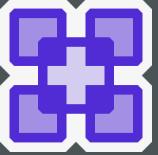


THE WONDERFUL WORLD OF .NET CROSS-PLATFORM DEVELOPMENT

Steve Bilogan

FRAMEWORKS (AT A GLANCE)

Framework	Status	Primary Use Case	Rendering Approach
.NET MAUI	Active (Microsoft)	Mobile-first with desktop	Native platform controls
Xamarin.Forms	Deprecated (May 2024)	Legacy mobile apps	Native platform controls
Uno Platform	Active (Open Source)	Enterprise multi-platform	Native or Skia (configurable)
Avalonia UI	Active (Open Source)	Desktop-first with mobile	Custom rendering (Skia/Direct2D)



.NET MAUI REPORT CARD

- Official evolution of Xamarin.Forms (Deprecated May 2024)
- Native UI Rendering (through Handlers)
- Unified project system (single .csproj)
- XAML for UI definition
- Support for iOS, Android, Windows (WinUI 3), macOS (Mac Catalyst), Tizen (via Samsung)



UNO PLATFORM REPORT CARD

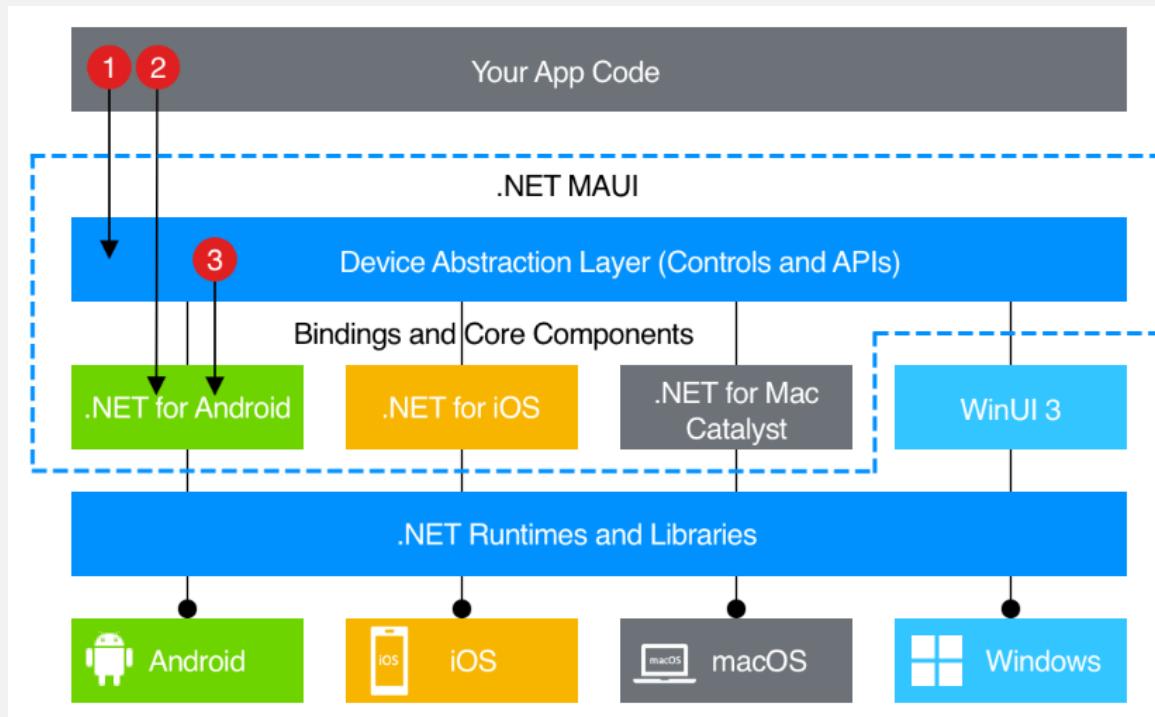
- Officially announced and open-sourced in May 2018
- Native and Skia-based rendering engines (customizable)
- Unified project system (single .csproj, sdk-style project)
- XAML/C# for UI definition
- Official support for iOS, Android, Windows, macOS, Linux, WebAssembly,
- Targets single-target desktop via skia backend.
- Maintains support for native Windows WinUI 3 Desktop apps as well



AVALONIA REPORT CARD

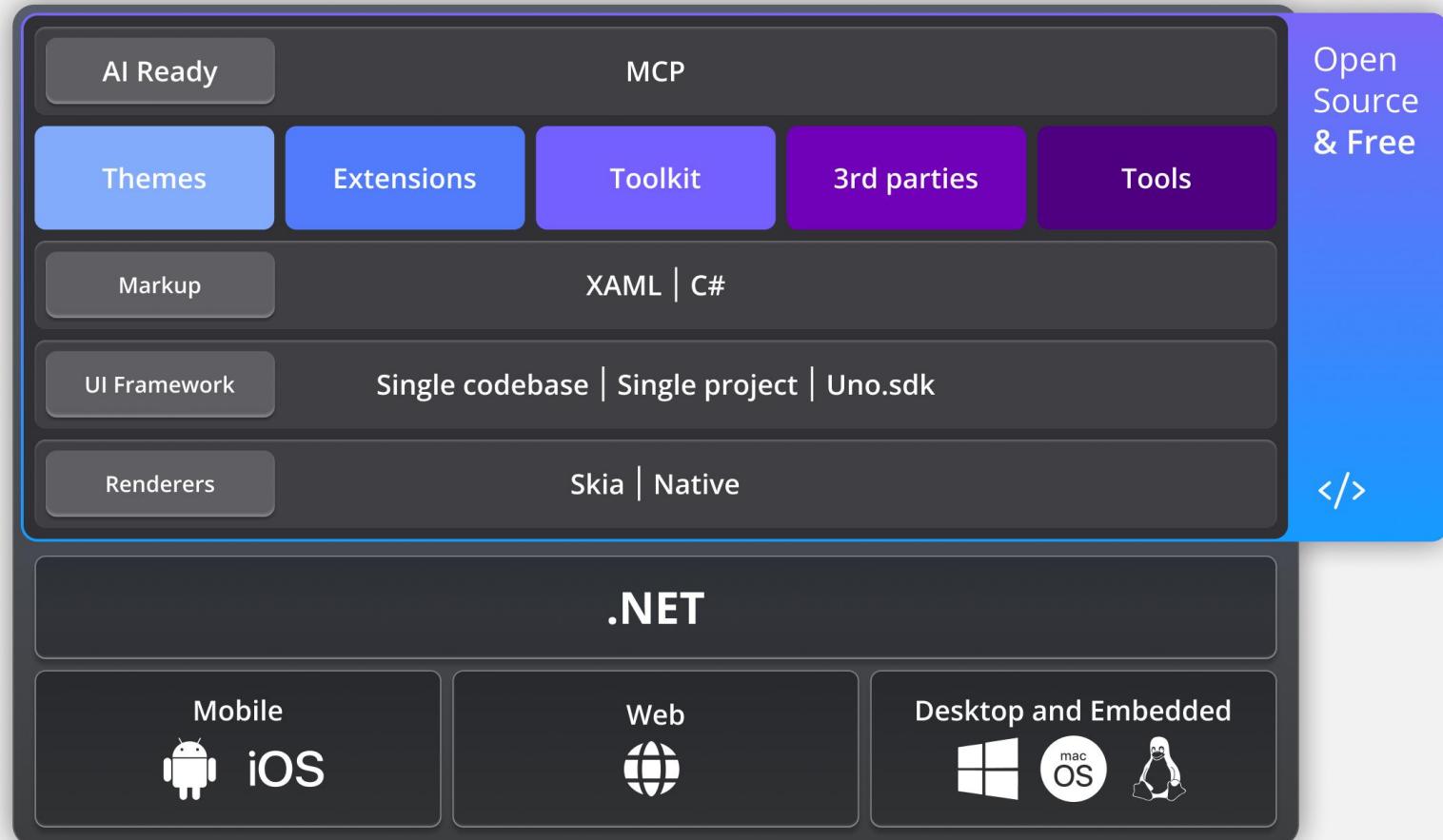
- Open-source project started in 2013, company founded in 2019
- Skia-/Direct2D-based rendering engine (in flux: [The Future of Avalonia's Rendering - Avalonia UI](#))
- Separate .csproj per platform
- XAML for UI definition (.axaml)
- Official support for iOS, Android, Windows, macOS, Linux, WebAssembly,

.NET MAUI ARCHITECTURE

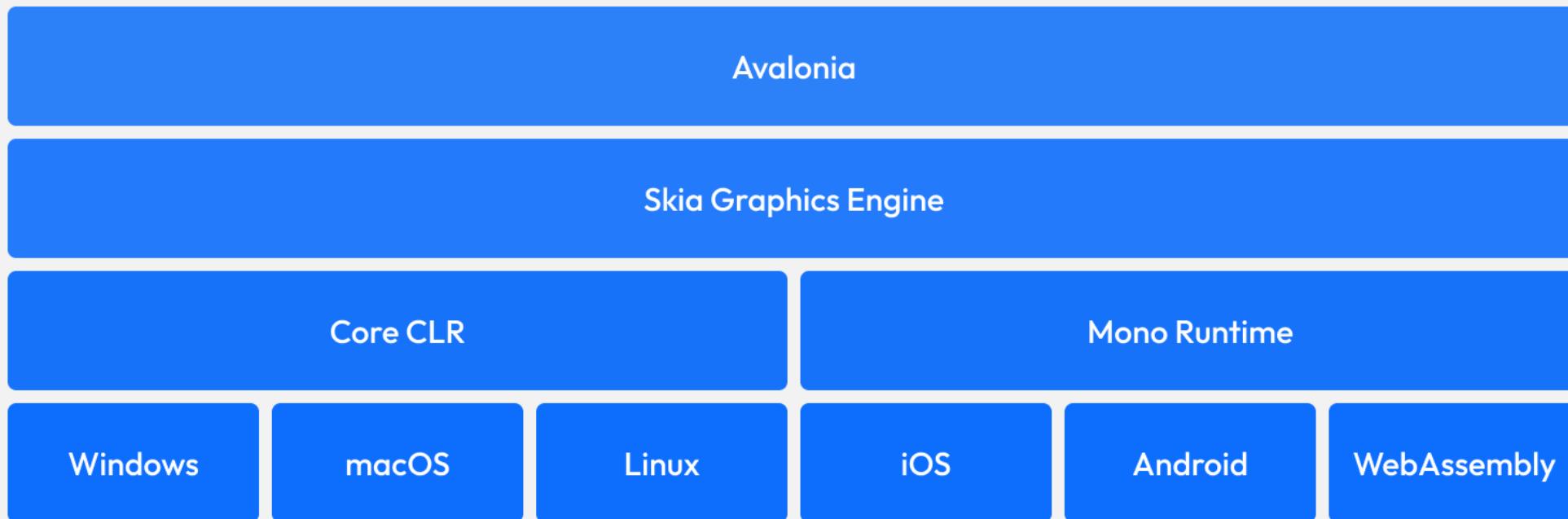


You write code that primarily interacts with the .NET MAUI controls and API layer (1). This layer then directly consumes the native platform APIs (3). In addition, app code may directly exercise platform APIs (2), if required.

UNO PLATFORM ARCHITECTURE



AVALONIA ARCHITECTURE



XAML FLAVORS

- .NET MAUI (Uses its own API – evolved from XF APIs)
 - `xmlns="http://schemas.microsoft.com/dotnet/2021/maui"`
 - [Get started with .NET MAUI XAML - .NET MAUI | Microsoft Learn](#)
- Uno Platform (Uses existing WinUI 3 APIs)
 - `xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"` (same as WinUI)
 - [Differences between Uno.UI and WinUI](#)
- Avalonia (WPF-esque)
 - `xmlns="https://github.com/avaloniaui"`
 - [From WPF to Avalonia: A Guide for .NET Developers Exploring Cross-Platform UI Frameworks - Avalonia UI](#)

.NET MAUI



```
<ContentPage xmlns="http://schemas.microsoft.com/dotnet/2021/maui"
    ...
    <Label Text="Hello, World!"
        TextColor="Red"
        FontAttributes="Bold"/>
</ContentPage>
```

AVALONIA



```
<UserControl xmlns="https://github.com/avaloniaui"
    ...
    <TextBlock Text="Hello, World!"
        Foreground="Red"
        FontWeight="Bold" />
</UserControl>
```

UNO PLATFORM



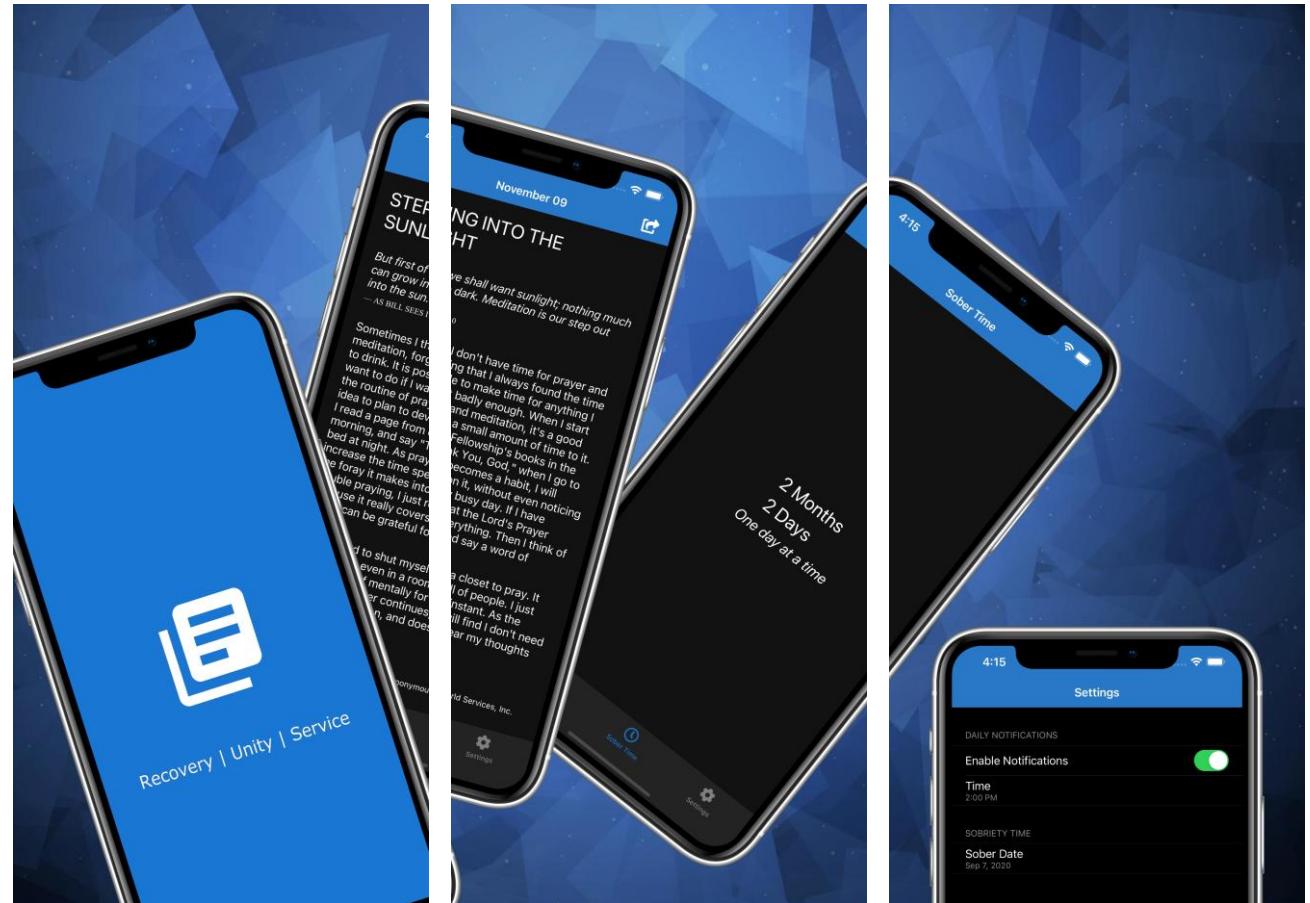
```
<Page xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    ...
    <TextBlock Text="Hello, World!"
        Foreground="Red"
        FontWeight="Bold" />
</Page>
```

TIME FOR
DEMOS!

See you in



A MIGRATION STORY...



A MIGRATION STORY (CONT.)

- Xamarin.Forms app
- Built and released in Oct 2020 for Android and iOS
- Daily readings loaded from a sqlite db
- Native local notification support for daily reminders
- Xamarin.Essentials for xplat Preferences, Share APIs
- Automated UI Tests (Xamarin.UITest)
- <https://github.com/kazo0/DailyReflection>

A MIGRATION STORY (CONT.)

- Initial port to MAUI: <https://github.com/kazo0/DailyReflection-ports/tree/main/DailyReflection>
- Refactoring Presentation and Service layers to be UI Framework agnostic
- Followed up with initial ports to:
 - Uno: <https://github.com/kazo0/DailyReflection-ports/tree/main/DailyReflection.Uno>
 - Avalonia: <https://github.com/kazo0/DailyReflection-ports/tree/main/DailyReflection.Avalonia>