Exciting times ahead for .NET

.NET FRAMEWORK

Multi-purpose, comprehensive framework for desktop and web applications

MODERN DEVICE EXPERIENCES

UNIVERSAL WINDOWS PLATFORM
Unified development across Windows devices

XAMARIN
Extend your reach to any device with .NET

MODERN CLOUD EXPERIENCES

.NET CORE
Cross-platform, high performance .NET

ASP.NET CORE
Cloud optimized framework for micro services

.NET today—the family gets bigger

.NET FRAMEWORK	.NET CORE	XAMARIN
Platform for .NET applications on Windows	Cross-platform and open source framework optimized for modern app needs and developer workflows	Cross-platform and open source Mono-based runtime for iOS, OS X, and Android devices
Distributed with Windows	Distributed with app	Distributed with app

.NET innovation

.NET FRAMEWORK

- WPF
- Windows Forms
- ASP.NET

.NET CORE

- UWP
- ASP.NET Core

XAMARIN

- iOS
- OS X
- Android

TOOLS

Visual Studio

Visual Studio Code

Xamarin Studio

.NET STANDARD LIBRARY
One library to rule them all

COMMON INFRASTRUCTURE

| Compilers | Languages | Runtime components |

.NET innovation

.NET FRAMEWORK

UNIVERSAL WINDOWS PLATFORM

- New .NET native tools
- HoloLens / Xbox support
- Coming soon: Runtime application analysis

DESKTOP DEVELOPMENT

- WPF improvements like per-monitor DPI and soft keyboard support
- ClickOnce—TLS 1.1/1.2 support

COMMON

- XAML edit-and-continue
- Desktop to UWP bridge ("Centennial")
- XAML language service updates
- Cryptography enhancements

.NET innovation

.NET CORE

.NET CORE

- New open source and cross-platform .NET runtime and library stack
- High performance, including native compilation
- New set of command-line tools—".NET Core CLI"—for compiling and publishing apps
- Supports app local, "shared framework," and Docker deployment

ASP.NET CORE

- ASP.NET Core builds on top of .NET Core
- Single framework for web pages, services, and microservices
- Introduces concept of middleware pipeline, enabling you to inject as little or much functionality as needed
- Fully integrates with CLI tooling and uses the shared framework
- Takes advantage of .NET Core performance and includes a very high performance web server, built on LibUV

.NET innovation

XAMARIN

CORE PLATFORM

- Xamarin SDK now open source as part of .NET Foundation
- Xamarin Forms updates

TOOLS

- iOS Simulator
- iOS USB Remoting
- Xamarin Forms previewer
- Test recorder for Visual Studio

LIFECYCLE

- Visual Studio Team Services, HockeyApp and Xamarin Test Cloud integration

Tools for any developer and any app

Visual Studio	Visual Studio Code	Xamarin Studio	Command Line Interface

OPEN
- Any App: Desktop, Mobile, Server, Cloud
- Any Developer: IDE, Code editor, CLI
- Any OS: Windows, OS X, Linux

POWERFUL
- Easy and quick installation
- Better productivity with reimagined inner loop
- First-class .NET experiences

.NET Core

Cross Platform
You can create .NET Core apps that run on Windows, Linux and Mac.

Open Source
Runtime, libraries, compiler, languages and tools are all open source on GitHub where contributions are accepted, tested and fully supported

Lightweight
No impact deployment and a modular development model where you only take dependencies on the minimal set of packages you need

Modern
Multiple language support with C#, VB, F# and modern constructs like generics, Language Integrated Query (LINQ), async support and more

Flexible
.NET Core supports multiple editors and development environments with a simple set of command line tools available across operating systems

Familiar
Reuse code and skills using the same languages, compilers and libraries across the multiple .NET platforms

Fast
Native compilation across platforms and high performance ASP.NET Core is 8x faster than Node.js and 3x faster than Go

Runtime & Languages

Improved 64-bit Jit Compiler
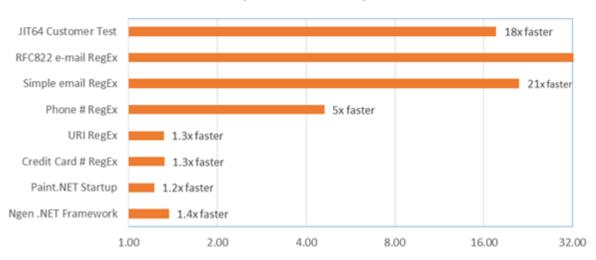- *a.k.a RyuJIT*
- *SIMD acceleration*

C# 6 , VB 14
- New language features
- Debugging improvements including lambdas and LINQ support, REPL, new refactorings, live code analysis
- *C# 7 in progress: pattern matching, tuples*

F# 4.0
- Functional-first
- Interoperable with C# & VB
- Type System helps reduce bugs
- Reduce time/state dependencies
- *F# on .NET Core in progress*

Performance Improvement of RyuJIT over JIT64

Test	Improvement
JIT64 Customer Test	18x faster
RFC822 e-mail RegEx	
Simple email RegEx	21x faster
Phone # RegEx	5x faster
URI RegEx	1.3x faster
Credit Card # RegEx	1.3x faster
Paint.NET Startup	1.2x faster
Ngen .NET Framework	1.4x faster

```csharp
public override string ToString()
{
    return String.Format("({0}, {1})", X, Y);
}
```

```csharp
public override string ToString() => $"({X}, {Y})";
```

```fsharp
/// Calculates the sum of the lengths of the words that start with 'h'
let sumOfLengthsOfWords =
    array2
    |> Array.filter (fun x -> x.StartsWith "h")
    |> Array.sumBy (fun x -> x.Length)
```

F#

.NET Compiler Platform

a.k.a *Roslyn*
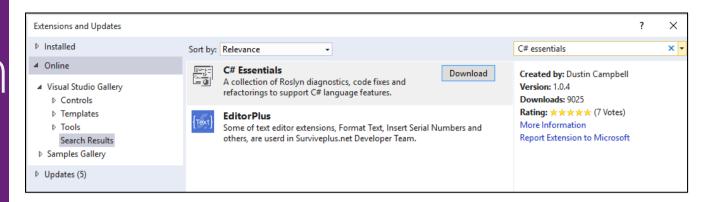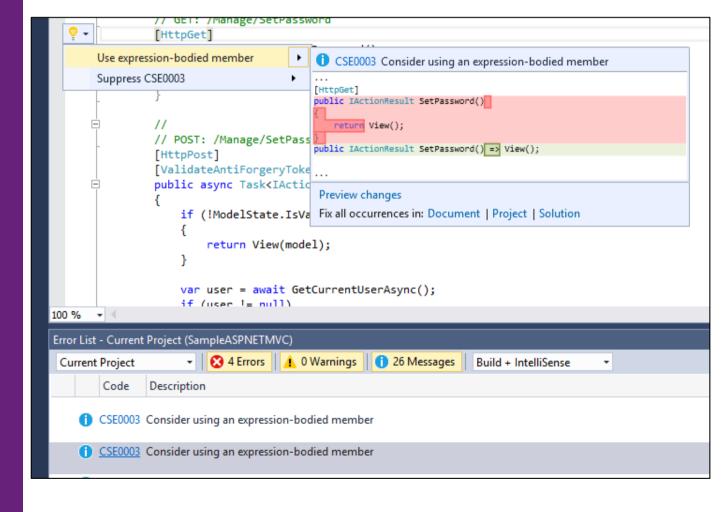
Ship more powerful tools faster

Code analyzers

- Plugins that provide live guidance within Visual Studio
- Enforce best practices for a library, an org or other domain

Code aware libraries

- = Library + Code Analyzer/Fix
- A library that provides guidance on correct use through embedded tooling and operates on the user's code in real time

Package Management

NuGet

- Package manager console... rewritten

- .NET Framework & .NET Core dlls

- No direct DLL references for .NET Core

- Indirect dependencies managed automatically

ASP.NET on Visual Studio 2015

Built in support for Bower & NPM
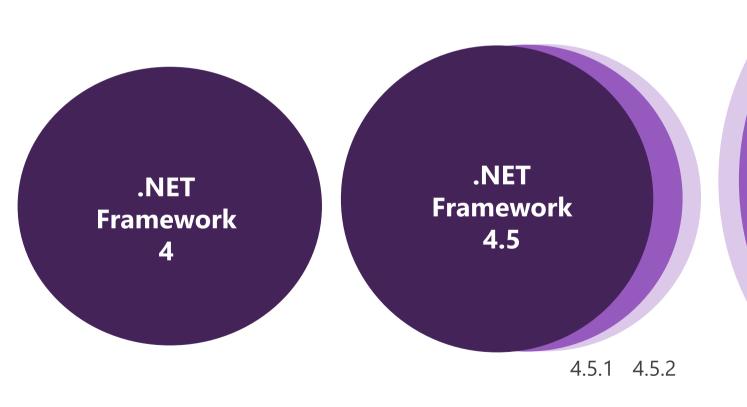
Demo
"Roslyn" Analyzers

Microsoft

.NET Framework 4.6

With over ~1B installations, we will continue to evolve .NET 4.x in a highly compatible manner

.NET Framework 4

.NET Framework 4.5

4.5.1   4.5.2

.NET Framework 4.6.2

- Highly compatible, in-place replacement for .NET 4, 4.5.X

- BCL & Crypto Improvements
- ASP.NET 4.6 & ASP.NET Core support
- Centennial Windows Bridge support

- Continues to leverage the investments on new compilers, Jit, and languages

4.6   4.6.1

WPF in .NET 4.6

Performance
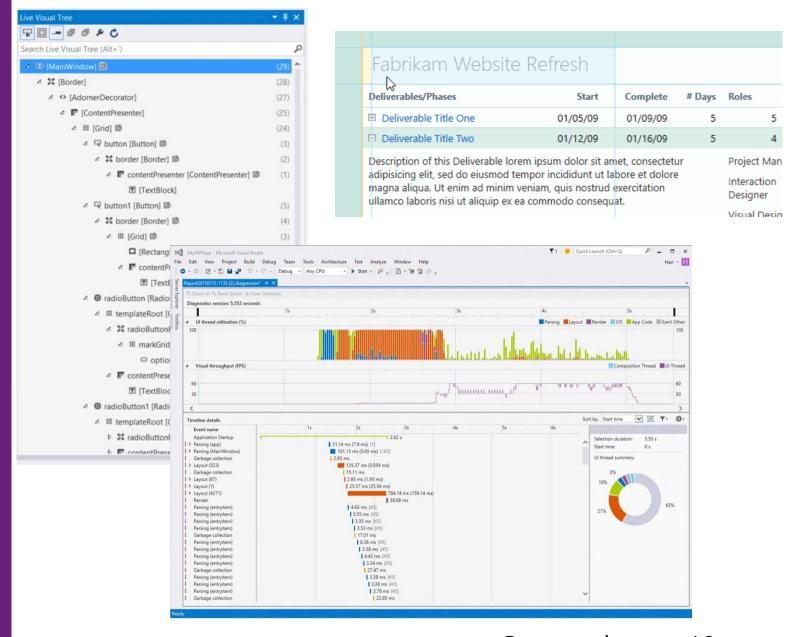
DirectX Interoperability

Modern Hardware
- Touch & HDPI

Tooling
- Blend for Visual Studio 2015
- Live Visual Tree
- UI Debugging tools for XAML
- Diagnostics timeline tool

Connect bugs >10 votes
reactivated for investigation
4/5 fixed of .NET 4.6

Windows Forms

Here to stay...
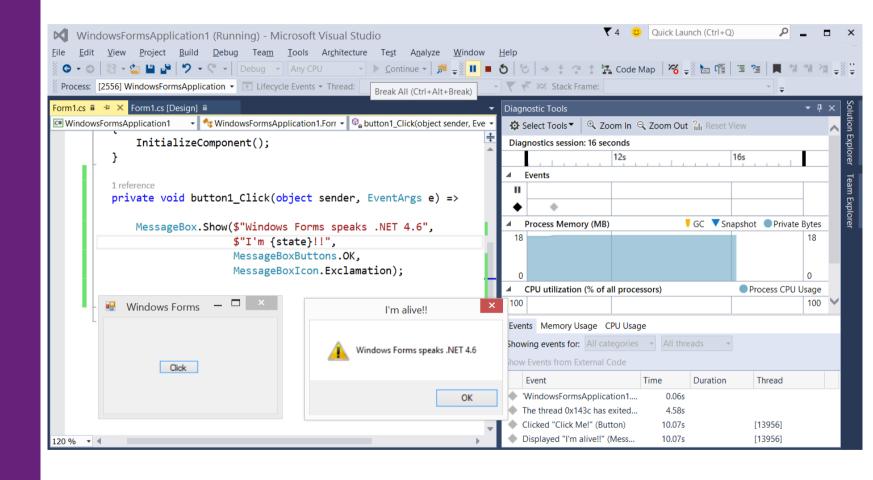
- LOB, Utilities, Maintenance,...

Great way of building desktop apps

- Modernize as appropriate to WPF/XAML or UWP
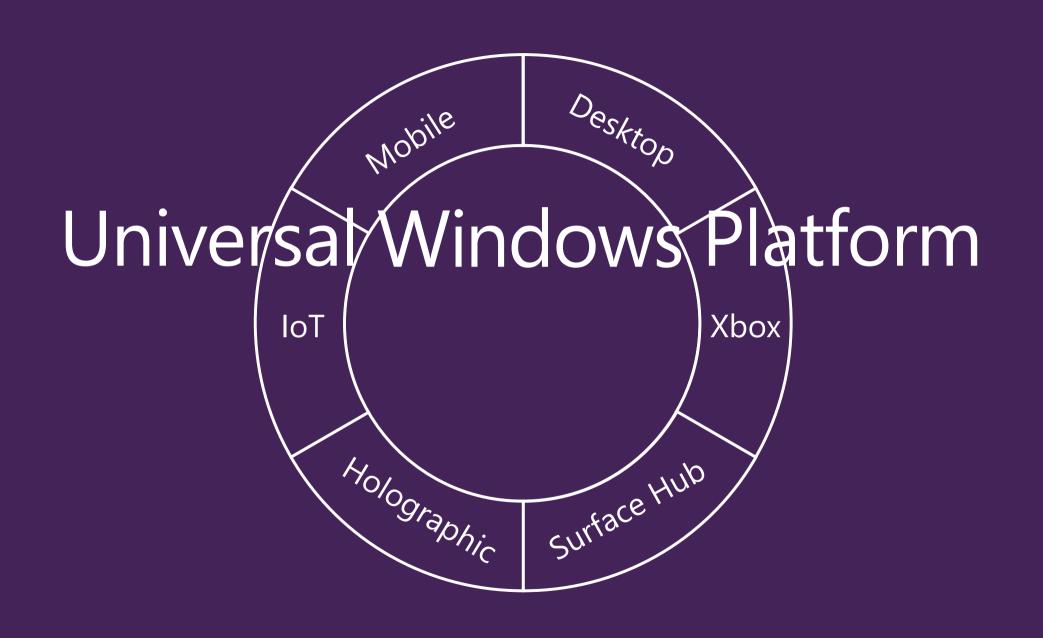
.NET Framework 4.6

- RyuJIT
- HDPI
- Roslyn

Demo
XAML / WPF debugging

Universal Windows Platform

Mobile

Desktop

Xbox

Surface Hub

Holographic

IoT

Windows 10 opportunity
One devices platform and ecosystem for the future

Large addressable market

Smart engagement

One Store, One Dev Center

One developer platform
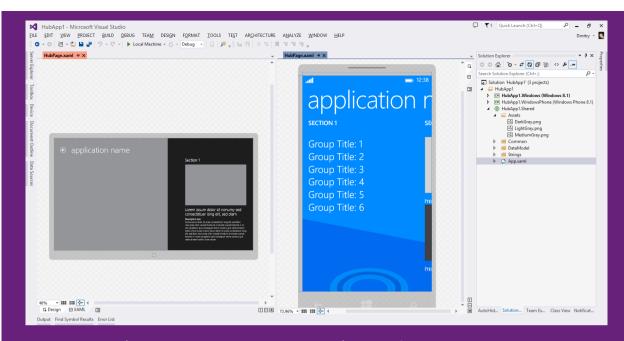
.NET UWP

Universal Windows Platform

.NET Native
Native code compilation
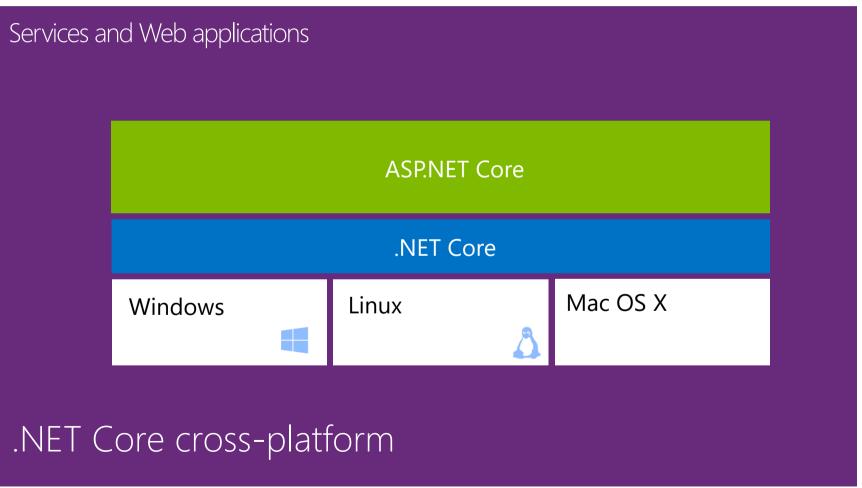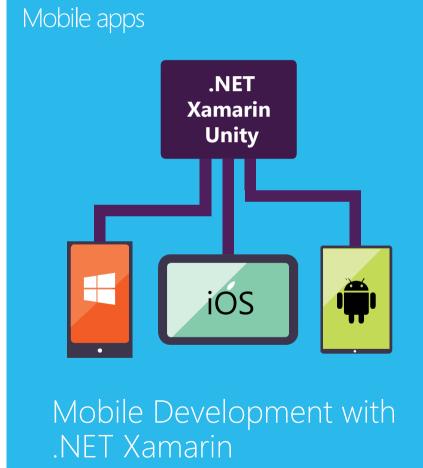
- Visual Designers in Visual Studio
- Predictable, consistent toolkit
- New Windows 10 Controls
- Adaptive triggers

.NET Native highlights

- Next Generation Compiler in the Cloud for Store Apps

- Uses lean runtime and VC++ optimizer for fast code execution and reduced memory usage

- Support for HoloLens and XBOX development

.NET Cross-Platform

Services and Web applications

ASP.NET Core

.NET Core

| Windows | Linux | Mac OS X |

.NET Core cross-platform

Mobile apps

.NET Xamarin Unity

iOS

Mobile Development with .NET Xamarin
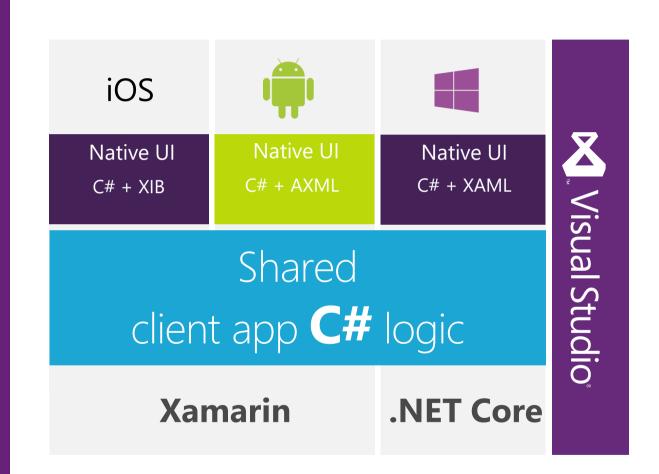
.NET and Xamarin

Share app logic across platforms

- Native apps for Windows, iOS and Android devices using .NET

- Most productive and powerful platform for creating native applications

- Maximize code reuse with Universal Projects & Portable Class Libraries

100% APIs exposed

- *Everything you can do in xCode or ADT you can do with Visual Studio*

iOS		
Native UI C# + XIB	**Native UI** C# + AXML	**Native UI** C# + XAML
Shared client app **C#** logic		
Xamarin		**.NET Core**

Visual Studio

ASP.NET

Improved tooling and frameworks
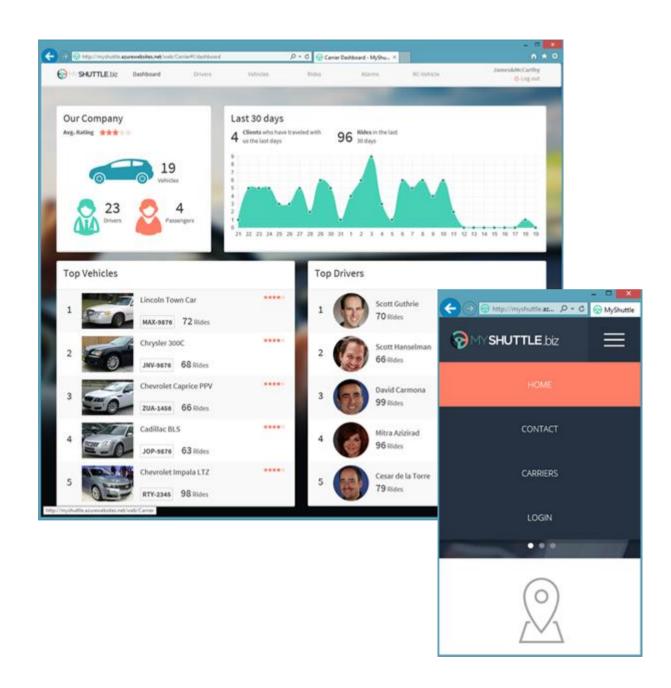
- Deliver value faster with improved tooling and frameworks

ASP.NET Core 1.0

- Smaller footprint
- Modular
- Faster
- Any Platform

Cloud-Ready

- Tools and frameworks ready for seamless transition to cloud.
- Remote diagnostics on the cloud.
- Container support via Docker.

Web Developer Productivity

Visual Studio 2015

- HTML5, CSS3, JS
- Package Managers
  - Nuget / Bower / Npm
- TaskRunners
- Extensions
  - Web Essentials 2015

More development tools

- Visual Studio Code
- Sublime, Emacs,...
- Thanks to Omnisharp

.NET Core is optimized for "cloud-native" apps

Cross-platform

Lightweight

Fast

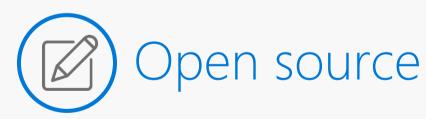Open source

.NET Core

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$your_platform

Services
Web Sites
Device Apps

Developer tools and services
- Visual Studio 2015
- Visual Studio Code
- Omnisharp (vi, emacs,...)
- Visual Studio Online
- Microsoft Azure

Services and web sites

ASP.NET Core

.NET Core

Devices

.NET
Xamarin
Unity

iOS

Demo
HelloWorld on Linux / OS X

Microsoft

Announcing
.NET Core Tooling
1.0

Visual Studio 2017
.NET Core CLI

www.dot.net/core
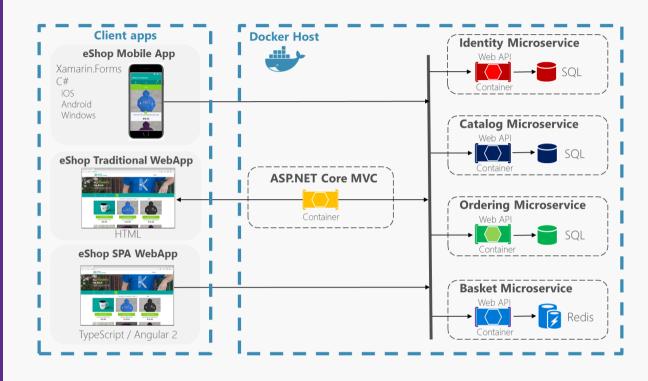
Announcing
.NET Core microservices reference application

Explore our beta release and provide feedback:

http://aka.ms/MicroservicesArchitecture

.NET Core microservices reference app

- Includes backend services architected with best practices

- Mobile and web client apps included

- Supported in Visual Studio 2017

- Supported on Docker and dotnet CLI on Mac, Linux or Windows

[e] eSHOP onCONTAINERS

Explore our beta release and provide feedback:

http://aka.ms/MicroservicesArchitecture

.NET foundation

.NET Compiler Platform ("Roslyn")   MVVM Light Toolkit   MSBuild

ASP.NET MVC   ASP.NET Core   MEF   IdentityManager   .NET Core

.NET SDK for Hadoop   Kudu

.NET Micro Framework   Cecil

Mimekit   Mono   Mailkit   Xamarin.Auth

Umbraco   NuGet   Cake   Open Live Writer

WorldWide Telescope   Couchbase Lite for .NET

ASP.NET Web Pages   Microsoft Azure SDK for .NET   WCF

ASP.NET SignalR   LLILC

Entity Framework   Open XML SDK   Xamarin SDK   IdentityServer

Microsoft Azure WebJobs SDK

Microsoft Web Protection Library   OWIN Authentication Middleware

ProtoBuild   ASP.NET Web API   System.Drawing

Orchard CMS   Orleans

ASP.NET AJAX Control Toolkit   Prism   Xamarin.Mobile   Salesforce Toolkits for .NET

Openness
Community
Rapid innovation

Protection
Licenses
Copyrights
Trademarks
Patents

Practices
Mentorship
Governance
Feedback
Co-ordination

Visibility
Media
Branding
Events

Support
Hosting
Code signing
CLA Management
Swag

Open source .NET

Platforms

- General purpose .NET Core runtime, compilers and libraries

- ASP.NET Core web server stack

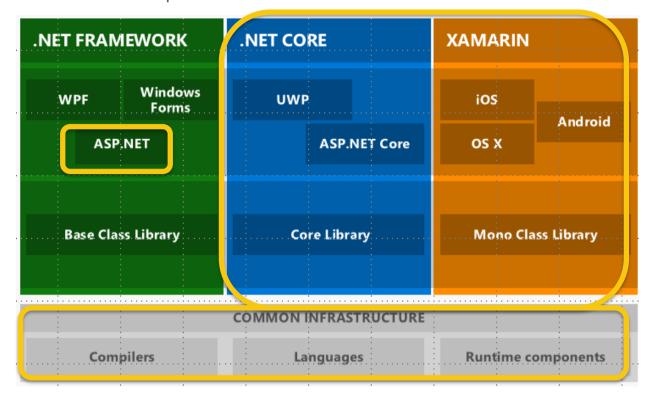- Xamarin SDK (runtime, libraries, command line tools)

Fully supported cross-platform

- Windows, Linux and OS X

- Visual Studio tooling support (e.g. debugging and deploying to Docker in Linux)

- Omnisharp extensions to cross-plat IDEs (Sublime, Emacs...)

Open Source

- .NET Core and ASP.NET Core source being developed on GitHub

- Contributions accepted, tested and fully supported

- Close collaboration with Mono community

What is open source?

Get started from:

github.com/microsoft/dotnet

Developed in the open together

www.dotnetfoundation.org

.NET foundation

Fully open development process

Open Source

Open to community contributions

Open process: roadmap, design docs, standups...

+ Great community momentum

>175 repositories

>24,000 forks

>4,000 contributors

= Amazing results

1.15+ Million requests/second!

New performance record for .NET Core

8x node.js performance in our labs

~40% performance gains contributed by community

Resources

Channel 9 dotnetConf videos	- http://channel9.msdn.com/events/dotnet/2016
.NET team blogs	- http://blogs.msdn.com/dotnet
.NET team twitter	- @dotnet
Dotnetfoundation	- http://www.dotnetfoundation.org/
Visual Studio twitter	- @visualstudio

Microsoft

Please take our survey:
http://aka.ms/netsurvey

Want a t-shirt? Get one here, plus lots more
.NET goodies!
http://dotnet.spreadshirt.com

Have some .NET artwork? Contribute to our
SWAG repo:
http://github.com/dotnet/swag