

# .NET9 客户端应用技术新特性



.NET9



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# Agenda

## Winforms

- 非感知DPI
- Dark them
- Binding
- AI

## WPF

- Fulent

## .NET MAUI

- 实时预览
- AOT
- 生态兼容



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# Microsoft's Investments in Client Development

## Windows Native



WinUI3



WinForms



WPF

## Cross Platform Native



React Native



.NET MAUI

## Hybrid



Blazor Hybrid



WebView2

## Web



Progressive  
Web Apps



Blazor Web

# Learn More



.NET

**BRK241:** Navigating Win32 App Development with WinUI and WPF  
**BRK244:** How to create superior experiences with WinUI and WPF  
**DEM774:** Elevating App craftsmanship with WinUI 3

<https://aka.ms/winui>  
<https://aka.ms/wpf>



**OD502:** Supercharging your React Native app for Windows

<https://aka.ms/reactnative>



**On Demand:** Enhancing .NET MAUI: Quality, Performance, & Interop in .NET 9  
**DEM746:** Build Hybrid Apps with Blazor and .NET MAUI

<https://aka.ms/maui>



<https://www.pwabuilder.com>

<https://aka.ms/pwa>

.NET

**On Demand:** What's New with WinForms in .NET 9

<https://aka.ms/winforms>

# Winforms



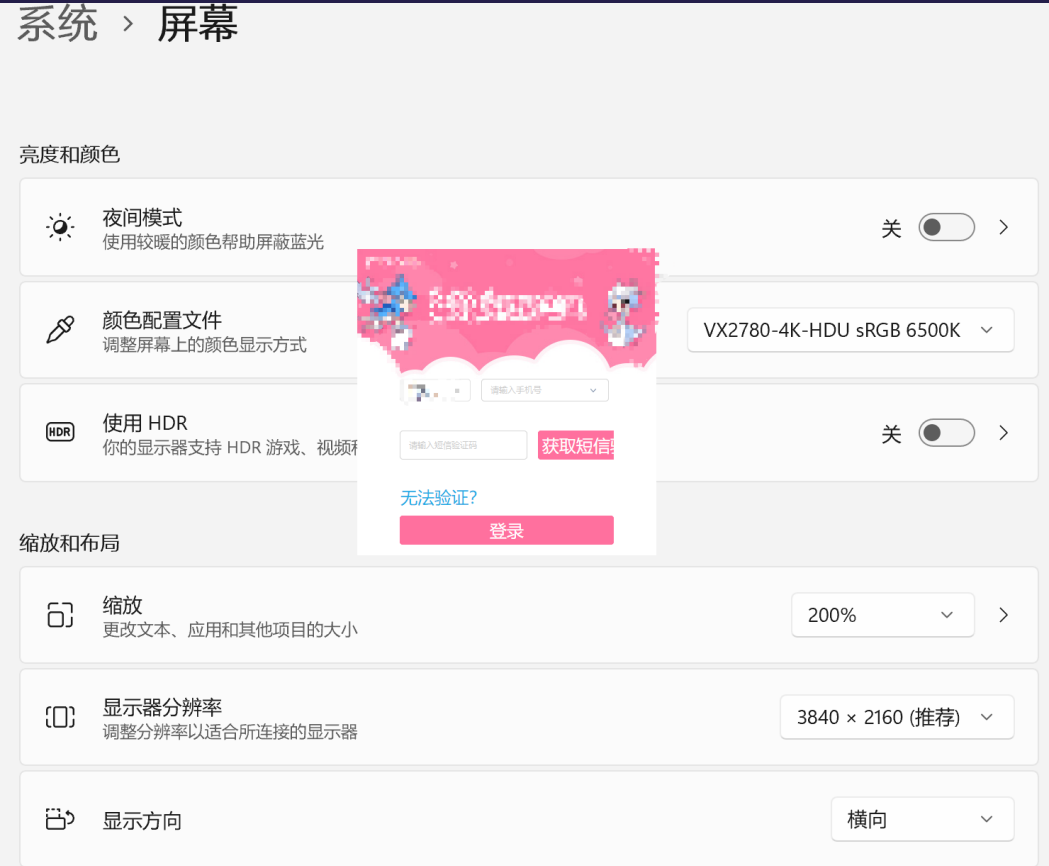
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# Winforms 非感知DPI

默认情况下，Visual Studio 是一个每英寸点数 (DPI) 感知应用程序，因此其显示会自动缩放。但是，Windows 窗体设计器是非 DPI 感知应用，因此它显示为 96 DPI 的位图。如果没有自动缩放支持，在 HDPI 监视器上打开窗体时，会出现问题和重叠现象，如下图所示：

- 1. UI 元素和文本过小：在高 DPI 显示器上，UI 元素和文本可能因为未正确缩放而显得过小，难以使用。
- 2. 元素重叠：由于缩放不正确，UI 元素可能会相互重叠，影响设计和使用。

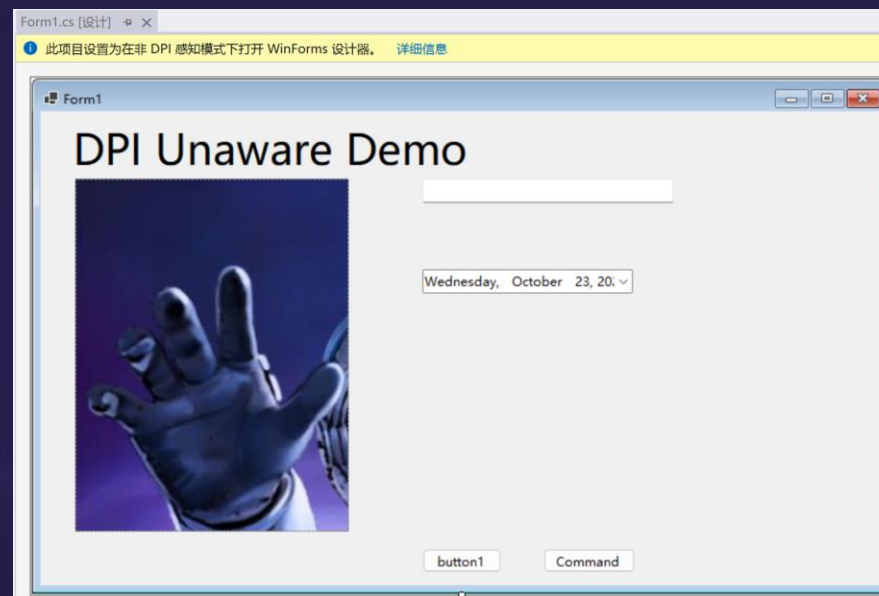
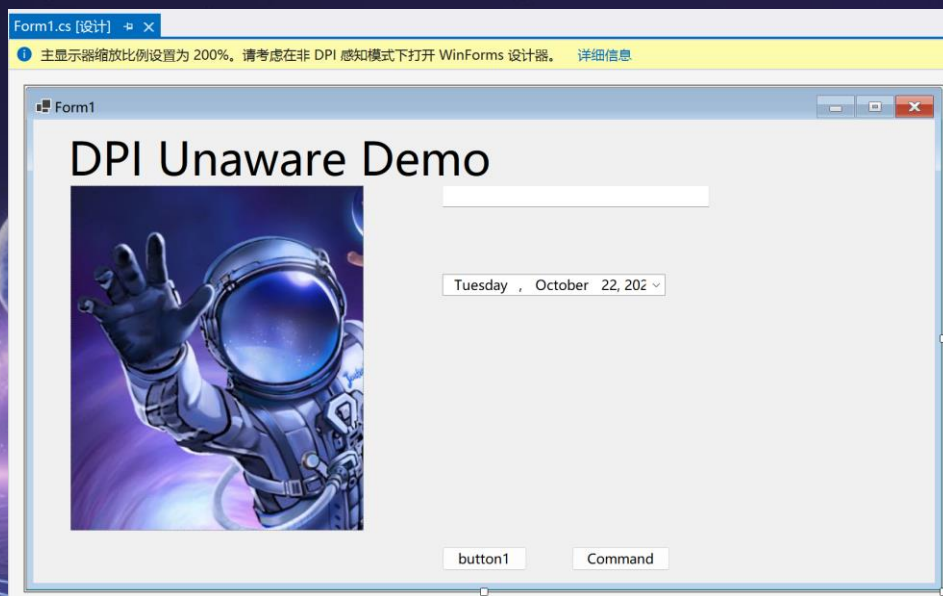


# Winforms 非感知DPI

解决因 HDPI 监视器上 Windows 窗体设计器的限制而导致的呈现问题。HDPI 代表较高的每英寸点数，每个点表示物理设备像素。

较高的像素密度能创建更清晰的图像，并正确显示缩放大小元素。如果没有正确缩放，用户界面 (UI) 元素和文本就会因为太小而无法有效使用，也可能会重叠。为了帮助解决此问题，Windows 会自动缩放 UI 百分比以匹配 DPI 设置。例如，DPI 设置为 100% 表示 96 DPI，而 125% 表示 120 DPI。监视器曾经每英寸提供 96 个像素，Windows 将其用作 100% 位图绘制的基线。但随着显示技术的进步，监视器现在提供 300 DPI 或更高的面板。

当应用程序声明自身是 DPI 感知应用程序时，就表示其在更高的 DPI 设置下表现良好，因此 Windows 可以应用自动缩放。相反，非 DPI 感知应用程序以每英寸 96 像素（或 100% 比例）的固定 DPI 值呈现内容，因此不会对其应用自动缩放。



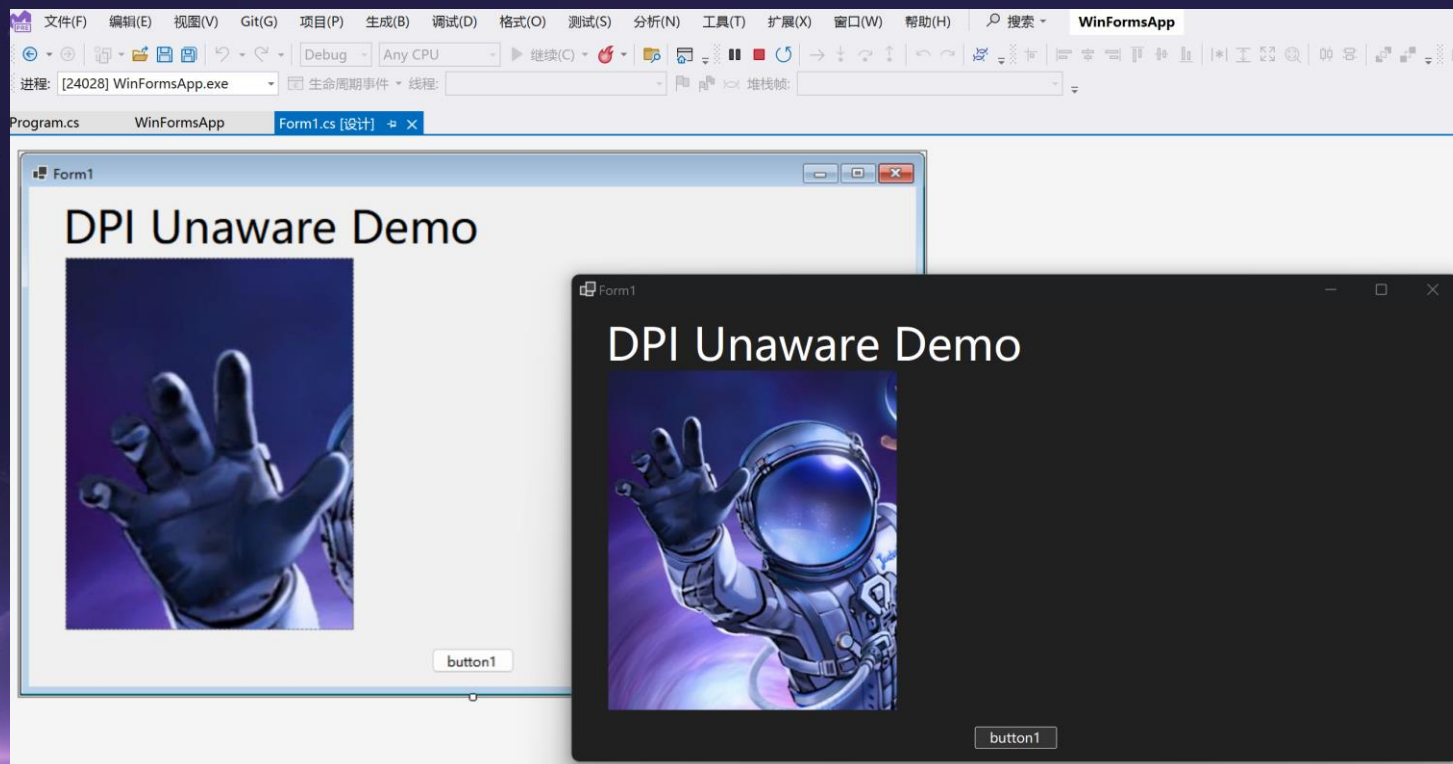
`<ForceDesignerDPIUnaware>true</ForceDesignerDPIUnaware>`

# Winforms Dark them

在新特性中添加了快捷设置窗体主题的功能，同时也支持在主题下的自定义修改。

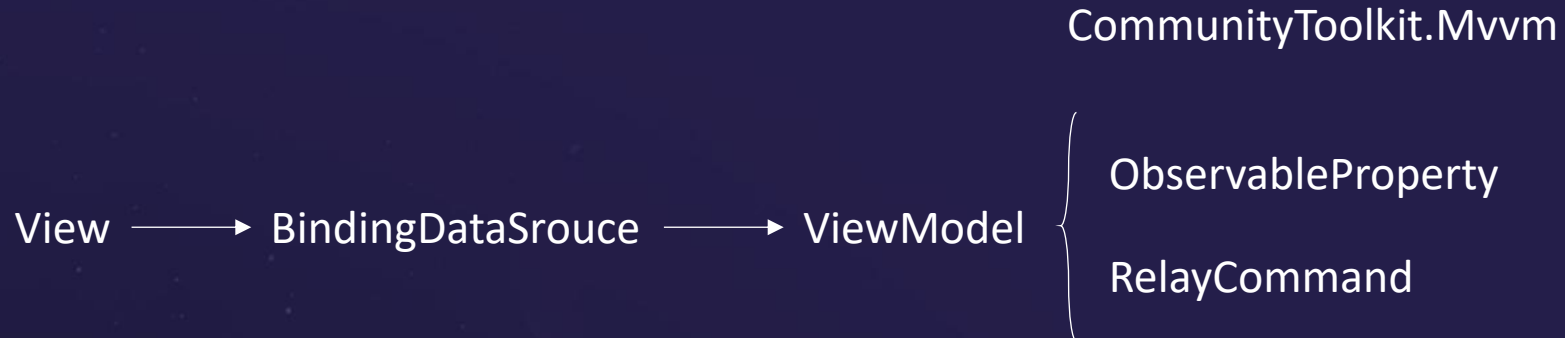
例如：

- 1.在Dark主题下，某个控件不继承Dark主题颜色。
- 2.在Dark主题下，某个控件自定义颜色。在Dark主题下按钮不再是黑色而是其他颜色。



```
Application.SetColorMode(systemColorMode: SystemColorMode.Dark);
```





在Winforms中支持了MVVM模式，那么几乎所有微软推出的客户端框架技术都是可以通用MVVM的代码。那么在这里对公司的架构师也是一种设计上的挑战，如果因为业务需要切换到不同的客户端技术上就对业务逻辑、通用逻辑、基础设施的封装有了一定要求。理想状况下一次设计在切换客户端技术时可以保留原项目中70%的代码复用性，剩下的30%代码只是View层代码的损耗。

View → ViewModel → Model → Service/Common/Infrastructure...

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# Winforms 异步

在Winforms1.0发布之初，编码时需要经理很多曲折才能享受到异步和等待的优点。但Winforms实际上从第一天起就能够处理异步场景。问题是没有真正使用它，因为实现起来非常尴尬和繁琐而且非常容易出错。如今我们可以非常轻松的实现。

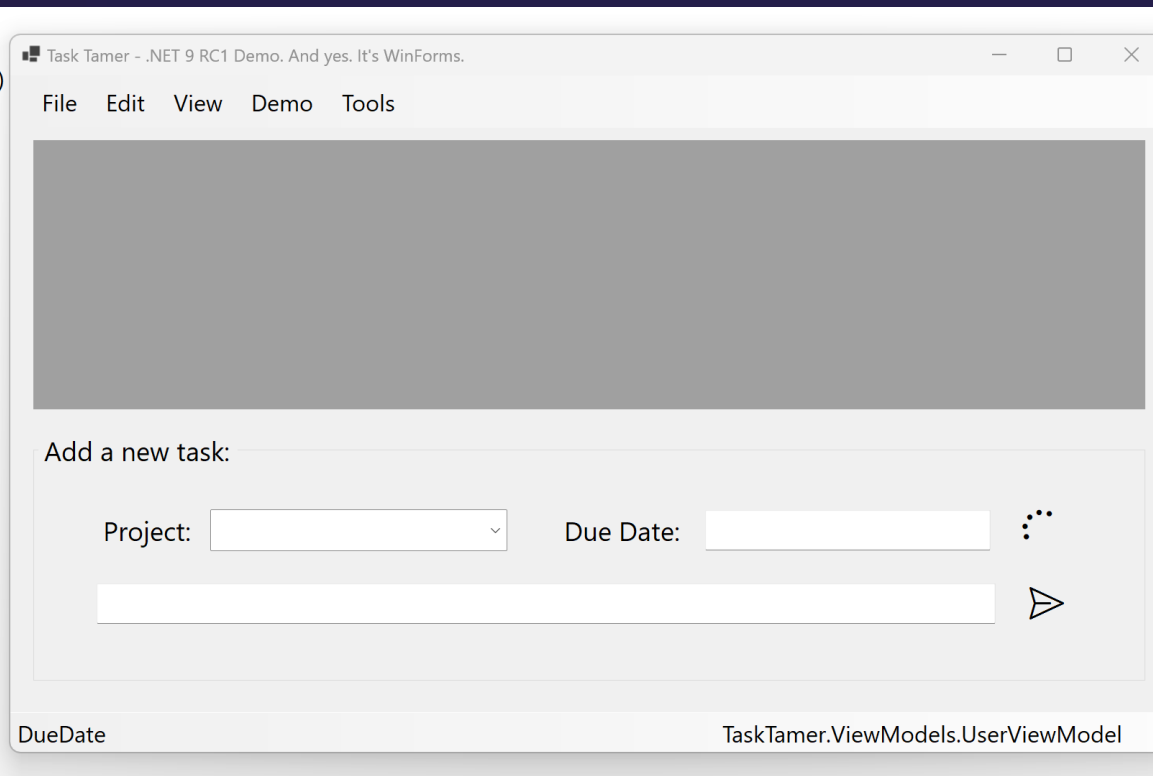
```
// Using the new WinForms API: Control.InvokeAsync
1 个引用 | 0 项更改 | 0 名作者, 0 项更改
private async Task SpinAsync(CancellationToken cancellationToken)
{
    var timer = new PeriodicTimer(TimeSpan.FromMilliseconds(20));

    try
    {
        int partCount = 0;

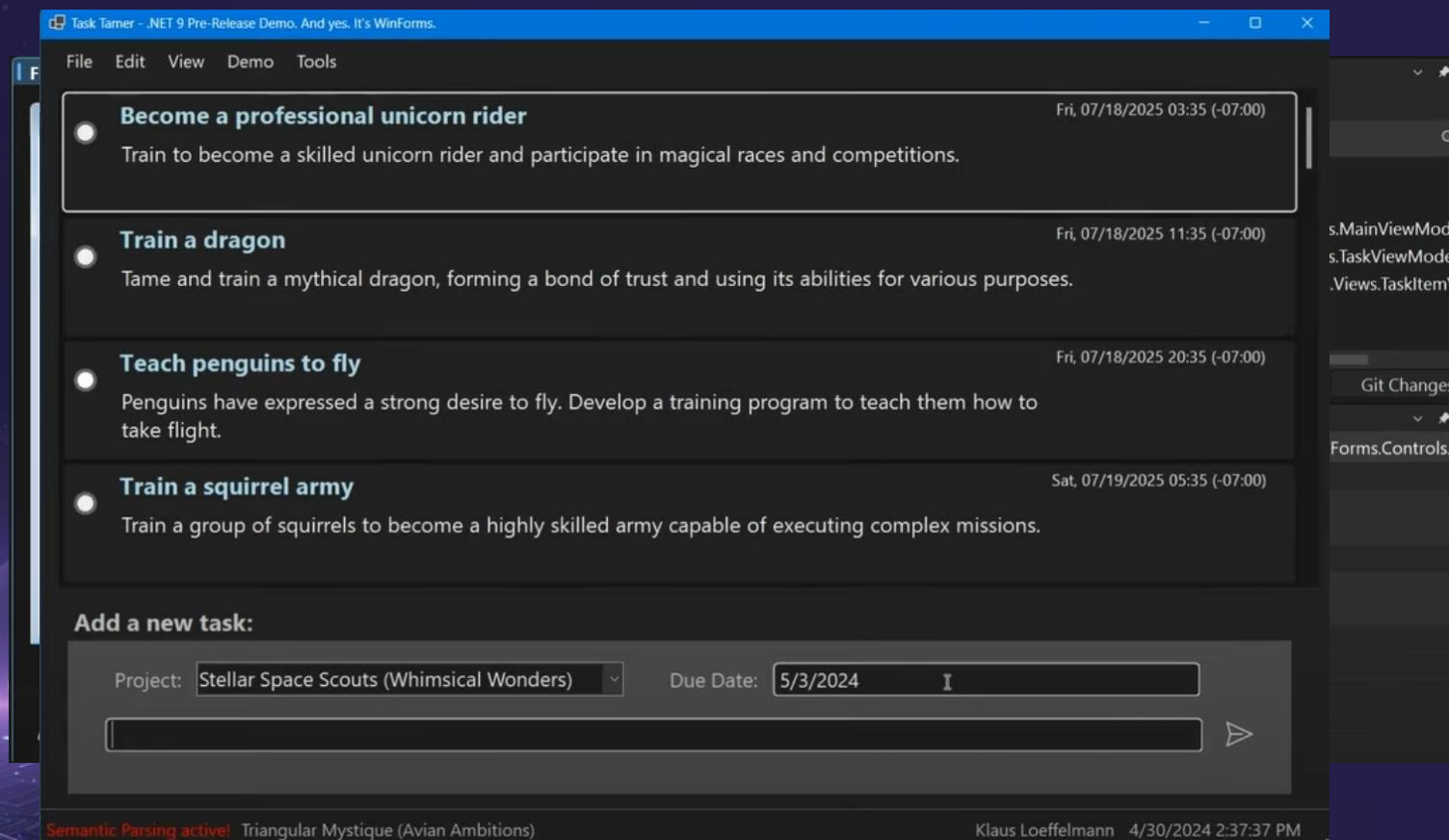
        while (await timer.WaitForNextTickAsync(cancellationToken))
        {
            if (cancellationToken.IsCancellationRequested)
            {
                break;
            }

            // In test-phase for .NET 9: Control.InvokeAsync.
            await InvokeAsync(
                async () => await DrawSpinnerPartAsync(
                    partCount++,
                    cancellationToken),
                cancellationToken);

            partCount %= _charParts.Length;
        }
    }
}
```



随着AI时代的来临，这次更新中提出了将Winforms中融入了AI的元素。对产品经理和UI交互设计领域是一个新的启发。

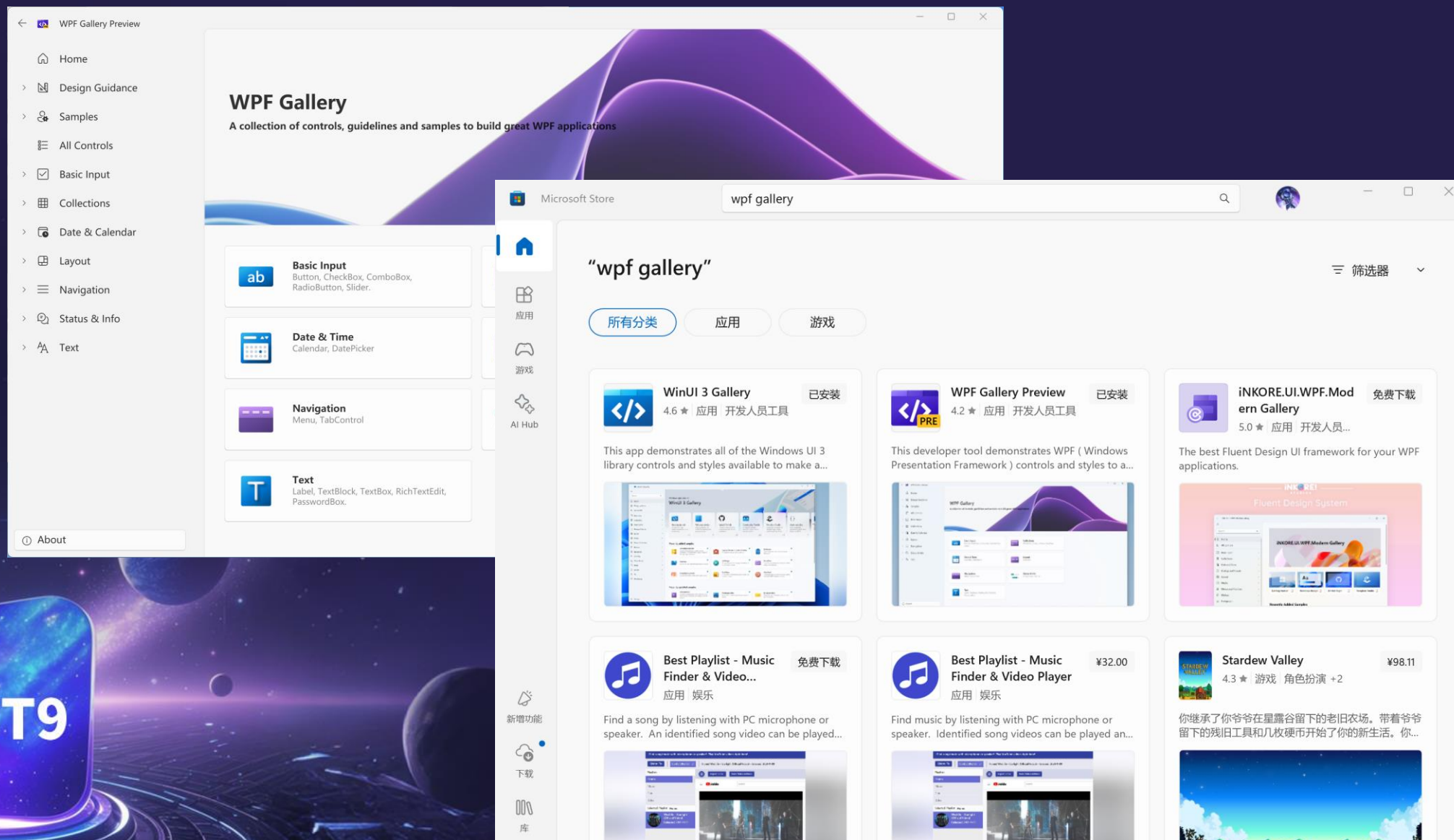


# WPF



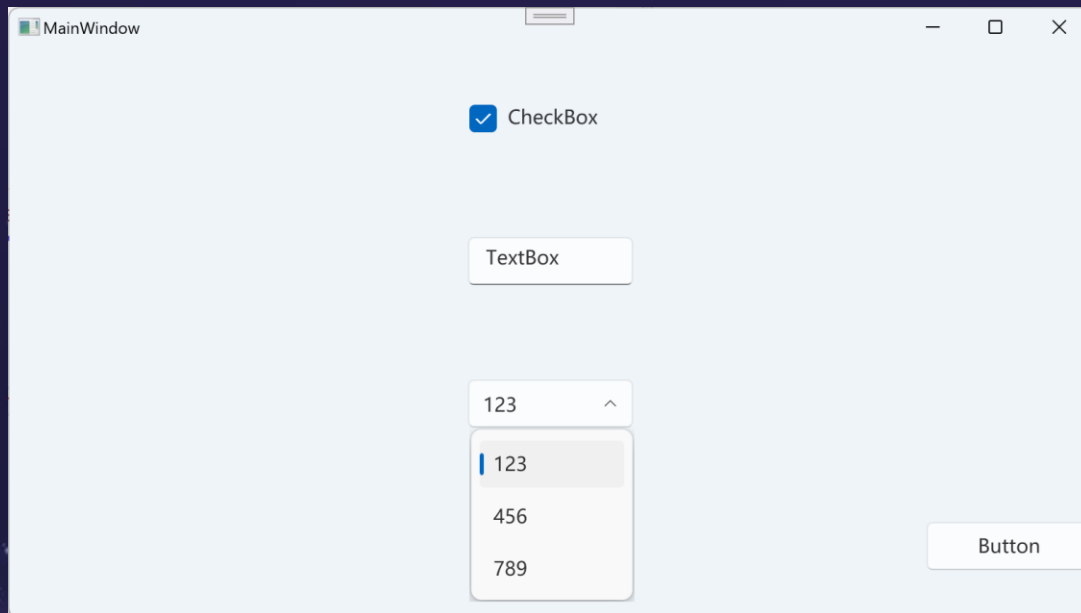
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# WPF Fulent

在.NET9中新增了Fulent主题除了可以非常方便的添加到应用程序当中，该主题感知当前操作系统主题。



App.xaml

```
<Application.Resources>
  <ResourceDictionary>
    <ResourceDictionary.MergedDictionaries>
      <ResourceDictionary Source="pack://application:,,,/PresentationFramework.Fluent;component/Themes/Fluent.xaml" />
    </ResourceDictionary.MergedDictionaries>
  </ResourceDictionary>
</Application.Resources>
```

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# .NET MAUI



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# .NET Multi-platform App UI (MAUI)

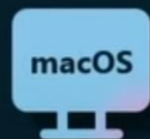
Generally available

Single project system, single codebase

WinUI



Mac  
Catalyst



iOS



Android



Unified .NET

Mobile, desktop, hybrid

Productive development

Native APIs, Native performance

40+ UI controls

Common platform services

Accessible by default

Visit [dot.net/maui](https://dot.net/maui) for more

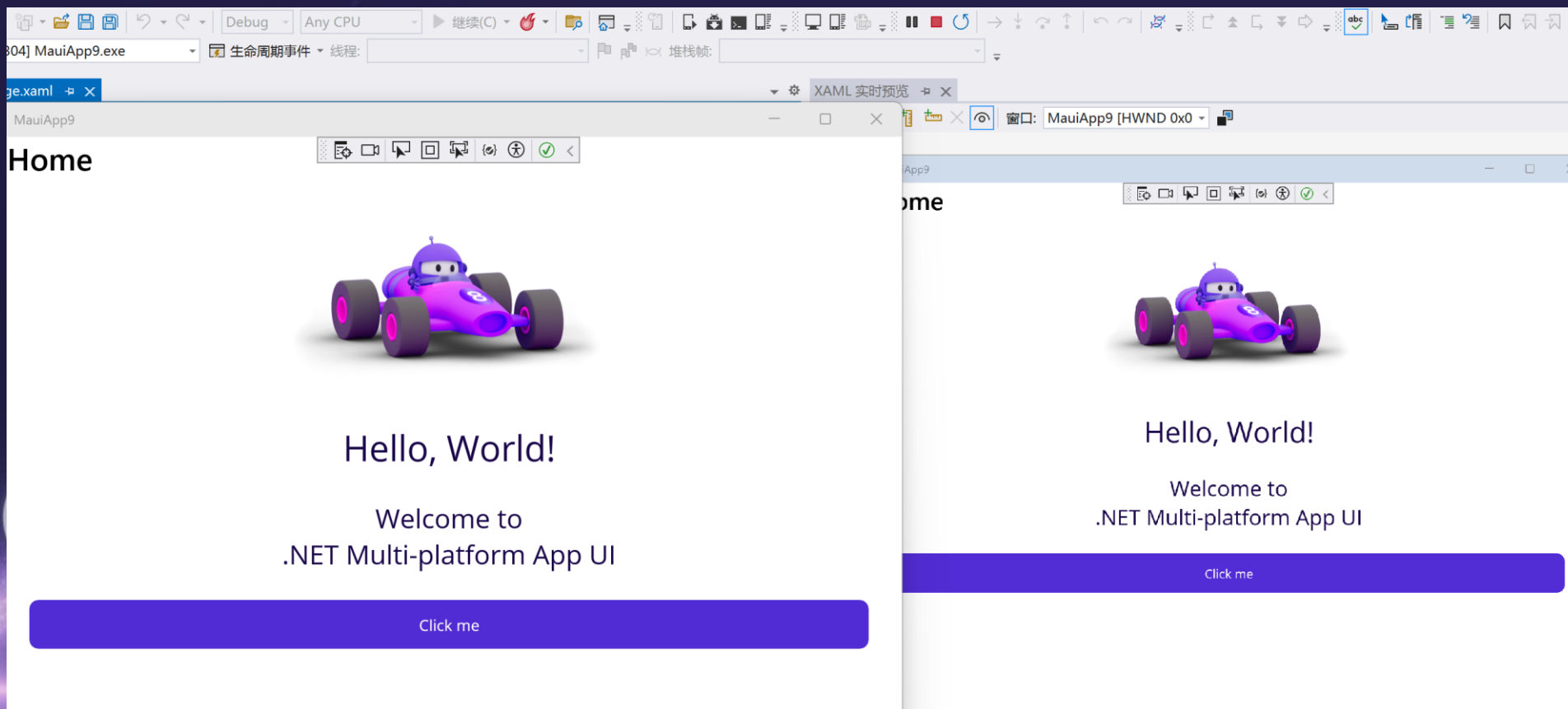








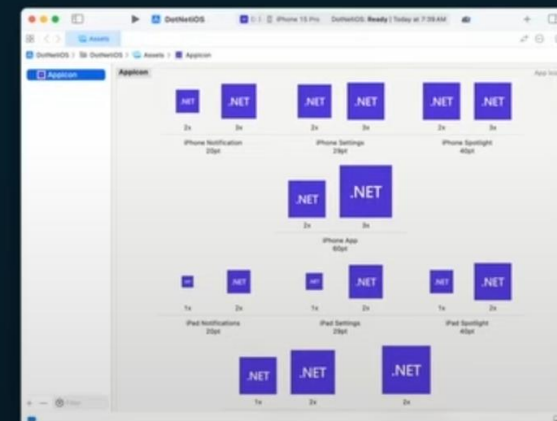
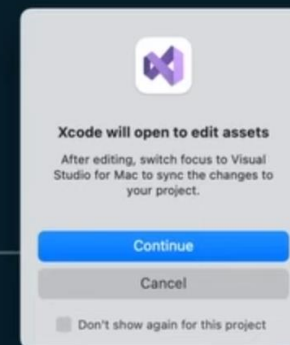
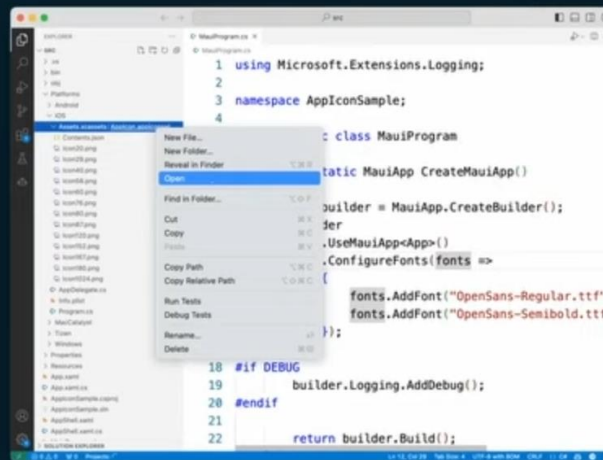




## Xcode Sync

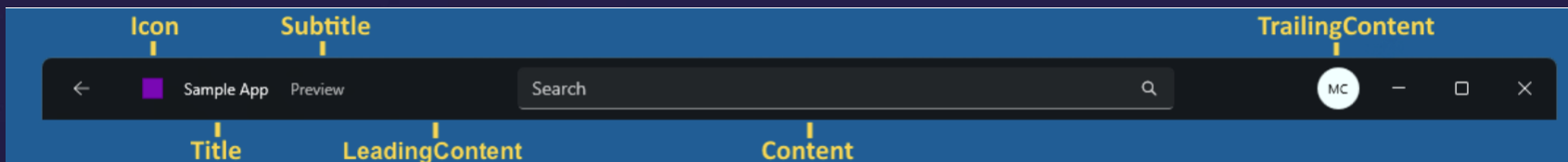
- Xcassets
- Storyboards
- Xibs

Utilize command line





## TitleBar



```
<Window xmlns="http://schemas.microsoft.com/dotnet/2021/maui"
  xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
  xmlns:local="clr-namespace:TitleBarDemo"
  x:Class="TitleBarDemo.MainWindow">
```

...

```
<Window.TitleBar>
  <TitleBar Title="{Binding Title}"
    Subtitle="{Binding Subtitle}"
    IsVisible="{Binding ShowTitleBar}"
    BackgroundColor="#512BD4"
    ForegroundColor="White"
    HeightRequest="48">
    <TitleBar.Content>
      <SearchBar Placeholder="Search"
        PlaceholderColor="White"
        MaximumWidthRequest="300"
        HorizontalOptions="Fill"
        VerticalOptions="Center" />
    </TitleBar.Content>
  </TitleBar>
</Window.TitleBar>
</Window>
```

## .NET MAUI Roadmap

### Android

- API 35 w/ Previews
- Trimming
- Asset pack support

### iOS

- Xcode 16 w/ Previews
- Multi-targeting
- Swift interop (foundational)

### .NET MAUI

- Focus on bugs impacting Xamarin upgrades (.NET 8 servicing)
- CollectionView
- SDK quality
- Visibility and transparency on GitHub
- Secure supply chain compliance
- Slim Bindings
- ...and more!



**.NET9**

```
<PropertyGroup Condition="$(TargetFramework.Contains('-maccatalyst') or  
$(TargetFramework.Contains('-ios'))">  
  <PublishAot>true</PublishAot>  
  <EnableTrimAnalyzer>true</EnableTrimAnalyzer>  
  <EnableAotAnalyzer>true</EnableAotAnalyzer>  
  <EnableSingleFileAnalyzer>true</EnableSingleFileAnalyzer>  
</PropertyGroup>
```

## Native AOT

Ahead of time compilation that results in smaller and faster apps.

All code must be trimmable.

```
dotnet publish -f net9.0-maccatalyst -r maccatalyst-arm64
```

	Metric	Mono	NativeAOT	Diff
1	Package size	13,850,984 B	5,301,713 B	-8,549,271 B (-61.7%)
2	Size on disk	40,051,550 B	12,673,754 B	-27,377,796 B (-68.4%)
3	Startup time	209.6 ms	108.3 ms	-101.3 ms (-48.3%)

## Native AOT

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All code must be trimmable.



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## Tracking version and tooling compatibility

### Release Versions

Rolf Bjarne Kvinge edited this page 2 weeks ago · 17 revisions

.NET MAUI	.NET SDK	.NET for Android	Android Tools	.NET for iOS	.NET for Mac Catalyst	Apple Tools	Windows App SDK	Visual Studio 2022
<a href="#">9.0.0-preview.3.10457</a>	<a href="#">9.0.100-preview.3.24204.13</a>	<a href="#">34.99.0-preview.3.231</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.9433-net9-p3</a>	<a href="#">17.2.9433-net9-p3</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	
<a href="#">9.0.0-preview.2.10293</a>	<a href="#">9.0.100-preview.2</a>	<a href="#">34.99.0-preview.2.189</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.9244-net9-p2</a>	<a href="#">17.2.9244-net9-p2</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	
<a href="#">9.0.0-preview.1.9973</a>	<a href="#">9.0.100-preview.1</a>	<a href="#">34.99.0-preview.1.151</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.9088-net9-p1</a>	<a href="#">17.2.9088-net9-p1</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	
<a href="#">8.0.20</a>	<a href="#">8.0.100, 8.0.200, 8.0.202, 8.0.204</a>	<a href="#">34.0.95</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.8043, 17.2.8053</a>	<a href="#">17.2.8043, 17.2.8053</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	
<a href="#">8.0.14</a>	<a href="#">8.0.100, 8.0.200, 8.0.202</a>	<a href="#">34.0.85</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.8043, 17.2.8053</a>	<a href="#">17.2.8043, 17.2.8053</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>✓ 1.4.x</div> <div>⚠ 1.5.x</div>	
<a href="#">8.0.10</a>	<a href="#">8.0.100, 8.0.200, 8.0.202</a>	<a href="#">34.0.85</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.8043</a>	<a href="#">17.2.8043</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	
<a href="#">8.0.7</a>	<a href="#">8.0.100, 8.0.200</a>	<a href="#">34.0.79</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.8022</a>	<a href="#">17.2.8022</a>	<div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	17.9.3 17.10 Preview 2
<a href="#">8.0.6</a>	<a href="#">8.0.100, 8.0.200</a>	<a href="#">34.0.52</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.2.8004</a>	<a href="#">17.2.8004</a>	<div>⚠ Xcode 15.1</div> <div>✓ Xcode 15.2</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	17.9 17.10 Preview 1
<a href="#">8.0.3</a>	<a href="#">8.0.100</a>	<a href="#">34.0.43</a>	<div>✓ JDK 11</div> <div>✓ Android SDK 34</div>	<a href="#">17.0.8478</a>	<a href="#">17.0.8478</a>	<div>✓ Xcode 15.0</div>	<div>✓ 1.3</div> <div>⚠ 1.4.x</div>	17.8

<https://aka.ms/maui/versions>

.NET9

October 22nd, 2024 2024 年 10 月 22 日

## .NET MAUI Welcomes Syncfusion Open-source Contributions

## .NET MAUI 欢迎 Syncfusion 开源贡献



David Ortinau 大卫·奥尔特诺

Principal Product Manager

首席产品经理

Today, Syncfusion announced their [dedication as contributors to .NET MAUI](#) and released the [Syncfusion Toolkit for .NET MAUI](#), a set of free, open-source controls for .NET MAUI! Syncfusion is a leader in UI controls and components and have some impressive controls for .NET. Today they made 14 of these UI controls freely available for .NET MAUI developers. These controls are available in the [syncfusion/maui-toolkit](#) repository on GitHub as well as a NuGet package [Syncfusion.Maui.Toolkit](#) which you can use in your .NET MAUI projects today.

今天, Syncfusion 宣布[致力于成为 .NET MAUI 的贡献者](#), 并发布了[Syncfusion Toolkit for .NET MAUI](#), 这是一组适用于 .NET MAUI 的免费开源控件! Syncfusion 是 UI 控件和组件领域的领导者, 并且拥有一些令人印象深刻的 .NET 控件。今天, 他们向 .NET MAUI 开发人员免费提供了其中 14 个 UI 控件。这些控件可在 GitHub 上的[syncfusion/maui-toolkit](#)存储库以及 NuGet 包[Syncfusion.Maui.Toolkit](#)中找到, 您现在可以在 .NET MAUI 项目中使用它。

To get started now with these controls, add the NuGet package to your project.

要立即开始使用这些控件, 请将 NuGet 包添加到您的项目中。

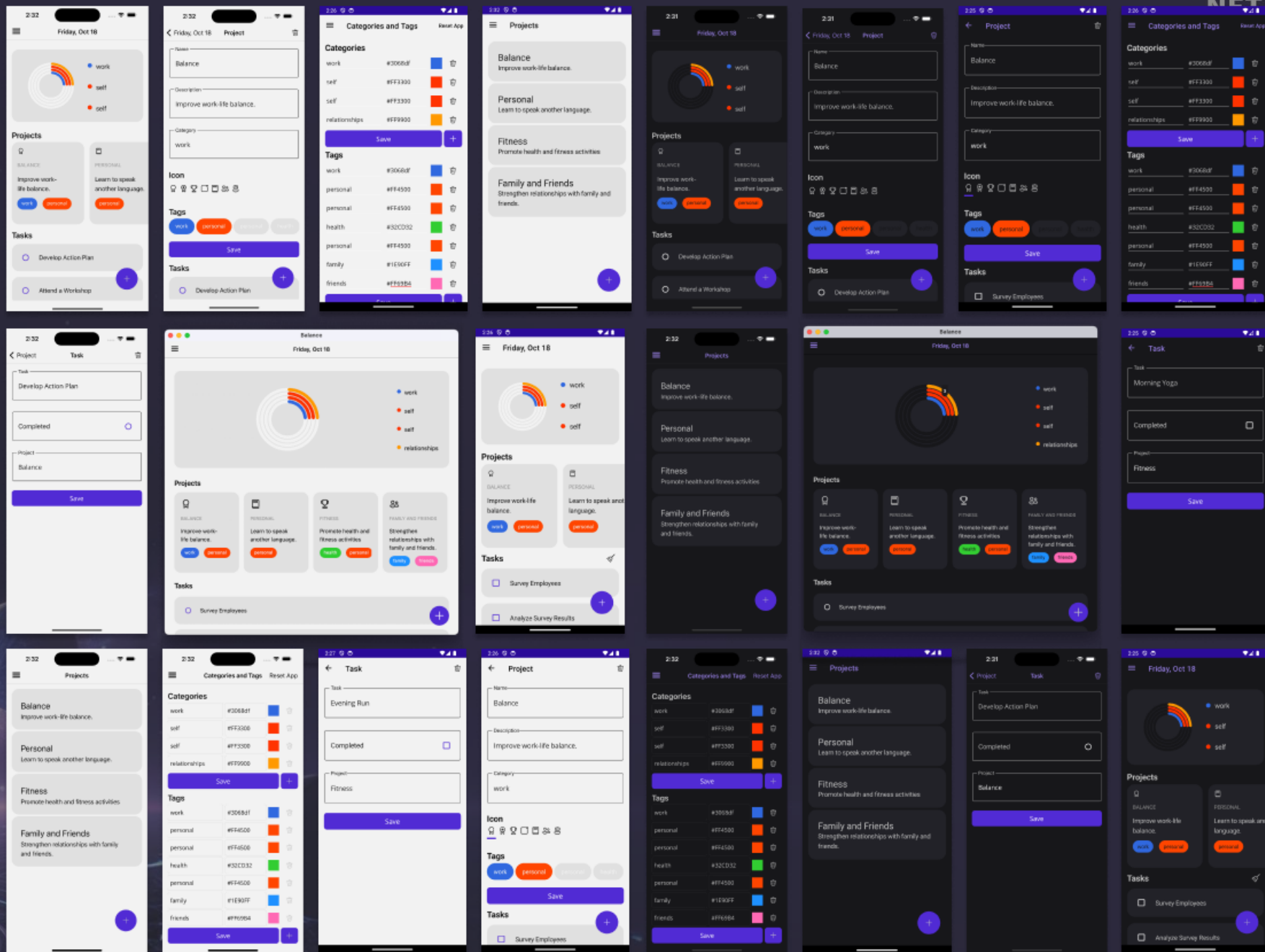
```
<PackageReference Include="Syncfusion.Maui.Toolkit" Version="1.0.1" />
```

```
public static class MauiProgram
{
    public static MauiApp CreateMauiApp()
    {
        return MauiApp
            .CreateBuilder()
            .UseMauiApp<App>()
            .ConfigureSyncfusionToolkit()
            .Build();
    }
}
```

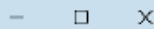
```
<?xml version="1.0" encoding="utf-8" ?>
<ContentPage xmlns="http://schemas.microsoft.com/dotnet/2021/maui"
    xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
    xmlns:syncfusion="http://schemas.syncfusion.com/maui/toolkit">
    <syncfusion:Shimmer>
        ...
    </syncfusion:Shimmer>
```

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Tuesday, Oct 22



- work
- self
- self
- relationships

Projects



BALANCE

Improve work-life balance.

- work
- personal



PERSONAL

Learn to speak another language.

- personal



FITNESS

Promote health and fitness activities

- health
- personal



FAMILY AND FRIENDS

Strengthen relationships with family and friends.

- family
- friends

Tasks



Survey Employees



Tuesday, Oct 22



- work
- self
- self
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Tasks



Survey Employees



谢谢观看



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