NDC { London }

ASP.NET CORE Workshop

Damian Edwards / David Fowler

Agenda

Day 1
ASP.NET 5 What and Why
Lab
Introduction to ASP.NET 5
Lab
Introduction to Routing & MVC
Lab
Logging & Error Handling
Lab
Dependency Injection and Unit Testing
Lab

Agenda

Day 2
Authorization
Lab
Razor & Tag Helpers
Lab
MVC Web API
Lab
Deployment & Hosting
Lab
The .NET CLI
Lab

Labs / Slides

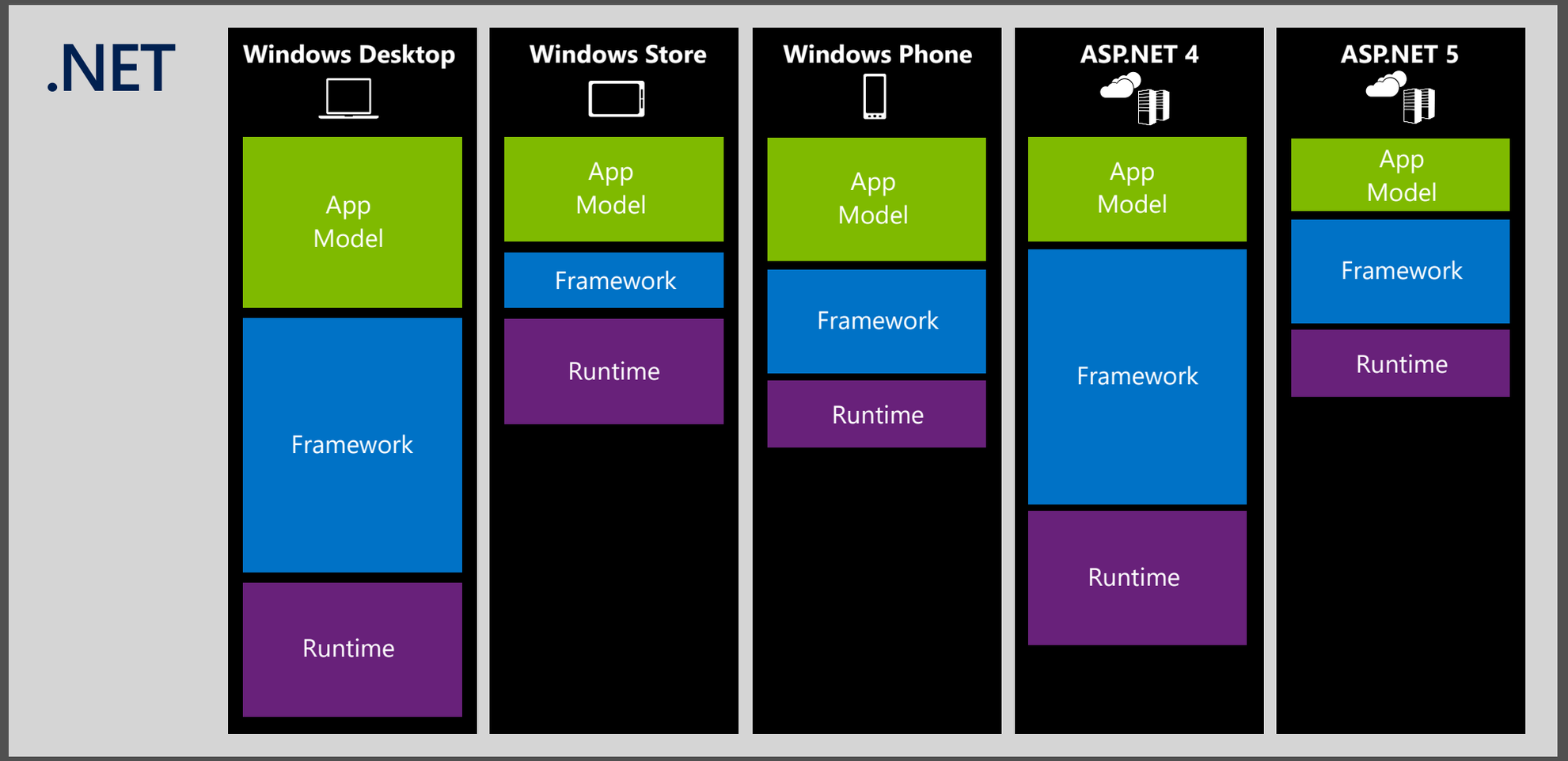
https://github.com/DamianEdwards/aspnet5-workshop

ASP.NET CORE
What and Why

Microsoft

.NET in 2015

History of .NET “verticals”



.NET 2015

.NET Framework 4.6

.NET Core



Common

Runtime

Next gen JIT
SIMD

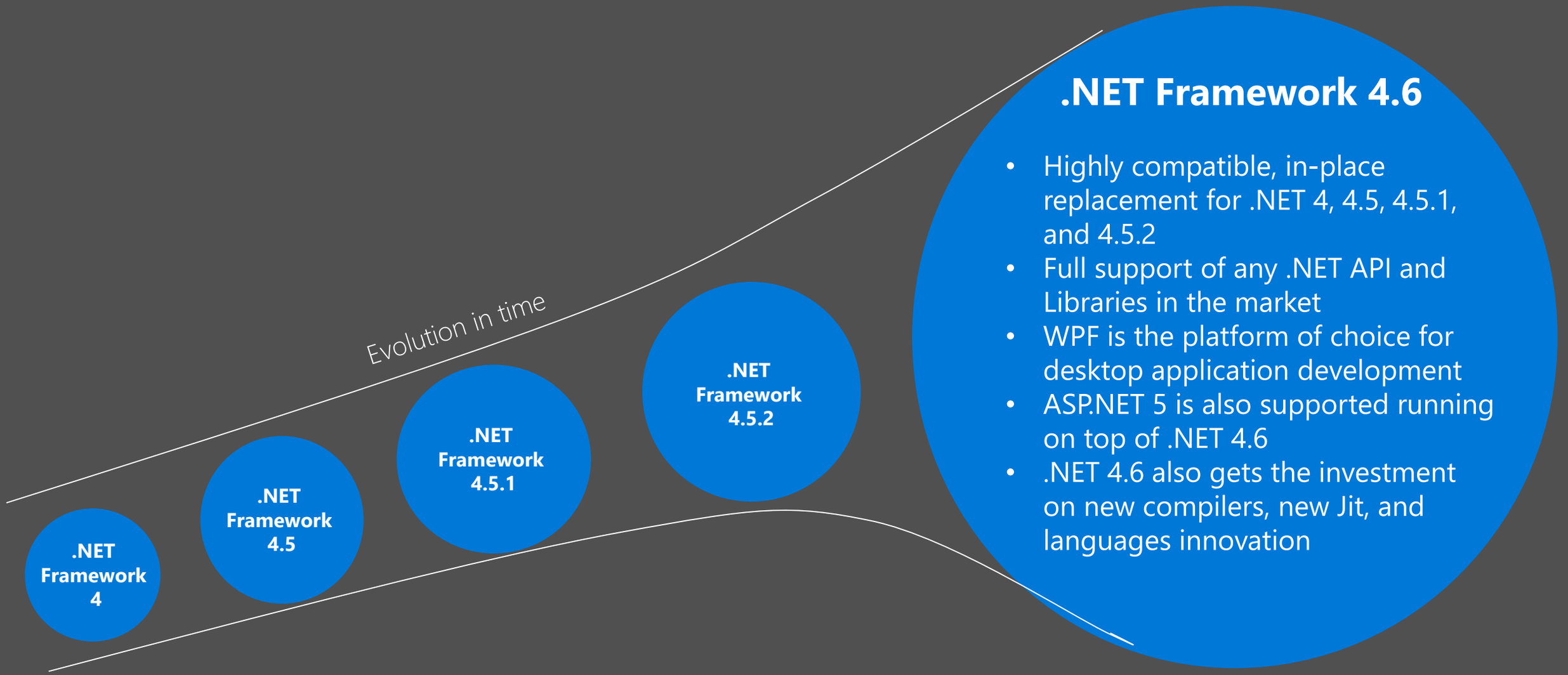
Compilers

.NET Compiler Platform
Languages innovation

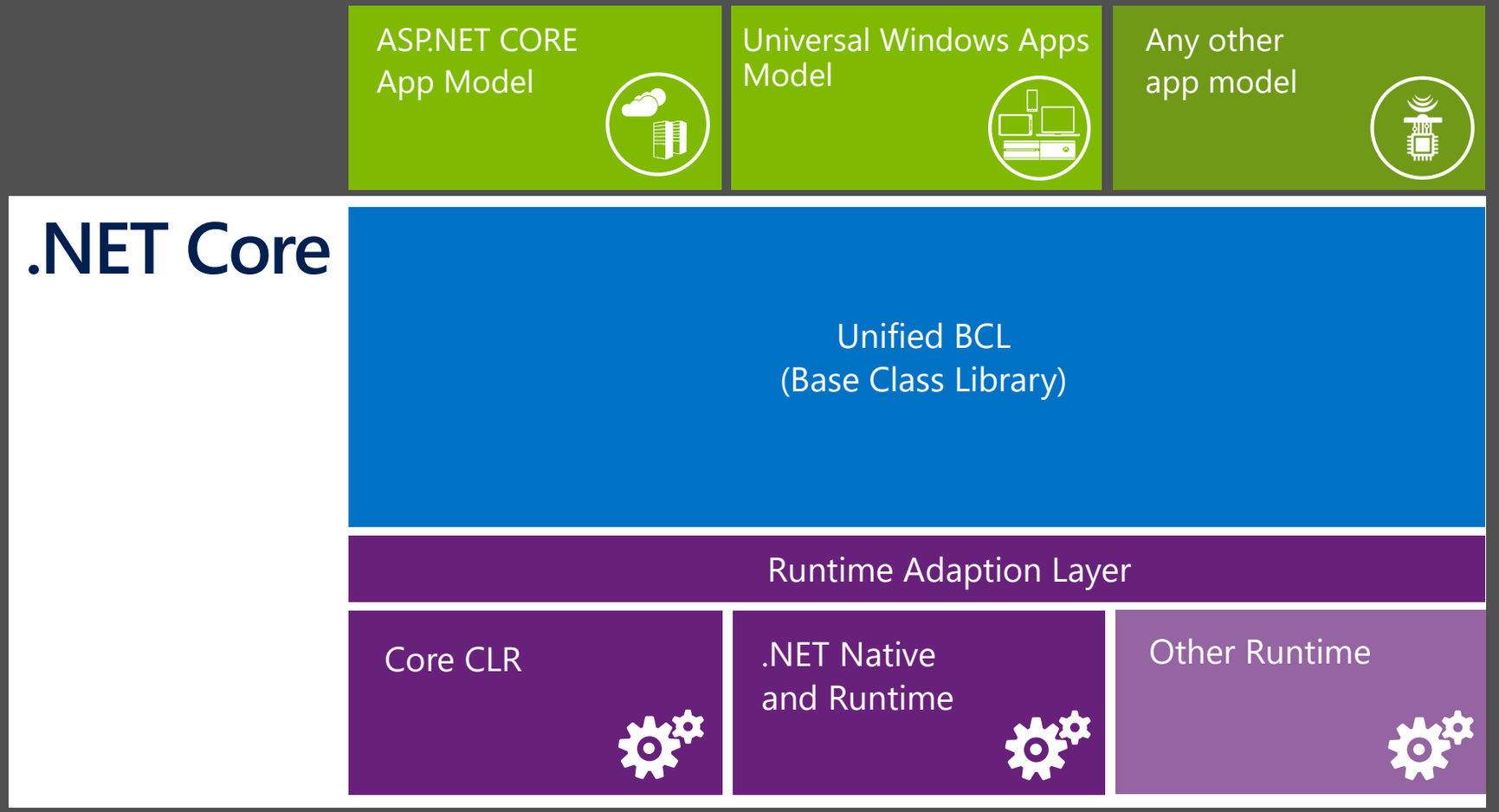
NuGet packages

.NET Core Libraries
.NET Framework 4.6 Libraries

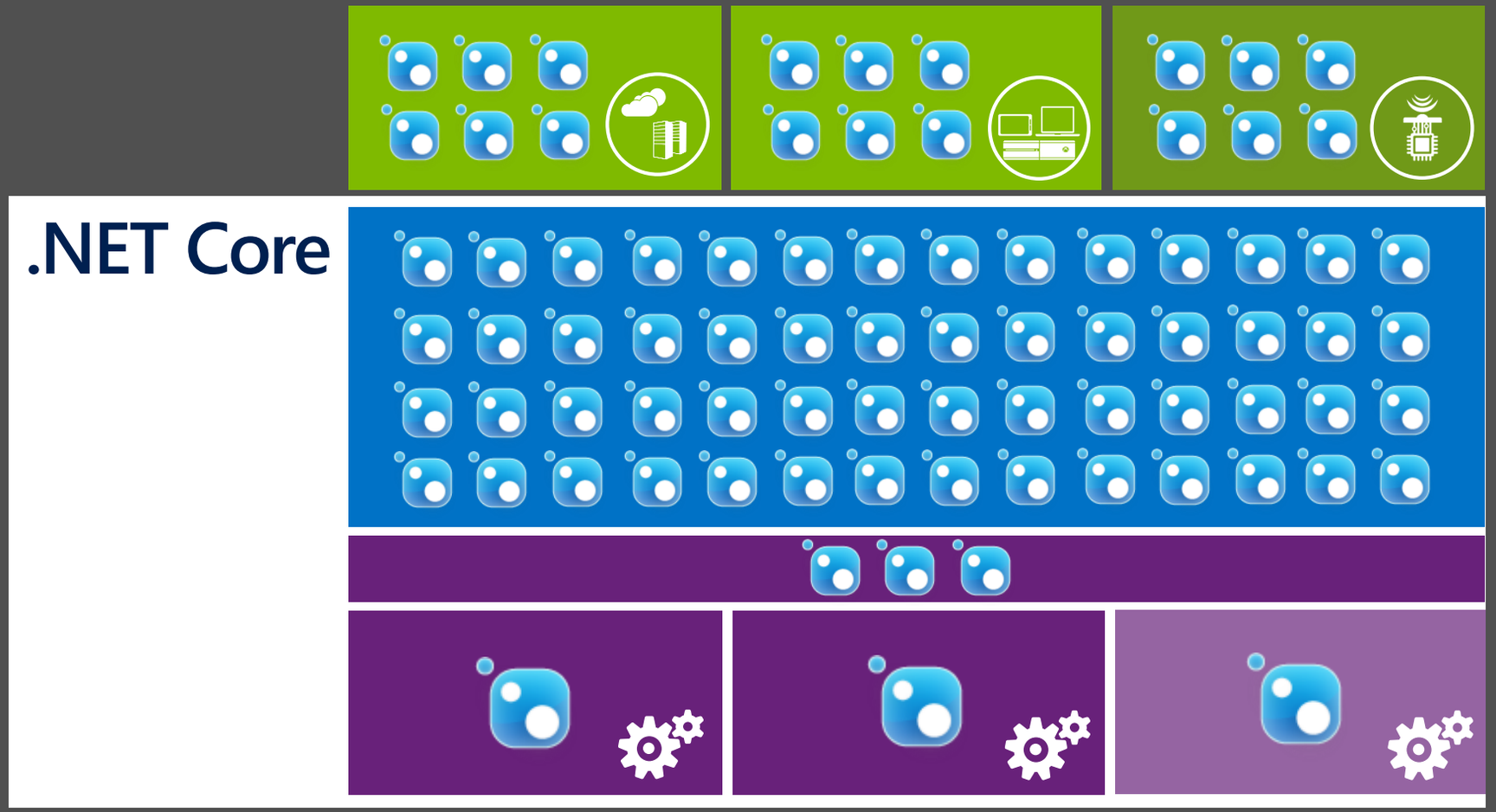
.NET Framework 4.6



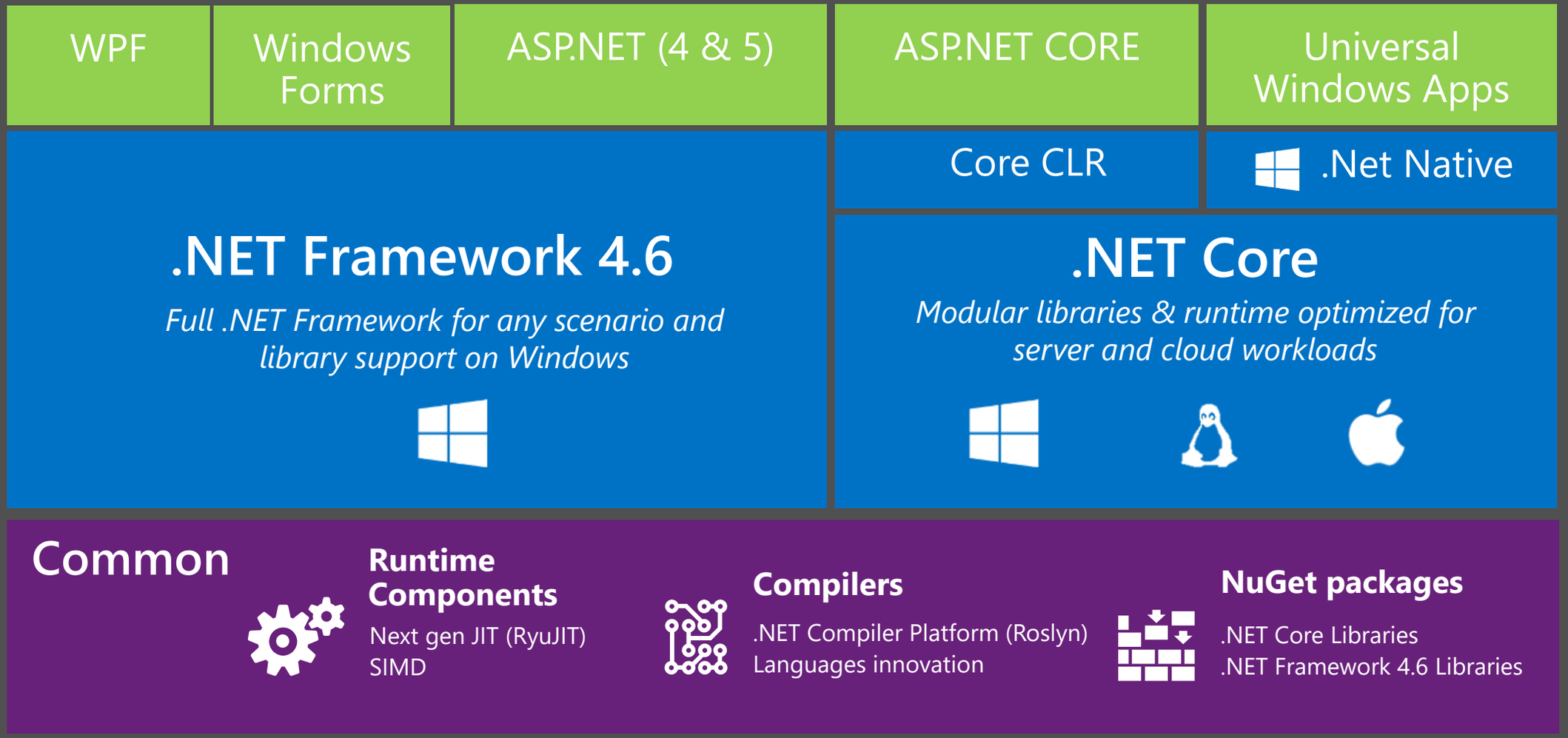
What is .NET Core



NuGet is mainstream in .NET Core



.NET 2015 – 10K foot view



.NET Compiler Platform ("Roslyn")

FROM

Isolated/closed compilers

Hard to extend dev experience

TO

API: open platform

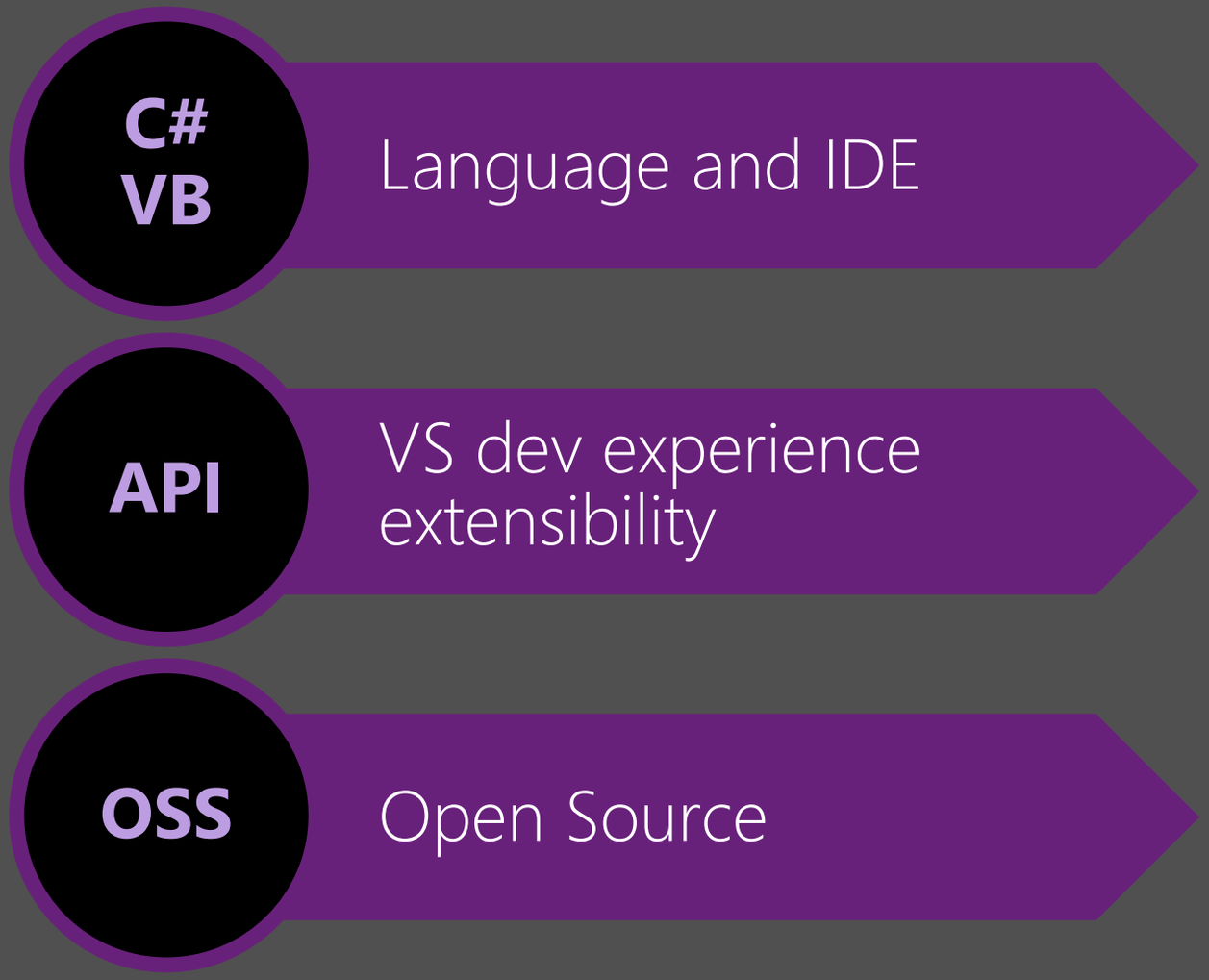
Rich IDE experiences/refactoring

Code analysis

Custom diagnostics

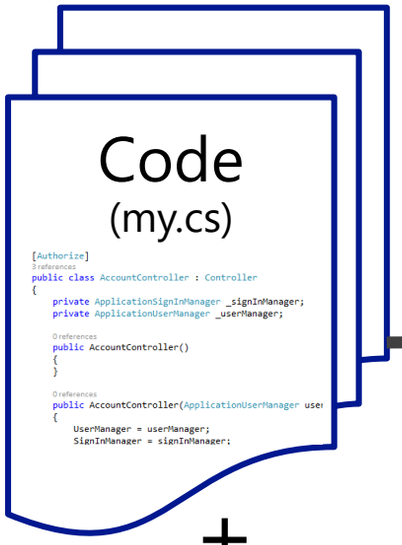
Open Source compilers

Scenarios/usage cases

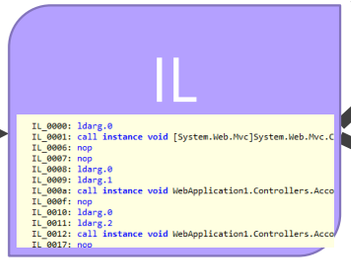


Code / Build / Debug

Roslyn takes your code and compiles it to IL. You have very modular references to the BCL and App Model you're targeting.



Roslyn



\+

BCL | App Model

References (Modular, NuGet)

Deploy & Run

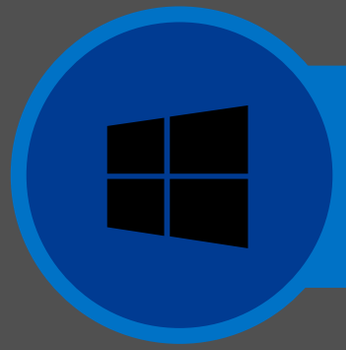
References are built with your app into one native dll deployed locally with runtime

WinStore → .NET Native tool chain → my.exe (stub) my.dll + .NET Native Runtime

ASP.NET → JIT Compiler (RyuJIT) → my.dll +referenced dlls + CoreCLR

References & CoreCLR are deployed with app locally, JIT compilation on start up

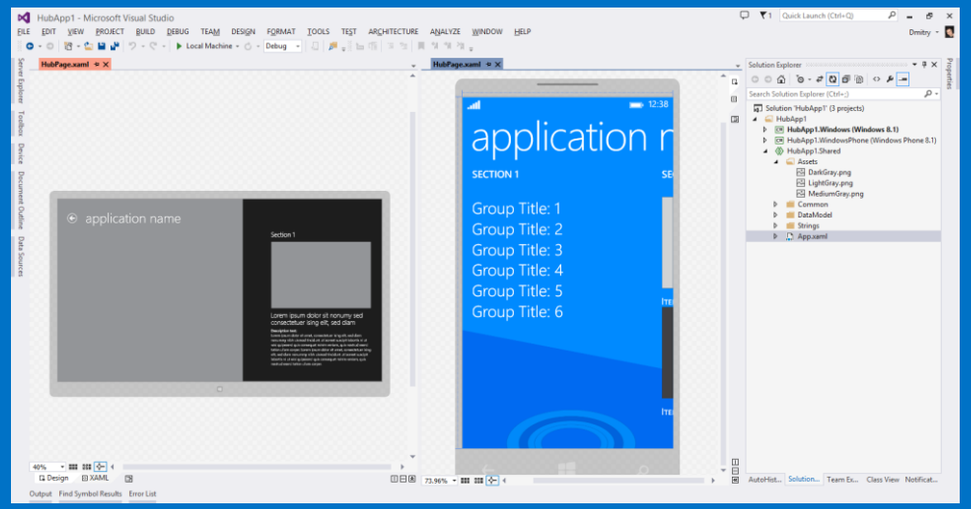
Universal Windows Platform



Universal Windows Platform
Shared across Windows and Windows Phone apps

.NET Native
Native code compilation

Universal Windows Platform



.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
- Preview available from Visual Studio http://aka.ms/dotnetnative

Open Sourcing .NET

Platforms

- General purpose .NET Core runtime, compilers and libraries
- ASP.NET Core web server stack

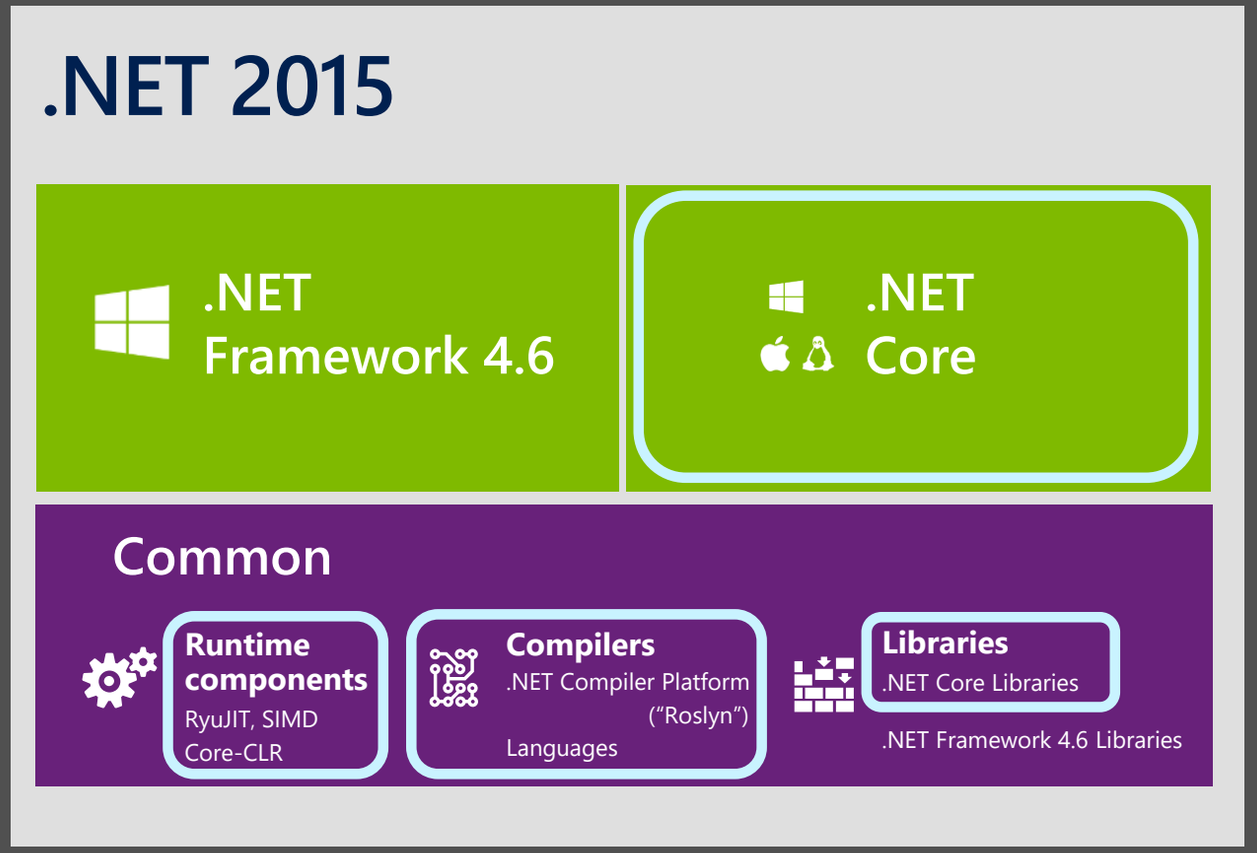
Fully Supported cross-platform

- 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 Microsoft Open Sourcing?



Get started from:
github.com/microsoft/dotnet

How does ASP.NET fit in?

ASP.NET Core

Unified framework for MVC, Web API and SignalR

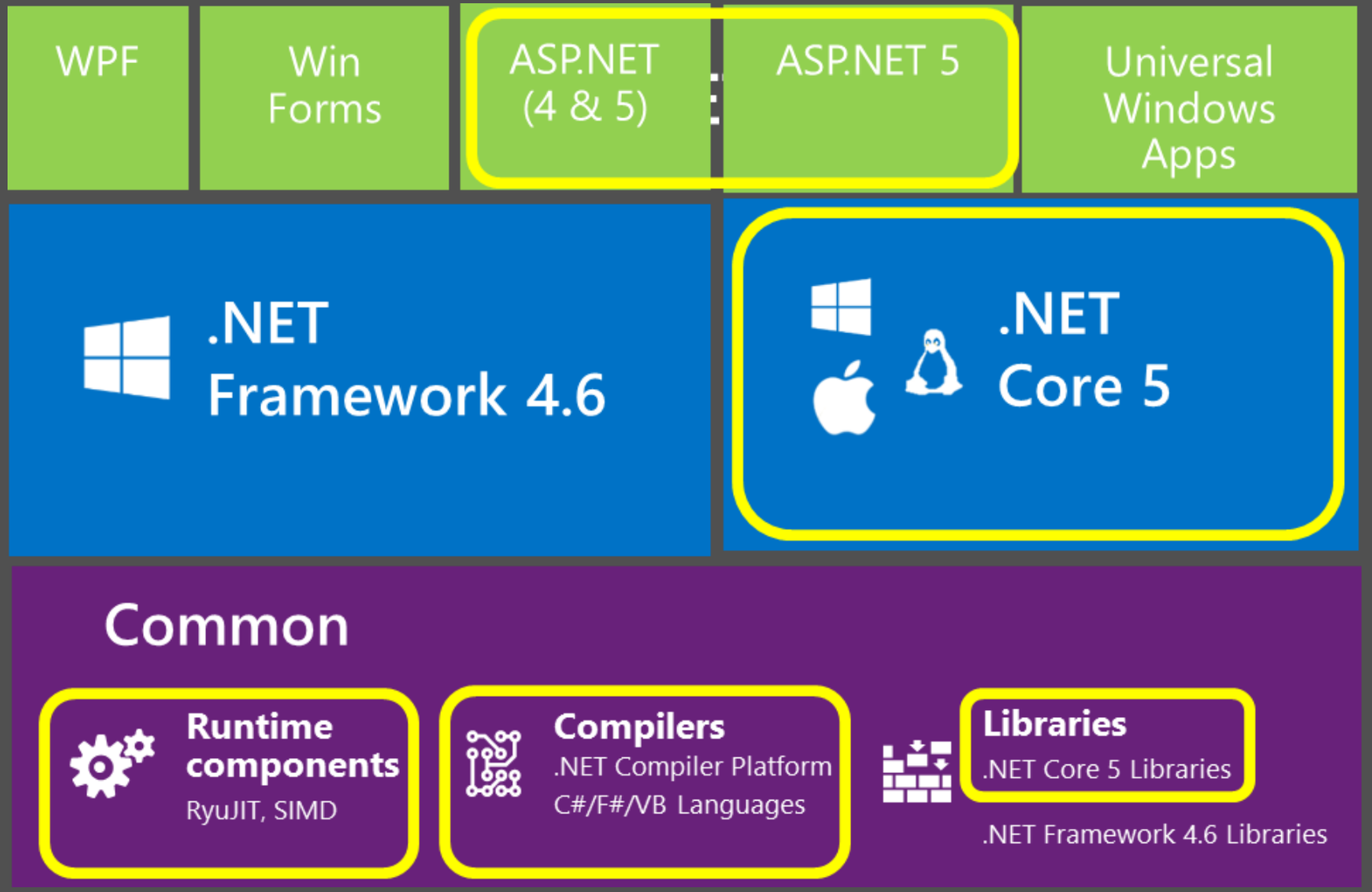
.NET Framework 4.6 stack and libs

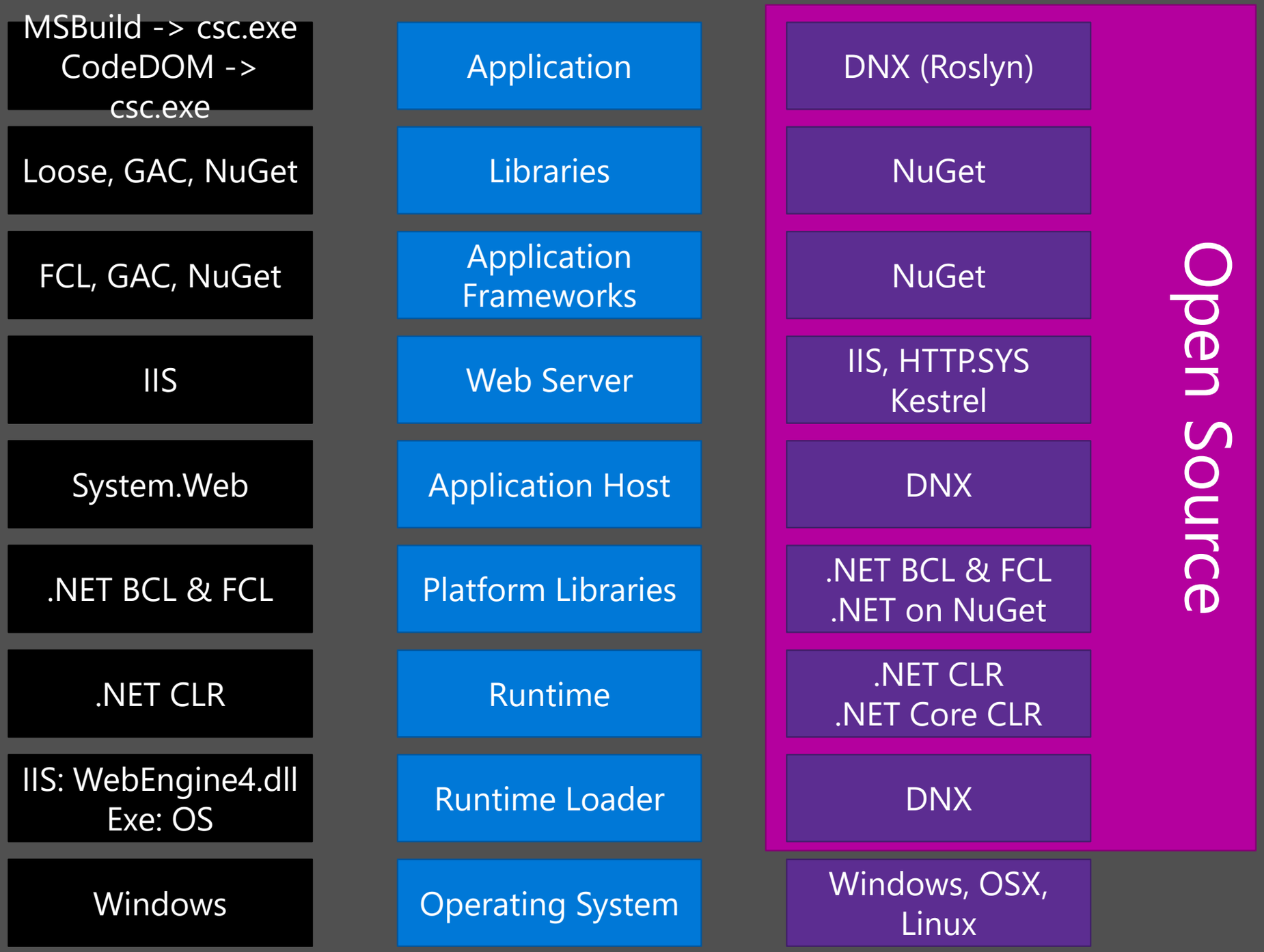
Full .NET Framework for any scenario and library support

.NET Core stack and libs

Small runtime optimized for server and cloud workloads

What is Open Source?




MSBuild -> csc.exe
CodeDOM -> csc.exe
Application
DNX (Roslyn)
Loose, GAC, NuGet
Libraries
NuGet
FCL, GAC, NuGet
Application Frameworks
NuGet
IIS
Web Server
IIS, HTTP.SYS
Kestrel
System.Web
Application Host
DNX
.NET BCL & FCL
Platform Libraries
.NET BCL & FCL
.NET on NuGet
.NET CLR
Runtime
.NET CLR
.NET Core CLR
IIS: WebEngine4.dll
Exe: OS
Runtime Loader
DNX
Windows
Operating System
Windows, OSX, Linux
Open Source

History of ASP (18+ years)

- 1996 – Active Server Pages (ASP)
- 2002 – ASP.NET
- 2008 – ASP.NET MVC
- 2010 – ASP.NET Web Pages
- 2012 – ASP.NET Web API, SignalR
- 2014 – ASP.NET Core (and the Core CLR)

ASP.NET and the Modern Web


Totally Modular


Faster Development Cycle


Seamless transition
from on-premises to cloud


Choose your Editors
and Tools

Open Source
with Contributions


Cross-Platform


Fast

Modern Web - Agility

Faster Development Cycle

- Features are shipped as packages
- Framework ships as part of the application

More Control

- Zero day security bugs patched by Microsoft
- Same code runs in development and production
- Developer opts into new versions, allowing breaking changes

Modern Web - Fast

Runtime Performance

- Faster startup times
- Lower memory / higher density (> 90% reduction)
- Modular, opt into just features needed
- Use a raw socket, framework or both

Development productivity and low friction

- Edit code and refresh browser
- Flexibility of dynamic environment with the power of .NET
- Develop with Visual Studio, third party and cloud editors

Modern Web - Cloud

Seamless transition from on-premises to cloud

Cloud ready

- Configuration
- Session
- Cache

Diagnostics

- Run/Debug in Cloud
- Tracing/Logging without re-deploy

Modern Web – Cross Platform

Runtime

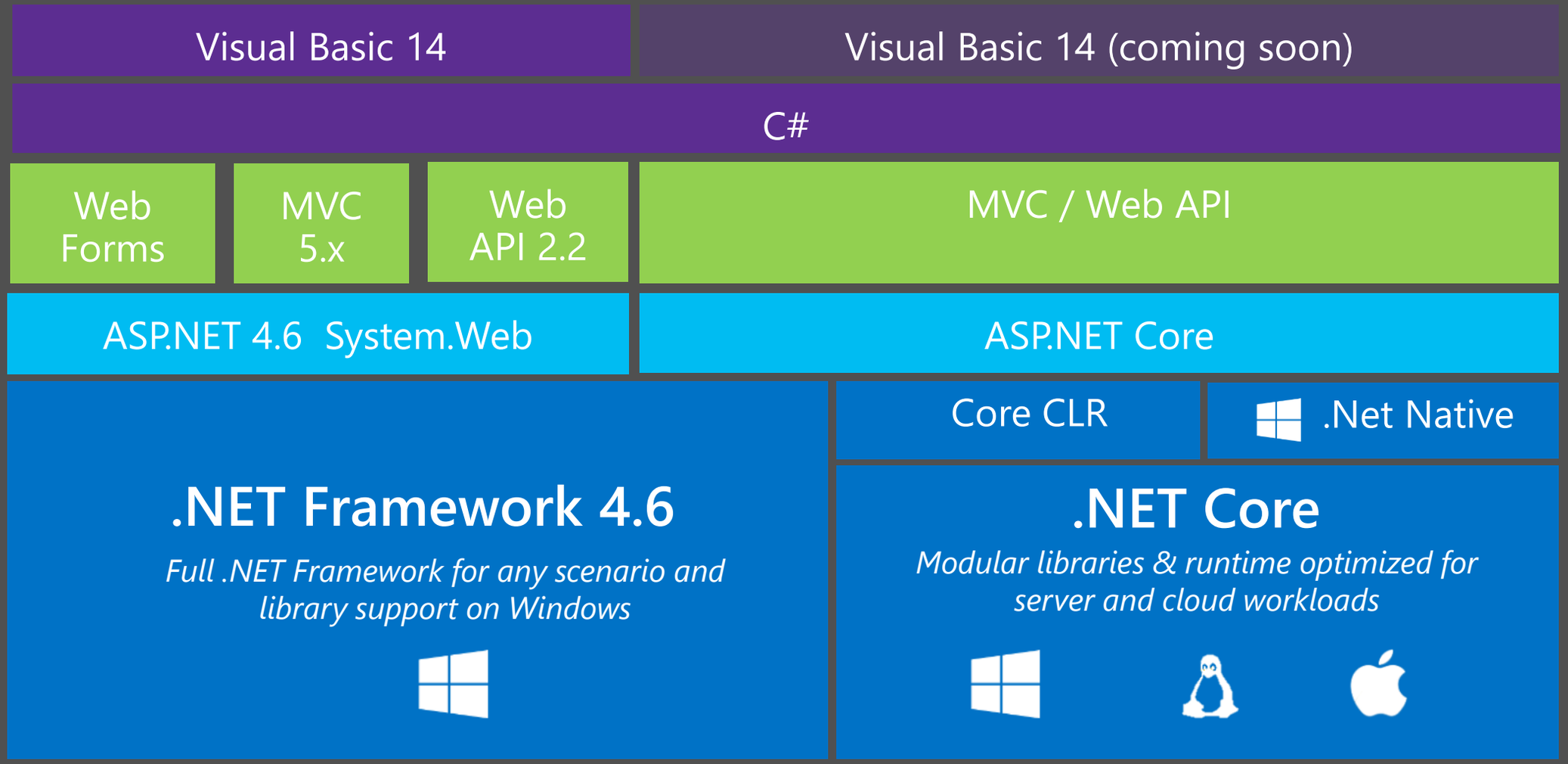
- Windows, Mac, Linux

Editors

- Visual Studio, Text, Cloud editors
- No editors (command line)

Open Source with Contributions

ASP.NET 2015 in a Nutshell



ASP.NET Core - Compatibility

- Web Forms, MVC 5, Web API 2, Web Pages 3, EF 6
  - Fully supported on .NET 4.6
- MVC, Web API, EF 7
  - Breaking changes:
    - New Project System
    - New Configuration System
    - MVC / Web API / Web Pages merge
    - No System.Web, new Lightweight HttpContext (not System.Web)
- .NET Core on Core CLR
  - Subset of the .NET Full Framework
    - Things you depend on might not be available yet

ASP.NET Core - Summary

MVC Core (MVC + Web API + Web Pages)

Feature	Running on .NET 4.6	Running on .NET Core
Cloud Ready	*	*
Modular Design	*	*
Dependency Injection	*	*
Consistent Tracing / Debugging	*	*
Faster Development (No Build Step)	*	*
Open Source	*	*
Full Side by Side (framework deployed inside application)		*
Fast startup, Low memory / High throughput (best of class)		*

ASP.NET Core resources

Get started at http://www.asp.net/vnext

GitHub project at https://github.com/aspnet/home

Docs site at http://docs.asp.net

In Review: Session Objectives And Takeaways

ASP.NET Core: What and Why

ASP.NET Core is an open-source and cross-platform framework for creating modern, cloud-based Web applications.