

State of .NET

Windows Desktop Development in .NET 5

Markus Egger

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CODE Magazine & Consulting

Kicking Things Off

Jim Duffy

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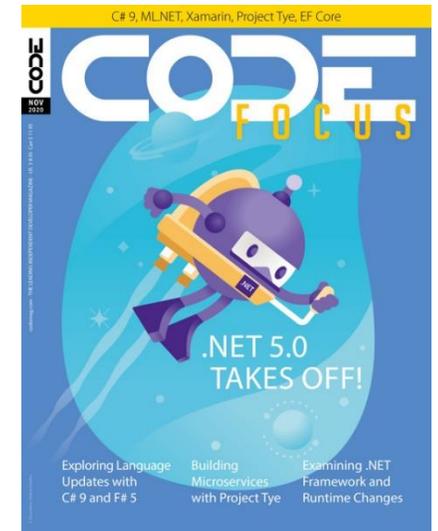
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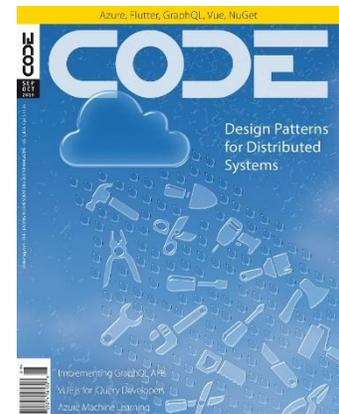
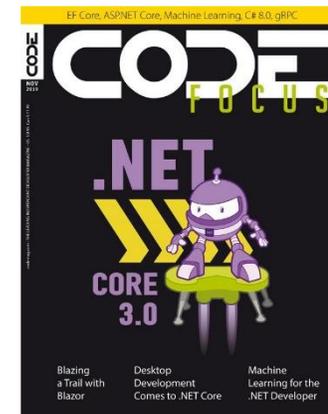
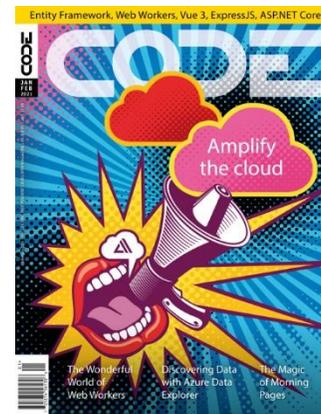
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About the Presenter

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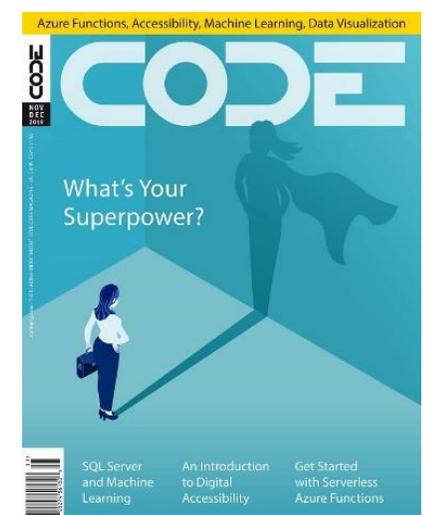
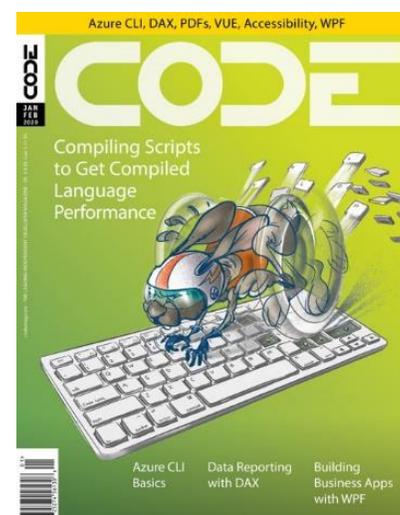
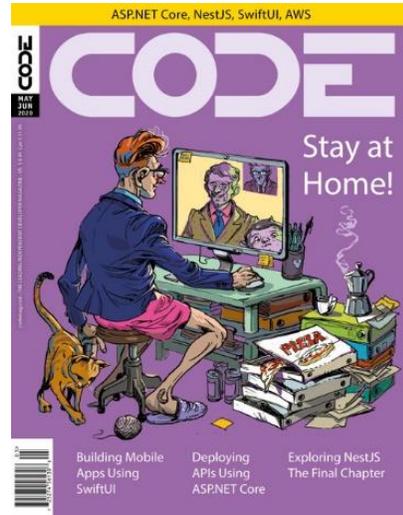
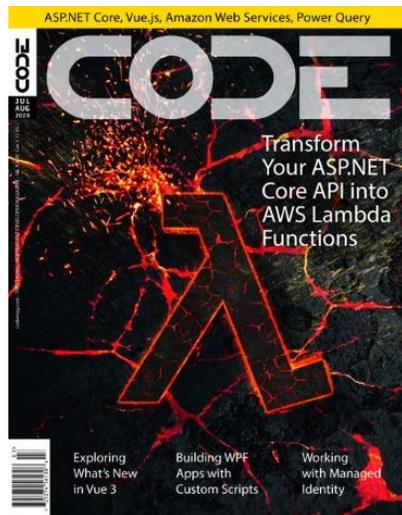
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THIS SLIDE WILL BE REPEATED AT THE END AND SURVEY LINK REPEATED IN THE CHAT WINDOW!

Introducing Photino



- Build native, cross-platform desktop apps that are lighter than light.
- Lightweight open-source framework for building native, cross-platform desktop applications with Web UI technology.
- Photino is maintained by CODE Magazine with the help of the open-source community.
- tryphotino.io
- [Github.com/tryphotino](https://github.com/tryphotino)

Prior Webinar Recordings

- Slides & Videos:
- <https://www.codemag.com/StateOfDotNet>

Recent Event Recordings

State of .NET - Blazor Web Development with .NET 5 - with Markus Egger

1/27/2021



State of .NET - .NET 5 In-Depth (.NET Conf Recap)

11/18/2020



State of .NET - .NET 5 (One .NET) Preview

10/28/2020



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9/30/2020



Agenda

- Overview of various .NET 5 Desktop Development Technologies
 - WinForms
 - WPF
 - UWP
 - WinUI 3 and WebView2 ("Project Reunion")
- Alternative Technologies
 - Electron, Photino
- Future Technologies
 - Blazor Desktop, MAUI

Desktop Development Overview

Is Desktop Development
Still a Thing?

A Plethora of Options

- The good news is that there are plenty of options...
- ...but the bad news is that there are plenty of options 😊
- Microsoft hasn't made any strong statements about the recommended desktop development platform in years
- There are many different technologies to choose from, developed by a variety of teams within Microsoft
- It is difficult to know which options are major initiatives vs. small/experimental projects.

Preserving Investments

- Most desktop development technologies from Microsoft have enjoyed very good longevity and have been supported over decades
 - The one big exception is Silverlight (if you consider that a desktop development technology)
- This is quite a bit different from what one experiences with web development frameworks (Microsoft or otherwise)

WinForms

Is WinForms Development Still a Thing?

- To a surprising extent, yes!
- Not usually for new projects, but to preserve existing investments
 - I recommend against starting new projects with WinForms

What's new for WinForms in .NET 5?

- WinForms has been supported since .NET Core 3x
- Better designer support
- Support for Visual Basic
 - This is especially important to support legacy enterprise apps and provide a way forward that protects existing investments

Moving your Old WinForms App to .NET 5

- This is generally a surprisingly easy step
 - One simply upgrades the project file (manually or with tools)
 - There is a **try-convert** CLI tool
- Note: If you are already on .NET Core 3x, you simply change the version in the project properties



WinForms is Open-Source

- WinForms was made available as Open-Source a while back
- You can join the project and even contribute
- <https://github.com/dotnet/winforms>

Windows Presentation Foundation (WPF)

WPF Apps Are Still Surprisingly Common

- We encounter quite a few customers who want to build conventional desktop apps, and WPF is not a bad choice
 - Less restrictive than UWP
 - Often feel more like a “real Windows application”
 - Extreme degree of freedom and very powerful

Is WPF the Right Platform for You?

- WPF is generally a very powerful platform useful for creating modern Desktop applications
 - This is especially true since WinUI components can be brought in
- Note: WPF was hampered by a very rocky start with convoluted architectural choices and recommendations
 - Many early project architectures made it very difficult to create successful WPF applications
- When done right, WPF is extremely productive and powerful
 - If you experience a WPF project that drags on and seems unproductive, it is probably done wrong
- WPF has many features that no other desktop technology provides

WPF Open-Source Effort

- WPF has also been made available as an Open-Source project
- Note: Due to a shortage of team staff, this has not been a great success story so far, but things may be improving
- <https://github.com/dotnet/wpf>

Universal Windows Apps (UWA)

UWA Overview

- Universal Windows Apps are “Windows 10 Apps”
 - Note: UWAs run on the Universal Windows Platform (UWP)
- They are the latest evolution of Microsoft’s “traditional Windows desktop development”
 - Formerly known as “Metro Apps” and “Store Apps”
- The platform has come a long way
- UWP is supported on Windows 10, Xbox, HoloLens, Windows Phone (yeah, I know 😊), ...

WinUI

WinUI Overview

- WinUI is a set of controls and styles useful for building modern desktop applications
- WinUI 2 (current last release) targets UWP exclusively
 - Although there are some hacks...
 - XAML Islands
- WinUI 3 (almost ready for release) targets all Windows Desktop development and makes it much easier to use these components in any desktop app
 - This makes it a great technology to gradually upgrade and enhance existing desktop applications

WebView2

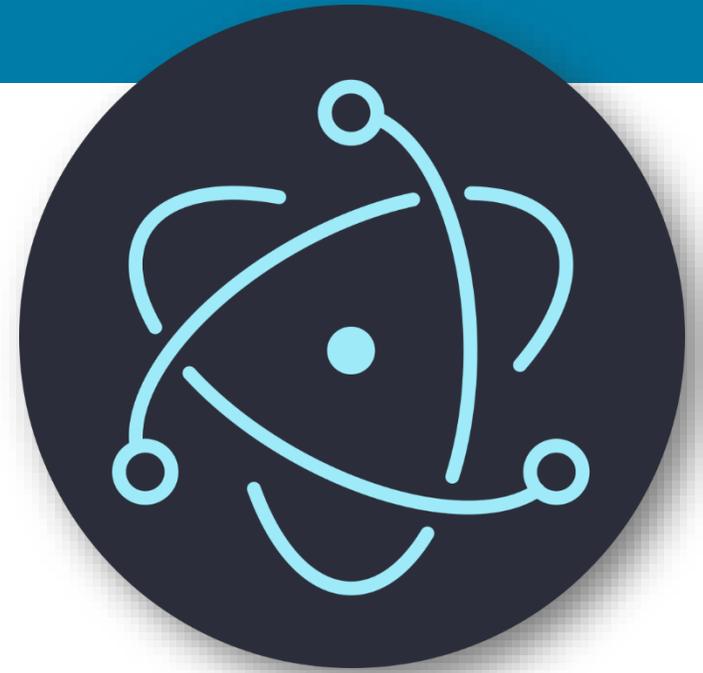
WebView2 – Edge (Chromium) in a Control

- WebView2 is the long-awaited control that encapsulates the new Chromium-based Microsoft Edge Browser
- It can be used in any .NET desktop environment
- Easier to use than embedding Google's Chromium version

Side-Note: Project Reunion

- Project "Reunion" is Microsoft's effort to unify desktop development and put an end to some of this fragmented madness
- WinUI3 and WebView2 are the first concrete results that came out of that effort

Electron



Electron Overview

- Electron applications use the Chromium engine, compiled into desktop apps, to apply web technologies to desktop development
- This is a great solution for people who already have web skills
- It can be seen as a hybrid-app wrapper for HTML and JavaScript
 - It hosts Node.js and a number of extensions to provide desktop abilities
- It also provides a great cross-platform story
- Electron originated with GitHub, which is now owned by Microsoft



Photino

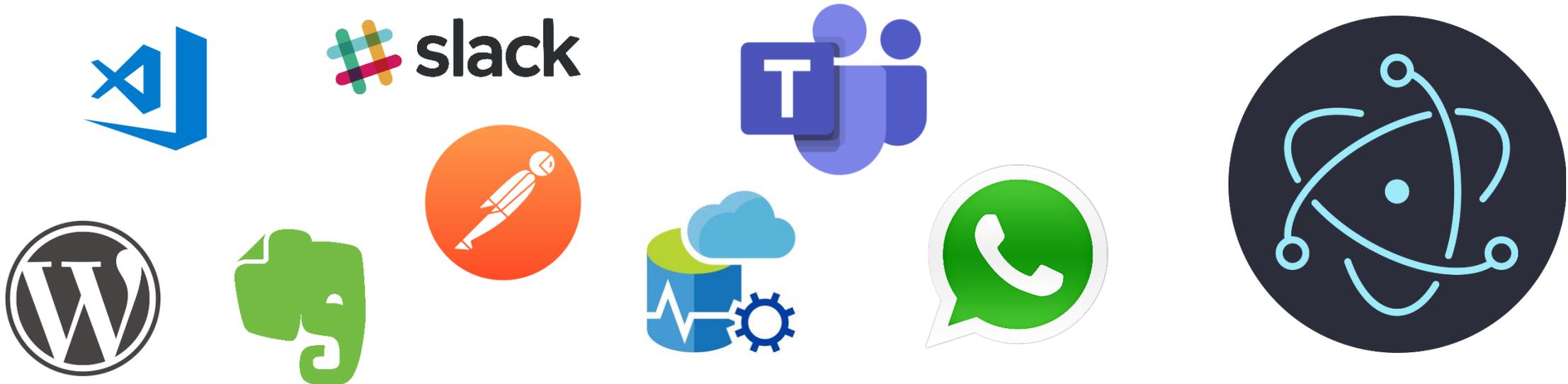
Create Desktop Apps with Web UIs

Introduction to Photino

Photino is an Open Source project that allows developers to put a WEB UI on a desktop app. Learn how to build apps that run on Windows, Linux and Mac using HTML and your favorite JavaScript framework and/or Blazor for the user interface and .NET 5 for the rest.

What is Photino?

- If you're familiar with Electron or Electron applications (VS Code, Slack, Azure Data Studio, Azure Storage Explorer, Evernote...)... Photino is also an Open-Source project to allow developers to use Web UIs (HTML, JavaScript, CSS, etc.) in native applications across platforms instead of learning platform specific UI technologies.



The Basics – Photino.Native

- **Photino.Native** is a C++ (and Objective C) wrapper around the OS's built-in Chromium or WebKit-based browser control that opens a native window on the desktop with the browser control in it.
 - On **Windows** this means the **WebView2** control – a browser control for native applications based on Chromium Edge.
 - On **Mac**, this means **WKWebView** – a WebKit browser control for native applications based on Safari.
 - On **Linux**, this means **WebKitGTK+2** – a browser control for native applications based on WebKit directly.
- **Photino.Native** is compiled for each platform and distributed as a NuGet package.

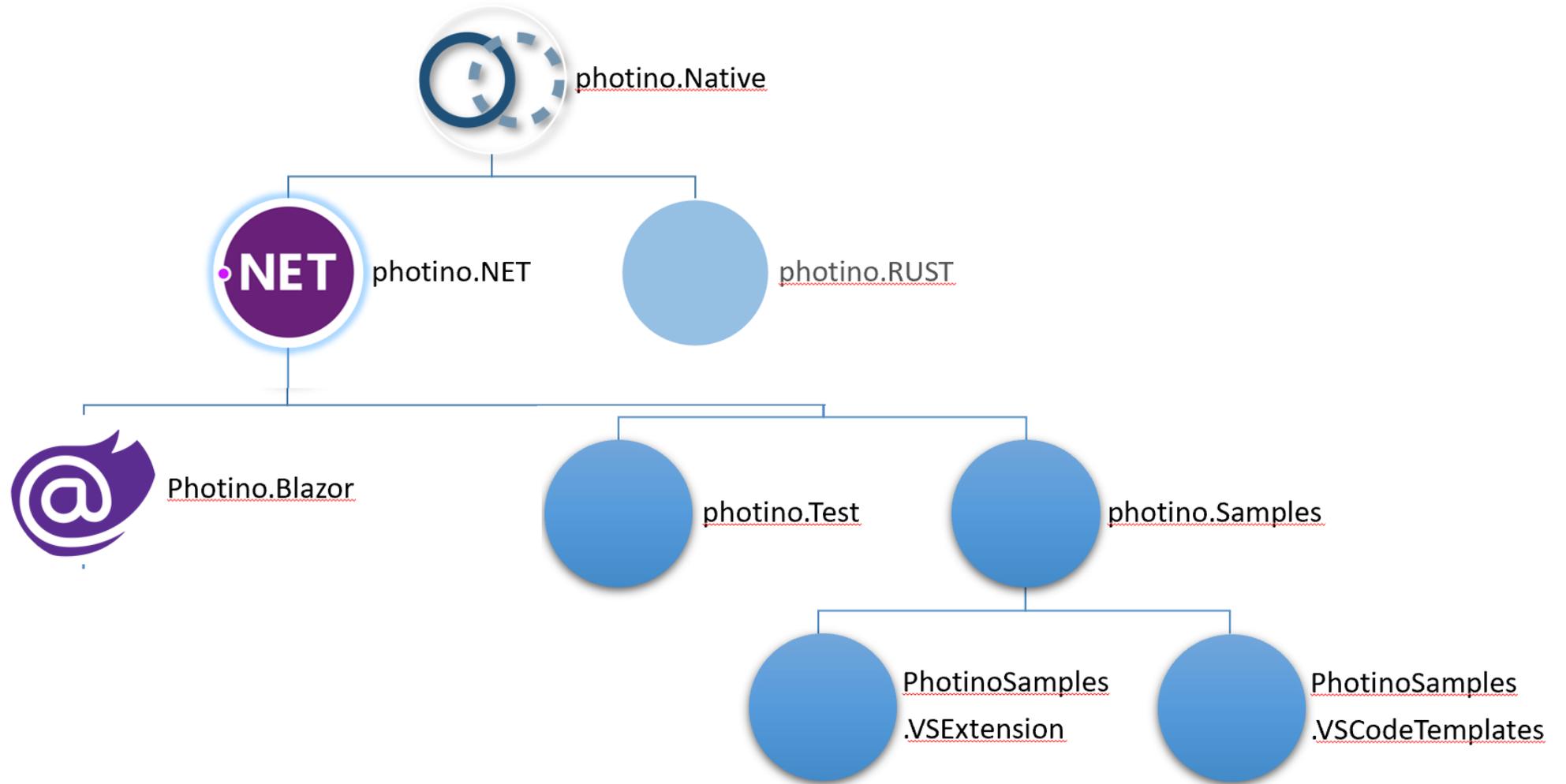
Light Weight & Cross Platform Browser Control

- The Photino.Native wrapper allows us to build desktop applications that are light weight and cross-platform
 - Light weight because the browser control is usually already installed, so we only have to install the wrapper
 - Cross-platform because applications communicate with the wrapper in exactly the same way on any OS
 - With a cross platform application written in .NET 5, that means 1 code base, 3 Oss... Even for the UI!

Photino.NET

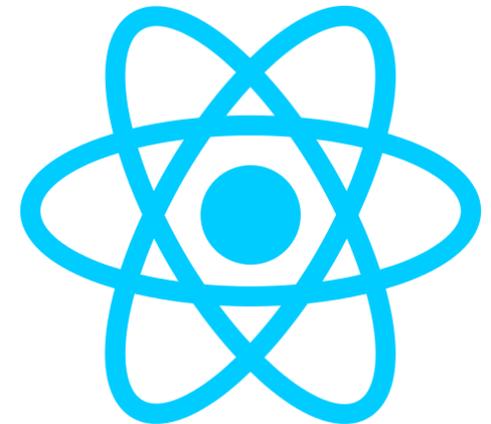
Photino.NET wraps the Photino.Native control and makes it available for .NET developers.

Photino Hierarchy



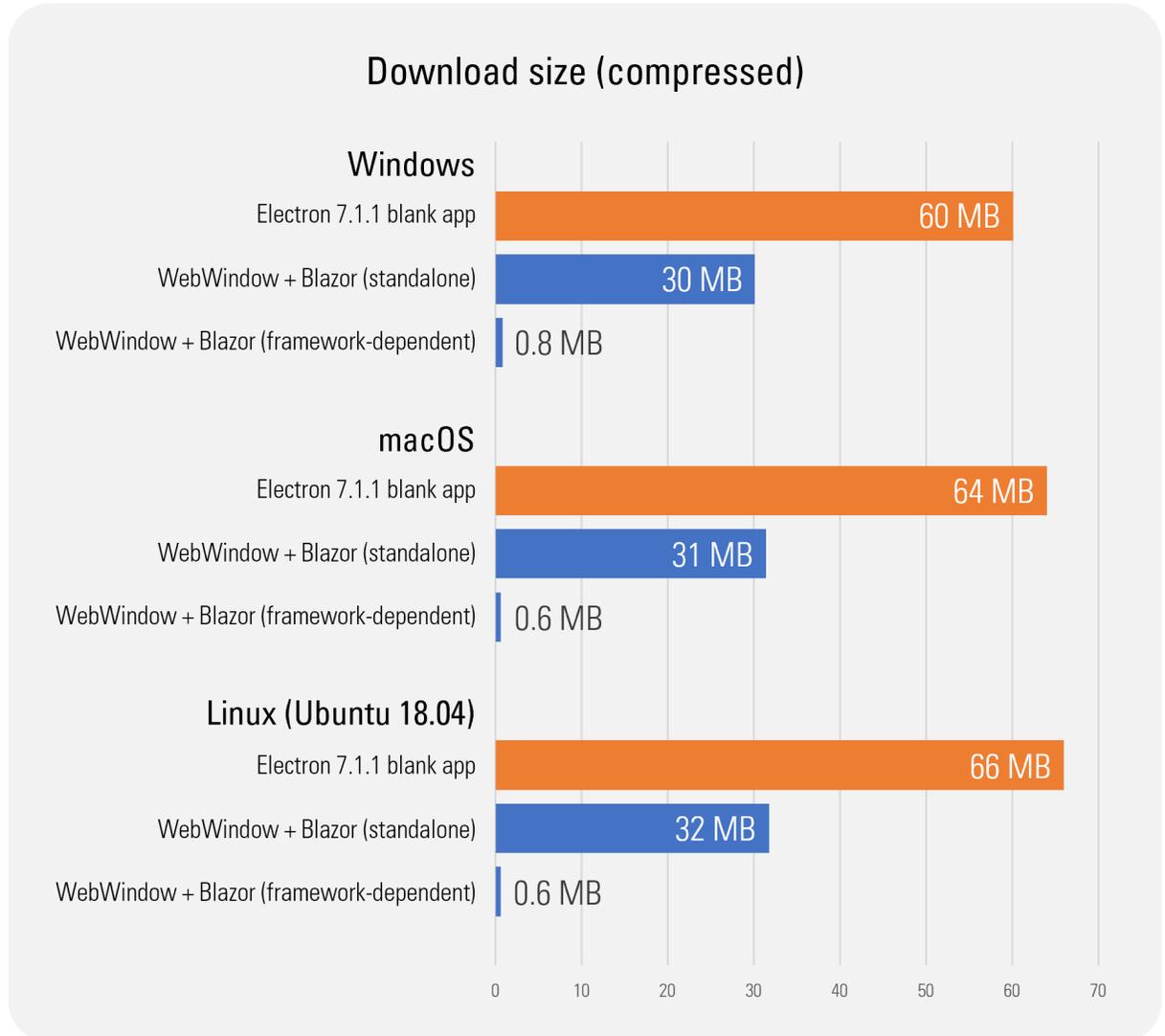
What can I build with Photino.NET?

- HTML, JavaScript, CSS applications
- ReactJS
- AngularJS
- VueJS
- GAMES!
- Etc.
- .NET 5 back end



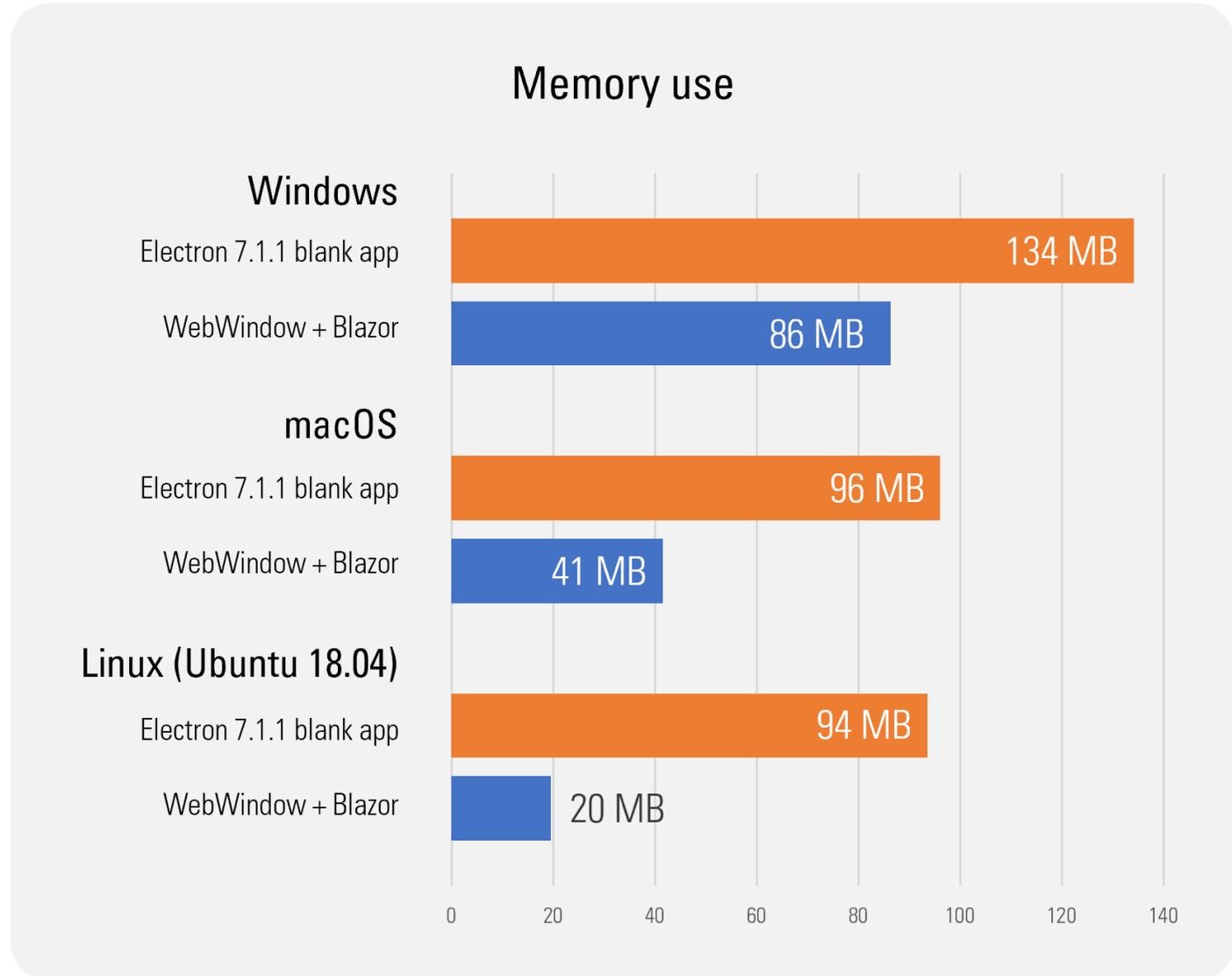
Photino vs. Electron

- Photino does not require Node.js as the host application
- Photino is smaller and lighter weight because it doesn't require downloading and installing the Chromium engine or Node.js
- If .NET 5 is already installed on the OS, the difference is huge



Photino vs. Electron

- Photino uses far less memory than Electron
- Especially on Mac and Linux where WKWebView and WebKitGTK+2 use far less memory than Chromium



Where can I get more info?

- [Tryphotino.io](https://tryphotino.io)
- [Github.com/Tryphotino](https://github.com/Tryphotino)
- [Tryphotino.Kavadocs.com](https://tryphotino.kavadocs.com)
- **CODE PRESENTS: 3/10/21**

Project MAUI



MAUI Overview

- Multi-Platform Application UI
- A continuation of Xamarin Forms
- Runs on Windows, iOS, Android, and macOS
 - ...but not Linux (at least in the first iteration)
- MAUI uses this approach to tie together a lot of existing technologies, including WinUI and others
- Access to underlying native technologies is provided



Blazor Desktop

Microsoft Announced Blazor Desktop

- Utilized the Blazor development approach to drive desktop development
- For more information, stay tuned for .NET Conf tomorrow!
 - More information in later slides...

Other Announcements

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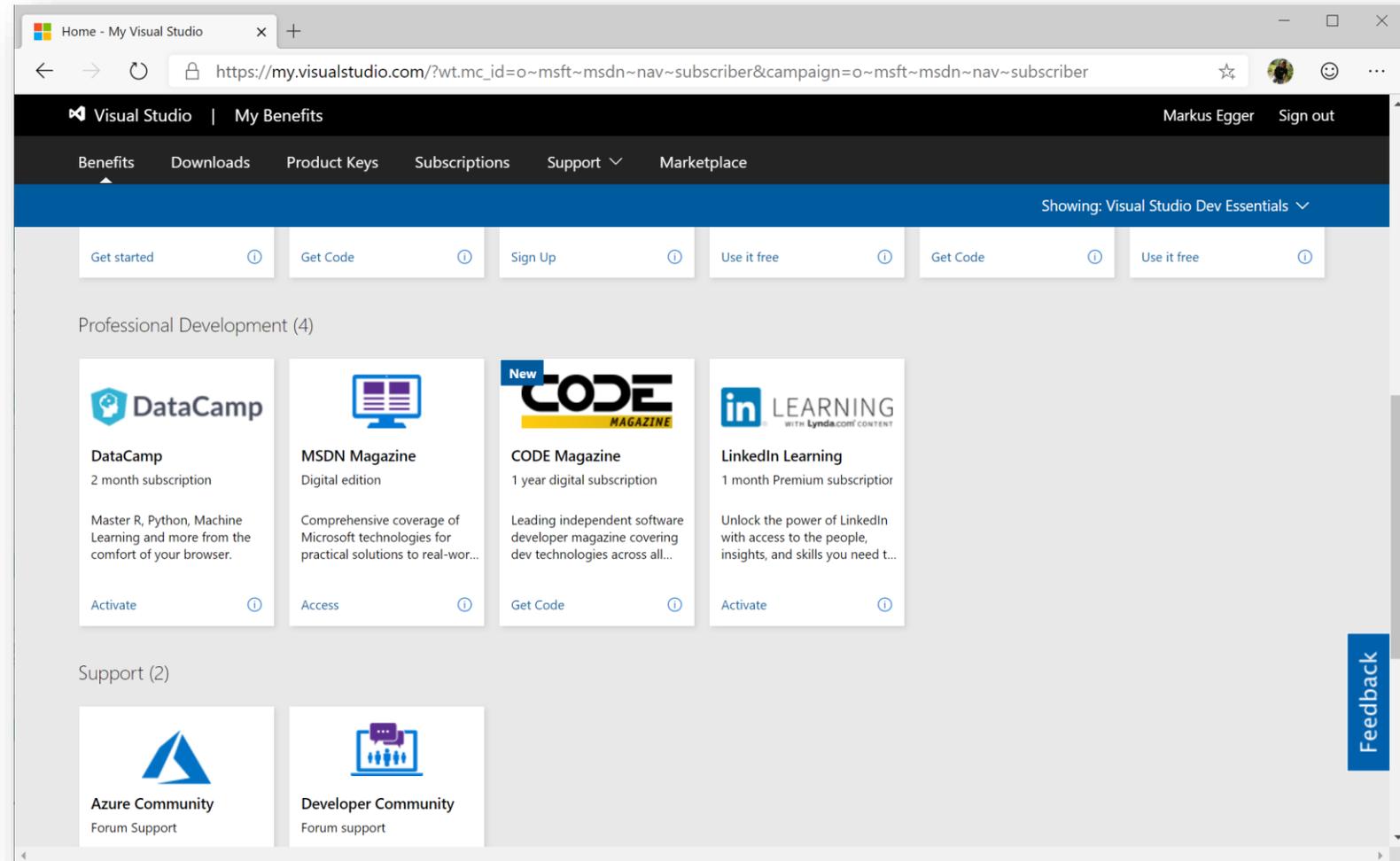
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- <https://focus.dotnetconf.net/>
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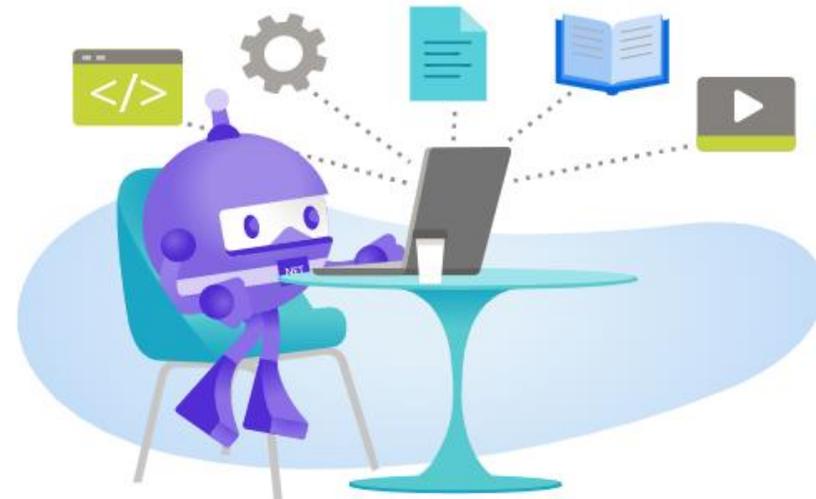
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