

State of .NET Online

Blazor Web Development in .NET 5

Markus Egger

President and Chief Software Architect
CODE Magazine & Consulting

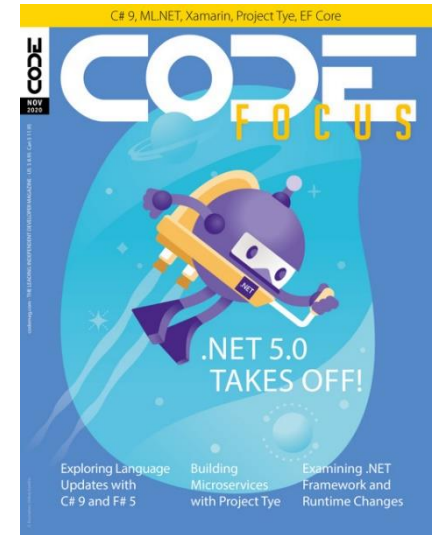
Dr. Otto Dobretsberger

Senior Software Developer
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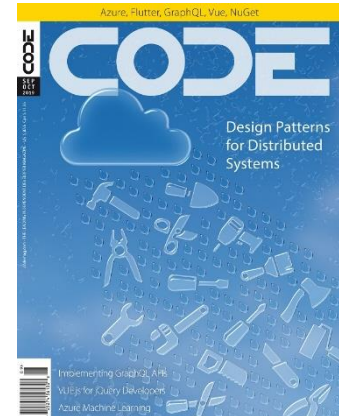
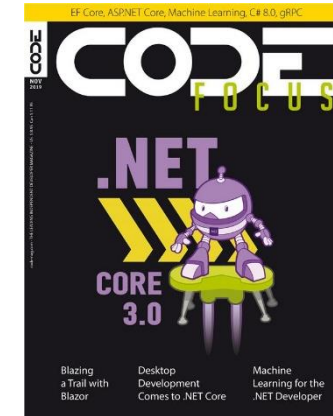
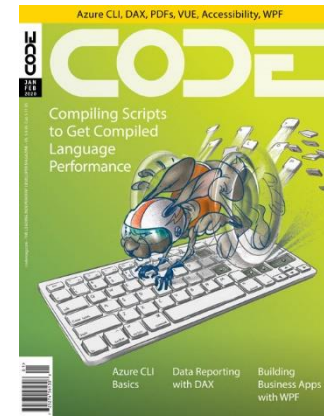
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<https://bit.ly/39ZynRI>



About the Presenter

- **Markus Egger**
- President and Chief Software Architect
EPS Software Corp. (dba CODE Consulting)
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- Twitter: @markusegger



About the Presenter

- **Dr. Otto Dobretsberger**
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- Professor at University of Houston
- PhD in Computer Science (UofH)
- [Email: ottod@codmag.com](mailto:ottod@codmag.com)
- ...and able to deadlift 700lbs+ (Texas State record holder) 😊



About CODE Consulting

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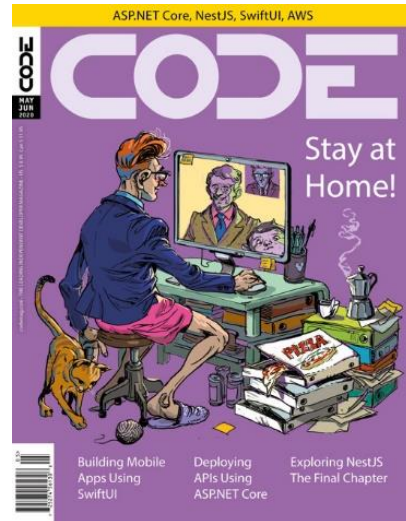
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- Please complete this very short 12 question survey

<https://tinyurl.com/cmw0127>

- Event Slides & Videos:

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The screenshot shows a survey form titled "CODE Magazine State of .NET - Blazor Web Development with .NET 5". Below the title, a message reads: "Thank you for attending! Please complete this brief 12 question survey. Yes, we still want to hear from you if you watch the recorded video. :-)". The form contains two required questions:

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Enter your answer

A chat window icon is visible on the right side of the form.

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

State of .NET Online

- Due to the Coronavirus Crisis, State of .NET has turned from “sometimes online” to “an online series”
- Expect monthly online events going forward
 - Future topics: Windows Desktop Development, DevOps, Azure, .NET 6,...
 - Let us know what you are interested in!
- Note that live-events will also continue to be scheduled at various locations once that is possible again

Agenda

- Overview of Blazor and what to expect
- How is Blazor adoption going?
- What is new with Blazor in .NET 5?
- An overview of Client-Side and Server-Side concepts
- Web Assembly vs. Server-Side
- Progressive Web Apps (PWA)
- Code Examples
- Photino

Blazor Overview



What is Blazor and why do we need it?

- Blazor is a new web development framework from Microsoft
- Based on the .NET Platform...
- ...both on the Client and the Server
- It is fundamentally different from other client-side frameworks that are based on JavaScript

Blazor Advantages

- C# Language (yes, even in the browser!)
- Great Tooling/IDE
- Stability
- Ecosystem
- Based on standards (HTML, CSS, Web Assembly,...)
- Code reuse and share
- Component based
- Skill reuse.

A Tale of Two Blazors

- **Blazor WebAssembly** – Client Side
- **Blazor Server** – Server Side
- Identical code bases
 - Except for some down-line differences, such as being able to access data more directly on the server

Blazor Features

- Component model
- Routing
- Layouts
- Forms and validation
- Dependency injection
- Live reload
- JavaScript interop
- Server-side rendering
- Debugging (browser & IDE)
- Rich IntelliSense and tooling
- Fallback to asm.js
- Publishing
- App size trimming

Blazor Release Versions

- Blazor is now included with .NET 5
- Blazor Server originally released with .NET Core 3
- Blazor Web Assembly originally released with .NET Core SDK 3.1.300
- Supported in Visual Studio and VS Code (and other .NET editors and IDEs) on all platforms
- blazor.net

Blazor Adoption

Blazor Adoption

- It is difficult to say how many people use Blazor in how many real-world projects, but...
- ...we do know that Blazor is THE topic that creates the most interest (as is evident in today's event)
- ...that .NET 5 is being adopted very quickly
- ...and that Blazor is the fastest growing workload within .NET 5.

.NET ecosystem momentum

>2M

.NET Core developers

in Visual Studio

#1 Most Loved

Framework (2019 & 2020)

.NET Core



Top 30

Highest velocity OSS projects

github.com/dotnet
github.com/aspnet



Top 5

Language on GitHub

C#



7x

Faster than Node.js

ASP.NET Core



40%

New to .NET are students

dot.net download survey

.NET ecosystem momentum

>5M

.NET developers

In Visual Studio family

#1

Most Loved Framework (2019 & 2020)

.NET Core

Top 30

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github.com/dotnet
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Top 5

Language on GitHub



7X

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40%

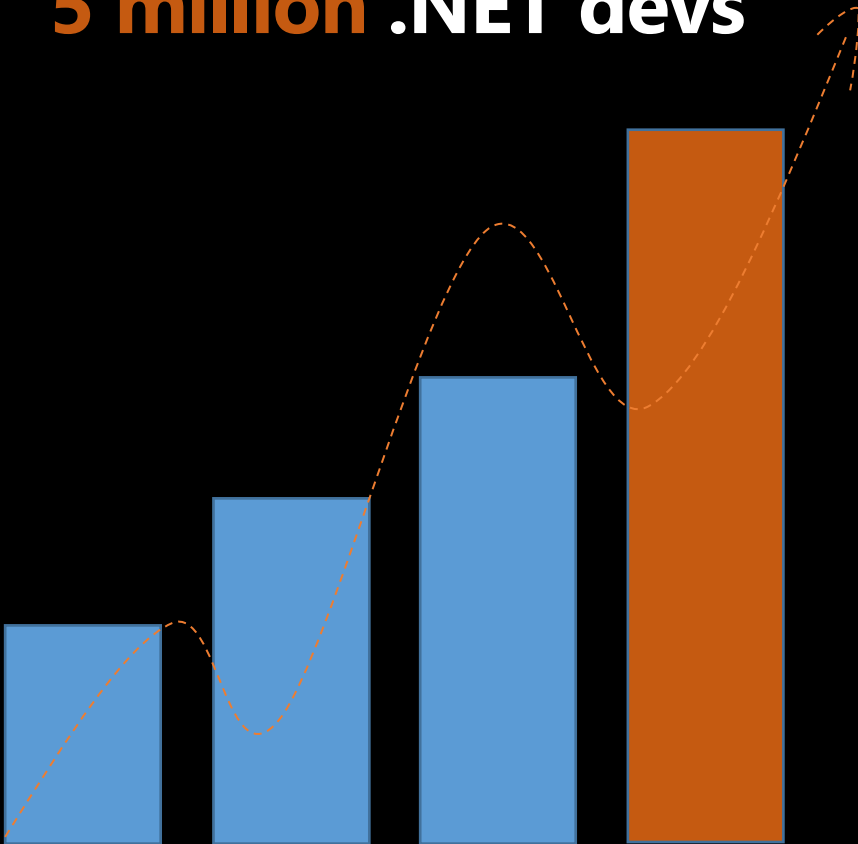
New to .NET are students

[dot.net download survey](https://dotnetdownloadsurvey.com)

Sources: insights.stackoverflow.com/survey/2019#most-loved-dreaded-and-wanted & insights.stackoverflow.com/survey/2020#most-loved-dreaded-and-wanted github.com/cncf/velocity/ octoverse.github.com/ www.techempower.com/benchmarks/#section=data-r18&hw=ph&test=plaintext

.NET adoption

5 million .NET devs



Visual Studio

+1 million new

Monthly active .NET developers in the last year

.NET Core

+600K new

Monthly active .NET Core developers in the last year

.NET on Linux

2 million

Publishes to Linux from Visual Studio

WebAssembly



WebAssembly is changing the Web

- In simple terms: binary code for web browsers
- Native performance for the web
 - Think of it as executing native compiled code in a browser
- Cross platform compilation target for any language
- Available in all major browsers
- Provides a “compilation target” for all kinds of languages
- Originally, this was mostly used by C++ game developers

WebAssembly

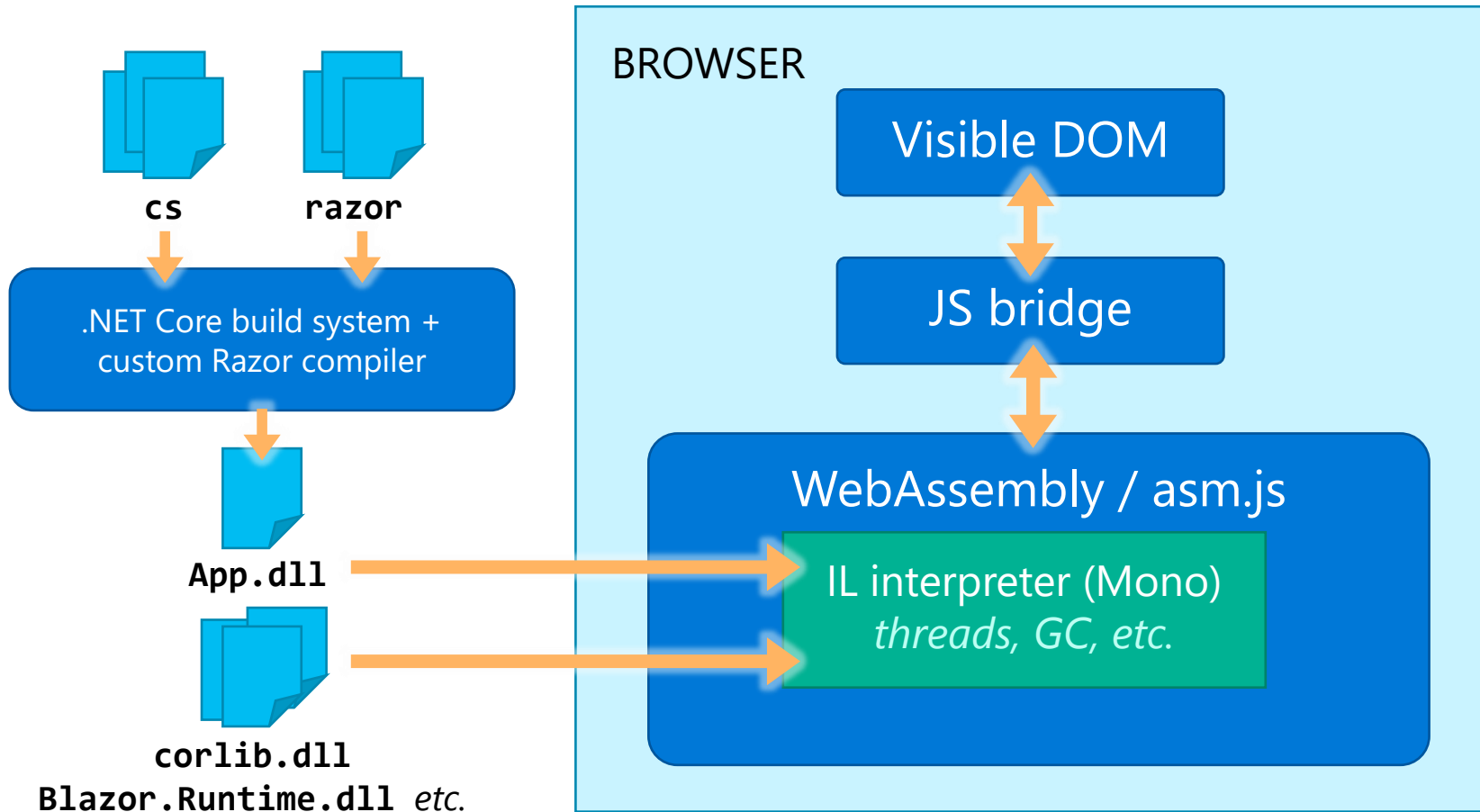


Can You Use It?

- Yes!
- All major browsers and platform support WebAssembly



How Blazor works





A First Lap Around Blazor

Blazor .NET 5



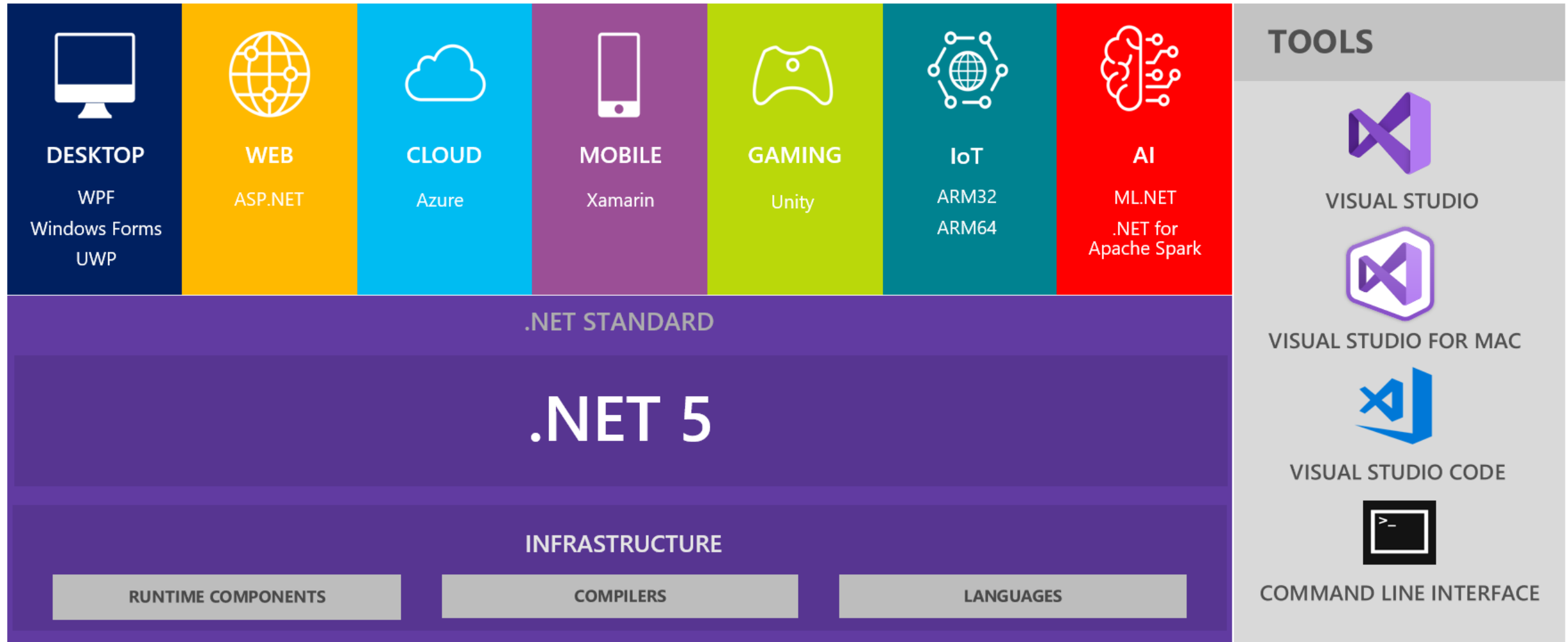
What's New in .NET 5?

One .NET from Desktop, to
Web, Mobile, and Beyond!

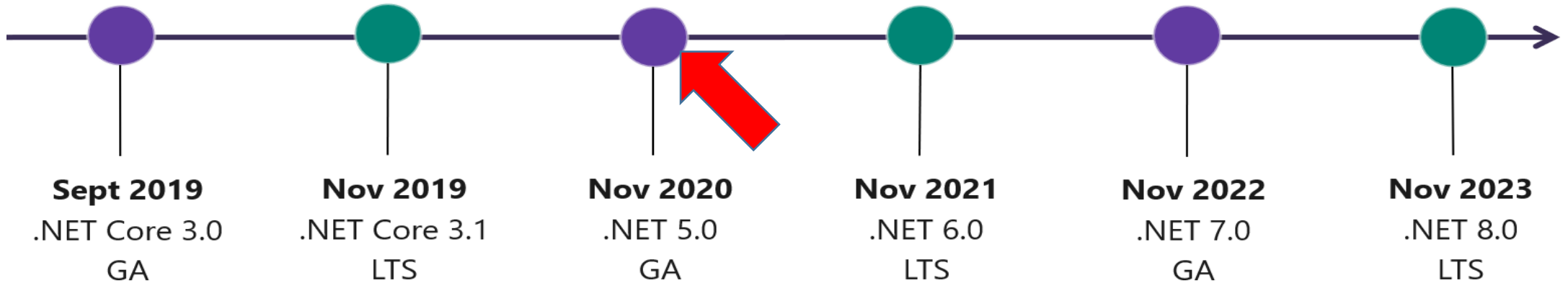
The Journey to One .NET

- .NET now looks back at a history lasting two decades...
- ...with many twists and turns
- .NET Framework, .NET Core, Mono, Xamarin, UWP, Silverlight, Windows Phone,...
- Different components, project structures, APIs,...
- .NET 5 is a huge step in the journey towards (re)unifying the .NET platform
- The goal is to get away from worrying about “what runs where” and simply “targeting .NET” with code that runs everywhere

.NET – A unified platform



.NET Timeline/Roadmap



- .NET 5 Release: November 10th, 2020
- Annual, predictable releases (started a year ago with .NET Core 3.1)
- Minor Releases if needed

CODE Focus Magazine: .NET 5

- We are working on a CODE Focus issue on .NET 5
- Great source of free information
- Produced in conjunction with Microsoft
- All CODE Magazine subscribers get this special issue for free
- Get a free subscription at:
www.codemag.com/subscribe/CF2020



What's New in .NET 5 Blazor?

- Included in .NET 5
- All of .NET 5 is available in Blazor (no more limit for Standard 2.1)
 - Situation-specific limitations still apply
- CSS Isolation
- Lazy Loading
- Hot Reload with **dotnet watch**
- New features aimed to reduce the need for JavaScript
- Debug Improvements

What's New in .NET 5 Blazor? (cont.)

- Performance Improvements (WebAssembly)
 - Typical CPU intensive operations run about 30% faster
 - UI rendering is about 200-400% faster
 - This is especially true for UI elements with lots of elements, such as grids
 - Virtualization is now supported
 - Prerendering

What's New in .NET 5 Blazor? (cont.)

- New Blazor WebAssembly SDK replaces the NuGet package used in the past

```
<Project Sdk="Microsoft.NET.Sdk.BlazorWebAssembly">
  <PropertyGroup>
    <TargetFramework>net5.0</TargetFramework>
  </PropertyGroup>
  <ItemGroup>
    <!-- Package references -->
  </ItemGroup>
</Project>
```



Blazor Server vs. Web Assembly

Dr. Otto Dobretsberger



PWAs (Progressive Web Apps)

What are PWAs?

- Progressive Web Apps are locally installed apps
- They are not specific to Blazor...
- ...but Blazor WebAssembly makes it very easy to develop them
- All code runs local, and the app can operate offline
- Apps can be started from the local experience (desktop, start menu, phone home screen,...)

Blazor PWA

Dr. Otto Dobretsberger



Blazor 3rd Party Components

3rd Party Vendors



Open Source Community



Blazored



MatBlazor



Ant Design Blazor

<Blazorise/>



BlazorStrap

bUnit

Blazm



Photino



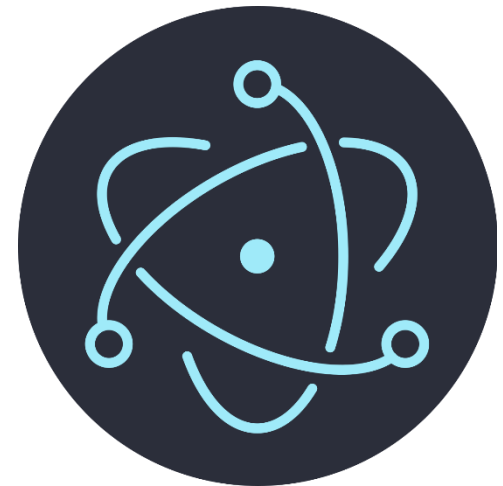
What is Photino?

- Photino is an Open Source project, based on Steve Sanderson's WebWindow which was based on .NET Core 3.1 and a pre-release version of WebView2
- Check out Steve's blog post on WebWindow

<https://blog.stevensanderson.com/2019/11/18/2019-11-18-webwindow-a-cross-platform-webview-for-dotnet-core/>

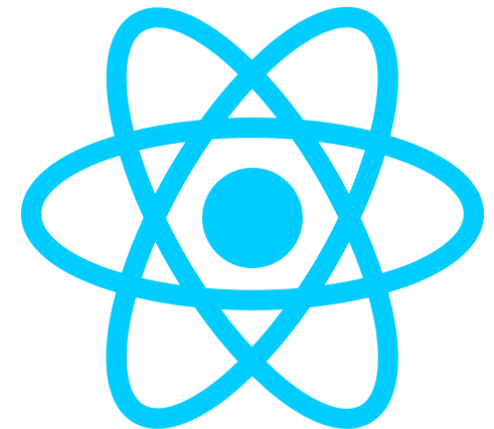
What is Photino?

- 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.

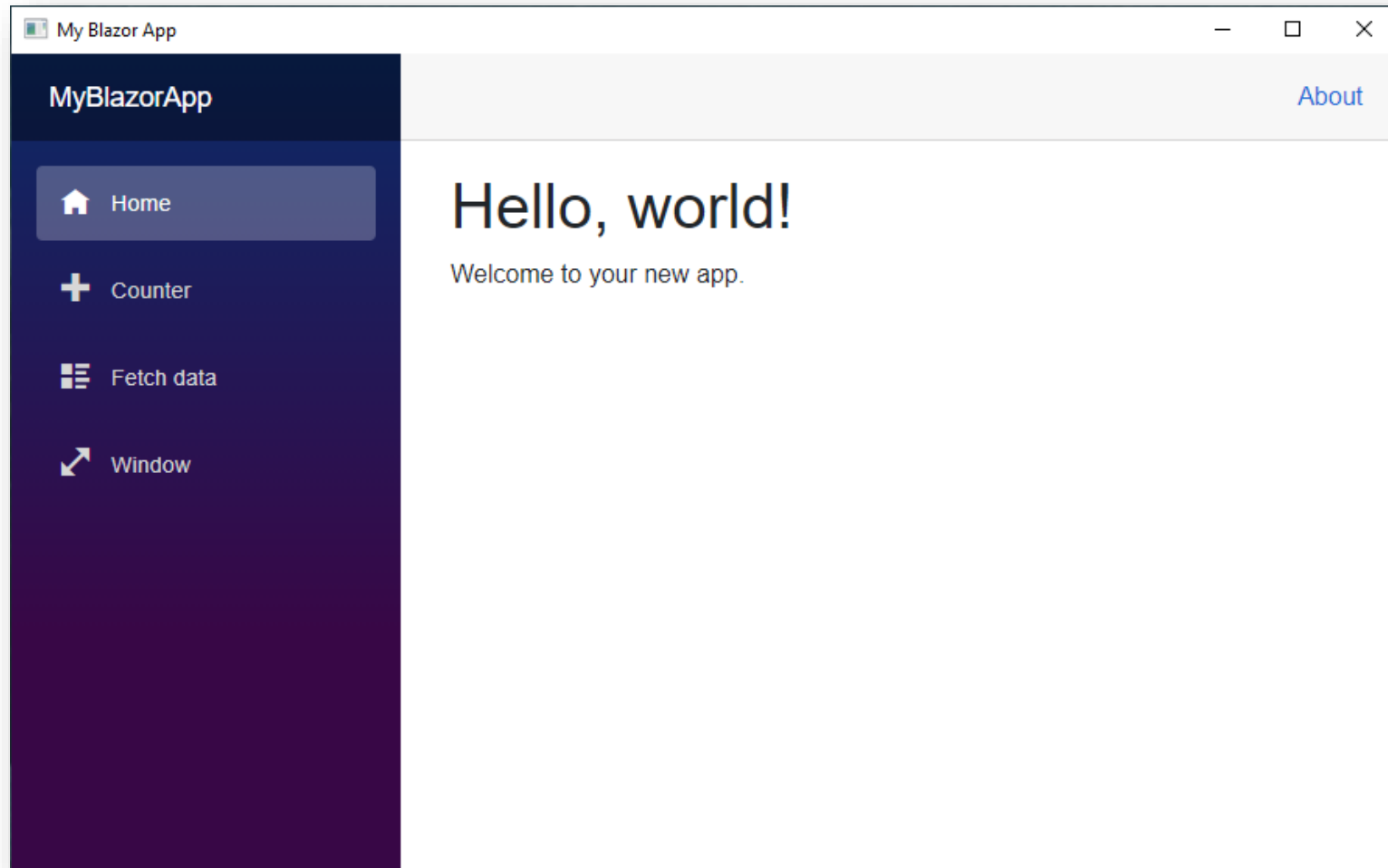


What can I build with Photino.NET?

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



Photino.NET.Blazor adds Blazor to Photino.NET



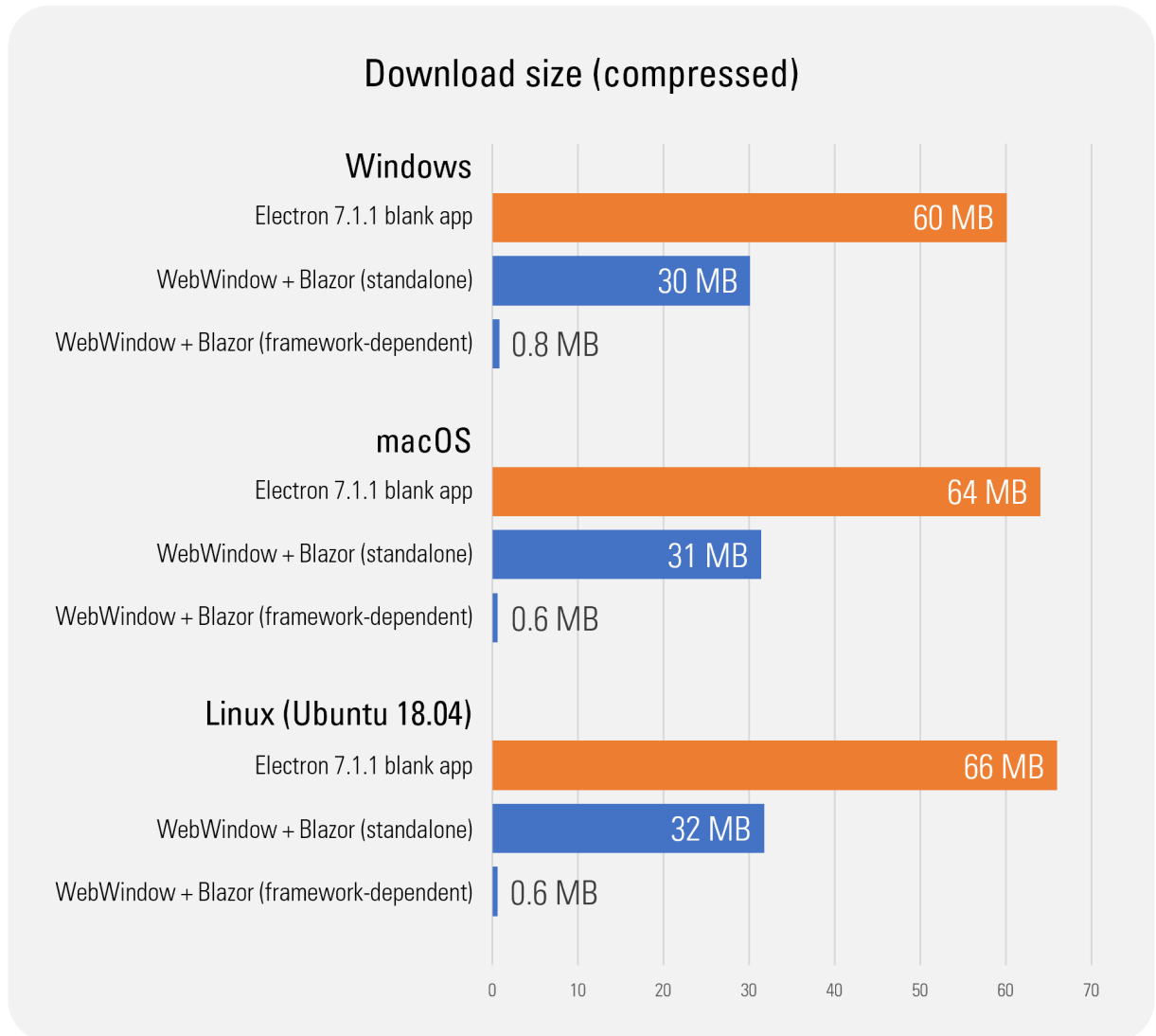
What can I build with Photino.NET.Blazor?

- Practically anything you can build with Blazor



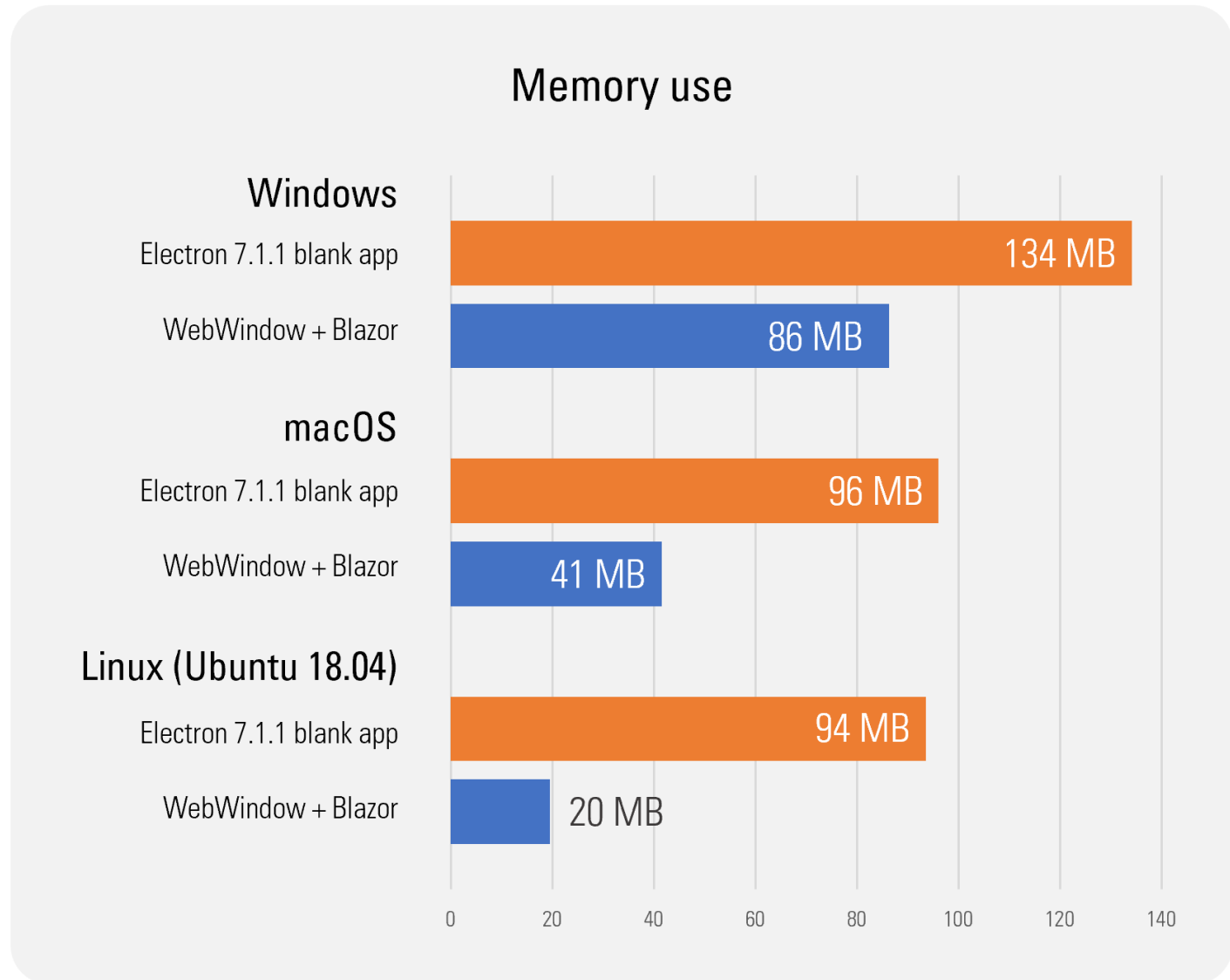
Photino vs. Electron

- Photino does not require NodeJS for back-end work
- Photino is smaller and lighter weight because it doesn't require downloading and installing the Chromium engine or NodeJS
- 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



Photino vs. Electron

- Electron is much more mature than Photino
- We'll be working with the community to bring features and capabilities to Photino
- You're welcome to join the community, add missing functionality that you need, fix bugs and submit Pull Requests
- And of course, you're always able to sub-class Photino.NET or Photino.NET.Blazor to override or enhance the project

DEMO

Other Announcements

Event Survey

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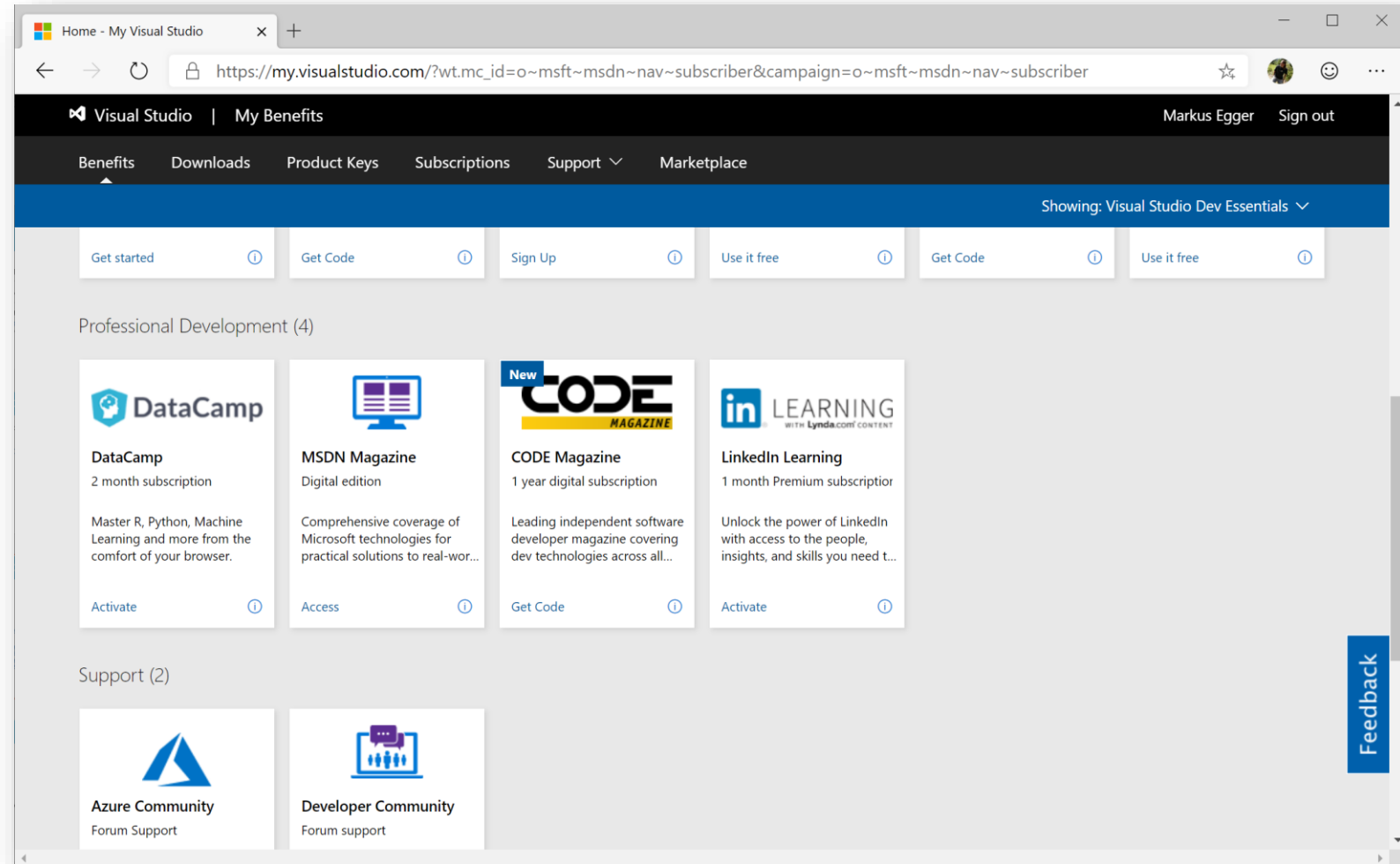
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<https://tinyurl.com/sodn0224>

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21	22	23	24	25	26	27
28						

Q&A

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