Testing .NET Code with xUnit.net: Getting Started

GETTING STARTED

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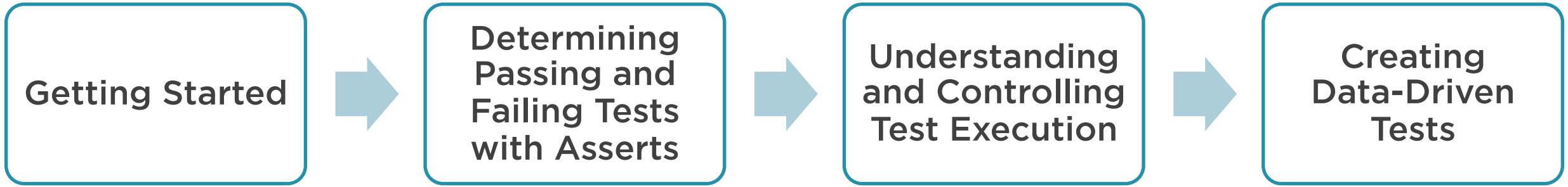
Course Outline



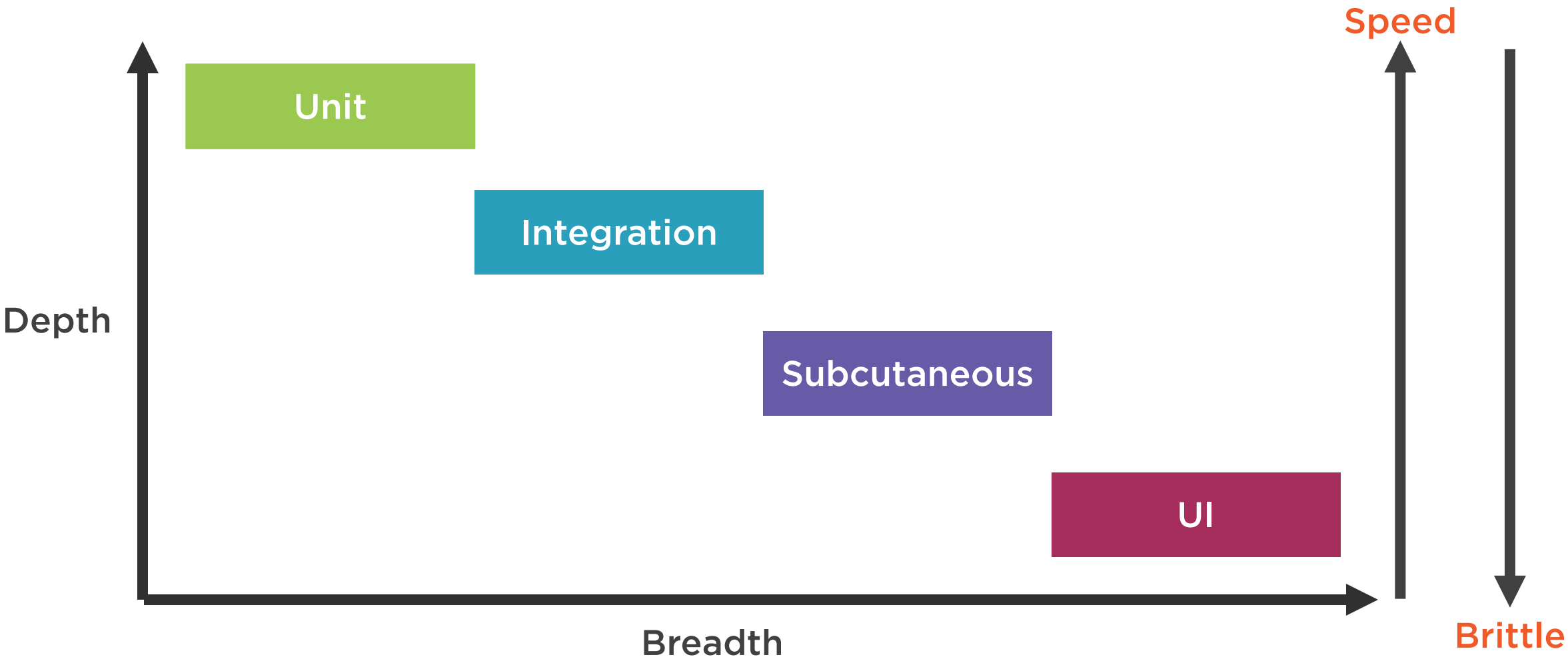
Overview

- Why write automated tests?
- An overview of different test types
- Testing behaviour vs. private methods
- The logical phases of an automated test
- Introducing xUnit.net
- Creating the test project
- Starting to create the first test
- Running the first test

Why Write Automated Tests?

- Free to run as often as required
- Run at any time, on-demand or scheduled
- Quicker to execute than manual testing
- Find errors sooner
- Generally reliable
- Test code sits with production code
- Happier development teams

An Overview of Different Test Types



Testing Behaviour vs. Private Methods

Public interface / behavior

```
public void Sleep()
{
    var healthIncrease = CalculateHealthIncrease();

    Health += healthIncrease;
}

private int CalculateHealthIncrease()
{
    var rnd = new Random();

    return rnd.Next(1, 101);
}
```

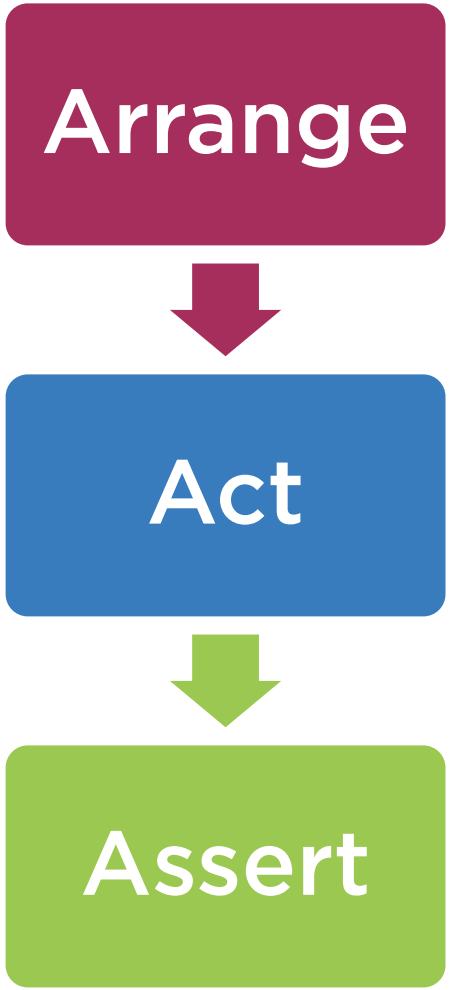
Testing Behaviour vs. Private Methods

```
// AssemblyInfo.cs
[assembly: InternalsVisibleTo("GameEngine.Tests")]
```

```
internal int CalculateHealthIncrease()
{
    var rnd = new Random();

    return rnd.Next(1, 101);
}
```

The Logical Phases of an Automated Test

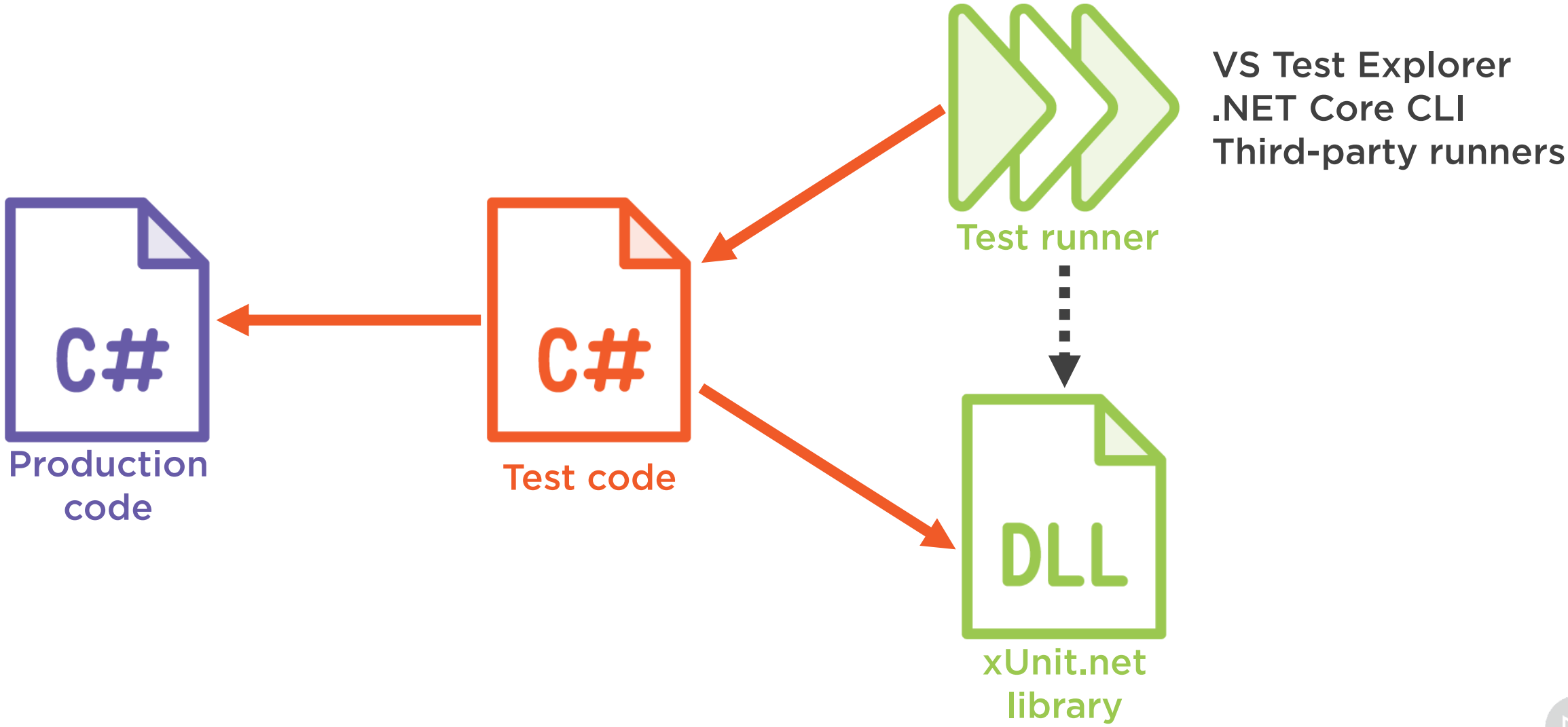


Set things up
Create object instances
Create test data / inputs

Execute production code
Call methods
Set properties

Check results
Test passes / fails

Introducing xUnit.net



Supported Platforms

.NET Full

.NET Core

.NET Standard

Universal Windows Platform (UWP)

Xamarin (iOS & Android)

https://xunit.github.io/

```
public class PlayerCharacterShould
{
    [Fact]
    public void IncreaseHealthAfterSleeping()
    {
        PlayerCharacter sut = new PlayerCharacter();
        sut.Sleep();
        Assert.InRange(sut.Health, 101, 200);
    }

    [Fact]
    public void AnotherTest() {...}

    [Theory]
    public void ADataDrivenTest() {...}
}
```

Arrange

Act

Assert

Summary

Why write automated tests?

- Find errors sooner
- Happier development team

An overview of different test types

- Unit, integration, subcutaneous, UI

Testing behaviour vs. private methods

Arrange, Act, Assert (AAA)

Introduced xUnit.net

Creating the test project

Started to create the first test

Executed the first test

Next:

Determining Passing and Failing Tests with Asserts