Microsoft

.NET on Azure

Various options to run your legacy .NET Apps and Cloud native apps on Azure

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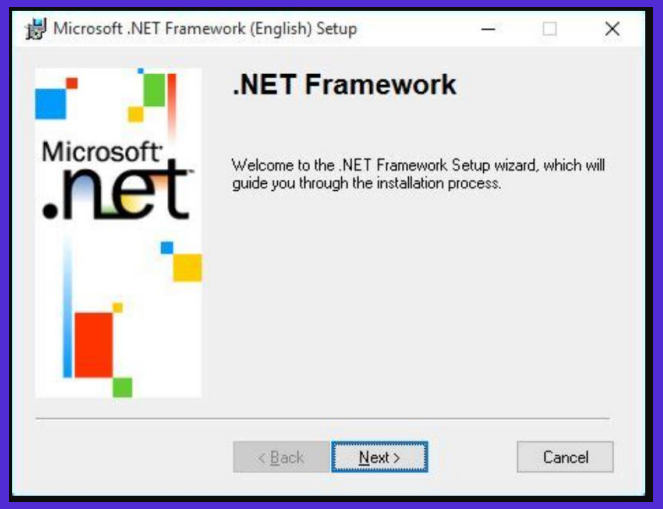
Cloud Solution Architect, Microsoft
maheskblr

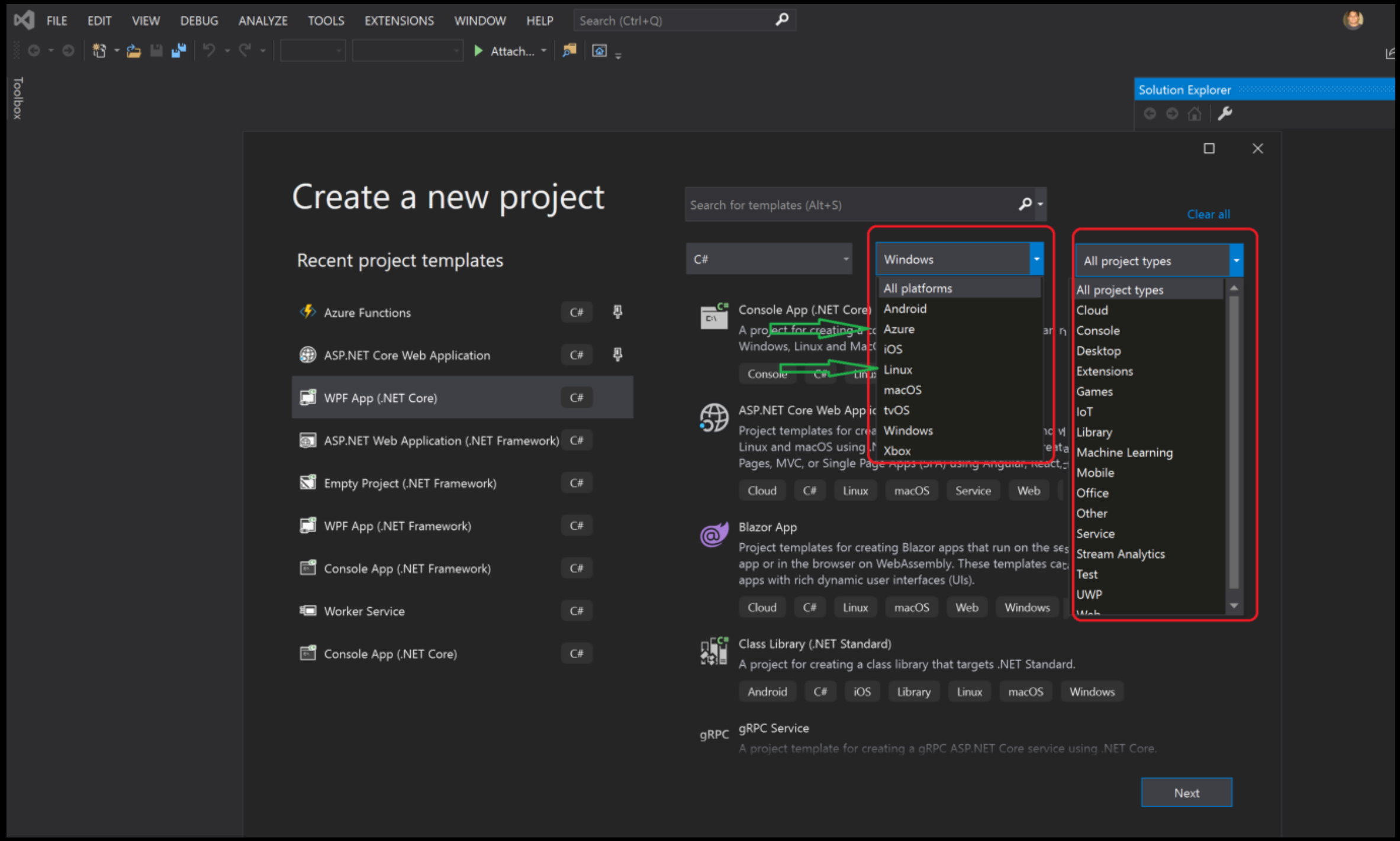
Azure



.NET

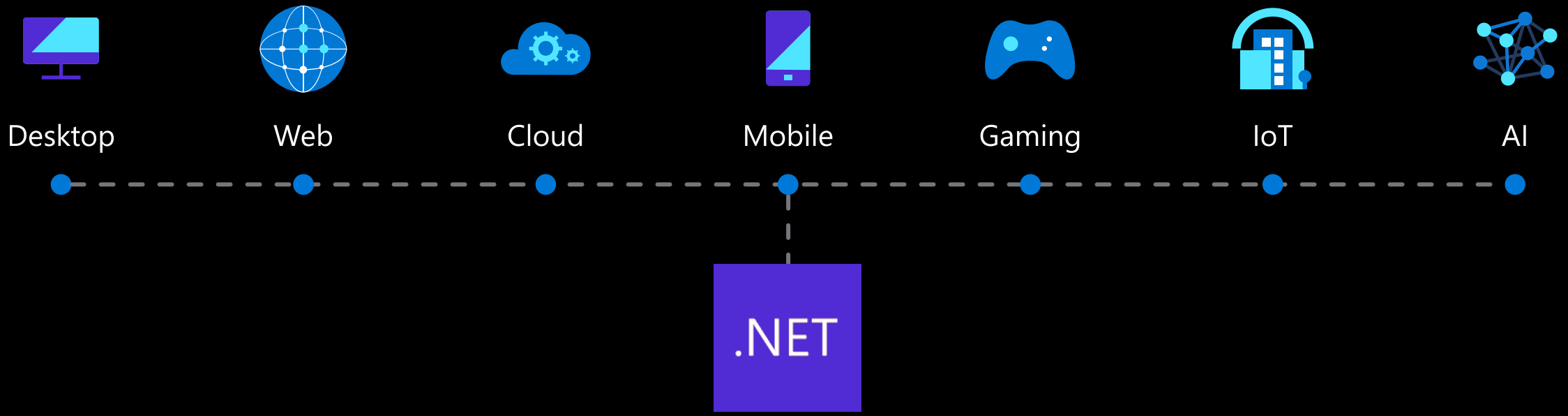
Free. Cross-platform. Open source. A developer platform for building all your apps.

www.dot.net

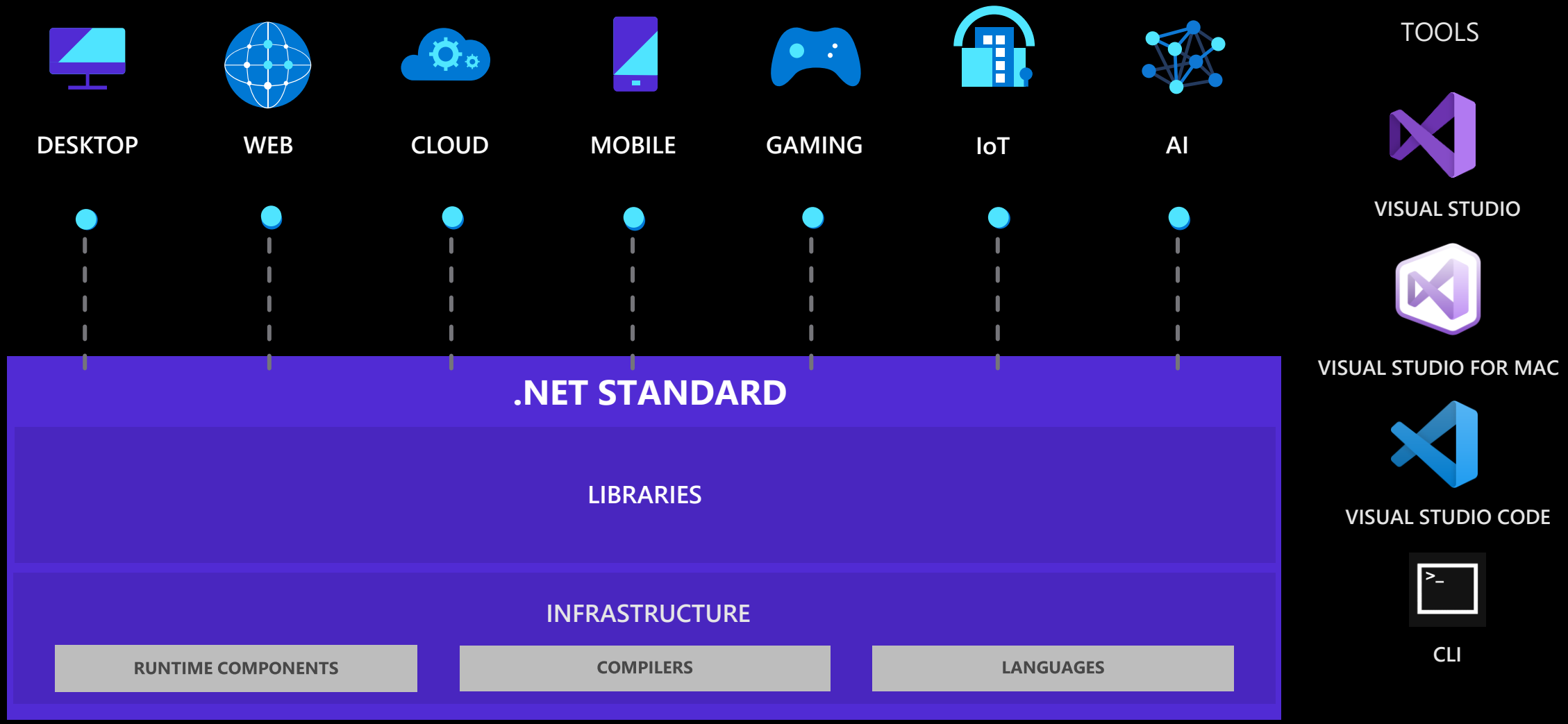

FILE EDIT VIEW DEBUG ANALYZE TOOLS EXTENSIONS WINDOW HELP
Search (Ctrl+Q)
Attach...
Toolbox
Solution Explorer
Create a new project
Recent project templates
Azure Functions C#
ASP.NET Core Web Application C#
WPF App (.NET Core) C#
ASP.NET Web Application (.NET Framework) C#
Empty Project (.NET Framework) C#
WPF App (.NET Framework) C#
Console App (.NET Framework) C#
Worker Service C#
Console App (.NET Core) C#
Search for templates (Alt+S)
Clear all
C#
Windows
All platforms
Android
Azure
iOS
Linux
macOS
tvOS
Windows
Xbox
All project types
All project types
Cloud
Console
Desktop
Extensions
Games
IoT
Library
Machine Learning
Mobile
Office
Other
Service
Stream Analytics
Test
UWP
Console App (.NET Core)
Windows, Linux and Mac
Console C# Linux
ASP.NET Core Web App
Linux and macOS using
Pages, MVC, or Single Page
Cloud C# Linux macOS Service Web
Blazor App
Project templates for creating Blazor apps that run on the
app or in the browser on WebAssembly. These templates
apps with rich dynamic user interfaces (UIs).
Cloud C# Linux macOS Web Windows
Class Library (.NET Standard)
A project for creating a class library that targets .NET Standard.
Android C# iOS Library Linux macOS Windows
gRPC
gRPC Service
A project template for creating a gRPC ASP.NET Core service using .NET Core.
Next

.NET

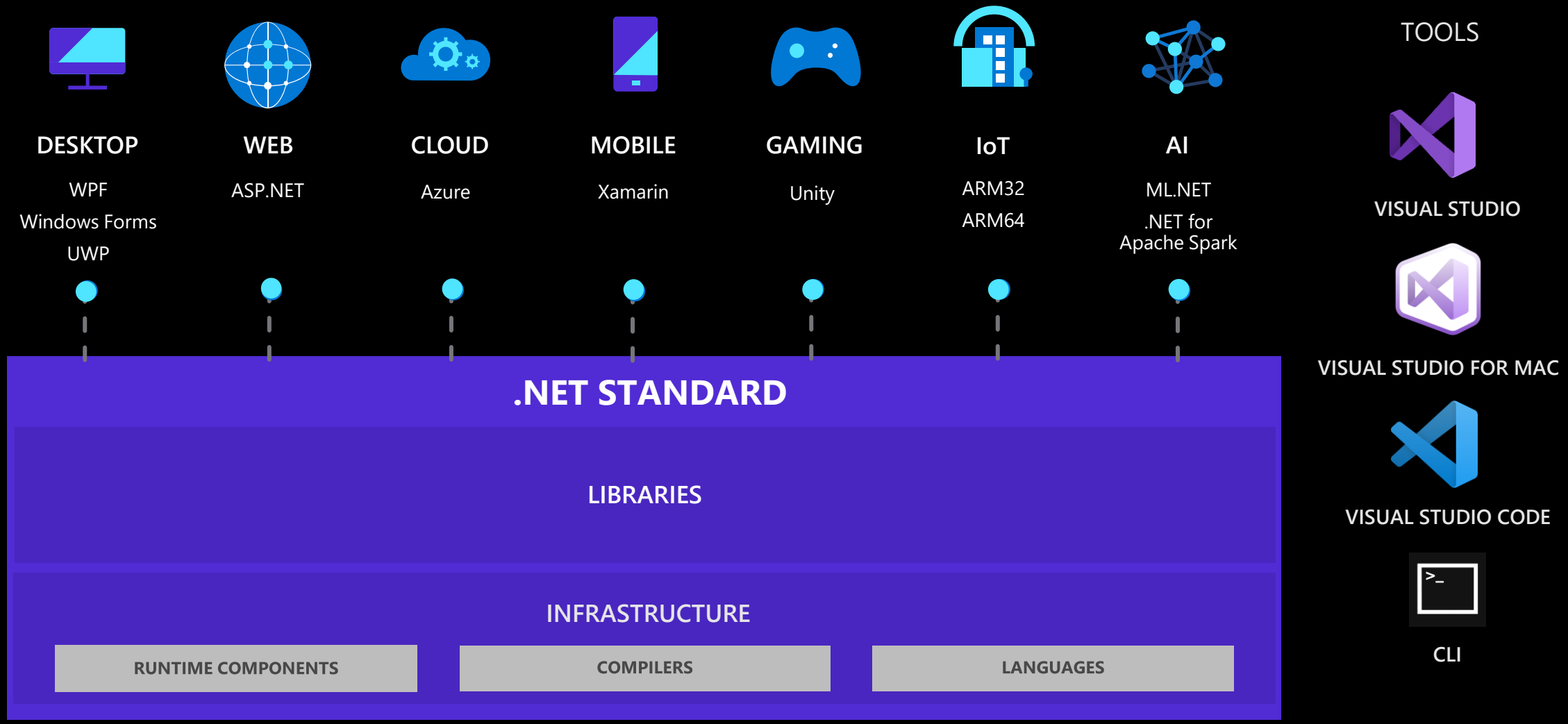
Your platform for building anything

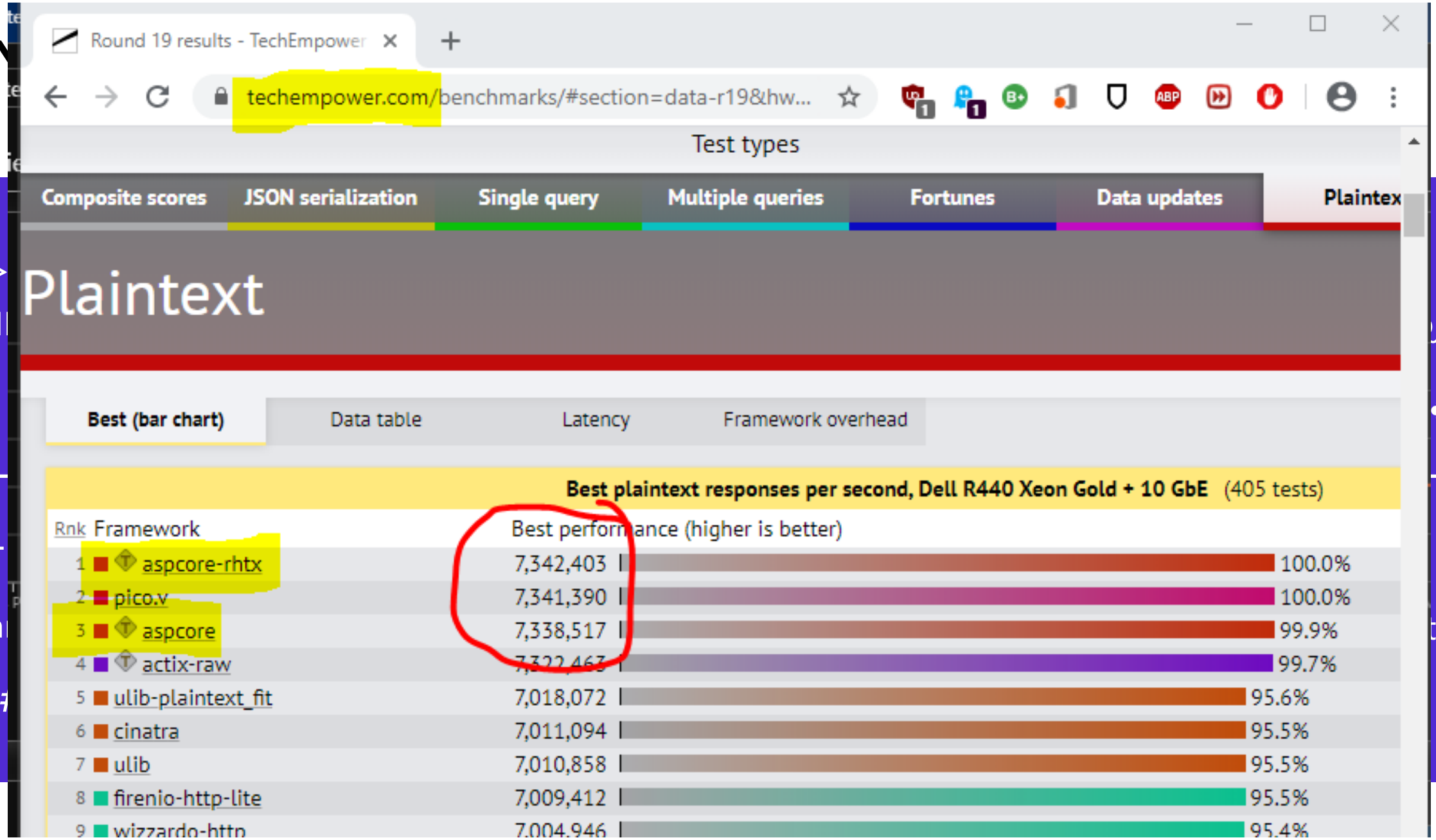


.NET – A unified platform

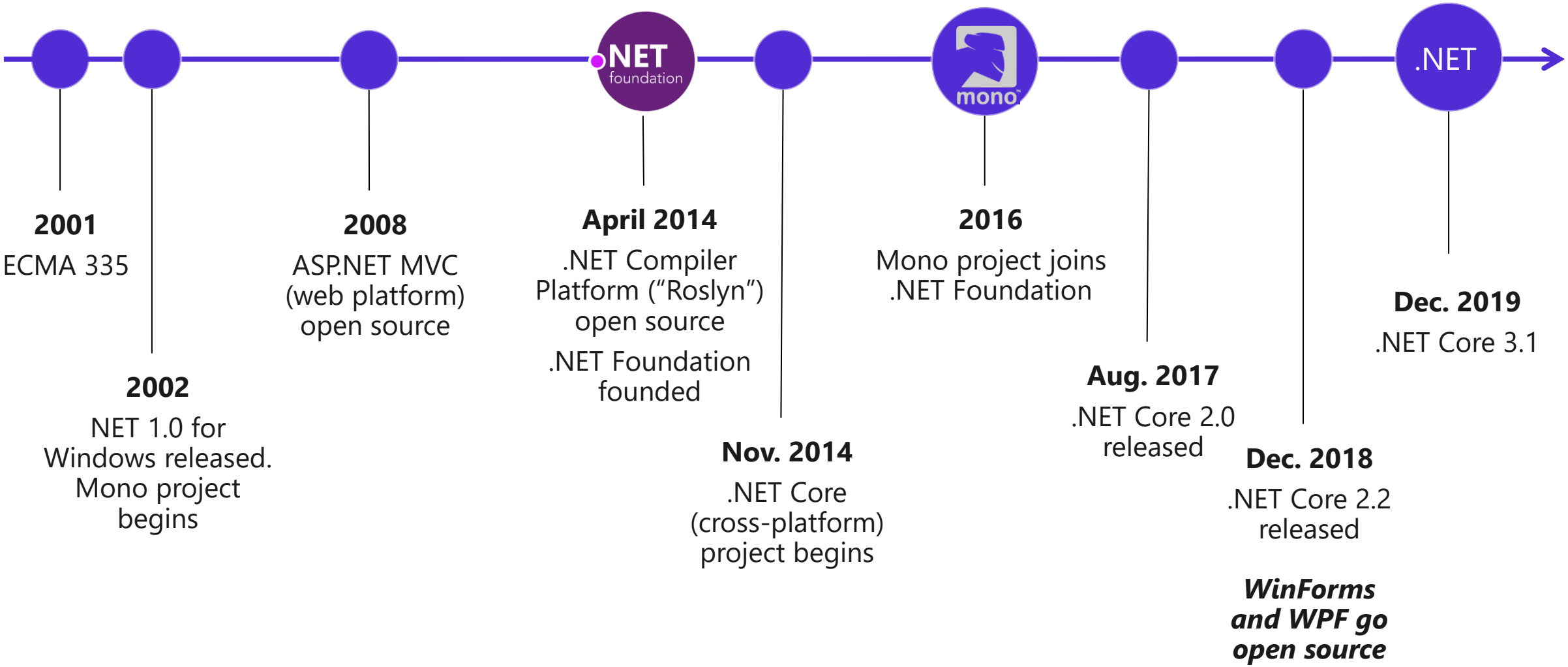


.NET Standard– A unified platform

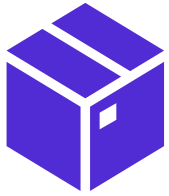



Round 19 results - TechEmpower
techempower.com/benchmarks/#section=data-r19&hw...
Test types
Composite scores
JSON serialization
Single query
Multiple queries
Fortunes
Data updates
Plaintex
Plaintext
Best (bar chart)
Data table
Latency
Framework overhead
Best plaintext responses per second, Dell R440 Xeon Gold + 10 GbE (405 tests)
Rnk Framework
Best performance (higher is better)
1 aspcore-rhtx 7,342,403 100.0%
2 pico.v 7,341,390 100.0%
3 aspcore 7,338,517 99.9%
4 actix-raw 99.7%
5 ulib-plaintext_fit 7,018,072 95.6%
6 cinatra 7,011,094 95.5%
7 ulib 7,010,858 95.5%
8 firenio-http-lite 7,009,412 95.5%
9 wizzardo-http 7,004,946 95.4%

.NET Open Source Journey



.NET Core 3 for Windows Desktop



Deployment Flexibility

Side-by-side deployment, self-contained EXEs

Install machine global or app local framework

Windows 10

Access modern Windows 10 APIs from WPF and WinForms

Use native Windows 10 controls via XAML islands

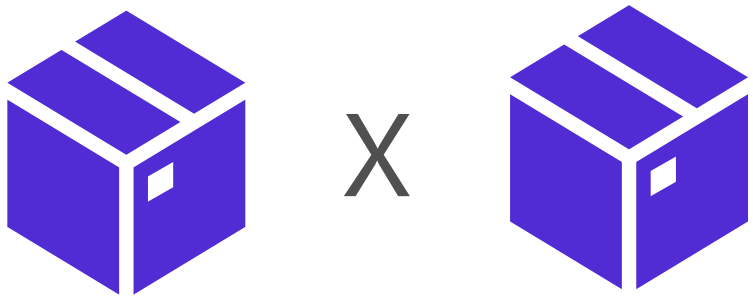
Open Source

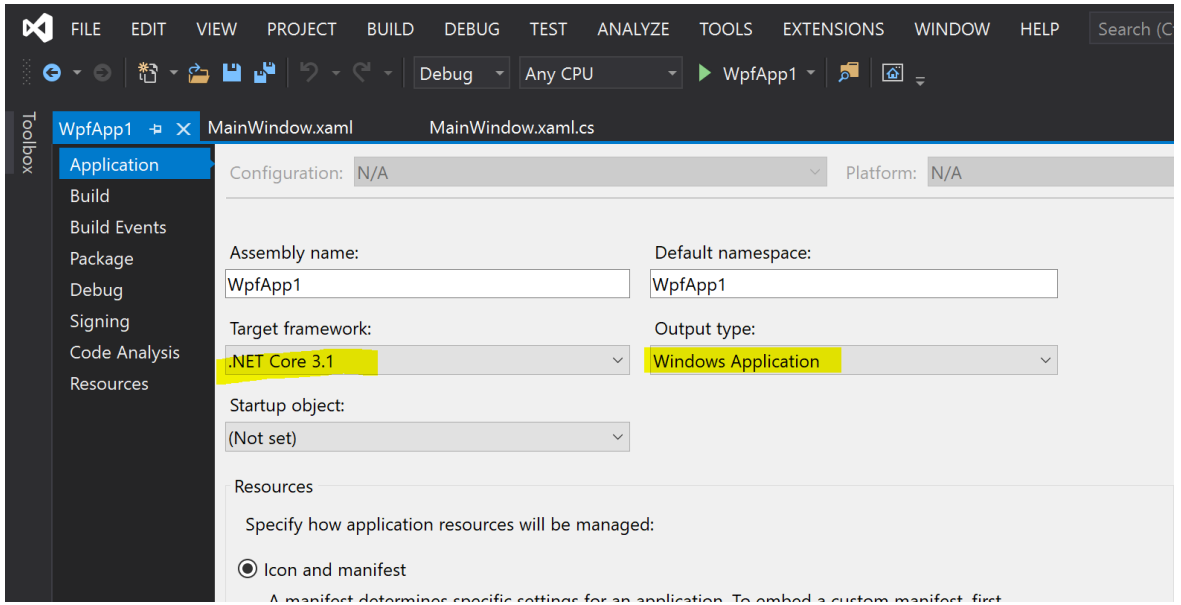
WPF and WinForms projects also open source on GitHub

Take advantage of performance, runtime and API improvements happening in .NET Core

Why Windows Desktop on .NET Core?

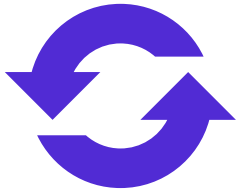
- Deployment Flexibility
  - Side-by-side support
  - Machine global or app local framework
  - Self-contained EXEs
- Core runtime and API improvements
- Performance





ASP.NET Core 3

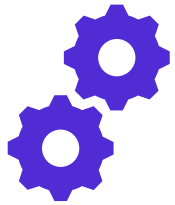
www.asp.net



gRPC

High performance contract-based RPC services with .NET

Works across many languages and platforms



Worker Service

Starting point for long running back processes like Windows Server or Linux daemon

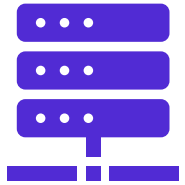
Producing or consuming messages from a message queue

Web API's + Identity

Add security and authentication to Web API's

ASP.NET Core 3 Blazor

www.blazor.net



Full stack web development with C#

You don't need to know AngularJS, React, Vue, etc.

Take advantage of stability and consistency of .NET

Runs in all browsers

Strongly typed on the client and server

Share C# code with the client and server

Web Assembly (In Preview, Release in May 2020)

Native performance

Requires no plugin or code transpilation

Machine Learning with ML.NET

dot.net/ml

Built for .NET developers

Create custom ML models using C# or F# without having to leave the .NET ecosystem

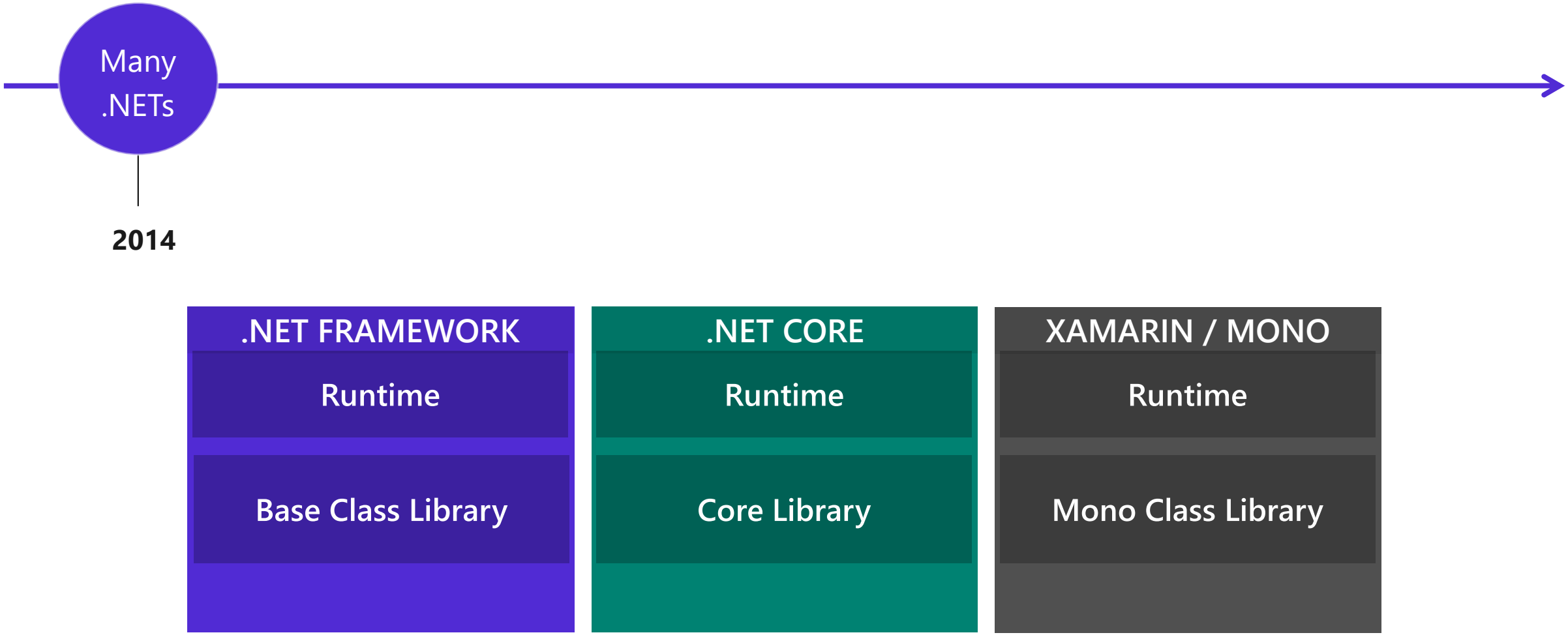
Custom ML made easy with AutoML

Visual Studio Model Builder and CLI make it super easy to build custom ML Models

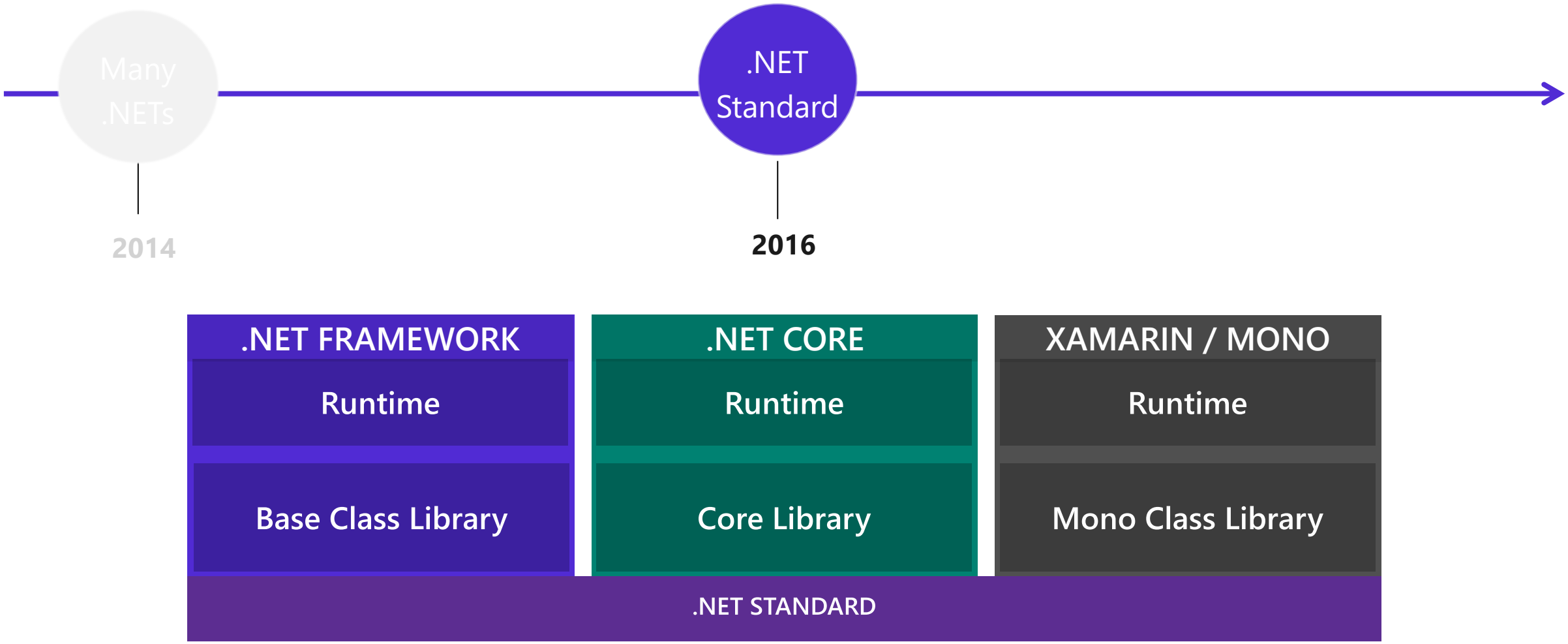
Extended with TensorFlow & more

Leverage other popular ML frameworks (TensorFlow, ONNX, and more)

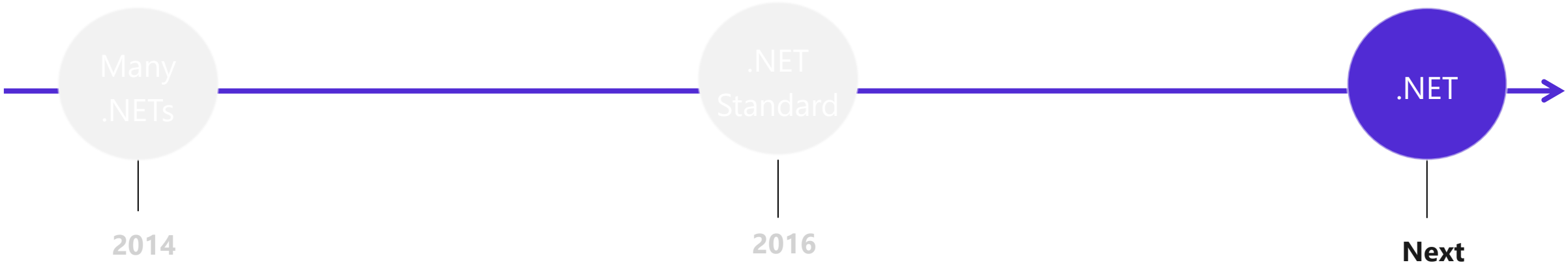
The .NET Roadmap

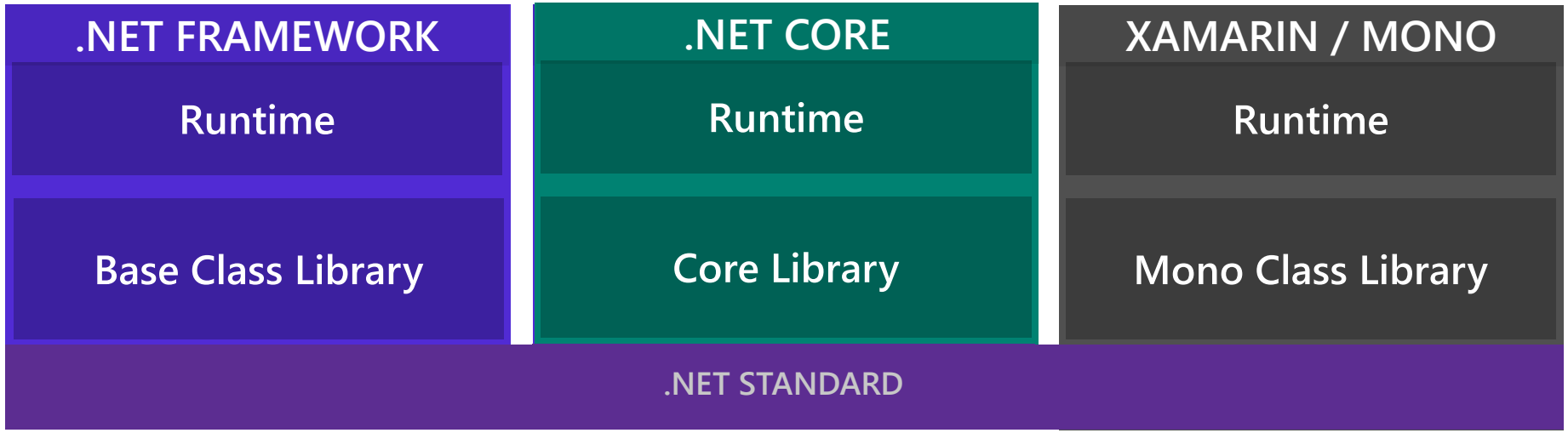


The .NET Roadmap

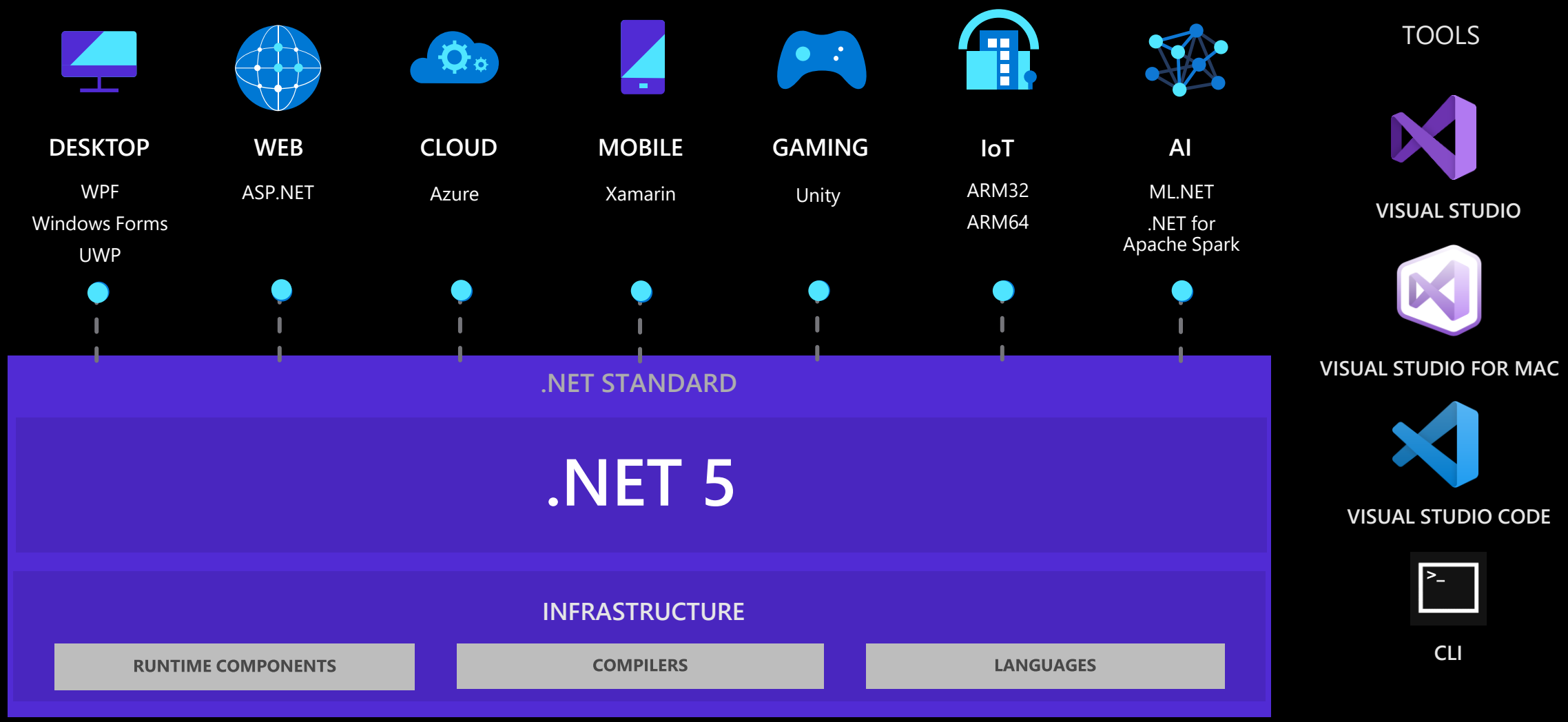


Introducing .NET 5





Introducing .NET 5 – A unified platform



What is *not* in .NET 5?

- Web Forms, WCF Server and Windows Workflow remain on .NET Framework 4.8 **only**. There are no plans to port these.

- Recommendations
  - ASP.NET Blazor for ASP.NET Web Forms (we have a migration guide)
  - gRPC for WCF Server and Remoting (we have a migration guide)
  - Open Source Core Workflow for Windows Workflow (WF): https://github.com/UiPath/corewf

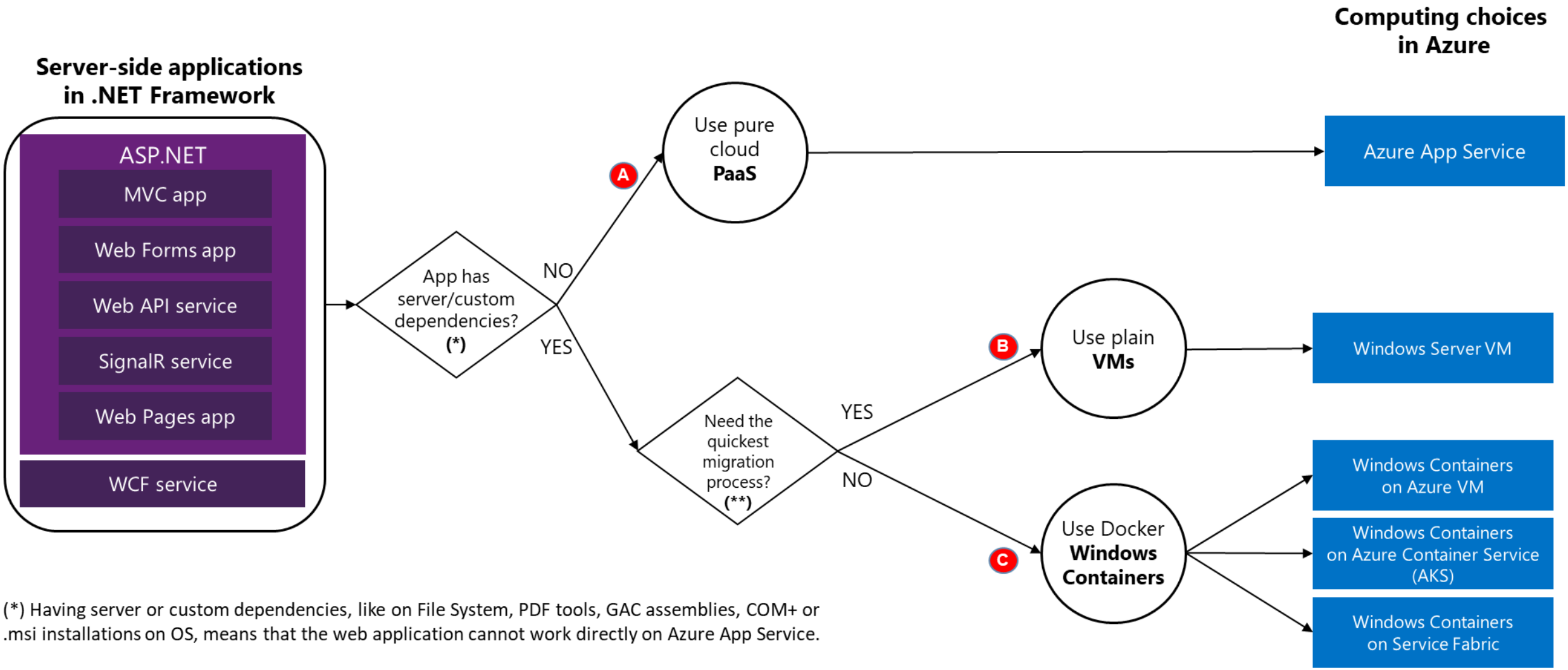
Future of .NET Framework?

- .NET Framework 4.8 is the last major version of .NET Framework on Windows
- Support policy remains the same:
  - Will always be in Windows
  - Will be patched with Windows
  - Will be supported with Windows
- Keep existing applications on .NET Framework
- Recommend .NET Core for new applications

- **>>>> .NET Core is the future**

https://devblogs.microsoft.com/dotnet/net-core-is-the-future-of-net/

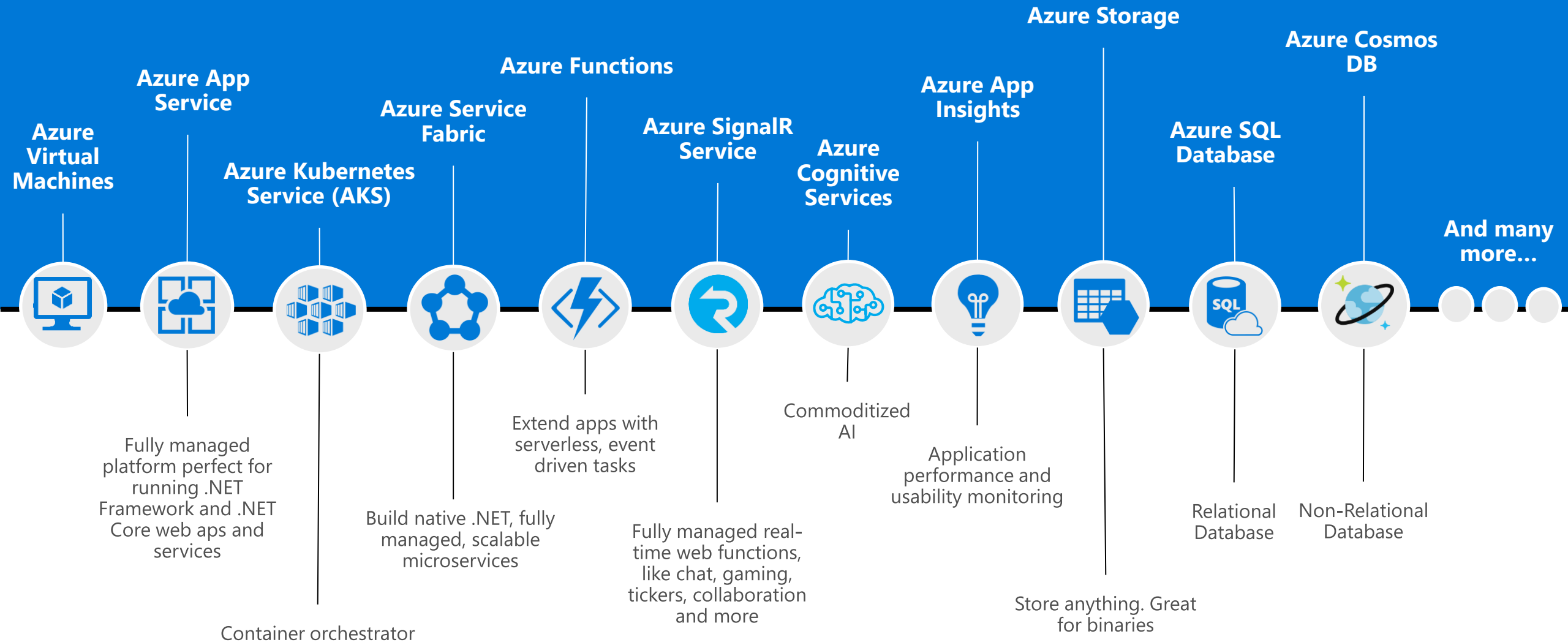
Azure compute decision tree for existing .NET Framework apps migration



(*) Having server or custom dependencies, like on File System, PDF tools, GAC assemblies, COM+ or .msi installations on OS, means that the web application cannot work directly on Azure App Service.

(**) Using Docker with Windows Containers is not the quickest migration path because it requires certain learning curve and minor changes in code, even when it won't require to re-architect your application.
There are many deployment benefits, when using Docker Containers compared to plain Azure VMs, which make your applications *Cloud DevOps-Ready*.
On the other hand, plain VMs are familiar, pretty similar to on-premises servers/VMs and quick to migrate to.

Azure is the best cloud for .NET



Azure Services Recommendations for .NET Apps

Azure Services

Application Architecture

	Azure Virtual Machines (VMs)	Azure App Service	Azure Kubernetes Service (AKS)	Azure Functions	Azure Batch	Azure Container Instances (ACI)
Web apps (Monolithic architecture)	✓	✓ Recommended	✓			
N-Tier apps (Coarse-grain services)	✓	✓ Recommended	✓ Large app portfolio Recommended			
Cloud-Native (Microservices architecture)			✓ Recommended	✓ Azure **event-driven** Recommended		
Batch / Jobs (Background tasks)	✓	✓	✓	✓ Application's **background tasks** Recommended	✓ **Large Batch scale** Recommended	✓

✓ Recommended ✓ Possible

DEMO#1

Deploy a sample ASP.NET Core application to App Service

Maturity model for .NET application modernization

Existing apps
.NET web apps (on-premises)

Monolithic / N-Tier architectures

On-premises

Cloud Infrastructure-Ready

Monolithic / N-Tier architectures

IaaS
(Infrastructure as a Service)

VMs

Azure

Cloud-Optimized
PaaS

Monolithic / N-Tier architectures

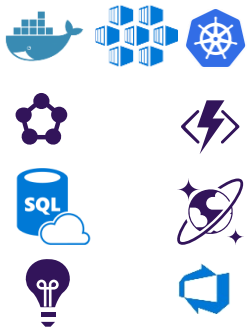
Managed services

And Windows Containers

Azure

Cloud-Native
PaaS for microservices and serverless

Microservices and **serverless** architectures



PaaS for containerized microservices
+ Serverless computing
+ Managed services

Azure

Base Cloud Environment and cross-cutting concerns: Network, Hybrid-cloud, Identity/Auth, Cost control and Operations model

Migrate / Rehost

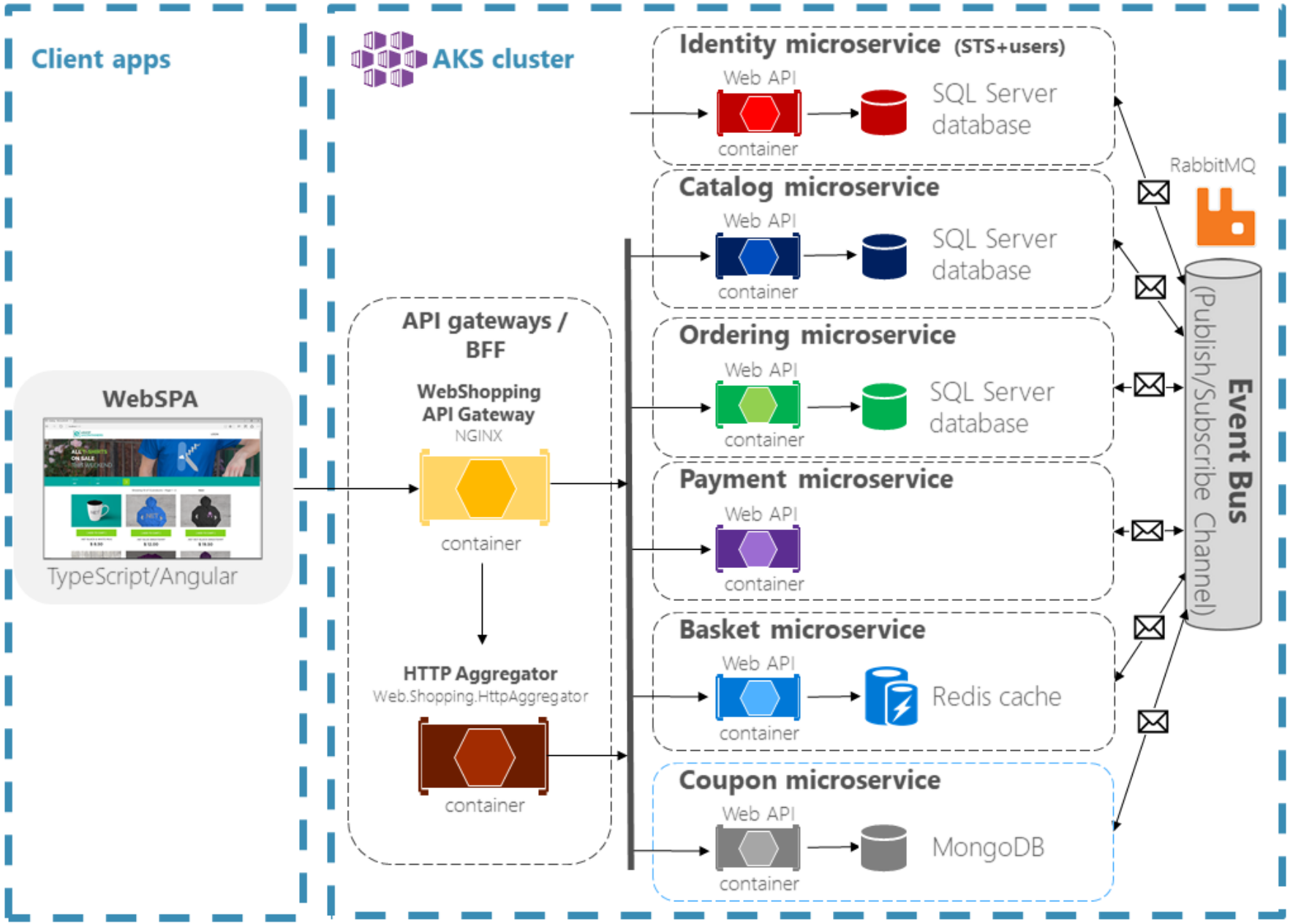
Modernize

Minimal code changes

Architected for the cloud, new code

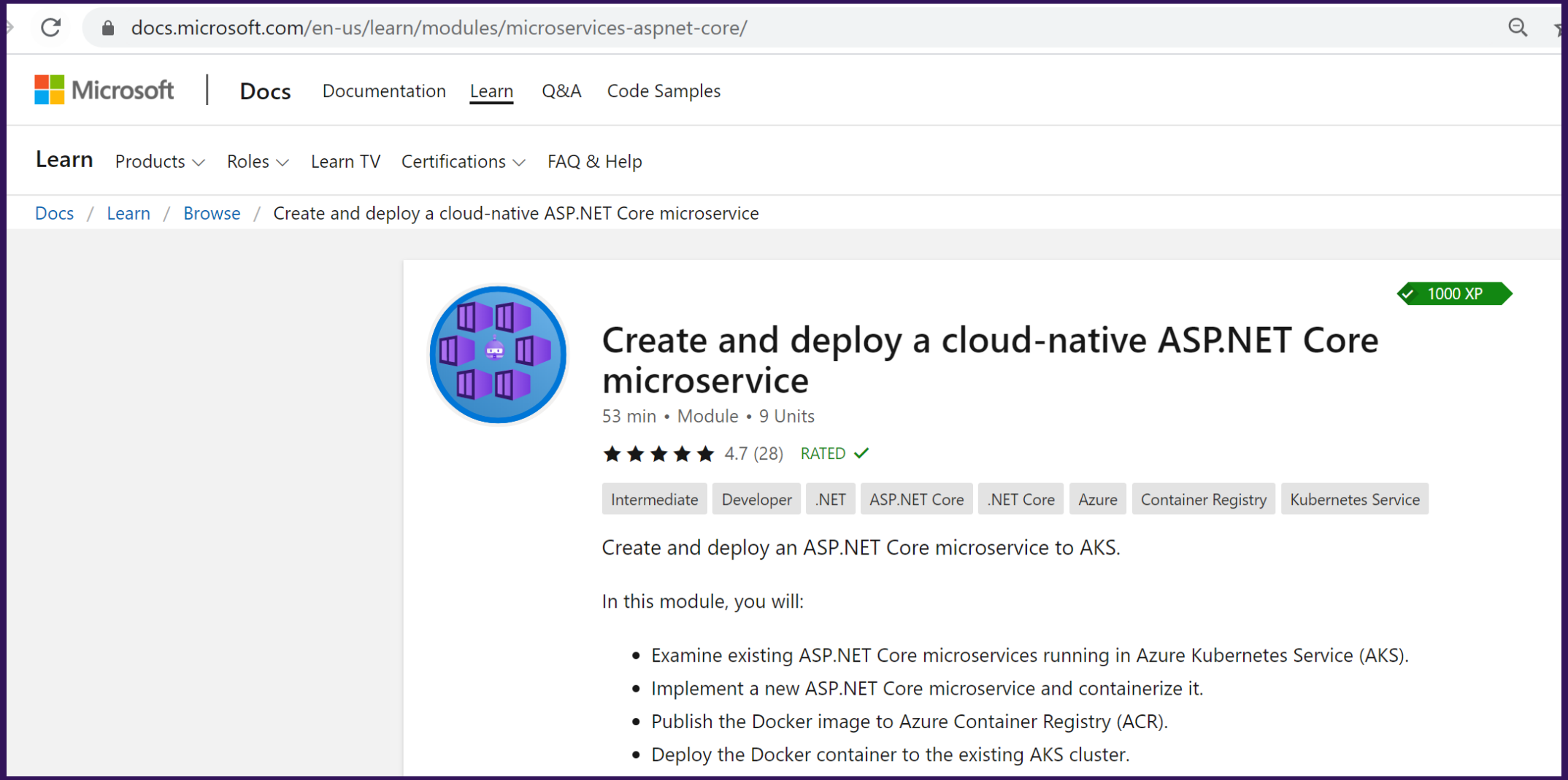
DEMO#2

Deploy a sample ASP.NET Core application to Azure Kubernetes Service (cloud native)



eShopOnContainers

https://docs.microsoft.com/en-us/learn/modules/microservices-aspnet-core/



Thank you

www.dot.net/architecture

https://appmigration.microsoft.com/

maheskblr