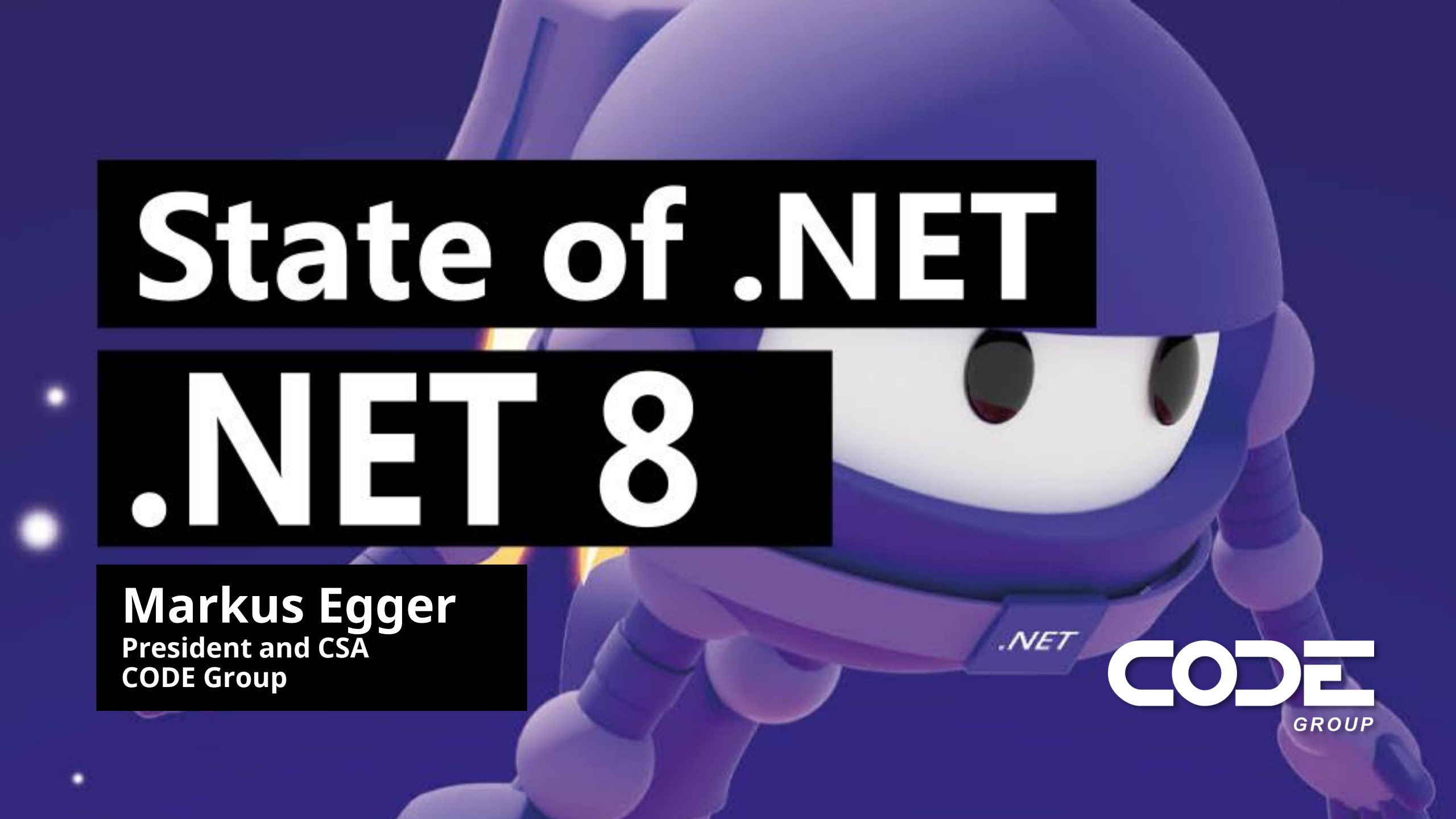
State of .NET

.NET 8



Markus Egger
President and CSA
CODE Group

CODE GROUP

About Our Presenter

- **Markus Egger**
- President and Chief Software Architect
  EPS Software Corp. (dba CODE Consulting)
- CEO – CODE Staffing
- Publisher – CODE Magazine
- International Author and Speaker
- Microsoft RD (Regional Director)
- Microsoft MVP 1995-2019
- Email: markus@codemag.com
- Twitter: @markusegger

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“Helping People Build Better Software”

About CODE Consulting

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Custom Software Development
(Web, Mobile, Desktop and Cloud Platform Apps)

Copilot Development, AI, GPT & Azure OpenAI

Project Rescue, App Modernization
(VB, VFP, Access, etc.)

Application Security Testing

Support & Maintenance for existing applications

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... and our employees a work environment in a bleeding-edge tech company with the **industry leading benefits!**

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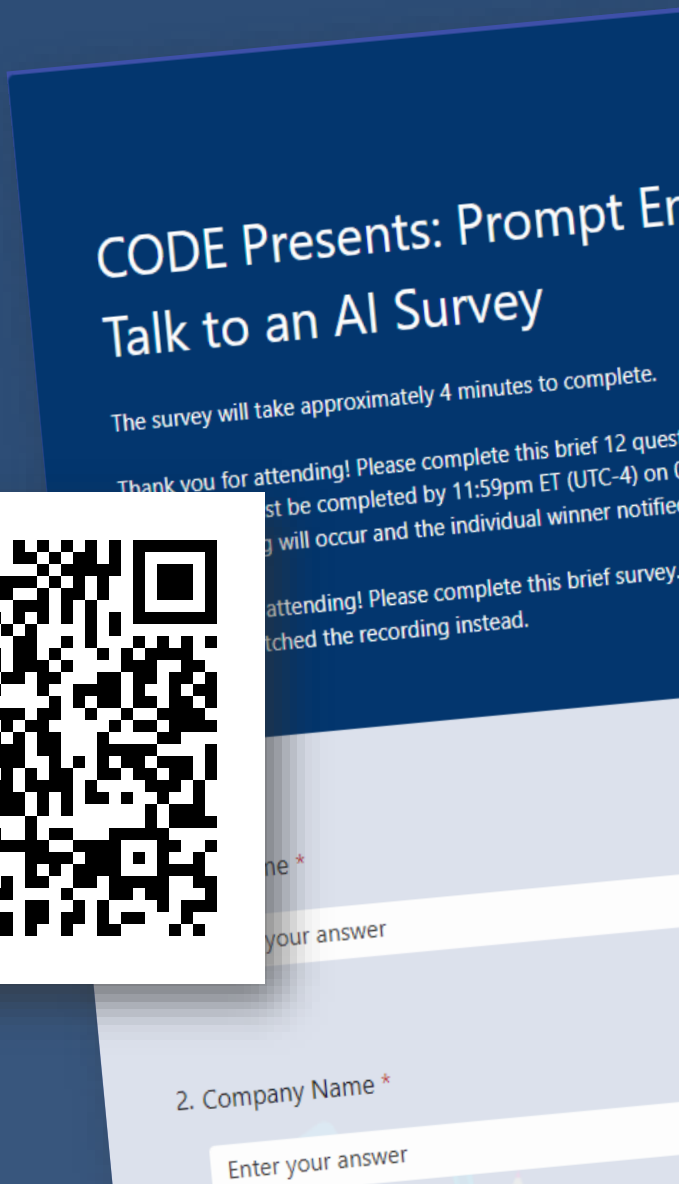

Agenda

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- Most important .NET 8 developments and themes
- Tool enhancements
- Language and Framework enhancements
- How .NET fits in overall
- Some AI ;-)

.NET 8 – Major Themes

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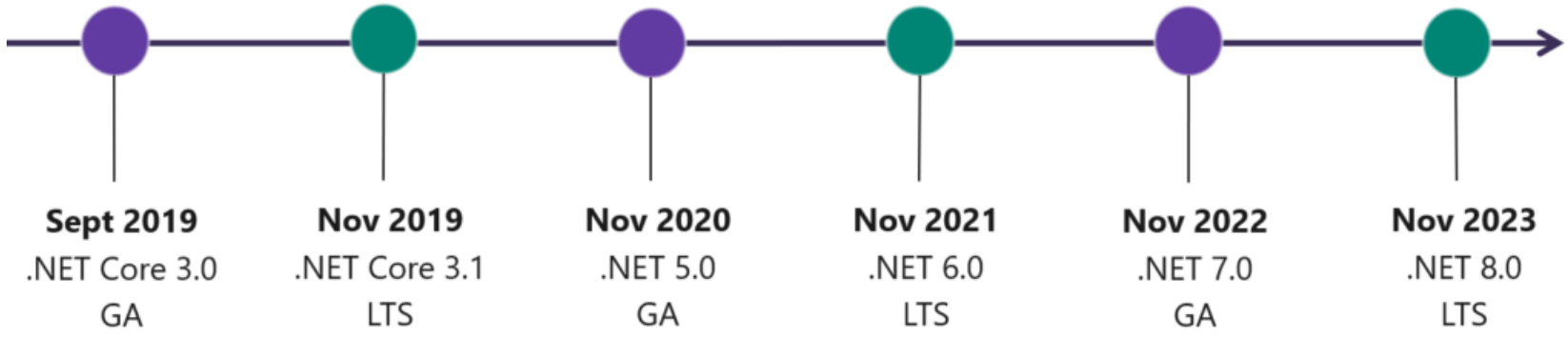
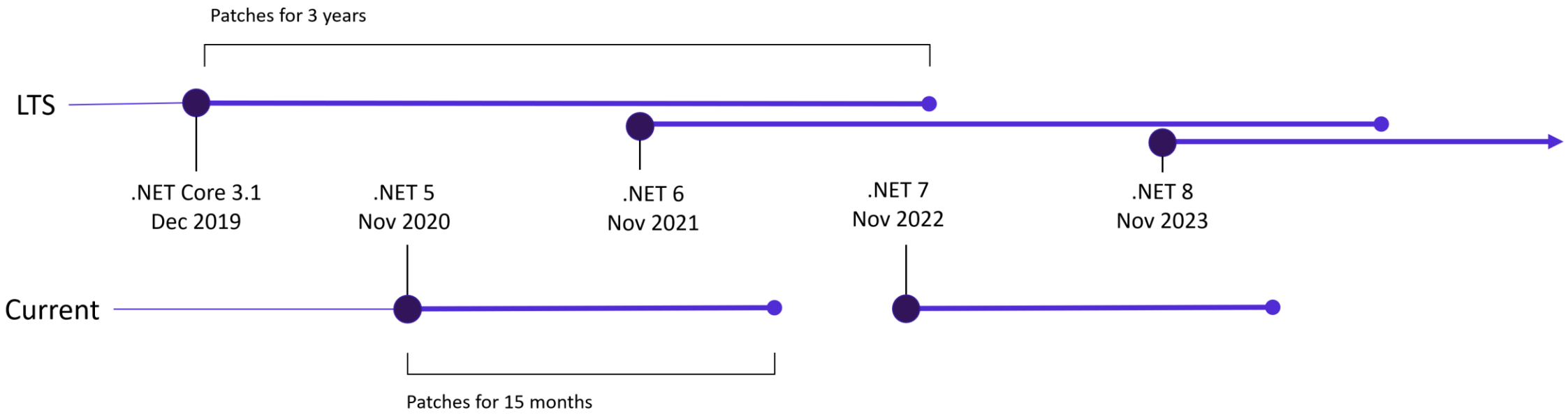
- Polishing up what's already there
- Performance
- Productivity in key development scenarios
- Tools updates
- Other related technologies

.NET Timeline



- .NET 8 Release: November 2023
  - DotNetConf – www.dotnetconf.net
- Azure services now support the new .NET 8 release
- Annual, predictable releases (started with .NET Core 3.1)
  - Minor Releases if needed

GA/Current vs. LTS

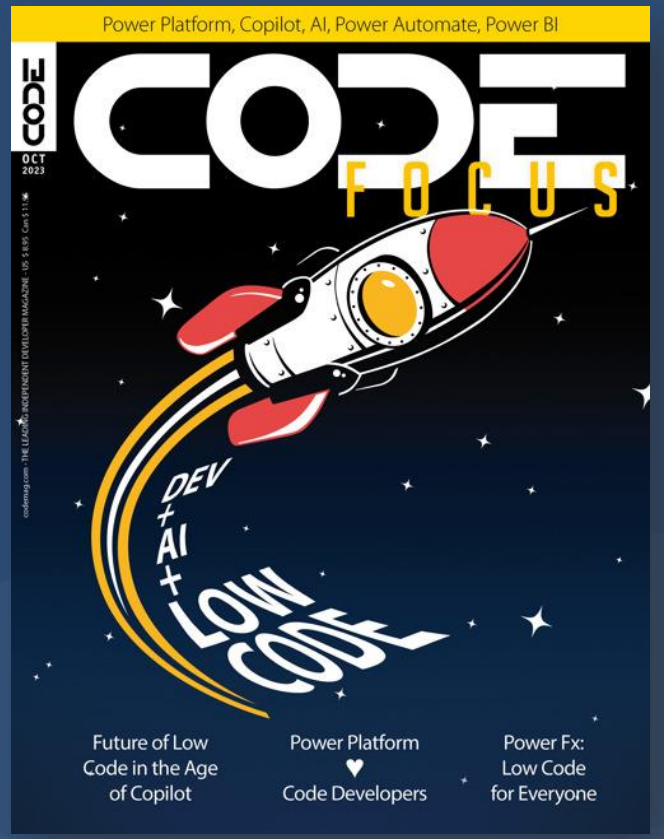


- Current versions (GA) are supported 15 months
  - (3 months after the next version's release date)
- LTS versions are supported for 3 years
- It should be easy to update from GA to LTS versions
- *Note: A lot of current tech targets .NET 6 as a minimum version*

Side-Note: CODE Focus Magazine - .NET 8?

- Not yet, but… ;-)

- Also, check out some of our recent special issues, such as the Power Platform issue
- These are all free
- www.codemag.com/focus

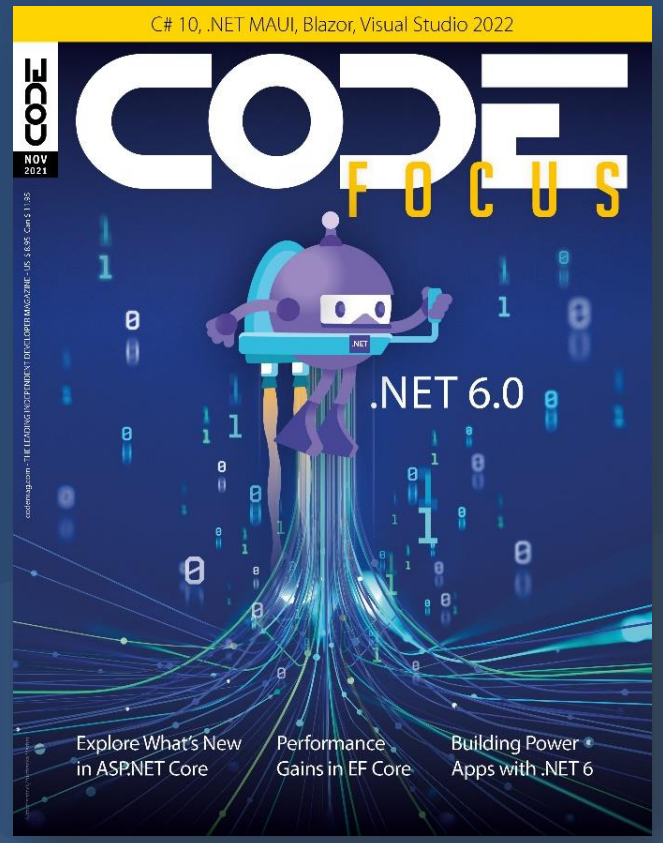


Side-Note: CODE Focus Magazine - .NET 7

- We created CODE Focus issue on .NET 7
- 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/CF2022

Side-Note: CODE Focus Magazine - .NET 6

- We also created a CODE Focus issue on .NET 6
- This is still available, free of charge, online
- www.codemag.com/focus



Side-Note: CODE Focus Magazine - .NET 5

- The same is true for our .NET 5 issue
- Content is still available online and very applicable today
- www.codemag.com/focus

.NET Momentum

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- **6.1+ Million**
  Monthly active users
- **53,000+**
  Community members have contributed to .NET
- **#1 – 2023**
  Most Admired Developer Framework on StackOverflow
- **Top 5**
  Highest velocity OSS project
- **Top 5**
  Top Programming Language on GitHub

** All numbers from DotNetConf*

.NET for Modern Apps

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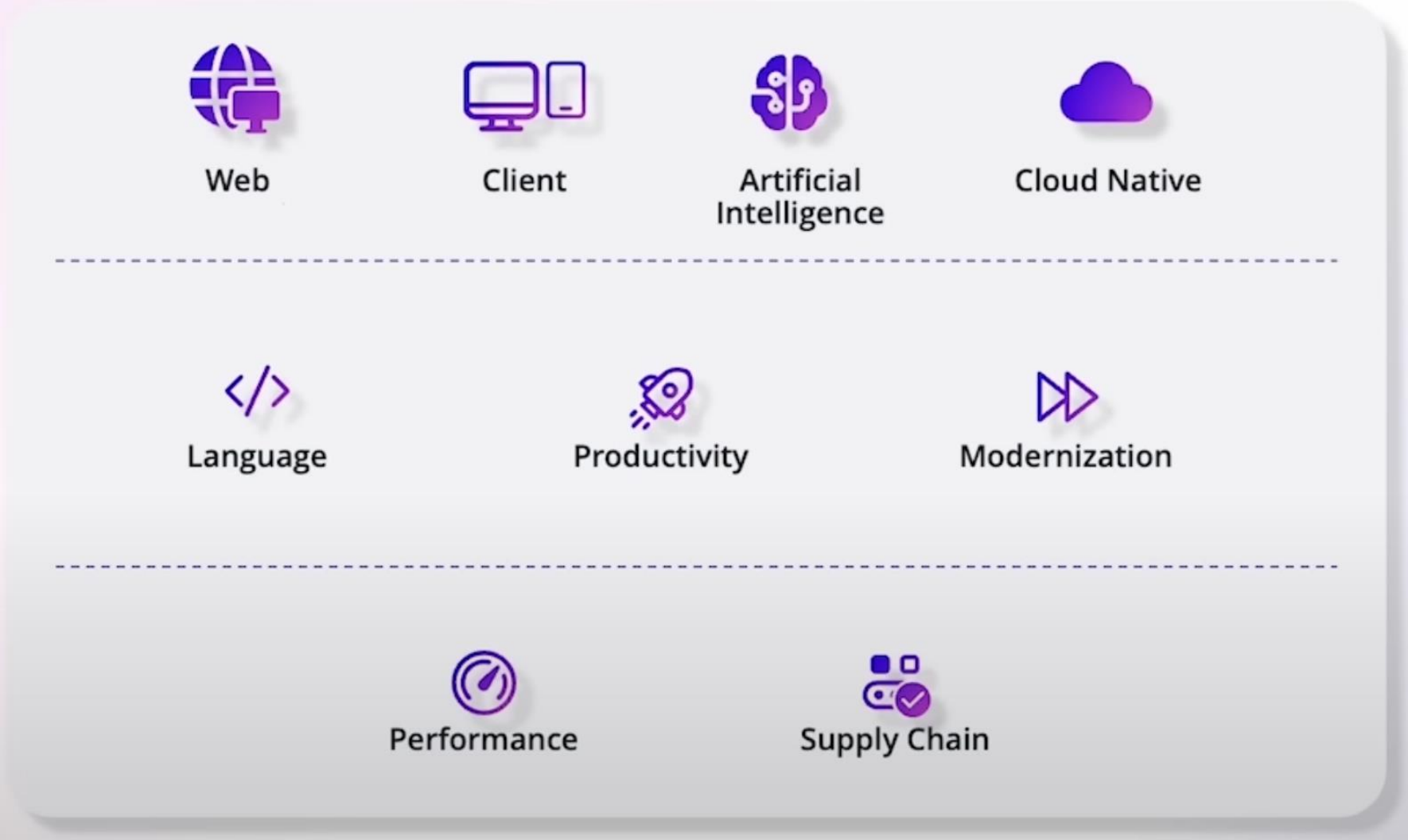

Performance Improvements

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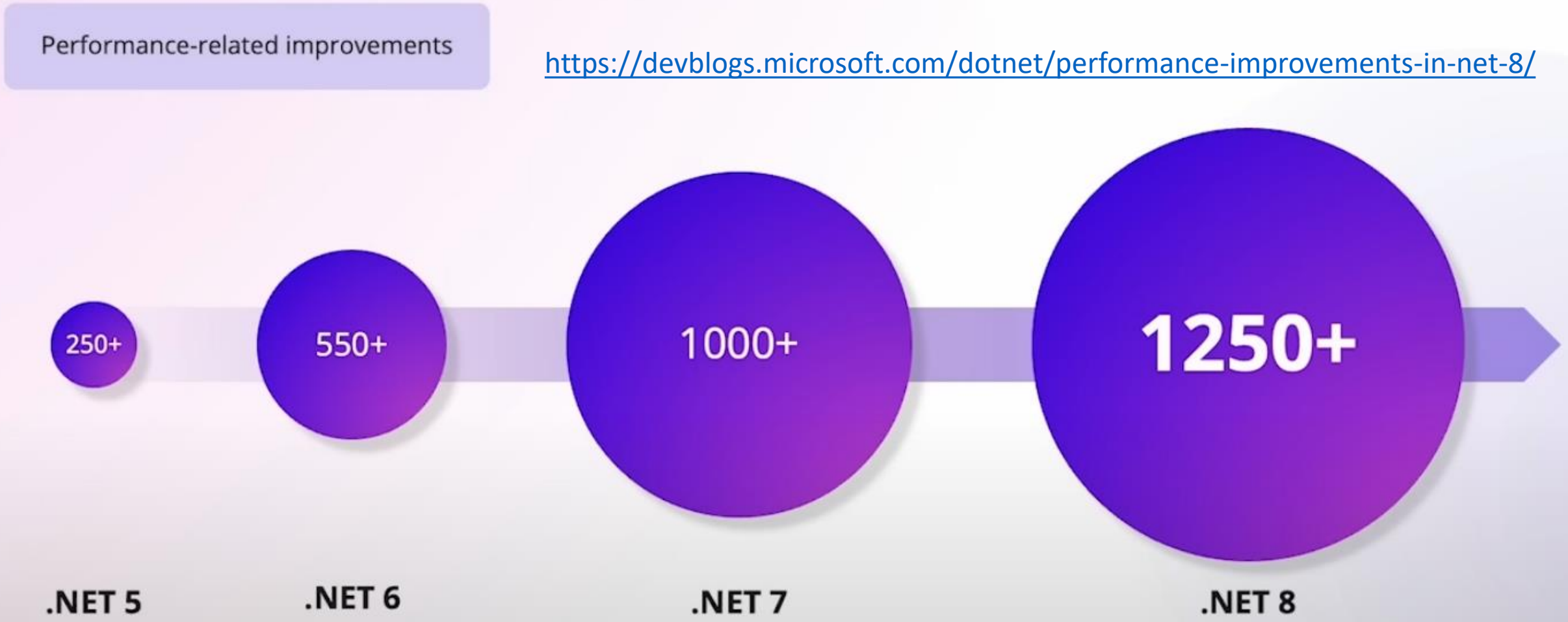

https://devblogs.microsoft.com/dotnet/performance-improvements-in-net-8/

Visual Studio IDE vs. VS Code

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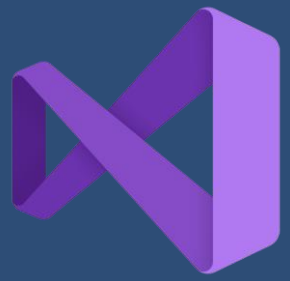

- **Integrated development environment** (IDE)
- **Windows**-focused
- Rich **out-of-the-box** tooling
- Rich **overall** development experience

- **Editor-based** experience
- **Extension**/add-on driven customization and tooling
- **Cross-platform** support for Windows, Mac, and Linux

C# Dev Kit

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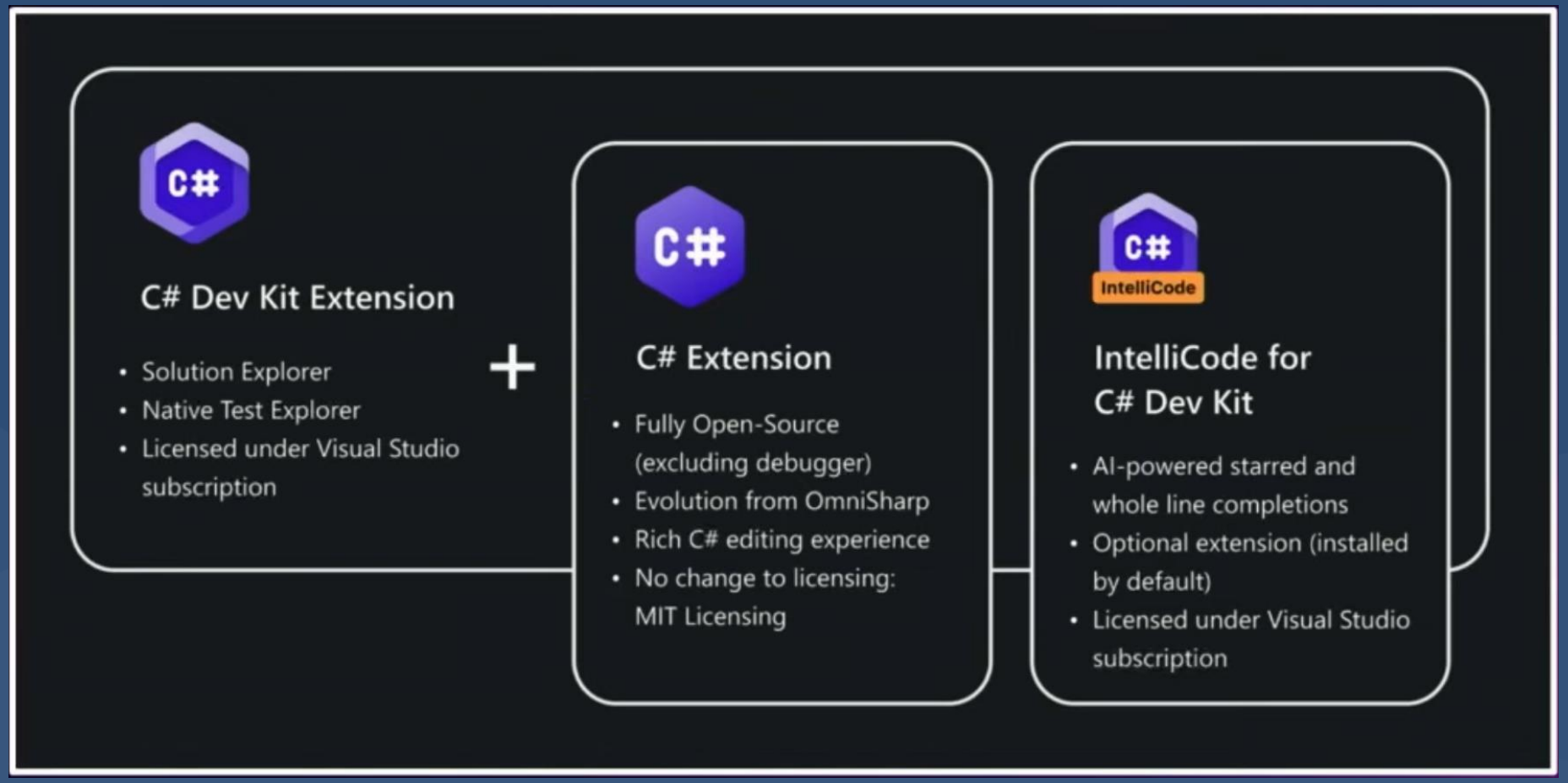
- Microsoft-built VS Code extension for C#
- Enables a richer development experience for C# developers in VS Code
- A great way for people to get into C# and .NET coding

C# Dev Kit: What's Included



C# 12

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- Another gradual version increase of an already mature and sophisticated language
- Added features include things like:
  - Primary Constructors on classes
  - Collection Expressions
  - Default values for lambda parameters

GitHub Copilot

- Your code writing assistant
- Now has millions of users…
- … and has become one of GitHub's most important offerings
- Promises great productivity gains…
  - …which is undoubtedly true, but hard to measure
- I find it also provides great quality and capability improvements

.NET & AI

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- AI is now everywhere!
- It’s not just about using Copilots in Microsoft apps, but EVERY app needs a Copilot!
- .NET is a great environment to call into AI environments to enrich your applications
- I find it easy to add AI to existing .NET apps
- Note: There also is the ability to write and train your own AI with ML.NET

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All apps without Copilot/AI features are now legacy!

AI Consulting Services

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Check out our new Executive Briefing offer!

We can help with your AI needs

What does AI mean for you?

“Skunk Works” Projects

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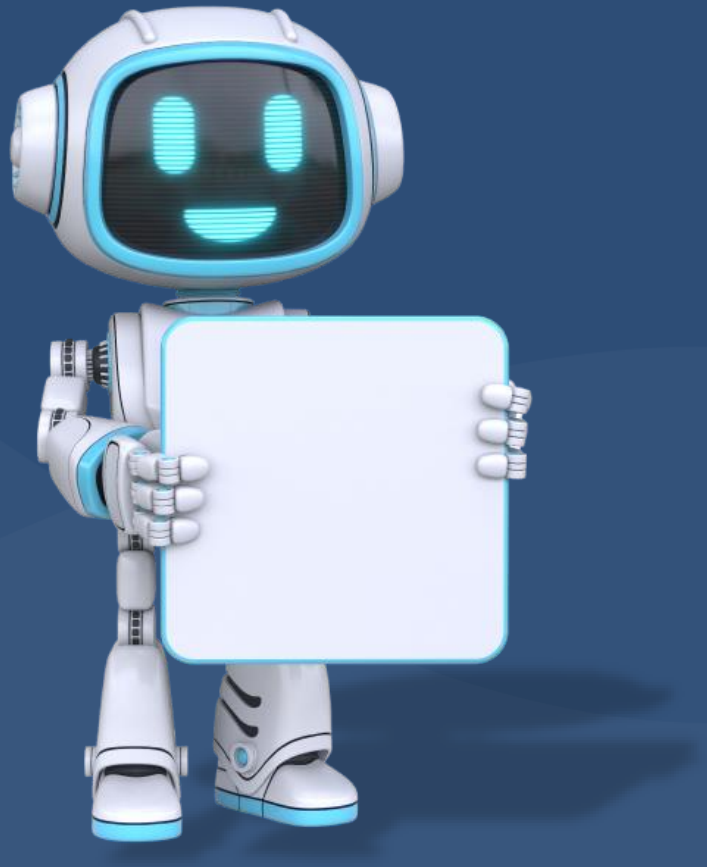
codemag.com/ExecutiveBriefing

AI Training Class



- We are offering a training class on how to build AI into your own applications
- **www.codemag.com/training**

ASP.NET Core

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Web UI

APIs

Data

Server

Security

Tooling

Blazor

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- Blazor has turned into a full-stack web UI platform...
- ...that integrates into just about everything imaginable
- Render models have evolved very nicely
- It has become a compelling platform

Blazor – Full Stack Web UI

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Full stack web UI

- Static server rendering
- Enhanced navigation & form handling
- Streaming rendering
- Add client interactivity per component or page
- Auto select the render mode at runtime

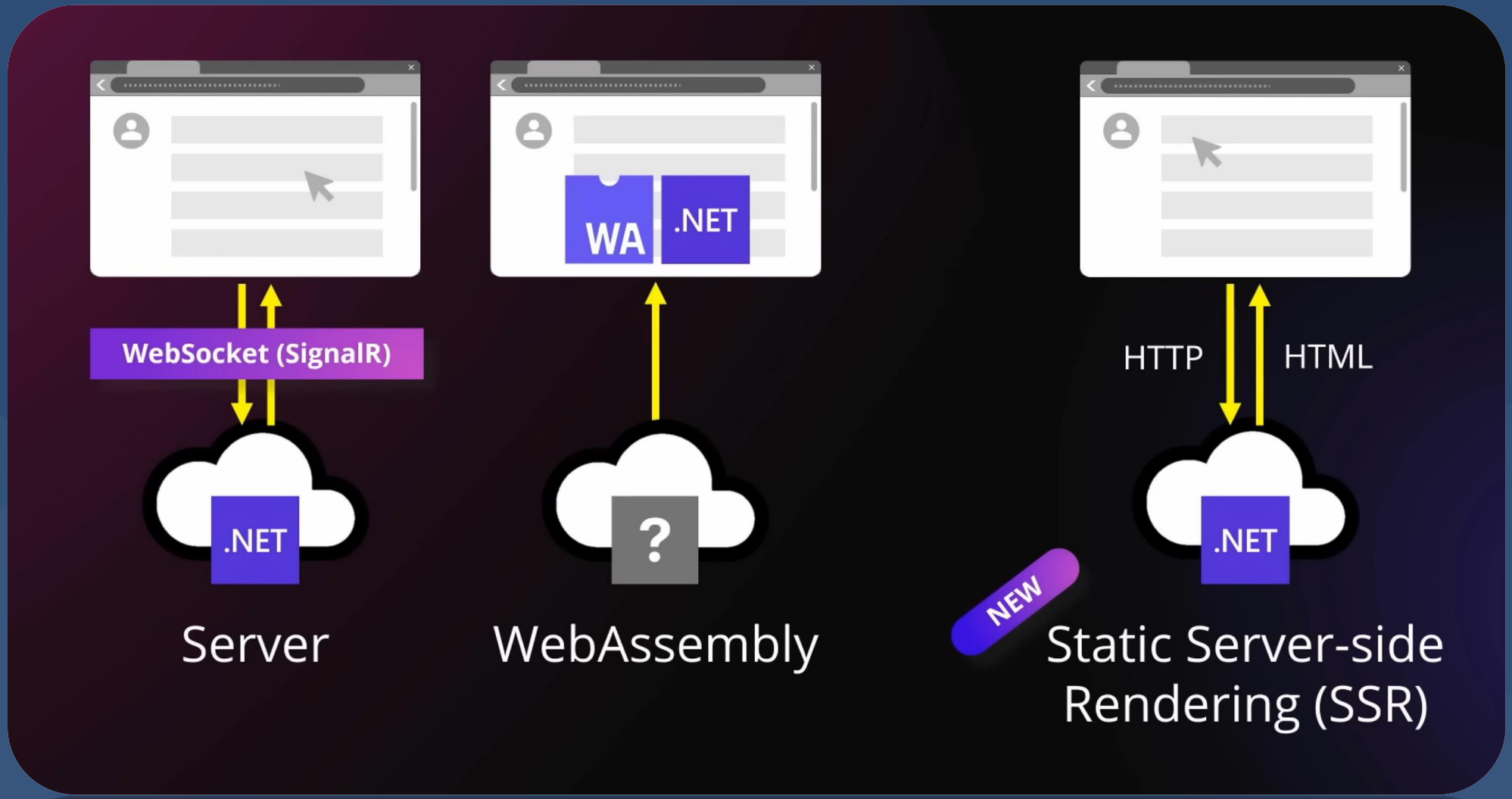
Enhancements

- Generate static HTML content with components
- QuickGrid
- Sections
- Route to named element
- Monitor circuit activity
- Improved authentication

WebAssembly

- Jiterpreter
- Hot reload improvements
- SIMD & exception handling enabled by default
- CSP compatibility
- Webcil packaging

Blazor Render Models



.NET MAUI Overview

- Cross Platform UI Development
- Windows, Mac, Android, iOS
- MAUI is the continuation of the Xamarin Forms technology
- “Multi-Platform App UI”
- Used internally at Microsoft for things like the M365 admin app and Azure admin app
- External customers, like NBC Sports

A Unified Rich UI Platform

MAUI's Popularity

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Top 2

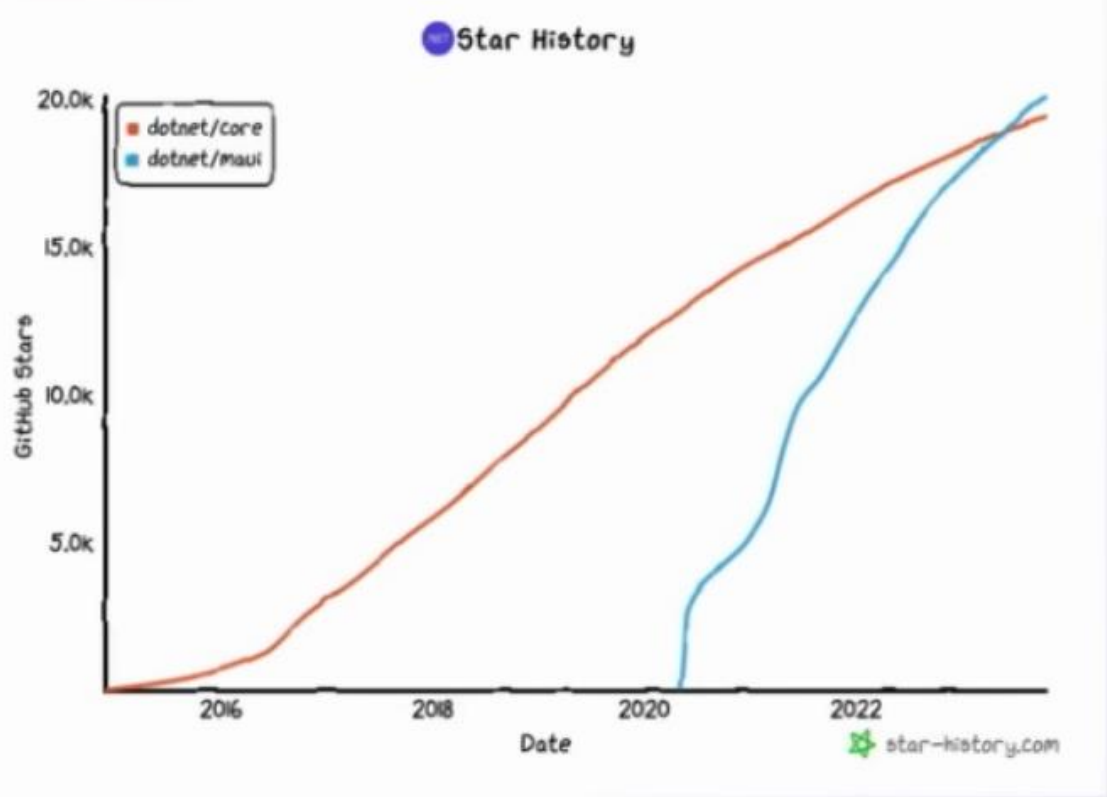
Active GitHub users in dotnet

Top 2

Most active in .NET Foundation

Top 5

Most active C# repo on GitHub October 2023



1600+ PRs and **600+ Issues Closed** in .NET 8

github.com/dotnet/maui

.NET MAUI in .NET 8

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Performance

Quality

Ecosystem

Hybrid Apps

Developer Experience

.NET MAUI in VS Code

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- MAUI extensions are coming for VS Code
- This is now available as a preview

Cloud Native

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Observability

- **Built in metrics with dimensions**
- **DI integration for metrics**
- **Better Logging support** (faster, can object serialization)
- **Enrichment**
- **Redaction**
- **Testing fakes for Logging & Metrics**

Resiliency

- **New Polly based resiliency packages**
- **SignalR Stateful Reconnect**

Scalability

- **AOT** (increased density)
- **Performance**
- **Chiseled Ubuntu**

Manageability

- **Certificate auto-rotation support in Kestrel**

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.NET Aspire

A cloud ready stack for building observable, production ready, distributed applications

First Preview Available Today

aka.ms/dotnet-aspire

Engage with team on GitHub

github.com/dotnet/aspire

Containers

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Hardened

- Non-Root Base Images
- USER "app"
- Default port - 8080
- Mariner distroless

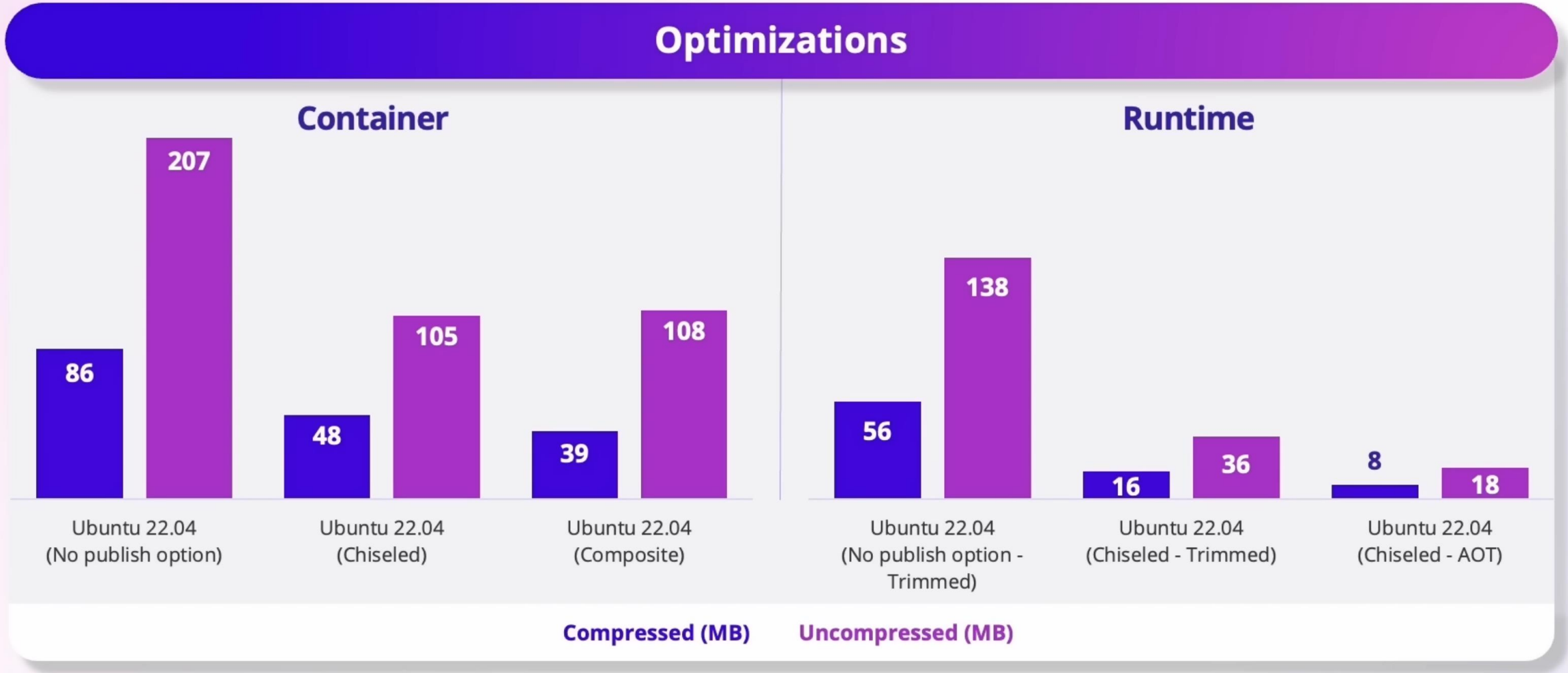
Smaller

- AOT base images
- "Composite" base images
- "extra" base images
- Distroless / Chiseled

More Productive

- Publish with .NET SDK
- Cross compilation
- Non-root by default
- Supports all Azure auth

Container Size Improvements



Other Announcements

CODE Training:

Development with OpenAI, ChatGPT, Azure OpenAI, and more...

AI Executive Briefings

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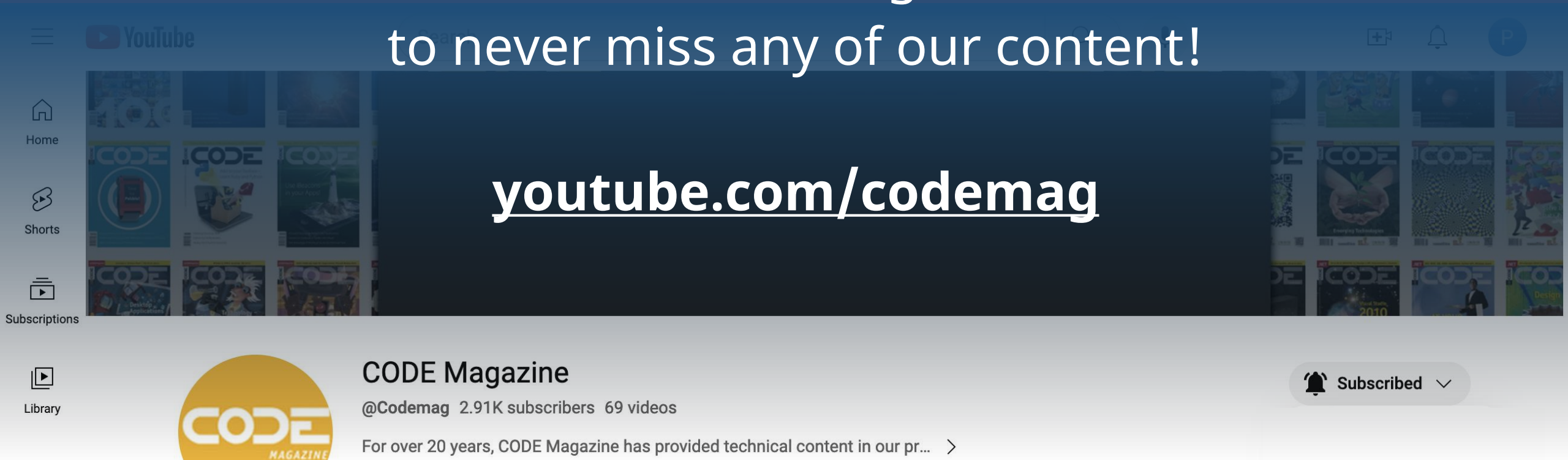

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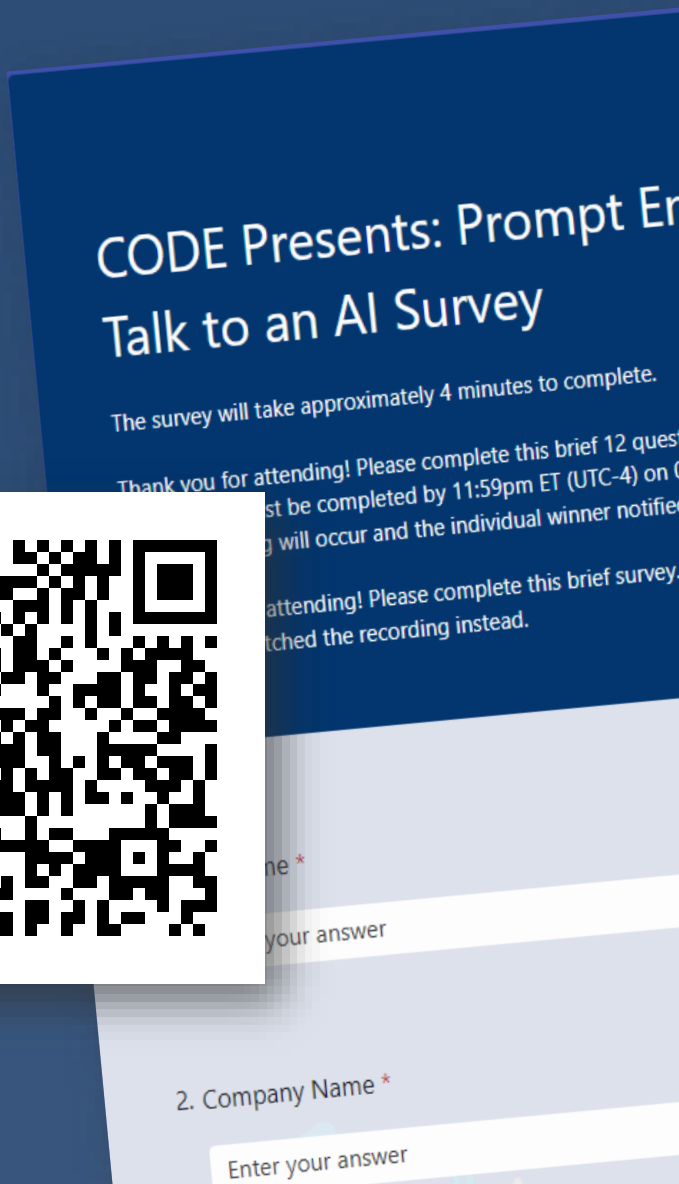

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