XAML Who?

Debuggable Cross-Platform UI with C# for Markup

Feedback:

ConFoo 2025

Lester Botello

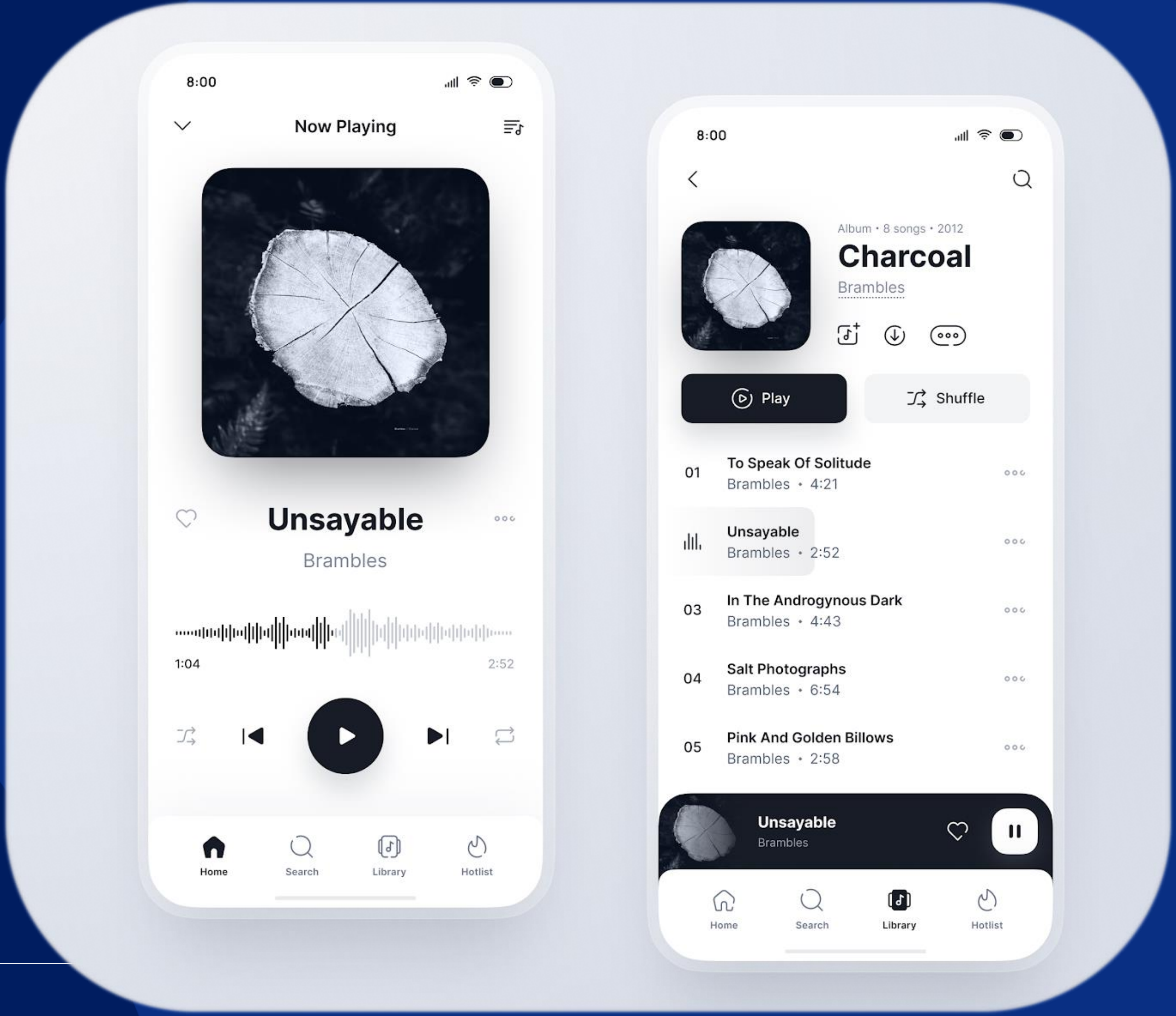
4 years at nventive

Native / Mobile .NET / Flutter

DevOps / Mobile Security

Development Team Lead

Getting the UI right is hard.



01 To Speak Of Solitude
Brambles • 4:21

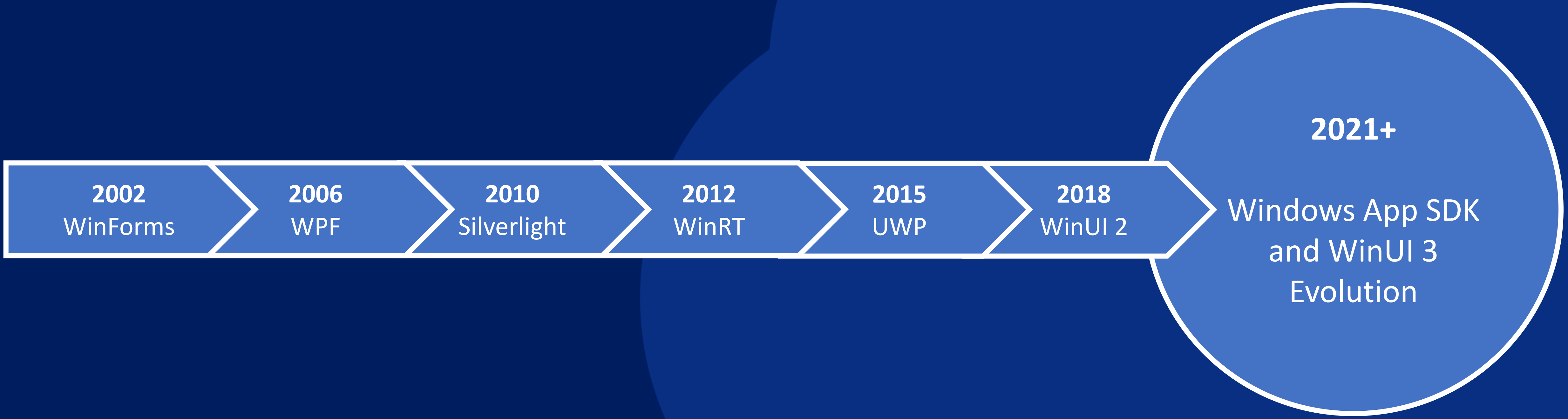
Unsayable
Brambles • 2:52

03 In The Androgynous Dark
Brambles • 4:43

04 Salt Photographs
Brambles • 6:54

05 Pink And Golden Billows
Brambles • 2:58

Windows design framework timeline



2002
WinForms

2006
WPF

2010
Silverlight

2012
WinRT

2015
UWP

2018
WinUI 2

2021+

Windows App SDK and WinUI 3 Evolution

XAML (ˈzæməl)

XAML

eXtensible Application Markup Language

First released in 2006

Two main flavors (WPF vs XF/.NET MAUI)

Complex design system

- Binding
- Templating and Styling
- Data conversion

Full MVVM Support

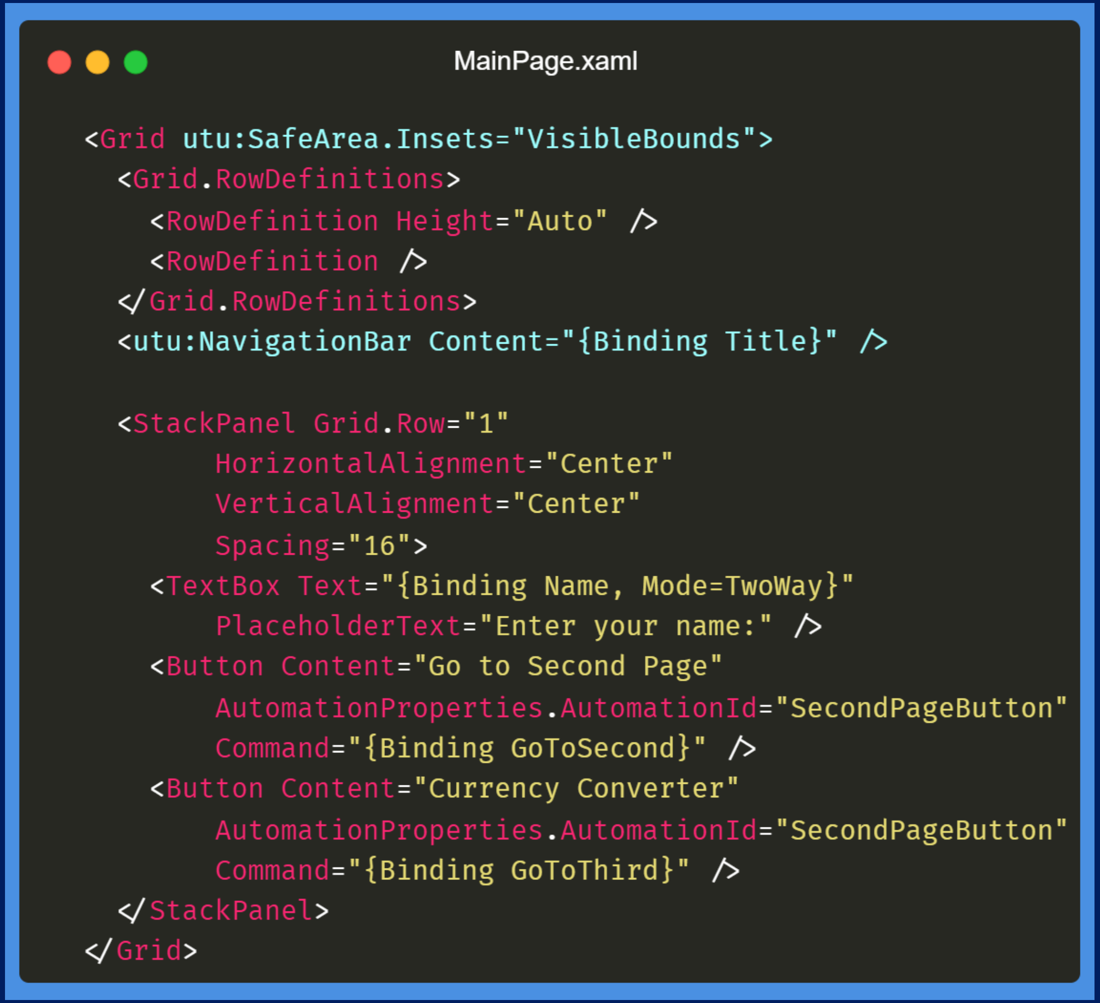
XAML

→ ✅ Based on XML

→ ✅ Easy to learn, hard to master.

→ ✅ Encourages separation of concerns

→ ✅ Supports Hot Reload



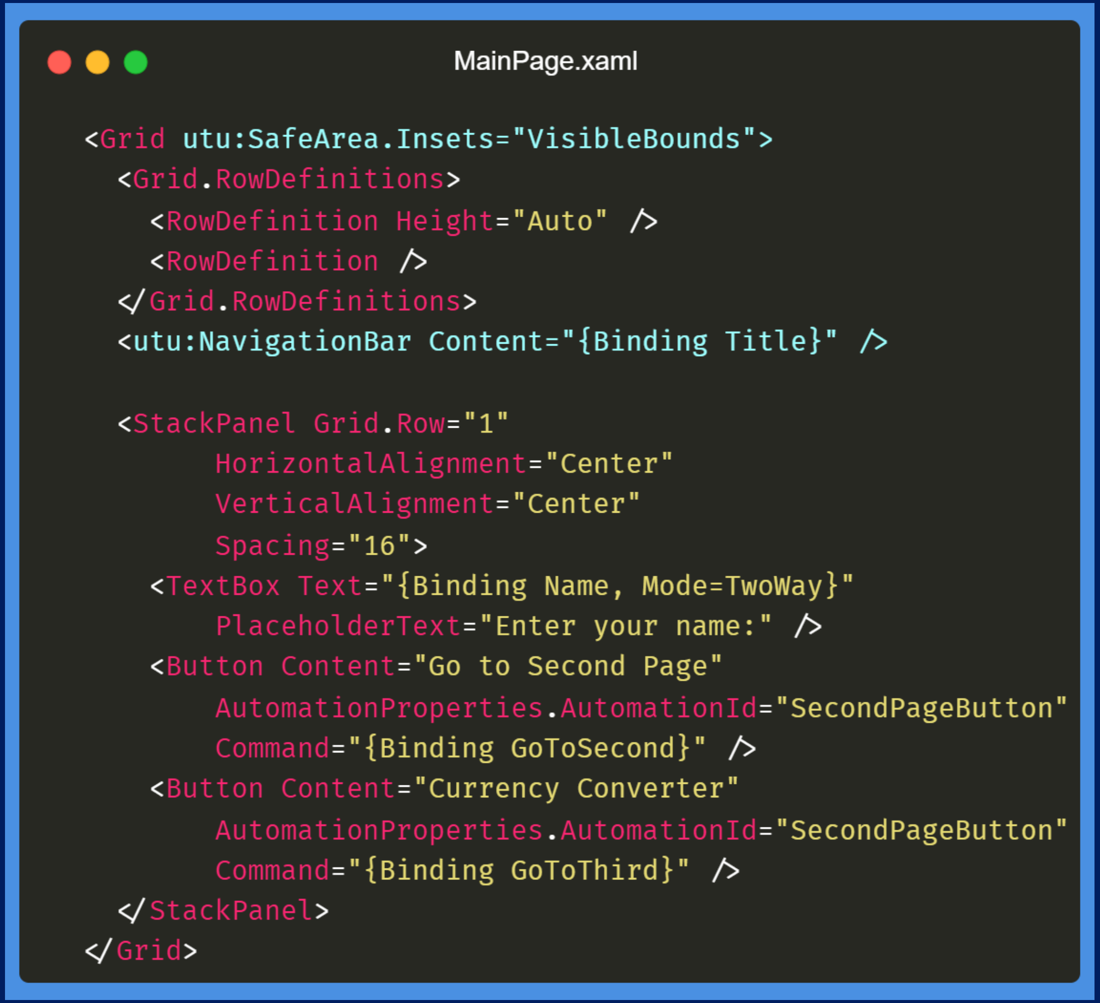
MainPage.xaml

```xml
<Grid utu:SafeArea.Insets="VisibleBounds">
  <Grid.RowDefinitions>
    <RowDefinition Height="Auto" />
    <RowDefinition />
  </Grid.RowDefinitions>
  <utu:NavigationBar Content="{Binding Title}" />

  <StackPanel Grid.Row="1"
        HorizontalAlignment="Center"
        VerticalAlignment="Center"
        Spacing="16">
    <TextBox Text="{Binding Name, Mode=TwoWay}"
        PlaceholderText="Enter your name:" />
    <Button Content="Go to Second Page"
        AutomationProperties.AutomationId="SecondPageButton"
        Command="{Binding GoToSecond}" />
    <Button Content="Currency Converter"
        AutomationProperties.AutomationId="SecondPageButton"
        Command="{Binding GoToThird}" />
  </StackPanel>
</Grid>
```

XAML

- → ❌ Parsed and interpreted
- → ❌ Data binding can be tricky to get right.
- → ❌ Styling and templating can easily become complex and hard to follow
- → ❌ Cannot inspect or step-through



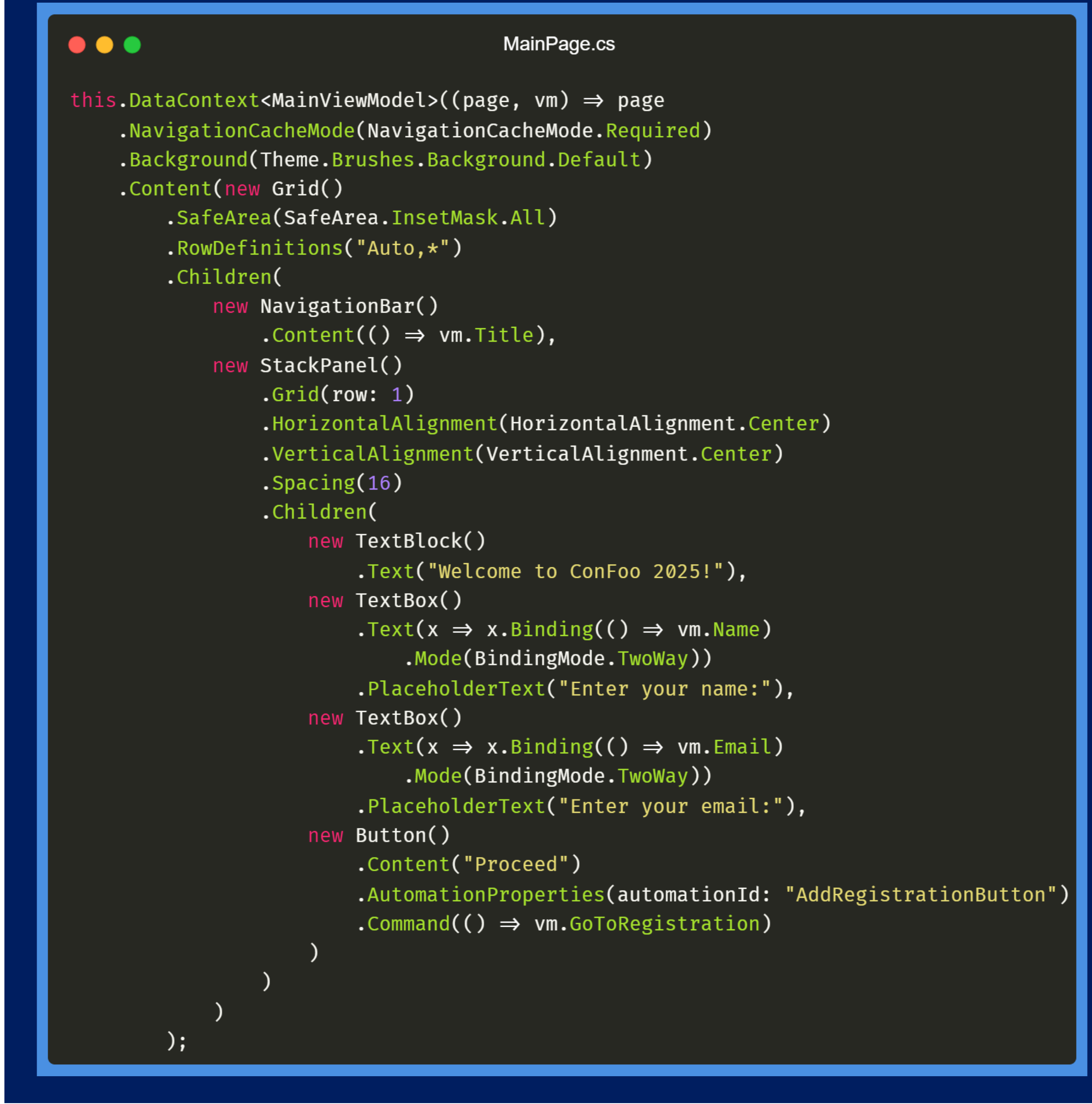
```
<Grid utu:SafeArea.Insets="VisibleBounds">
  <Grid.RowDefinitions>
    <RowDefinition Height="Auto" />
    <RowDefinition />
  </Grid.RowDefinitions>
  <utu:NavigationBar Content="{Binding Title}" />

  <StackPanel Grid.Row="1"
        HorizontalAlignment="Center"
        VerticalAlignment="Center"
        Spacing="16">
    <TextBox Text="{Binding Name, Mode=TwoWay}"
        PlaceholderText="Enter your name:" />
    <Button Content="Go to Second Page"
        AutomationProperties.AutomationId="SecondPageButton"
        Command="{Binding GoToSecond}" />
    <Button Content="Currency Converter"
        AutomationProperties.AutomationId="SecondPageButton"
        Command="{Binding GoToThird}" />
  </StackPanel>
</Grid>
```

Enter C# Markup

C# Markup

- → ✅ Set of extension methods to declare XAML programmatically.
- → ✅ Fluent API.
- → ✅ Easier to learn if coming from another framework (i.e., Flutter)
- → ✅ 100% compiled to IL



```
this.DataContext<MainViewModel>((page, vm) => page
    .NavigationCacheMode(NavigationCacheMode.Required)
    .Background(Theme.Brushes.Background.Default)
    .Content(new Grid()
        .SafeArea(SafeArea.InsetMask.All)
        .RowDefinitions("Auto,*")
        .Children(
            new NavigationBar()
                .Content(() => vm.Title),
            new StackPanel()
                .Grid(row: 1)
                .HorizontalAlignment(HorizontalAlignment.Center)
                .VerticalAlignment(VerticalAlignment.Center)
                .Spacing(16)
                .Children(
                    new TextBlock()
                        .Text("Welcome to ConFoo 2025!"),
                    new TextBox()
                        .Text(x => x.Binding(() => vm.Name)
                            .Mode(BindingMode.TwoWay))
                        .PlaceholderText("Enter your name:"),
                    new TextBox()
                        .Text(x => x.Binding(() => vm.Email)
                            .Mode(BindingMode.TwoWay))
                        .PlaceholderText("Enter your email:"),
                    new Button()
                        .Content("Proceed")
                        .AutomationProperties(automationId: "AddRegistrationButton")
                        .Command(() => vm.GoToRegistration)
                    )
                )
            )
        );
```

C# Markup

1. Type Safety
2. Full IntelliSense support
3. Breakpoints and easy refactoring
4. Performance

C# Markup

How users naturally come to review your app (i.e. without prompting

CommunityToolkit.Maui.Markup

- Built for .NET MAUI apps
- Works with MAUI’s XAML dialect

Uno.Extensions.Reactive.WinUI.Markup

- Built for Uno Platform apps
- Based on WinUI/WPF XAML dialect

Demo time!

Source code:

Merci !
Thank you!

Feedback: