

# THE WONDERFUL WORLD OF .NET CROSS-PLATFORM DEVELOPMENT

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# FRAMEWORKS (AT A GLANCE)

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

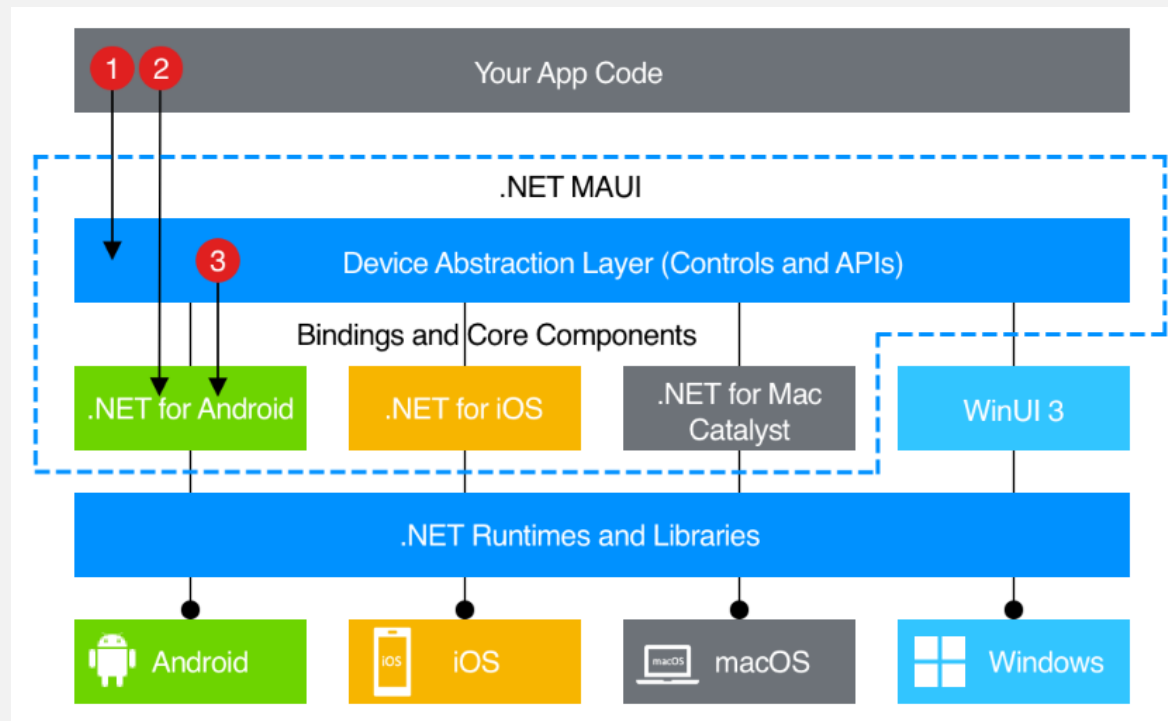
- Officially announced and open-sourced in May 2018
- Native and Skia-based rendering engines (customizable)
- Unified project system (single .csproj, sdk-style project)
- XAML/C# for UI definition
- Official support for iOS, Android, Windows, macOS, Linux, WebAssembly,
- Targets single-target desktop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



# AVALONIA REPORT CARD

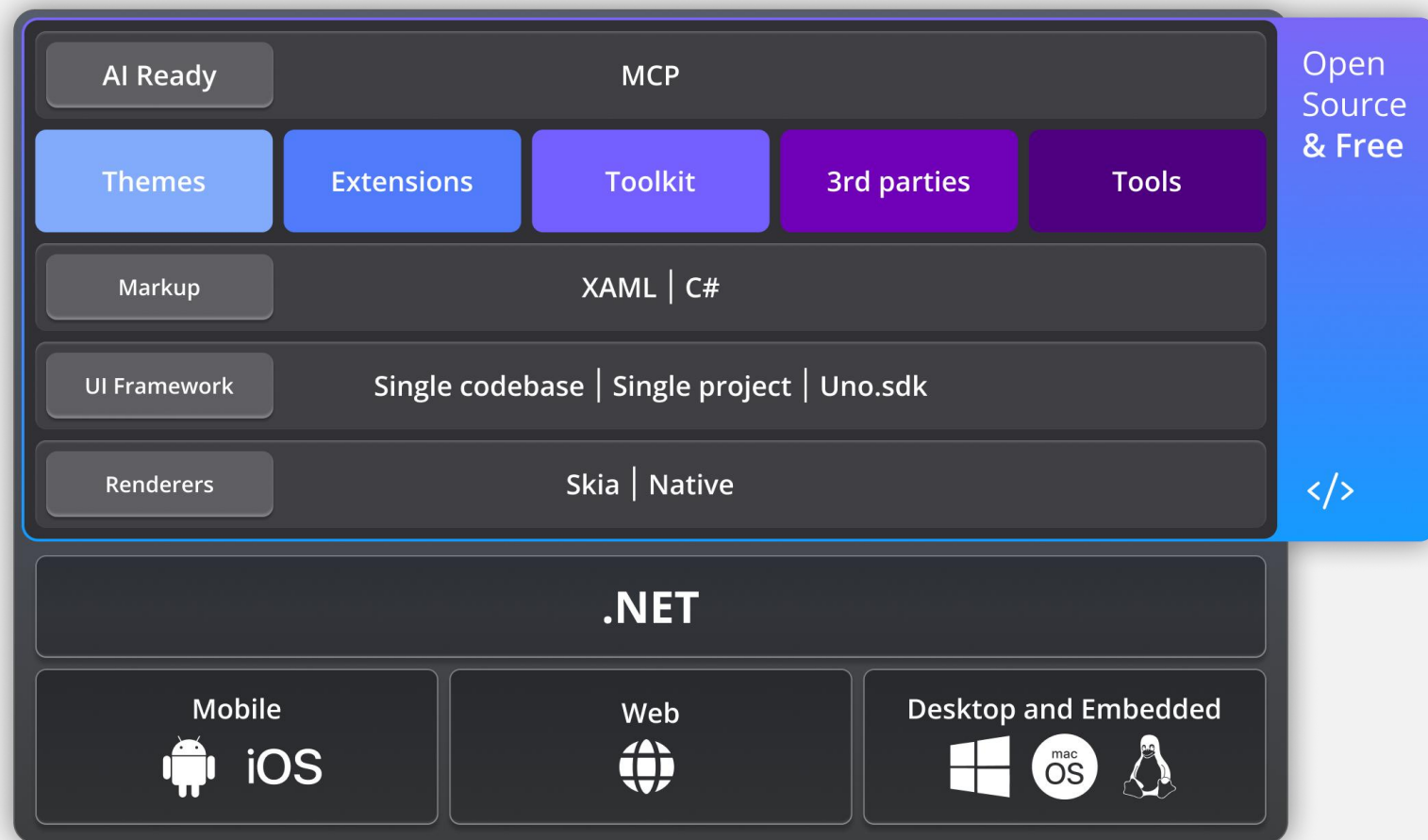
- Open-source project started in 2013, company founded in 2019
- Skia-/Direct2D-based rendering engine (in flux: [The Future of Avalonia's Rendering - Avalonia UI](#))
- Separate .csproj per platform
- XAML for UI definition (.axaml)
- Official support for iOS, Android, Windows, macOS, Linux, WebAssembly,

# .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

Avalonia

Skia Graphics Engine

Core CLR

Mono Runtime

Windows

macOS

Linux

iOS

Android

WebAssembly



# 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>