



TRAILHEAD
TECHNOLOGY PARTNERS

.NET and C# Training

Hi, I'm J.

Jonathan "J." Tower

Principal Consultant & Partner

Trailhead Technology Partners



Microsoft MVP in .NET



Frequent conference speaker



Organizer of Beer City Code conference



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[jtowermi](https://twitter.com/jtowermi)

Introductions

1. Your name
2. Your role on the team
3. Your experience with programming or software development

More About Me

1. Jonathan "J." Tower
2. Partner & Principal Consultant, Trailhead Technology Partners
 - Trainer
3. Developing professionally for 23 years
 - Started .NET in 2001
 - Microsoft MVP in .NET
 - Consultant most of my career
 - Started in Chicago
 - Started Trailhead about 6.5 years ago
 - Architect and run projects today

Introductions

1. Your name
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Introductions

1. Your favorite aspect of software development
2. One interesting fact about you
3. What you are hoping to get out of the training
4. Your biggest fear about the training, if any

More About Me

1. I like the creative aspects of software
2. I've been to all 50 states, and 52 of the 63 US National Parks
3. I'm looking forward to teaching something I love to people who want to learn about it
4. Wanting to make sure its as useful as possible for everyone

Introductions

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How It's Going To Work

- In-person today; online after
- Most Wednesday mornings this summer
- Estimated 16 times
- Questions at ANY TIME
- Joe and team available for questions between sessions

How It's Going To Work

1. Review solution to previous assignment (15 min)
2. New topic instruction, examples (3.5 hr)
3. Review assignment for next time (<15 min)

NOTE: Assignments should take between 15 minutes and 2 hours per week

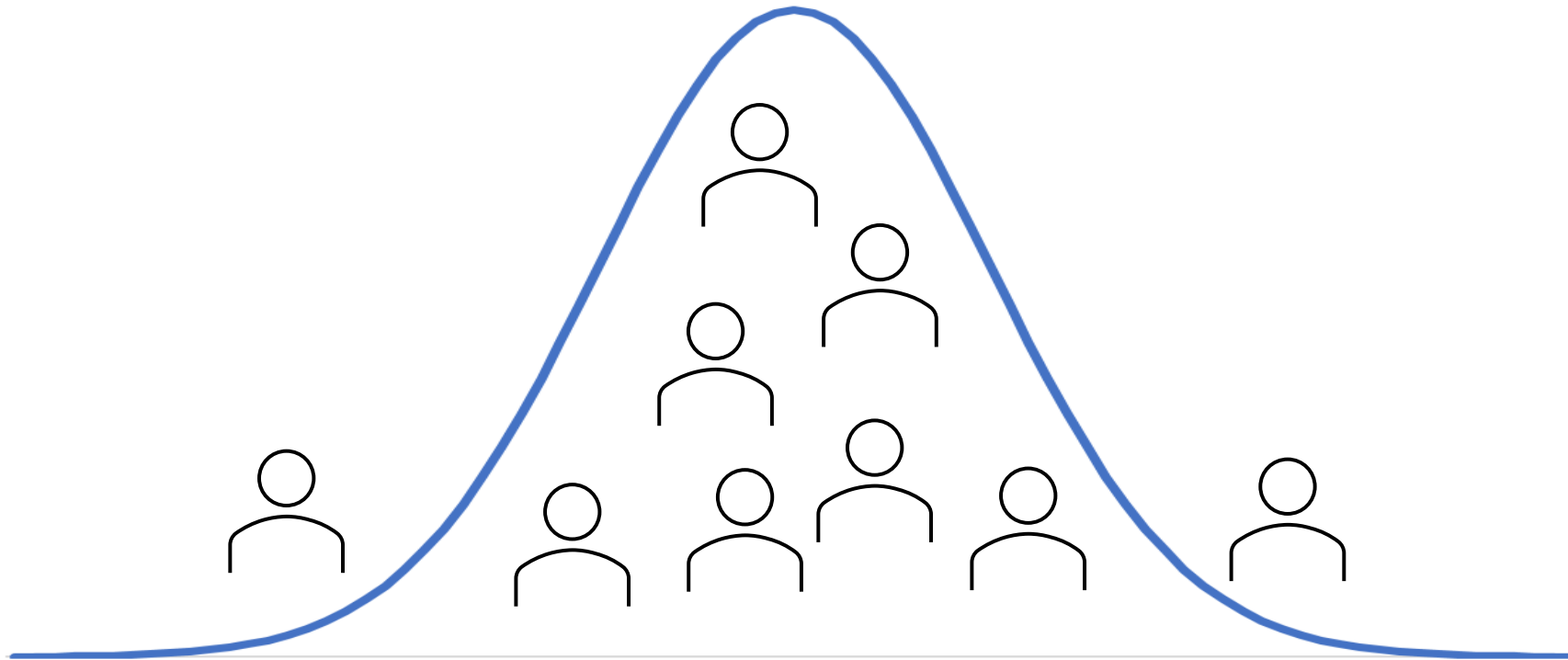
Course Agenda

1. .NET History and Overview
2. Visual Studio 2022 IDE Basics
3. Visual Studio Advanced
4. C# Introduction
5. .NET BCL Introduction
6. Data Access Basics
7. C# Advanced
8. Entity Framework 6
9. Version Control
10. ASP.NET Web APIs

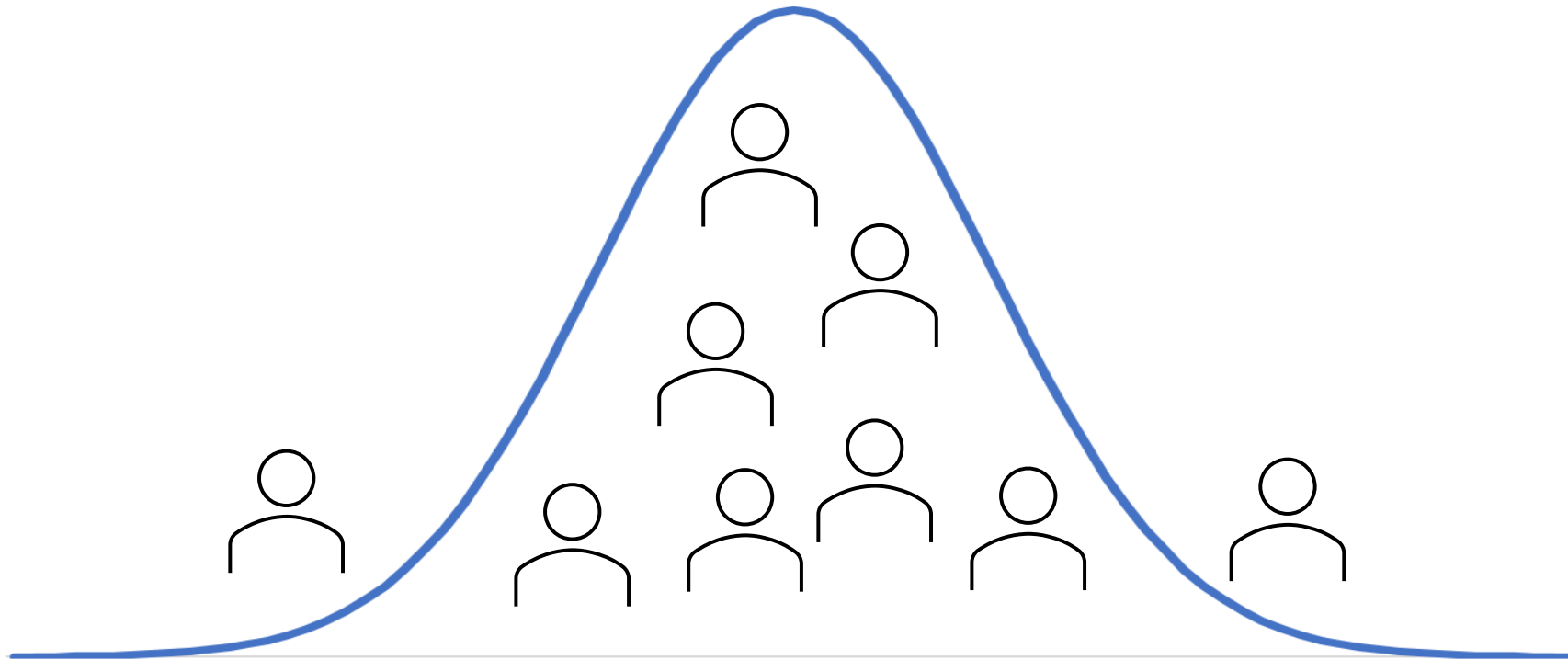
Today's Agenda

1. Format overview and expectation setting
2. .NET History and Overview
3. Visual Studio 2022 IDE Basics

Everyone Has Different Experience

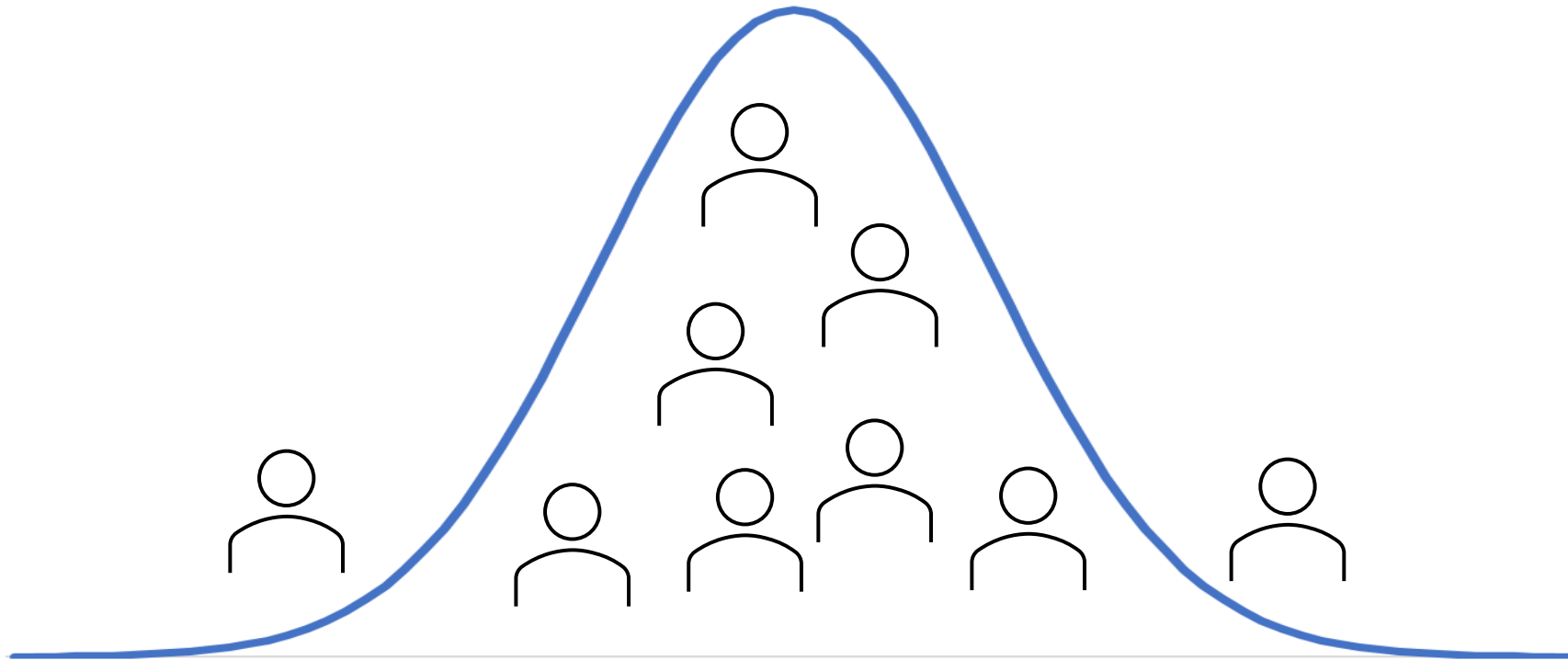


Everyone Has Different Experience



You Will Get Out Of It What You Put Into It

Everyone Has Different Experience



You Will Get Out Of It What You Put Into It

<https://forms.gle/eTxhrTV1gCfPsjJC8>

.NET History and Overview

What is .NET Framework

- The .NET Framework is a proprietary software framework developed by Microsoft that runs primarily on Microsoft Windows
- Most popular languages C# and VB.NET
- Most popular IDE: Visual Studio

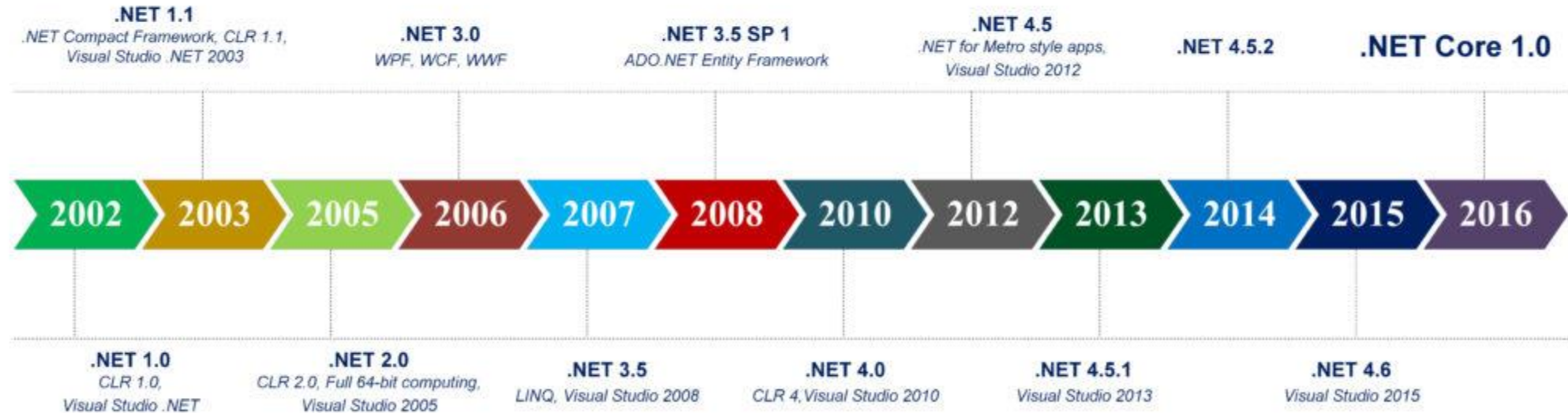
You're Coming in at a Good Time

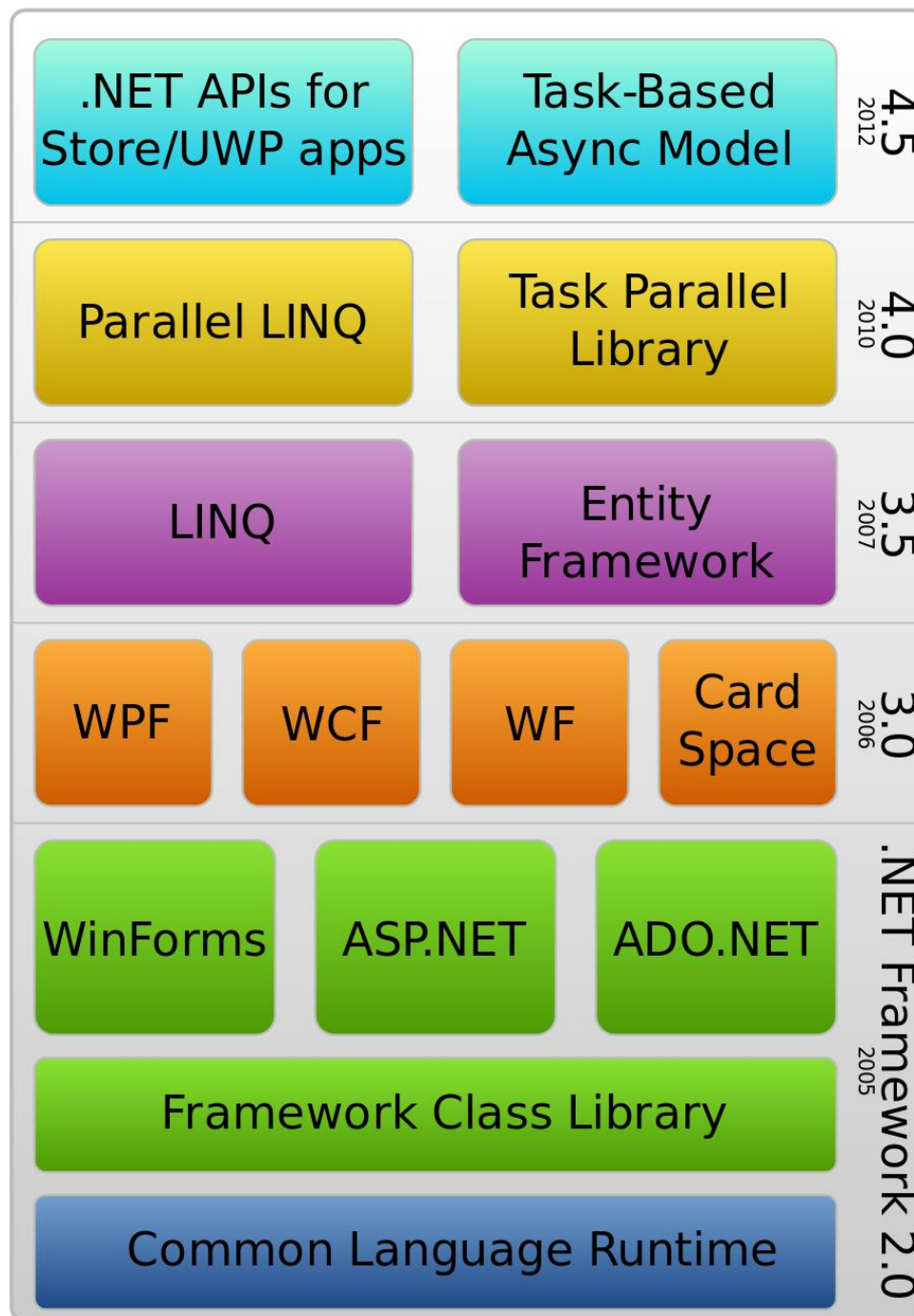
<https://dotnet.microsoft.com/en-us/platform/why-choose-dotnet>

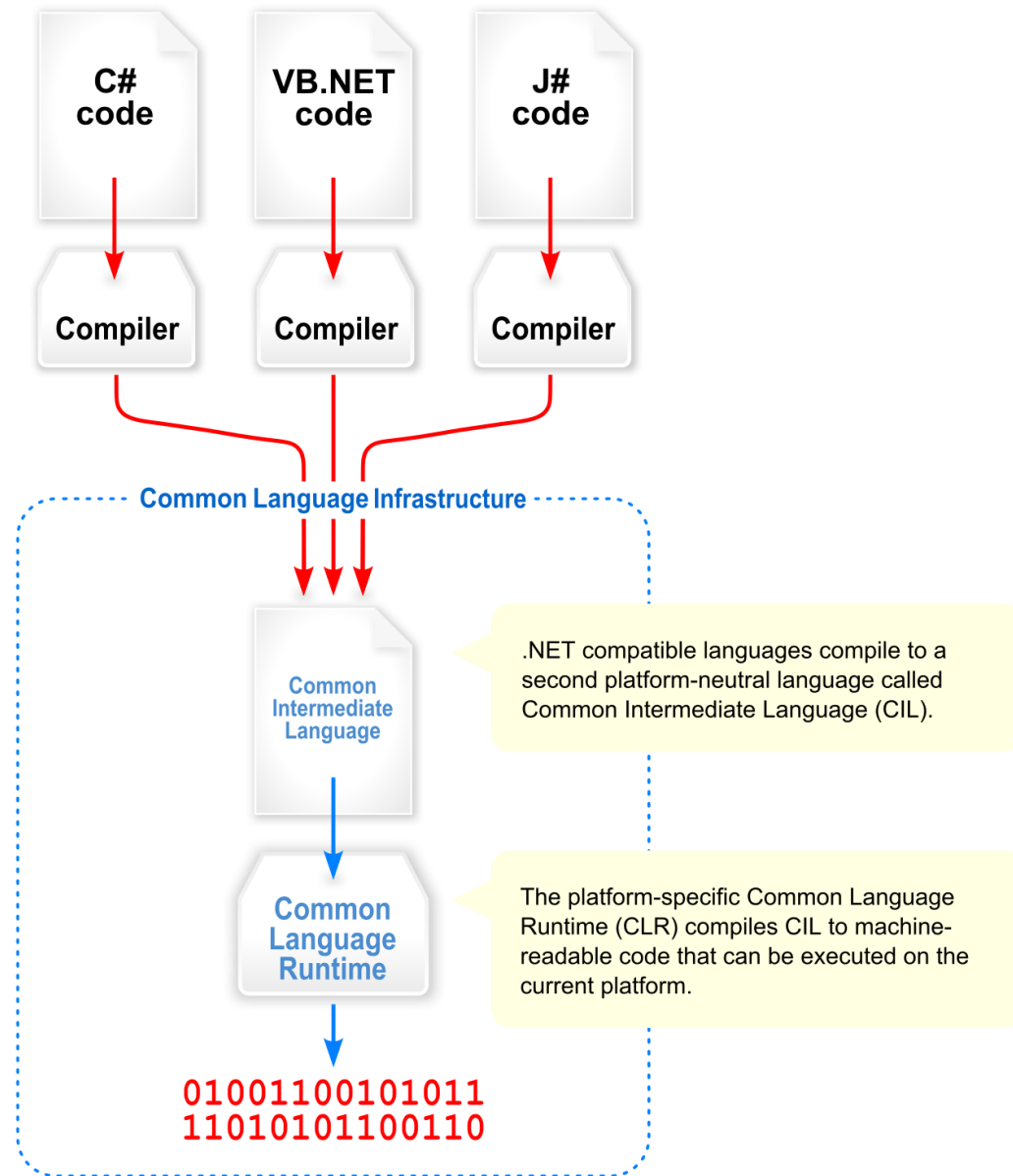
- Productive, general purpose
- Loved
- High-performance
- Secure
- Large community

NOTE: Some of this applies specifically to the newest versions of .NET

The release history of .NET Framework







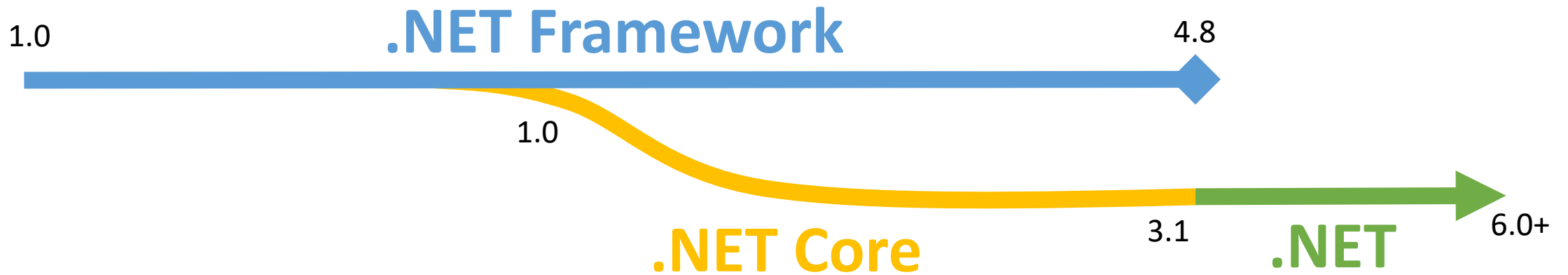
.NET Acronym Soup

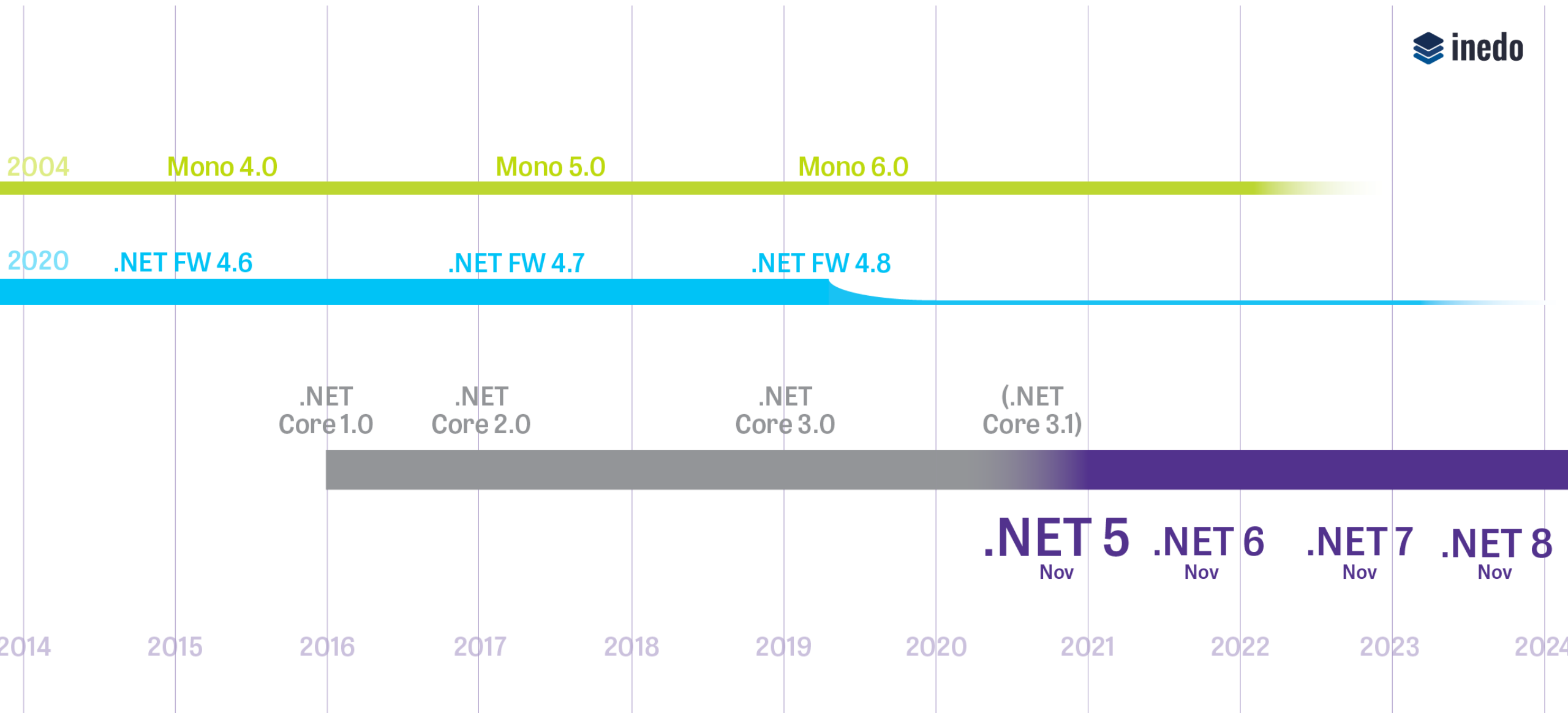
- CLI/CLR
- CTS
- CSC/VBC
- MSIL
- JIT
- BCL/FCL
- Roslyn

What is .NET Core

- Completely rewritten .NET
- Starting in 2016
- Cross-platform: Windows, Linux, and Mac
- Performance is a feature

.NET Branding Going Forward





Visual Studio Basics

What is an IDE?

- Integrated Development Environment
 - Projects
 - Syntax highlighting
 - Code completion
 - Refactoring
 - Debugging
 - Version control
 - Search
 - AI
- Visual Studio = Most popular IDE in the world

VS Editions

- Community, Professional, and Enterprise

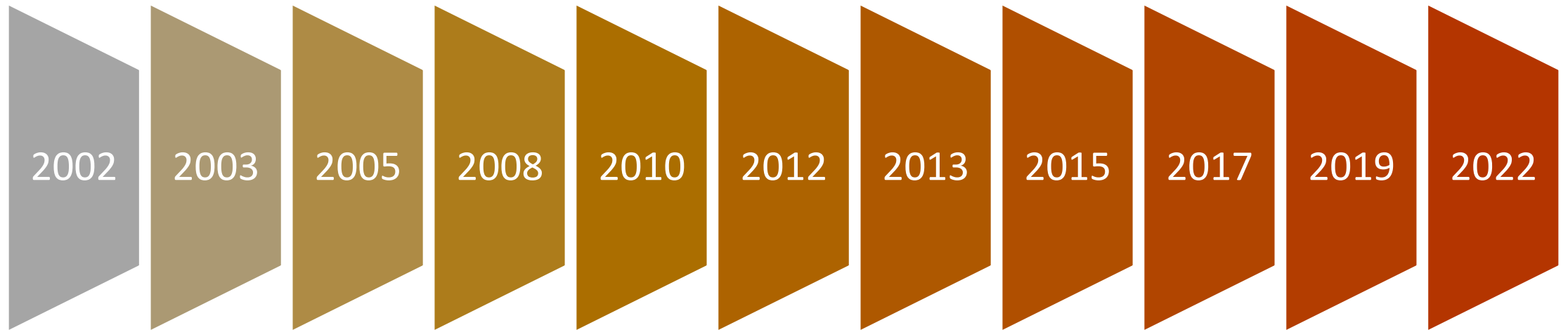
Supported Features	Visual Studio Community Free download	Visual Studio Professional Buy	Visual Studio Enterprise Buy
⊕ Supported Usage Scenarios	●●●○	●●●●	●●●●
Development Platform Support ²	●●●●	●●●●	●●●●
⊕ Integrated Development Environment	●●●○	●●●○	●●●●
⊕ Advanced Debugging and Diagnostics	●●○○	●●○○	●●●●
⊕ Testing Tools	●○○○	●○○○	●●●●
⊕ Cross-platform Development	●●○○	●●○○	●●●●
⊕ Collaboration Tools and Features	●●●●	●●●●	●●●●

<https://visualstudio.microsoft.com/vs/compare/>

Let's Install Visual Studio Now

If You Don't Have It Already...

Visual Studio Versions



Visual Studio vs Visual Studio Code

- Visual Studio
 - Fully featured IDE
 - Available for Windows and MacOS*
 - Paid product (excluding Community Edition)
 - Project and solution based
 - Compilation and debugging built in
- Visual Studio Code
 - Light-weight editor
 - Windows, Linux and MacOS
 - Free
 - Compilation or debugging using plug-ins

Project and Solution Structure

- Solution file – group of projects edited/compiled together
- Project file – group of files compiled into single output
- Folders & Solutions Folders

Compilation and Assemblies

- Assemblies
 - DLL – libraries used by executables at run-time
 - EXE – directly executable
- Selected build configuration
- /bin and /obj directories

Demo

Project Structure and Compilation

ASP.NET = .NET Web Development

- Replaced older Active Server Pages (ASP) technology
- Started with "Web Forms" to make web development feel like desktop Development (Win Forms)
- Eventually replaced with other models: MVC, Web API, Razor Pages, and more.

Demo

ASP.NET

Desktop Development

- Console (command-line, text only)
- WinForms
- Windows Presentation Foundation, or WPF (XML-based UIs)
- Universal Windows Platform (UWP)
- WinUI
- .NET MAUI - Multi-platform App UI

Demo

WinForms

Class Library

- Shared code
- Only runs in the context of another project using it

Demo

ASP.NET + WinForms + Class Library

Many Other Project Types

- JavaScript SPAs
- Unit Testing
- UI Automation Testing
- Windows Service
- Xbox/Video Games
- Database
- Cloud-Native Technologies
- Blazor

IDE Panes

- Documents
- Solution Explorer
- Toolbox
- Properties
- Output
- Object Browser

Demos

Commonly Used IDE Panes

Assignment 01

- Create a .NET console "Hello world" application using the code below

```
using System;
namespace MyConsoleApp
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello, world");
            Console.ReadKey();
        }
    }
}
```

- Run the application in the IDE
- Build the application and run the .EXE from outside the IDE

<https://github.com/jonathantower/learning-dotnet>