# GETTING TO THE .NET CORE OF THINGS

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# ABOUT ME

- Programming since 1990s
- Jack of all trades, master of none
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# ABOUT YOU!

# PRESENTATION CONTEXT

- .NET Core version 2.0, released August 2017

# TRADITIONAL .NET

## QUICK HISTORICAL RECAP

# MICROSOFT AND .NET

- Proprietary, closed source
- Windows-only

# CREATING .NET APPS

- **Languages**: C# and VB.NET (later also F#)
- **Compilation result**: Intermediate Language (IL) => bytecode

# RUNNING .NET APPS

**.NET Framework**

- Common Language Runtime (CLR)
  - Garbage Collector (GC)
  - Base Class Library (BCL)
- Application Frameworks...

# PACKAGES ON NUGET

- Application frameworks
- Libraries

# RECAP

- Write some C# or VB.NET or F#
- Compile to IL
- Package and ship
- Run on computer with .NET Framework

# TERMINOLOGY

## WHAT THE HELL ARE WE TALKING ABOUT?

# THE MOST IMPORTANT TERM!

**.NET Standard**

*Specifies an API for* ***.NET Implementations****.*

# IMPORTANT .NET IMPLEMENTATIONS

- **.NET Framework**: proprietary, Windows-only
- **Mono**: cross-platform port of .NET Framework
- **Xamarin**, specifically **Xamarin.iOS** and **Xamarin.Android**
- **.NET Core**: open source, cross-platform

# ABOUT .NET CORE

- **CoreCLR**: the Common Language Runtime
- **CoreFX**: the Base Class Library

# .NET STANDARD

## HOW THE API SPECIFICATION WORKS

# .NET STANDARD VERSIONS VS IMPLEMENTATIONS

| .NET Standard | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 2.0 |
|---|---|---|---|---|---|---|---|---|
| .NET Core | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 |
| .NET Framework | 4.5 | 4.5 | 4.5.1 | 4.6 | 4.6.1 | 4.6.1 | 4.6.1 | 4.6.1 |
| Mono | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 5.4 |
| Xamarin.iOS | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.14 |
| Xamarin.Android | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.5 |

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| Mono | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 5.4 |
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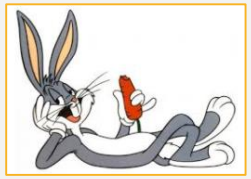
| Xamarin.Android | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.5 |

# .NET STANDARD DOCS

Example from 2.0:

```
namespace System.Drawing {
    public struct Color {
        public static readonly Color Empty;
        public byte A { get; }
        public static Color AliceBlue { get; }
        public static Color AntiqueWhite { get; }
        public static Color Aqua { get; }
```



# .NET STANDARD VERSION DIFFS

Example from 1.6 to 2.0:

```
+    public sealed class StackOverflowException : SystemException {
+        public StackOverflowException();
+        public StackOverflowException(string message);
+        public StackOverflowException(string message, Exception innerException);
+    }
```

# TARGET FRAMEWORK

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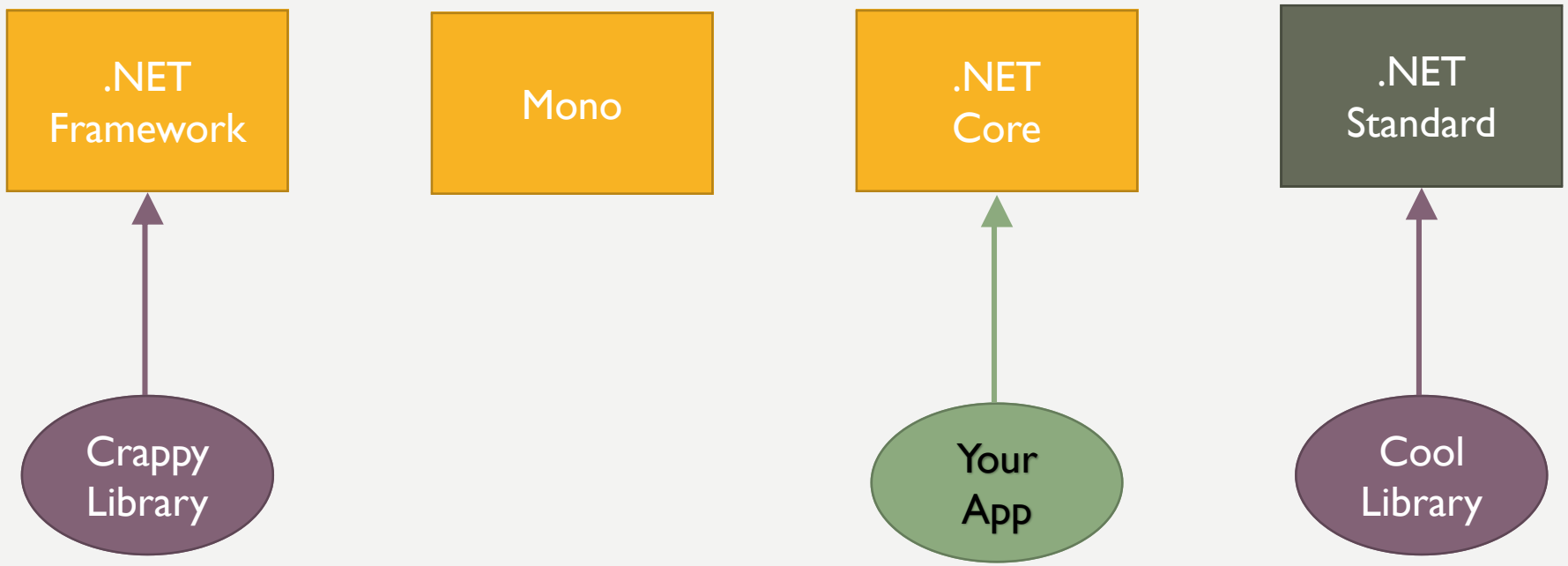

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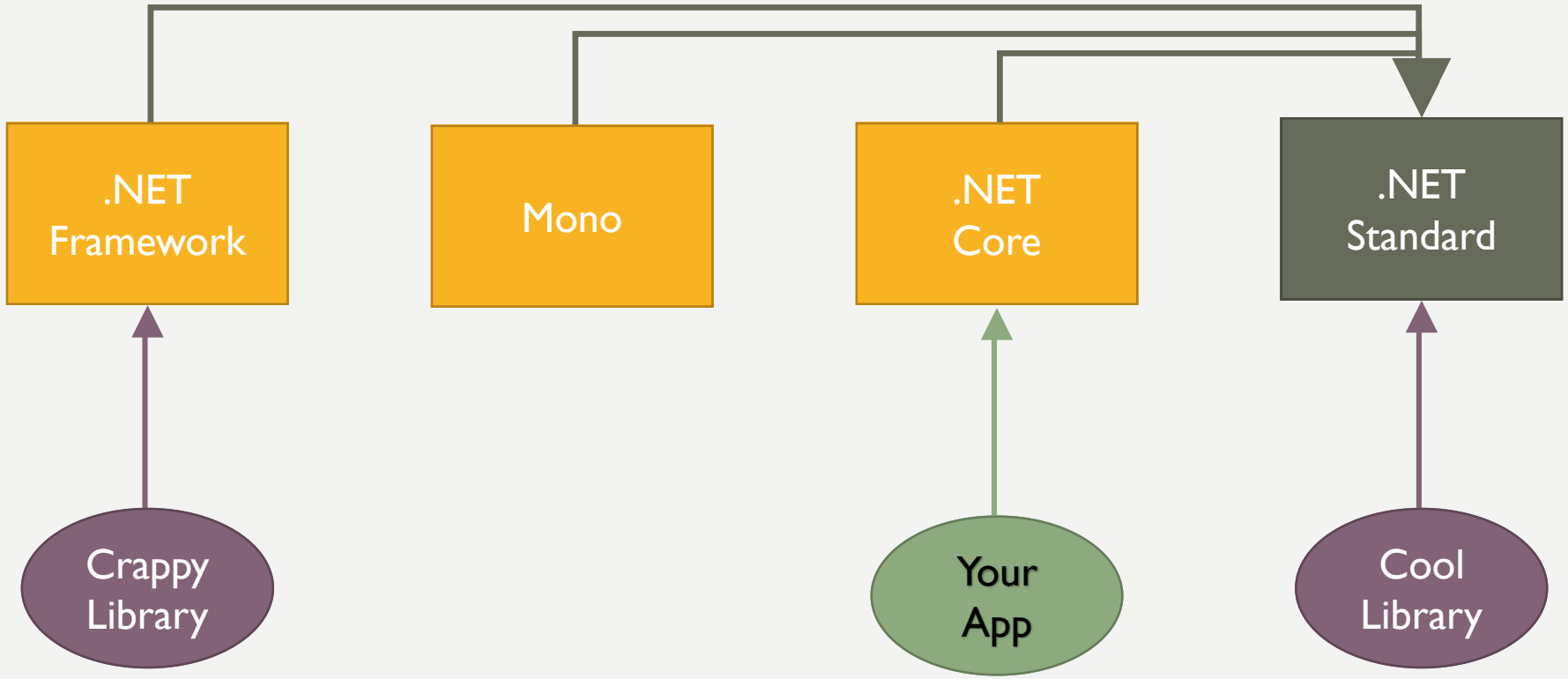

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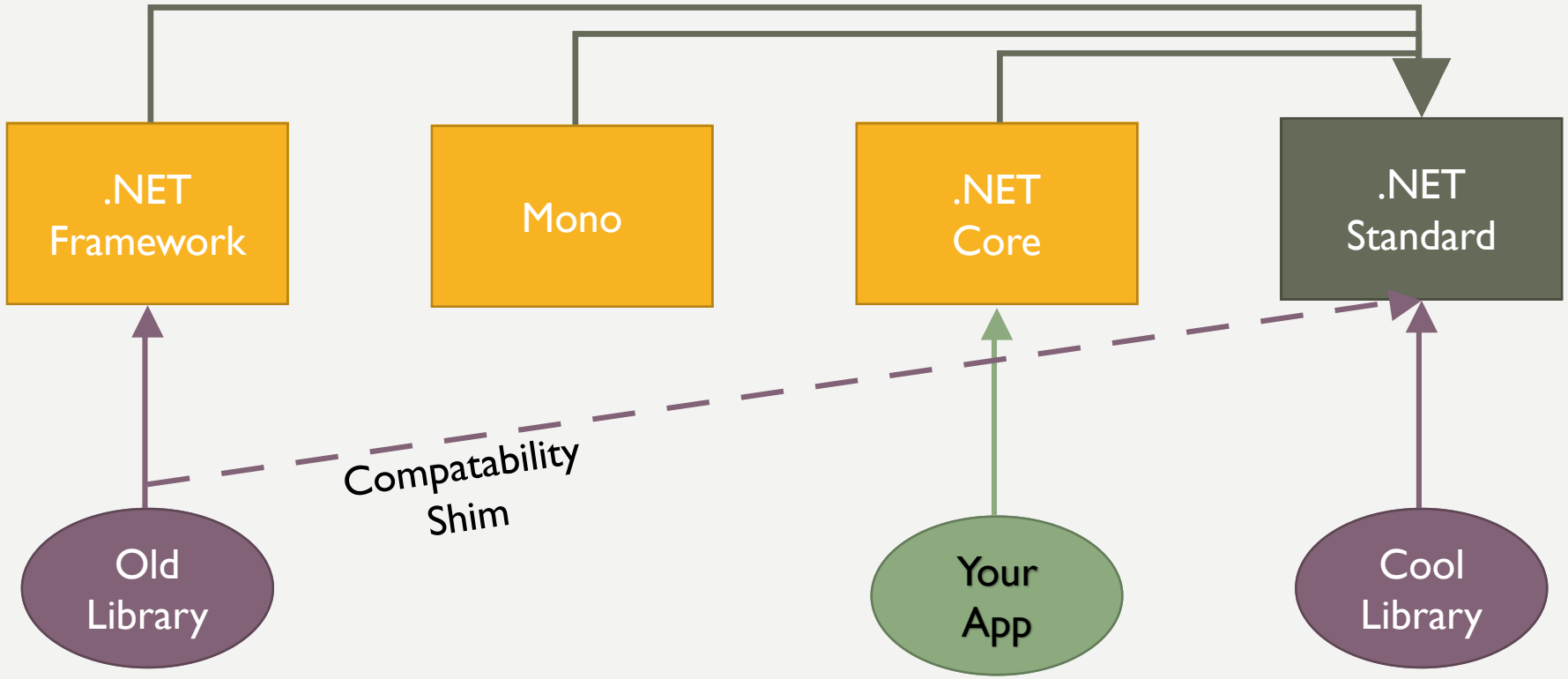


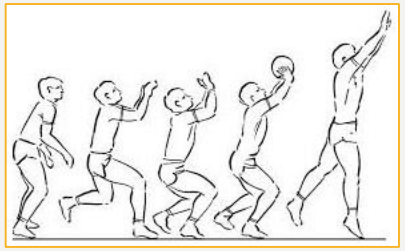
# .NET CORE

## FINALLY GETTING TO THE .NET CORE OF THINGS!

# SETUP

- Download .NET Core SDK
  - Windows
  - Linux
  - OS X

- Choose Dev Environment
  - Command Line Interface
  - Visual Studio
  - VS Code
  - JetBrains Rider



# CLI EXAMPLE: HELLO WORLD

```
$ mkdir hellow
$ cd hellow
$ dotnet new console
$ dotnet run
Hello World!
```

# PUBLISHING

## JUST YOUR APPLICATION

- Small: includes only your IL
- Runs on any device with .NET Core

## SELF CONTAINED

- Larger: includes .NET Core itself
- Platform specific artifacts
  - win10-x64
  - osx.10.12-x64
  - linux-x64
  - etc.

# STOP!

DEMO TIME!

# DEMO TIME

If there *is* time...

# WRAPPING UP

BECAUSE I'M LIKELY WAY BEYOND MY TIME LIMIT

# SUMMARY OF TERMINOLOGY

- **.NET Standard**: API specification
- **.NET Implementation**: frameworks
  - .NET Framework
  - Mono
  - Xamarin
  - .NET Core
- **Target Framework**: .NET Standard or any .NET Implementation

# SUMMARY OF .NET CORE

- An open source, cross platform .NET Implementation.
- The new way to write apps with C# or F#, in the .NET ecosystem.

# MORE COOL STUFF

- **Docker:** works great with .NET Core
- **EF (Entity Framework) Core**: Microsoft's ORM library
- **Universal Windows Platform (UWP)**: for platforms like Xbox and Hololens
- **Roslyn**: open source compilers
- **.NET Native**: compiling to native instead of bytecode

# THANK YOU!

# QUESTIONS?

(IF THERE'S TIME / OR A LAPTOP SWITCH)