.NET 5 & C# 9

A look at what's new

#DDD20

HELLO!

I am Stuart Lang

You can find me at

stu.dev

DMs open!

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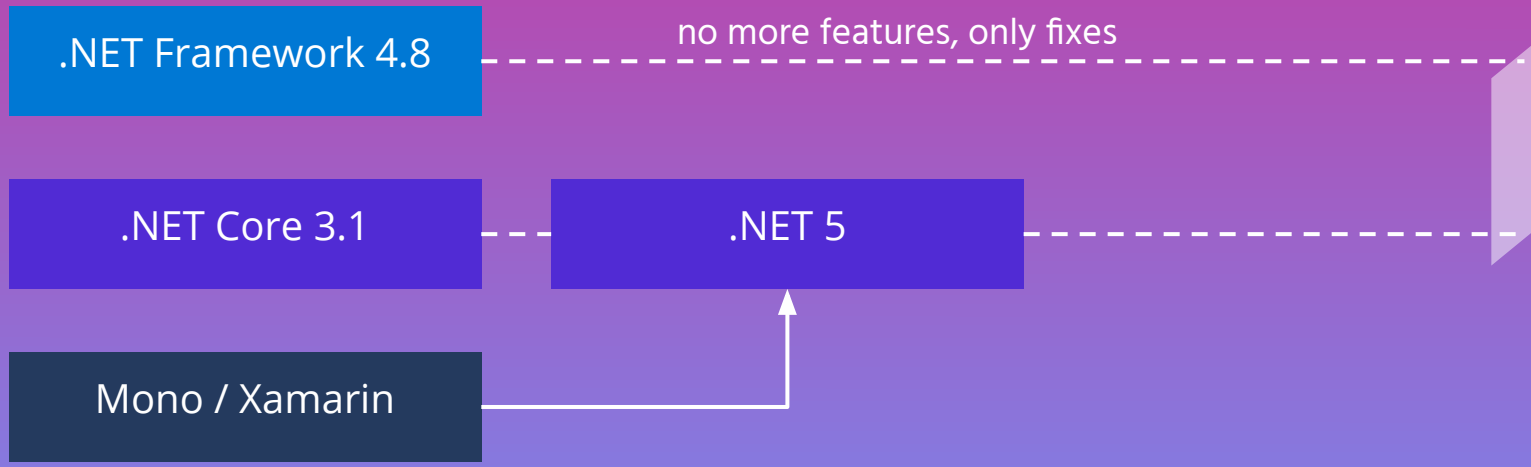
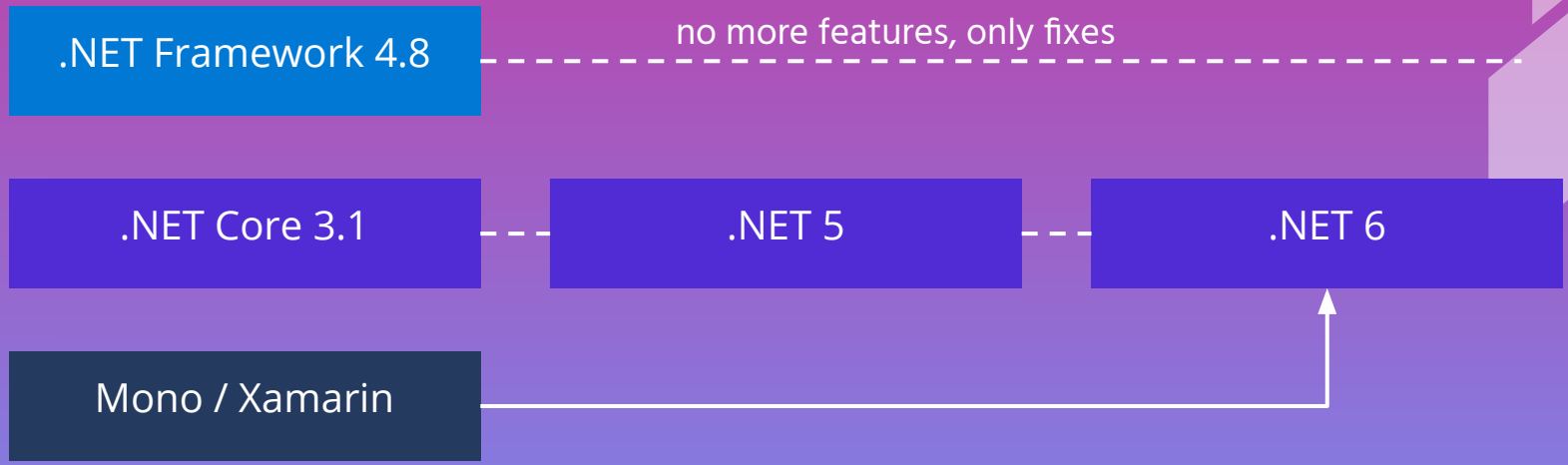
Agenda

- .NET 5
  - What is it
  - Support
  - What's new
- C# 9
  - Top-level programs
  - Patterns
  - Records
  - Source Generators

What's .NET 5


.NET Framework 4.8
no more features, only fixes
.NET Core 3.1
.NET 5
Mono / Xamarin

What's .NET 5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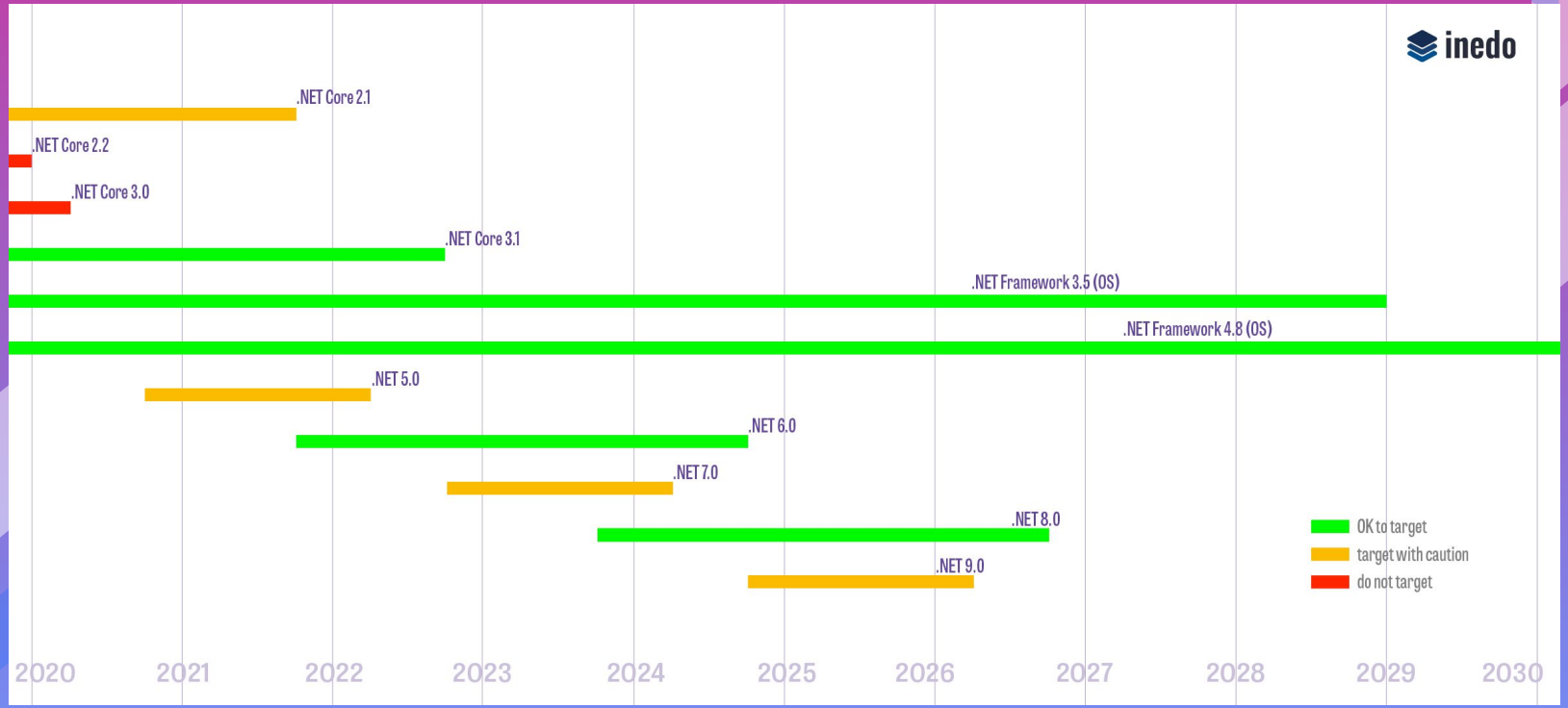
Release Plan

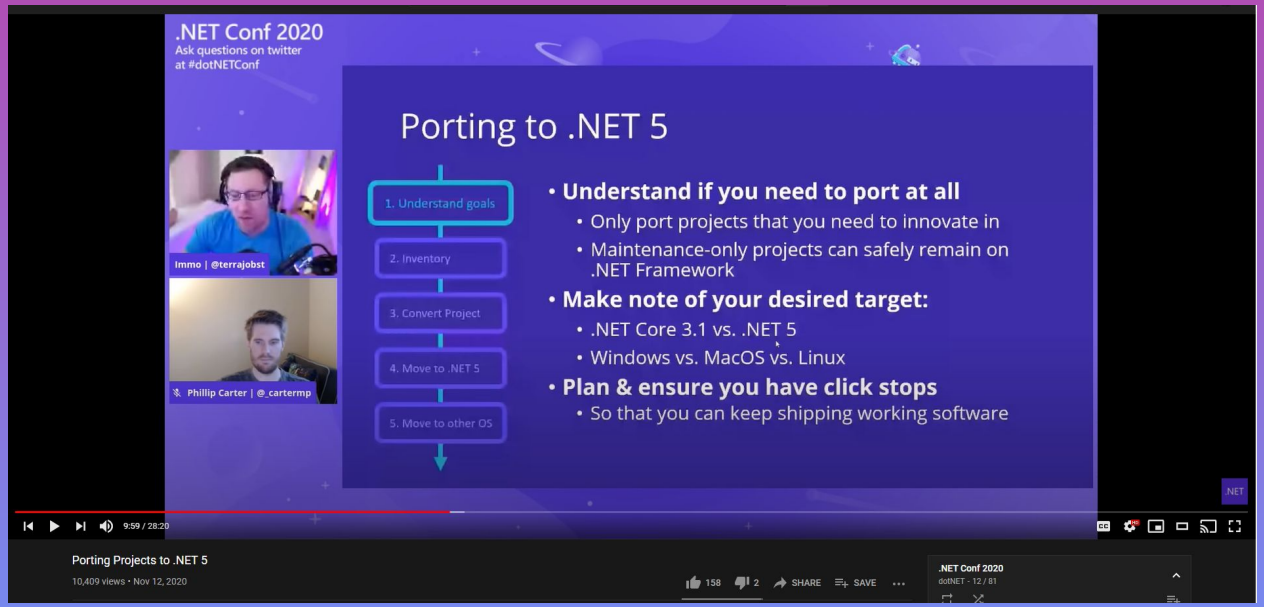


https://blog.inedo.com/demystifying-net-lts

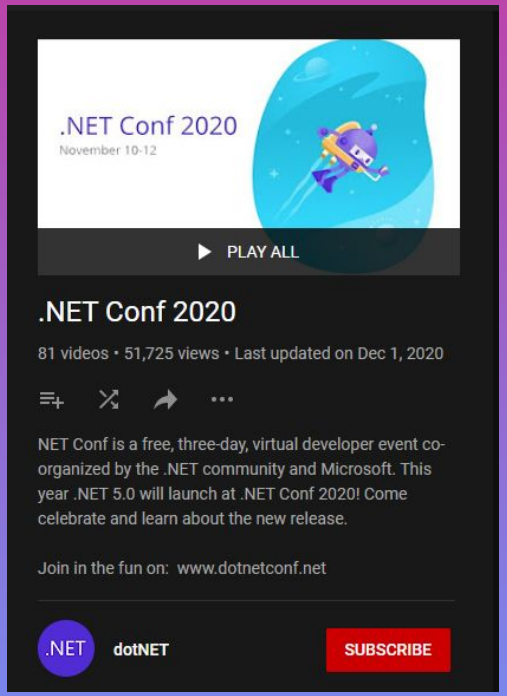
Consider Ecosystem Support

Porting to .NET 5

try-convert: https://github.com/dotnet/try-convert



.NET Conf 2020



[.NET Conf 2020]

.NET 5 Features

- C# 9
- Performance ⚡ Link
- Single file apps
- App trimming
- System.Text.Json new features
- F# 5
- Add more

C# 9

Top-level programs

* demo *

Patterns

Patterns - Switch Expressions

```
var first = pattern[0];
var last = pattern[pattern.Length - 1];

if (first == '%' && last == '%')
{
    return src.ToLower().Contains(pattern.Substring(1, pattern.Length - 2).ToLower());
}

if (first == '%')
{
    return src.ToLower().EndsWith(pattern.Substring(1).ToLower());
}
if (last == '%')
{
    return src.ToLower().StartsWith(pattern.Substring(0, pattern.Length - 1).ToLower());
}
return src.ToLower().Equals(pattern.ToLower());
```

Patterns - Switch Expressions

```
var first = pattern[0];
var last = pattern[^1];

return (first, last) switch {
    ('%', '%') ⇒ src.ToLower().Contains(pattern[1..^1].ToLower()),
    ('%',  _ ) ⇒ src.ToLower().EndsWith(pattern[1..].ToLower()),
    ( _ , '%') ⇒ src.ToLower().StartsWith(pattern[..^1].ToLower()),
    ( _ ,  _ ) ⇒ src.ToLower().Equals(pattern.ToLower())
};
```

Patterns - Switch Expressions

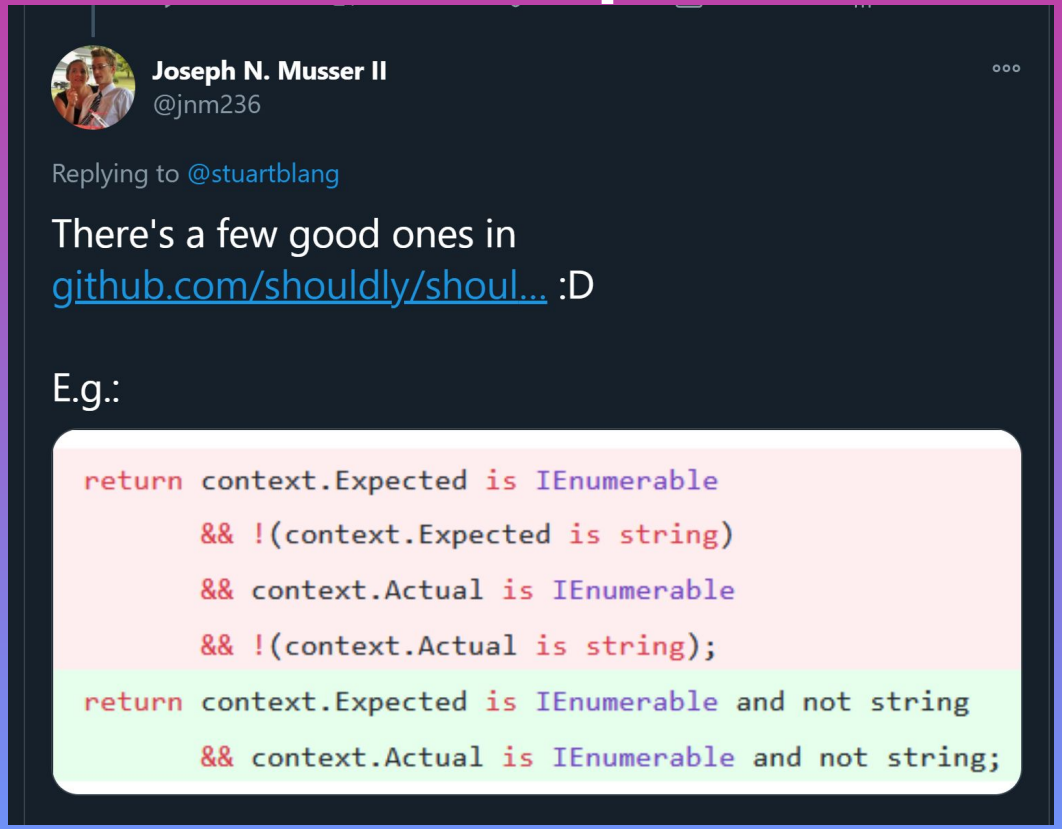
```
static double ComputeArea(object shape)
{
    switch (shape)
    {
        case Square s when s.Side == 0:
        case Circle c when c.Radius == 0:
        case Triangle t when t.Base == 0 || t.Height == 0:
        case Rectangle r when r.Length == 0 || r.Height == 0:
            return 0;

        case Square s:
            return s.Side * s.Side;
        case Circle c:
            return c.Radius * c.Radius * Math.PI;
        case Triangle t:
            return t.Base * t.Height / 2;
        case Rectangle r:
            return r.Length * r.Height;
        default:
            throw new ArgumentException("shape is not a recognized shape",
                nameof(shape));
    }
}
```

Patterns - Switch Expressions

```
static double ComputeArea(object shape)
{
    return shape switch
    {
        Square {Side: 0} ⇒ 0,
        Circle {Radius: 0} ⇒ 0,
        Triangle {Base: 0} or Triangle {Height: 0} ⇒ 0,
        Rectangle {Length: 0} or Rectangle {Height: 0} ⇒ 0,
        Square s ⇒ s.Side * s.Side,
        Circle c ⇒ c.Radius * c.Radius * Math.PI,
        Triangle t ⇒ t.Base * t.Height / 2,
        Rectangle r ⇒ r.Length * r.Height,
        _ ⇒ throw new ArgumentException("shape is not a recognized shape", nameof(shape))
    };
}
```

Patterns - Examples



Patterns - Examples

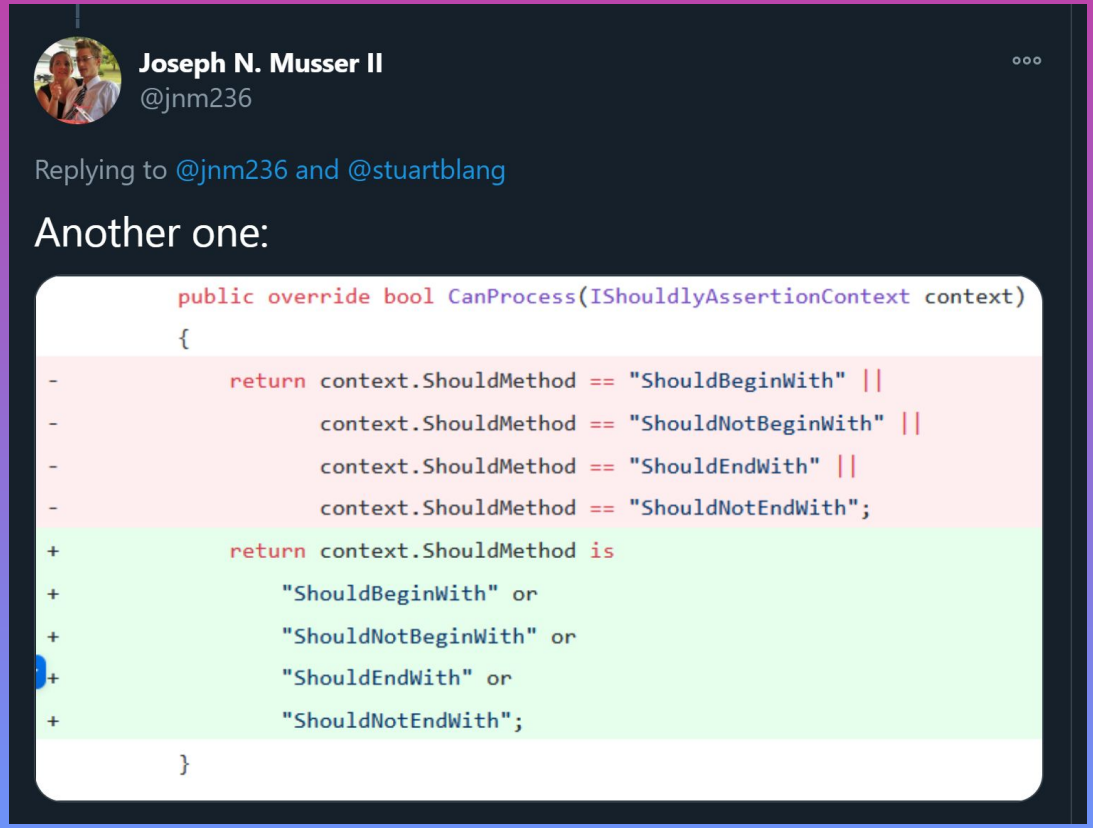
Joseph N. Musser II
@jnm236

Replying to @jnm236 and @stuartblang

Another one in my Shouldly PR:

```
        public override bool CanProcess(IShouldlyAssertionContext context)
        {
-           return context.ShouldMethod.Equals("ShouldBe") &&
-                  !(context.Expected is Expression) &&
-                  context.Actual is IEnumerable<string>;
+           return context is
+           {
+               ShouldMethod: "ShouldBe",
+               Expected: not Expression,
+               Actual: IEnumerable<string>,
+           };
        }
```

Patterns - Examples

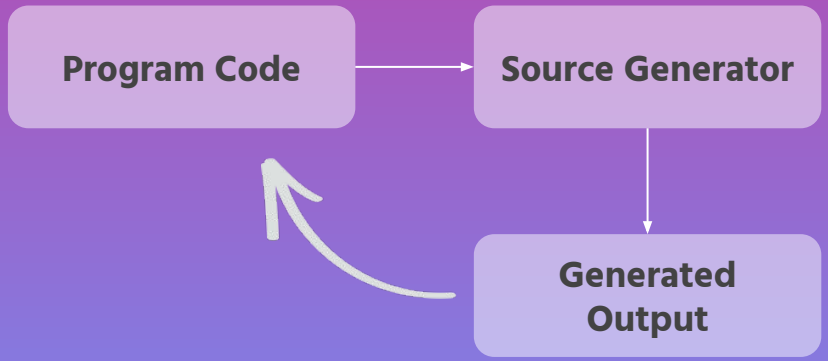


Records

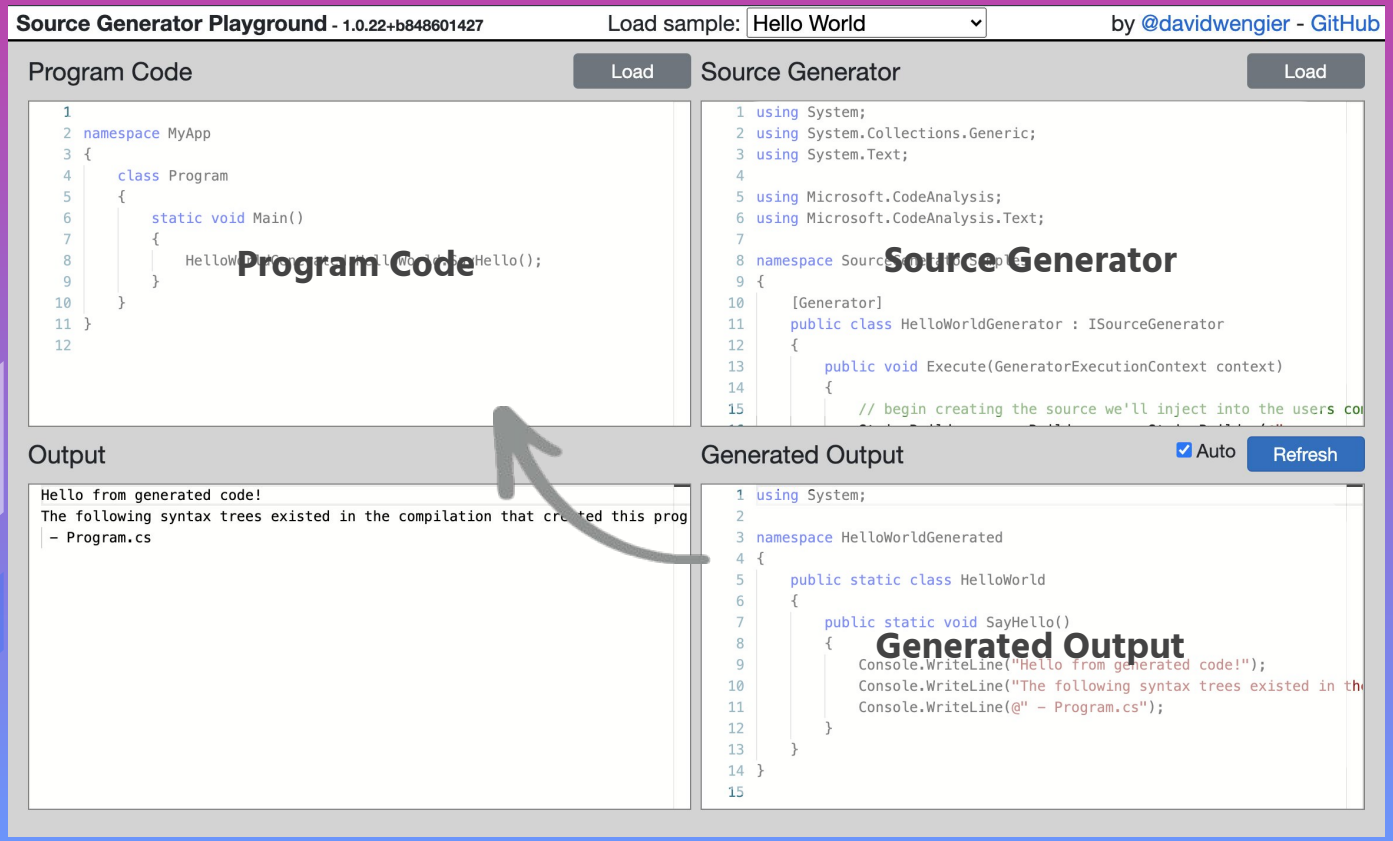
* demo *

Source Generators

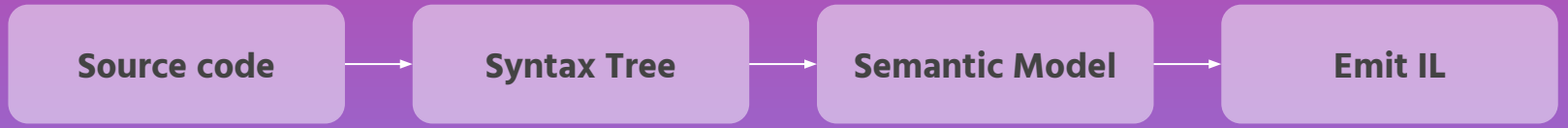
Source Generators



Source Generators



Source Generators - Roslyn



Source Generators

* demo *

THANKS!

Any questions?

You can find me at:

@stuartblang · stu.dev