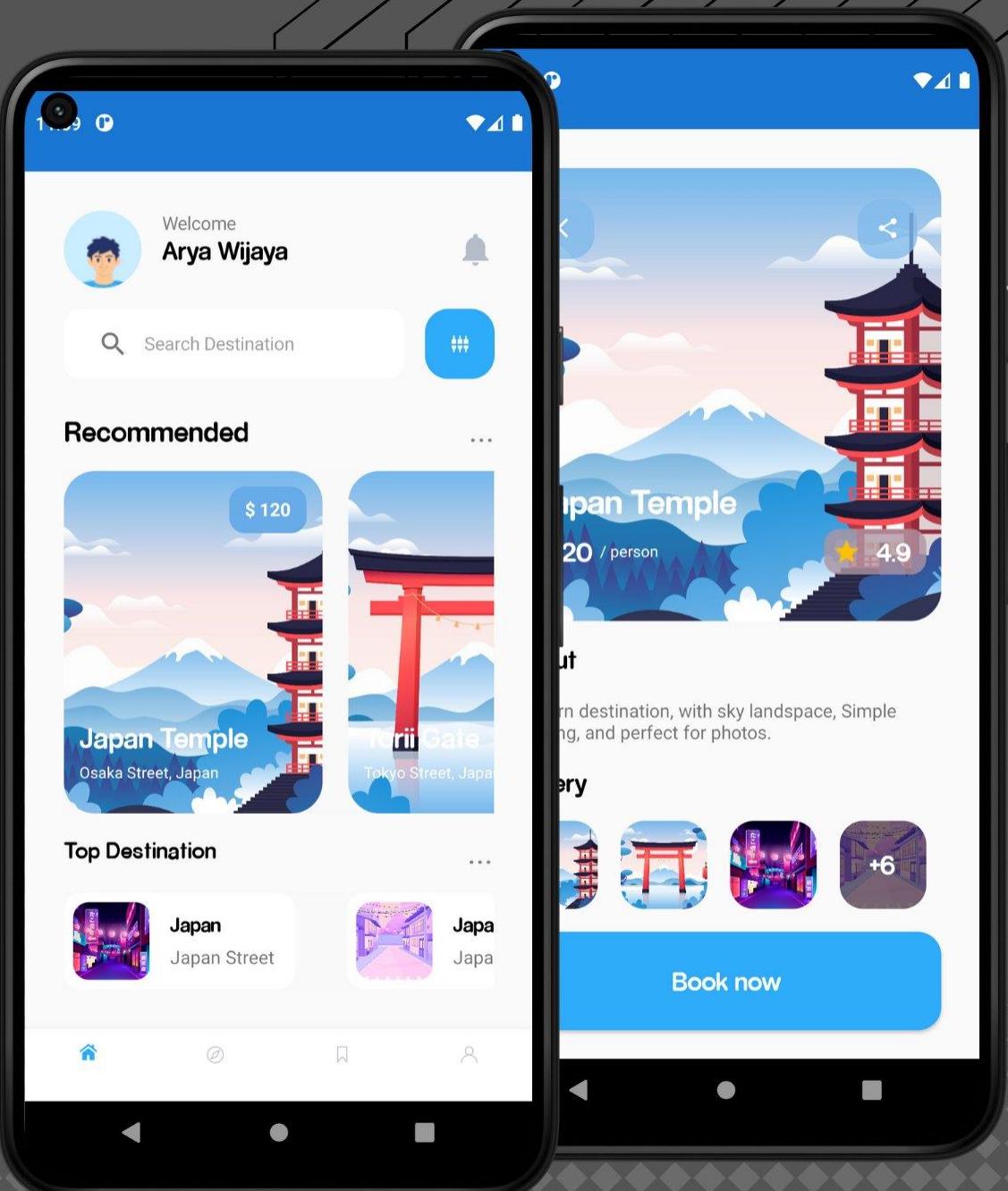


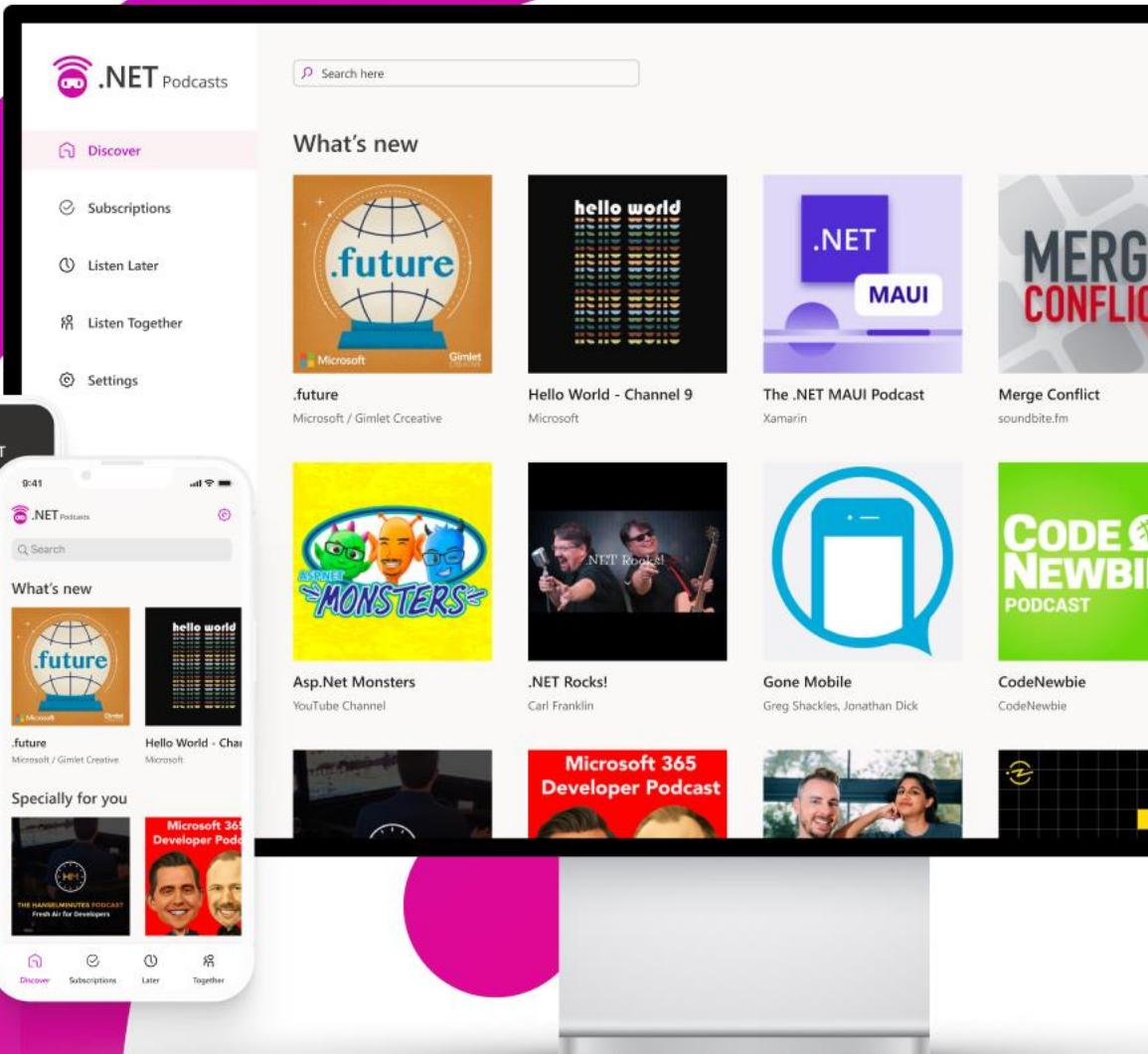
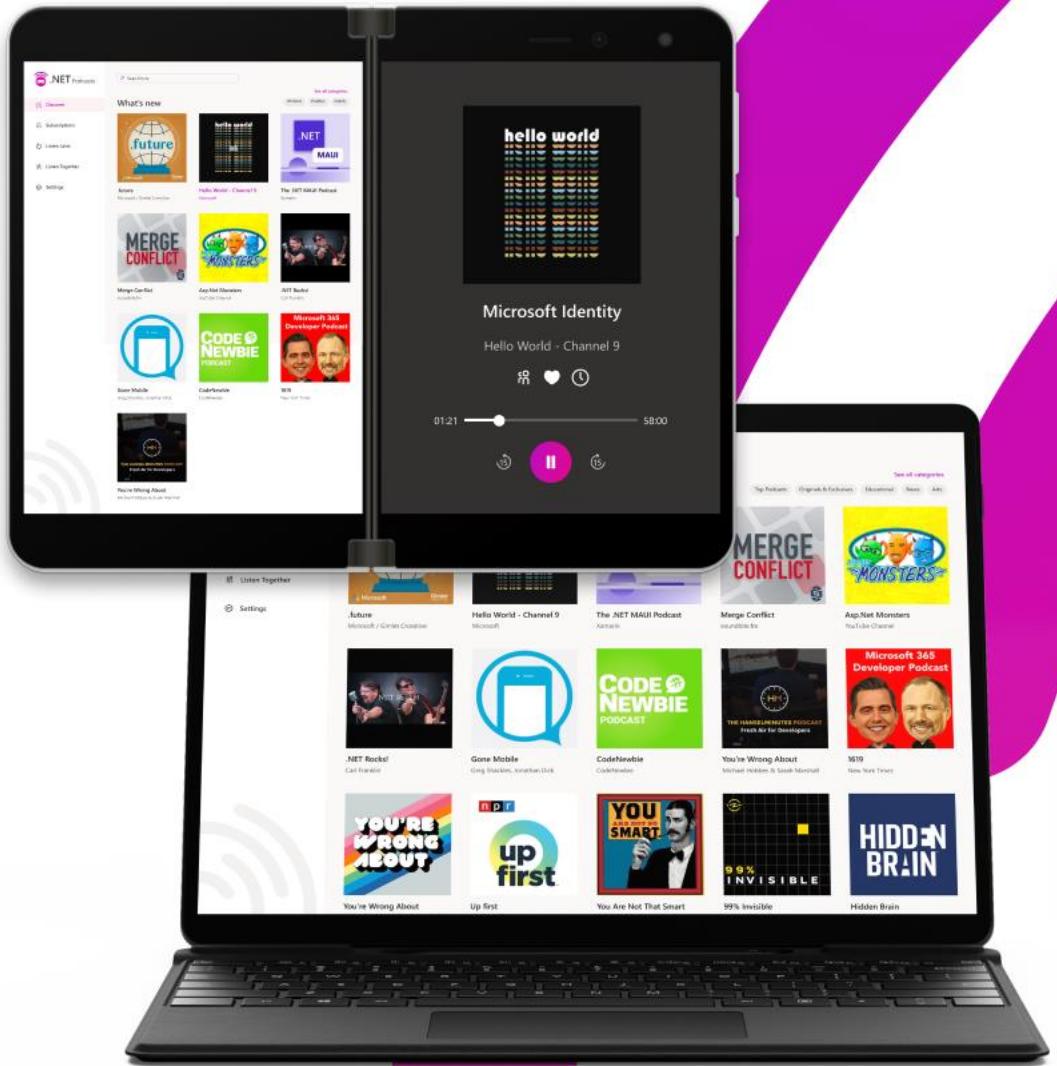
TRAVEL APP

Made with .NET MAUI



@jsuarezruiz





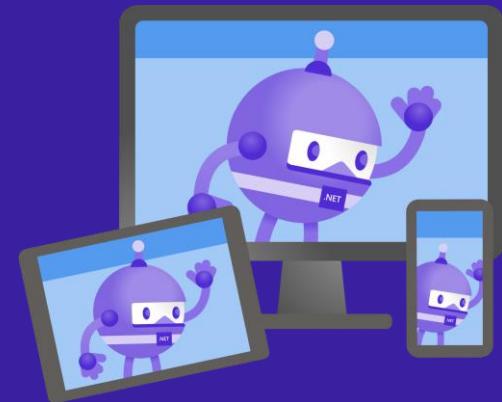
Demo

.NET Podcasts in Action

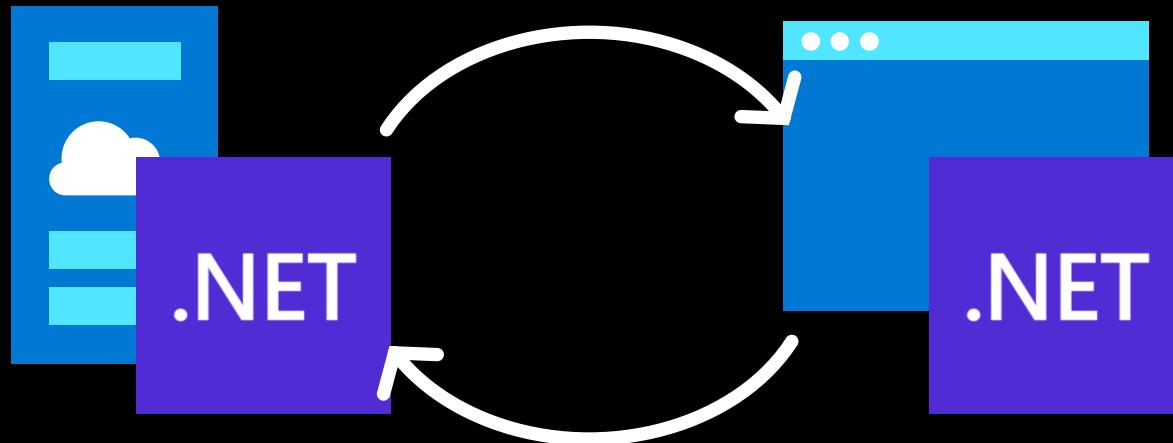
github.com/microsoft/dotnet-podcasts

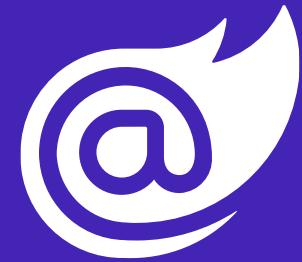
Hybrid

Bring native client capabilities to your web apps.

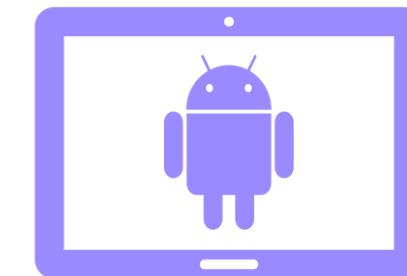
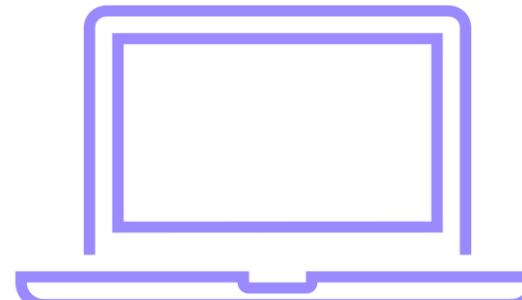
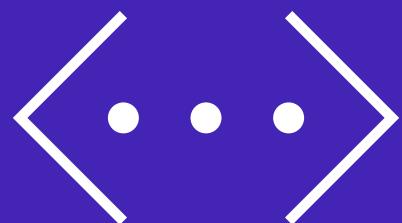
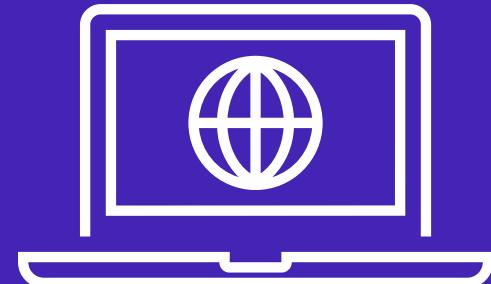
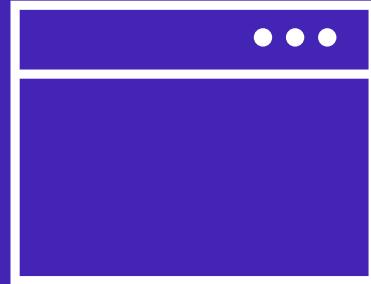


Blazor - full stack web apps with .NET

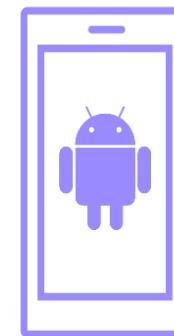
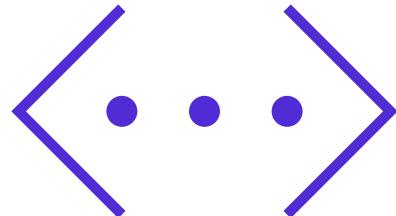
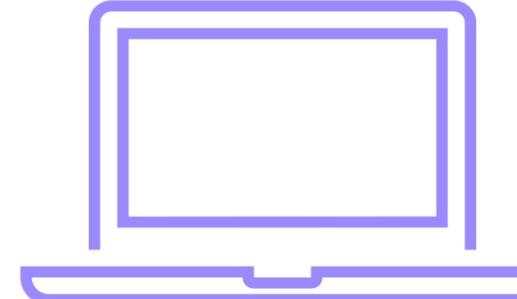
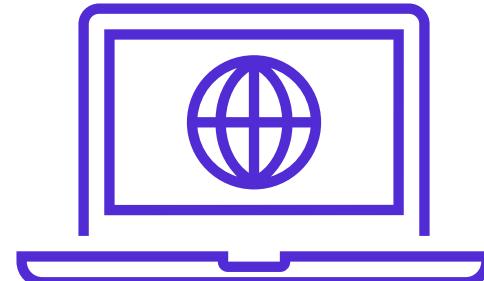




Blazor



Blazor Hybrid: @ + .NET MAUI



Hybrid app benefits

- Reuse existing web development skills and code
- Access to all the native platform capabilities of the device
- Mix native & web UI
- Reduce app development time
- Ship seamlessly to app store or internal distribution

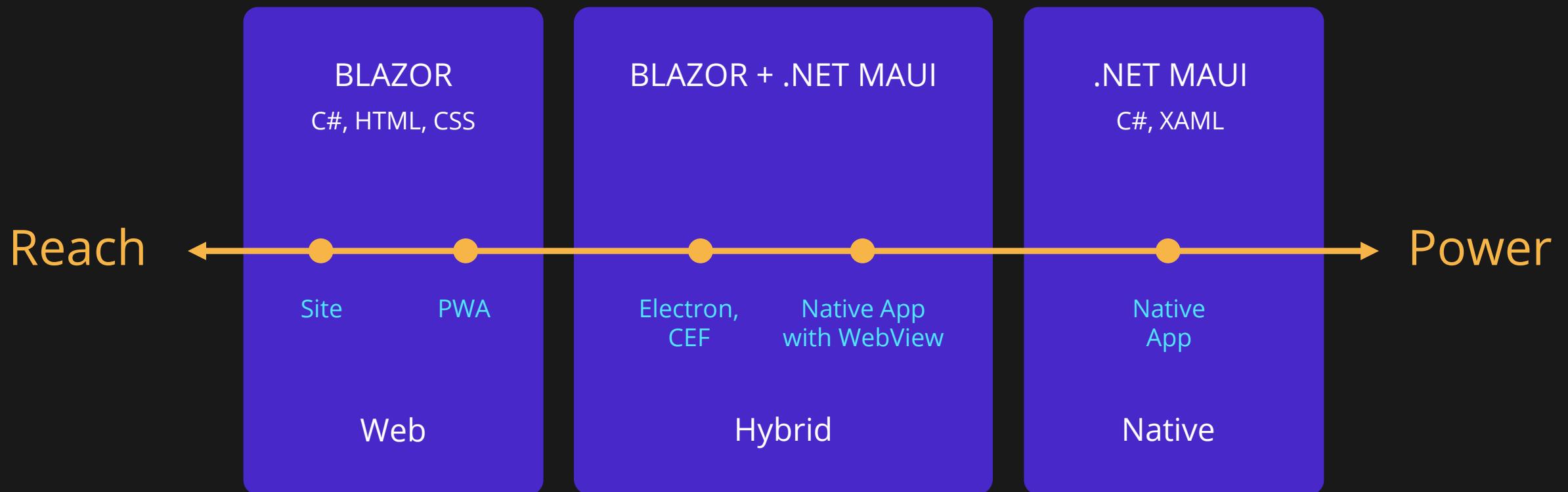
Hybrid Architecture - .NET MAUI & Blazor



Demo

Let's build a hybrid app!

Choose your stack



.NET 7

.NET MAUI is great for desktop apps

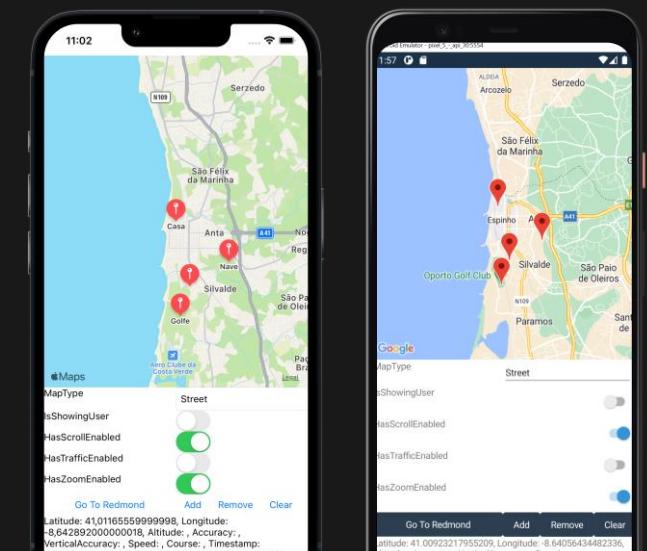
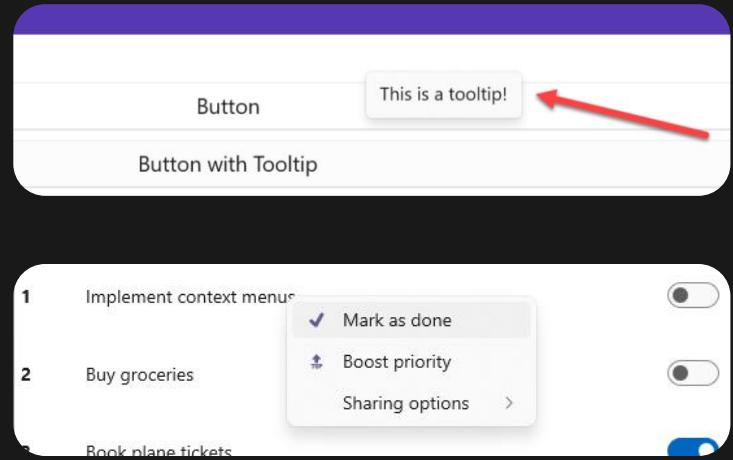
ContextMenu
Cursors
Hover Gesture

Right-click Gesture
Title Bar
Tooltips

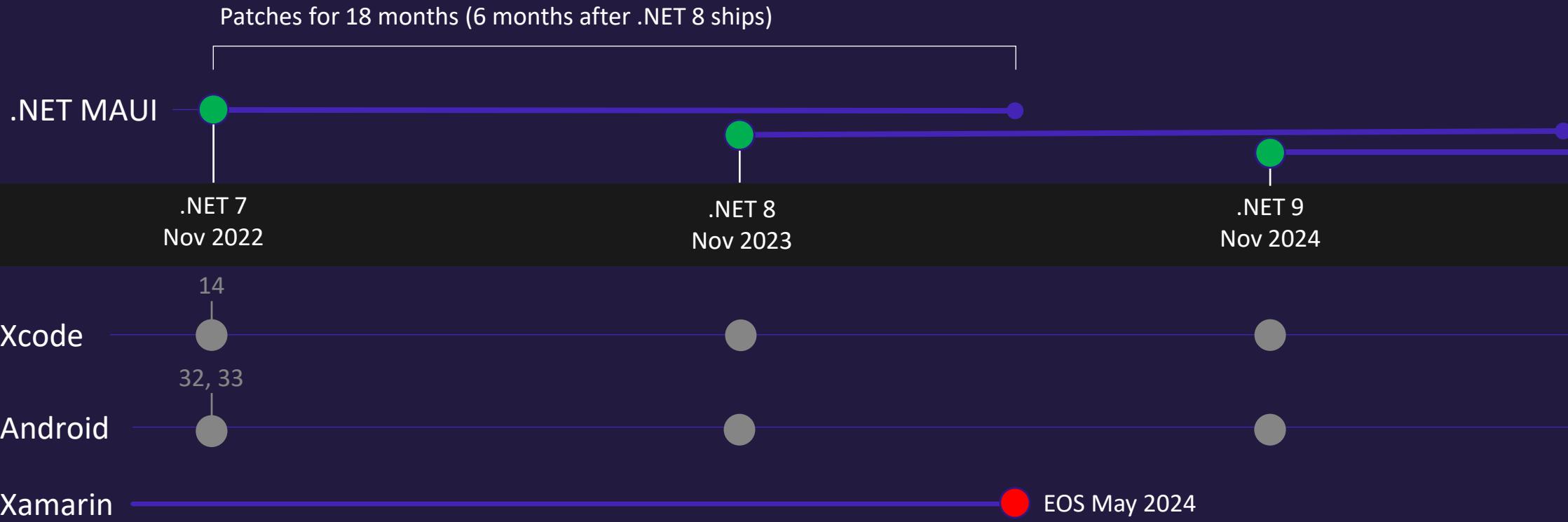
Mobile

Maps

...and more!



Release schedule, support & patching



- A major version of .NET MAUI will ship with .NET going forward (.NET 7, .NET 8, etc.)
- .NET MAUI is an optional workload with external dependencies (such as Xcode & Android SDK tools)
- A major version of .NET MAUI will receive patches for 6 months after a successor (major version) ships
- Xamarin SDKs will receive support until May 2024

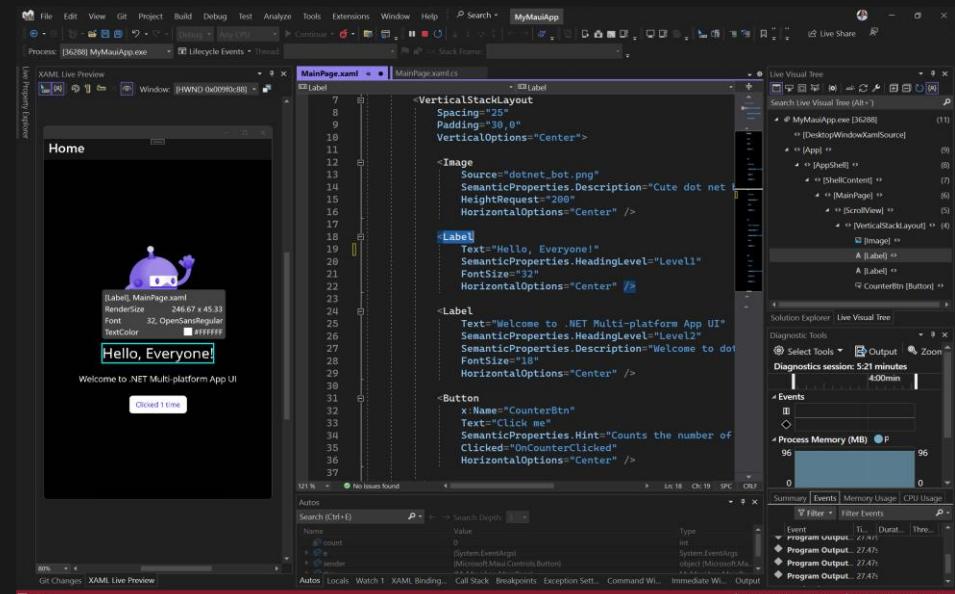
Get started today!

Get started with .NET MAUI

The screenshot shows the official .NET Multi-platform App UI (MAUI) landing page. It features a large blue header with the title ".NET Multi-platform App UI" and a subtext "Build native, cross-platform desktop and mobile apps from a single C# codebase." Below this is a "Get Started" button and a link to the documentation. To the right, there's a preview of a mobile app interface with a purple whale icon and the text "Hello, Everyone!". At the bottom left, a video thumbnail shows the Visual Studio interface with the "Create a new project" dialog open, displaying various project templates like "Blank MAUI App", "Blank MAUI Core Web App", and "Blank MAUI App".

dot.net/maui

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Thank you so much!

Q&A



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