

# Universal Windows Platform Development

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September 9, 2020

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# Objectives

- ▶ Brief history of Native Windows Development
- ▶ Universal Windows Platform programming
- ▶ Build automation
- ▶ Distribute and update apps
- ▶ Monitor apps

# Brief history of Native Windows Development

- ▶ Win32 API, C/C++, MFC/ATL, COM
- ▶ Visual Basic 6.0, ASP, J#
- ▶ .NET, C#, VB.NET, ASP.NET, F#, Windows Forms, WPF, XAML
- ▶ UWP, JavaScript, C++/WinRT
- ▶ Rust/WinRT, .NET Core 3.1, ASP.NET Core, Blazor
- ▶ .NET 5, WinUI 3, MAUI .NET

# Universal Windows Platform programming

- ▶ Multiple form factors
  - ▶ Windows 10 Desktop
  - ▶ XBox
  - ▶ HoloLens
  - ▶ Mobile devices
- ▶ Sand-boxed apps distributed via Store or Side-loaded
- ▶ Modern Windows Runtime (WinRT) API

# C++/WinRT and Rust/WinRT

- ▶ Author components using C++17, C#, or Rust
- ▶ WinRT IDL
- ▶ Consume C and C++ code and libraries directly in C++
- ▶ Consume authored components in .NET and Python

# User interface programming with XAML

- ▶ XML based responsive design language
- ▶ Pixel-perfect layouts
- ▶ Component oriented
- ▶ Support for SVG compatible paths
- ▶ Support for localization and accessibility
- ▶ Appropriate resource sizes loaded automatically

# UWP demos

- ▶ Visual Studio 2019 overview
- ▶ Generate app using Windows Template Studio
- ▶ XAML Studio
- ▶ XAML Controls Gallery
- ▶ Windows Community Toolkit Sample App



# App lifecycle

- ▶ States
  - ▶ Not running
  - ▶ Running
    - ▶ In foreground
    - ▶ In background
  - ▶ Suspended
- ▶ Mechanisms to perform background tasks
  - ▶ Triggers
    - ▶ Only out-of-process, e.g. Device Servicing Trigger
    - ▶ In- or out-of-process, e.g. Time Trigger
  - ▶ App Services
  - ▶ Background transfer
  - ▶ Extended execution

# Distribute and update apps

- ▶ Visual Studio
  - ▶ Generating app for store and side-loading
  - ▶ Self-signing app
  - ▶ PowerShell based installer for testing
- ▶ Visual Studio App Center demo
  - ▶ Build on code commit
  - ▶ Distribute to app store
  - ▶ Crash reporting
- ▶ Partner Center demo
- ▶ Microsoft Store demo