

What's new* in .NET 8

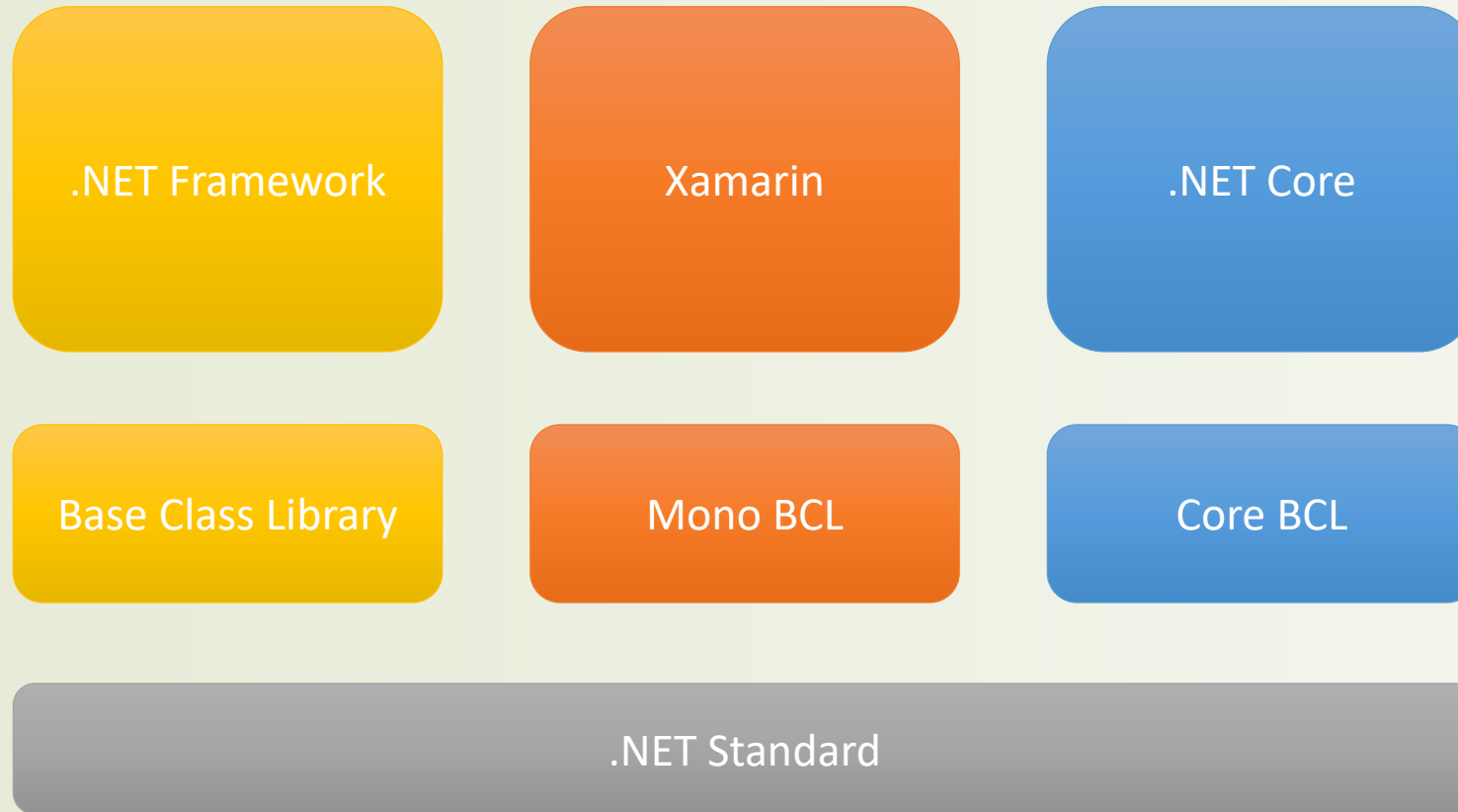


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*new as of in May 2024

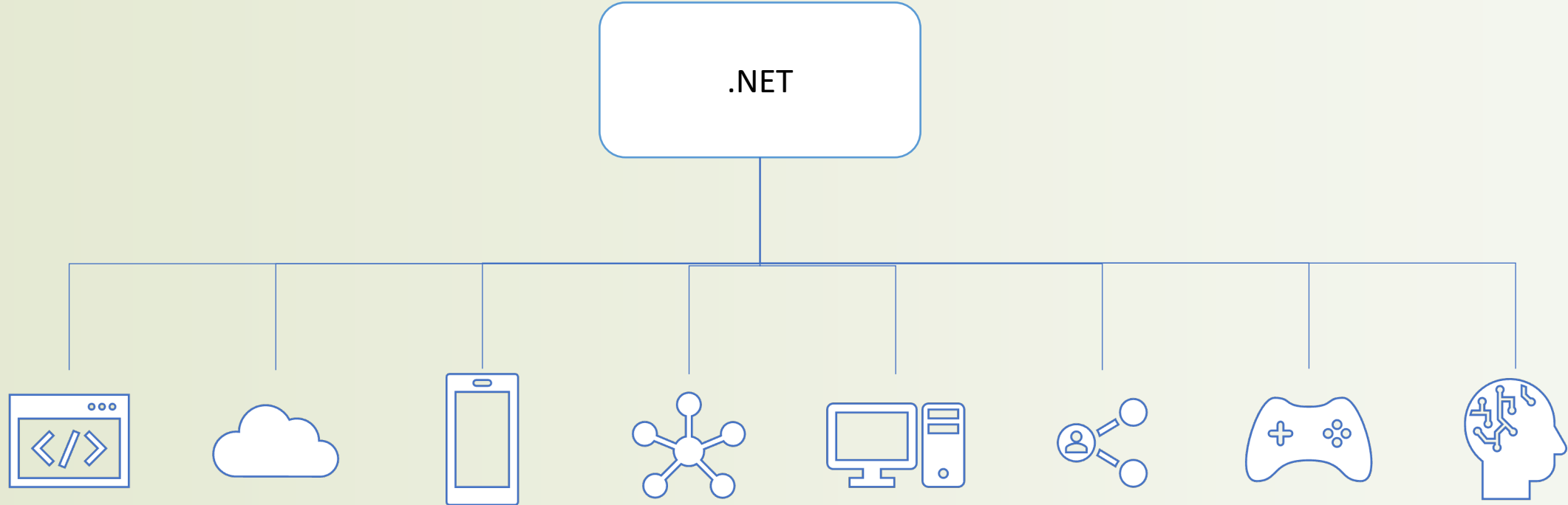
.NET Plattform

Rückblick – Pre .NET 5



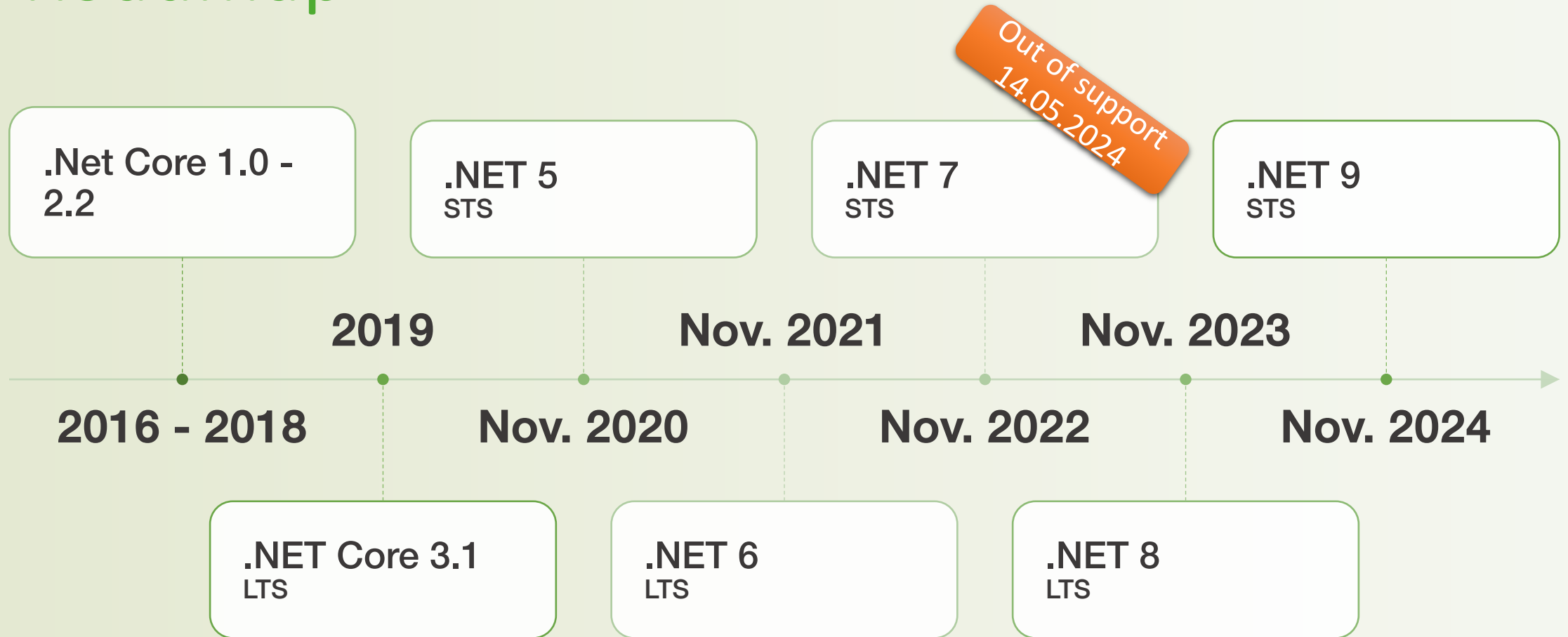
.NET Plattform

Rückblick – one .NET to rule them all



.NET Plattform Roadmap

Long Term Support = 3 Jahre
Short Term Support = 18 Monate



.NET 7

Rückblick - Features

- **Performance**

1000 PRs mit Performance Verbesserungen

- **C# 11**

Raw string literals, required properties, list patterns

- **ASP.NET Core**

Rate-Limiting Middleware, Minimal API Verbesserungen

.NET 8

Features

- **C#12**
Primary Constructors, Collection Expressions, ...
- **ASP.NET Core**
Keyed Services, Short circuit, BackgroundServices, ...
- **.NET Aspire**
Cloud-ready Stack für verteilte Applikationen

.NET 8 Upgrade

```
--- a/Upgrade.csproj
+++ b/Upgrade.csproj
@@ -2,13 +2,13 @@

    <PropertyGroup>
      <OutputType>Exe</OutputType>
-     <TargetFramework>net7.0</TargetFramework>
+     <TargetFramework>net8.0</TargetFramework>^M
      <ImplicitUsings>enable</ImplicitUsings>
      <Nullable>enable</Nullable>
    </PropertyGroup>

    <ItemGroup>
-     <PackageReference Include="Microsoft.EntityFrameworkCore" Version="7.0.8" />
+     <PackageReference Include="Microsoft.EntityFrameworkCore" Version="8.0.4" />^M
    </ItemGroup>

  </Project>
( END )
```

.NET 8

Tooling

- **Visual Studio 2022 17.8+**
Http Files Support
- GitHub Copilot

.NET 8 Tooling

- CLI
Modernisierter Build Output

```
dotnet build
MSBuild version 17.8.3+195e7f5a3 for .NET
  Determining projects to restore...
  All projects are up-to-date for restore.
  02_RequiredProperties -> /Users/manuel/git/developer-day-2024/csharp/csharp11/02_RequiredProperties/bin/Debug/net7.0/02_RequiredProperties.dll
  01_RawStringLiterals -> /Users/manuel/git/developer-day-2024/csharp/csharp11/01_RawStringLiterals/bin/Debug/net7.0/01_RawStringLiterals.dll
/Users/manuel/git/developer-day-2024/csharp/csharp11/03_ListPatterns/Program.cs(24,19): error CS0103: The name 'resadfsult' does not exist in the current context [/Users/manuel/git/developer-day-2024/csharp/csharp11/03_ListPatterns/03_ListPatterns.csproj]

Build FAILED.

/Users/manuel/git/developer-day-2024/csharp/csharp11/03_ListPatterns/Program.cs(24,19): error CS0103: The name 'resadfsult' does not exist in the current context [/Users/manuel/git/developer-day-2024/csharp/csharp11/03_ListPatterns/03_ListPatterns.csproj]
    0 Warning(s)
    1 Error(s)

Time Elapsed 00:00:00.78
```

```
dotnet build --tl
MSBuild version 17.8.3+195e7f5a3 for .NET
Restore complete (0.3s)
  02_RequiredProperties succeeded (0.1s) -> 02_RequiredProperties/bin/Debug/net7.0/02_RequiredProperties.dll
  01_RawStringLiterals succeeded (0.1s) -> 01_RawStringLiterals/bin/Debug/net7.0/01_RawStringLiterals.dll
  03_ListPatterns failed with errors (0.6s)
    /Users/manuel/git/developer-day-2024/csharp/csharp11/03_ListPatterns/Program.cs(24,19): error CS0103: The name 'resadfsult' does not exist in the current context

Build failed with errors in 1.0s
```

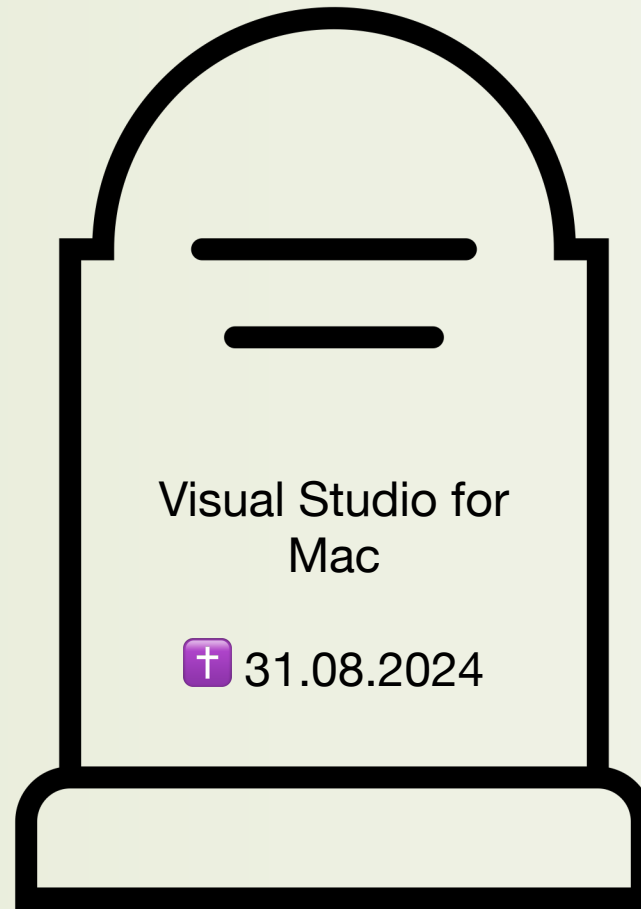
.NET 8 Tooling

- CLI
MSBuild Daten für Build Scripts nutzen

```
dotnet publish --getProperty:OutputType  
Exe ←
```

```
<Project Sdk="Microsoft.NET.Sdk">  
  <PropertyGroup>  
    <OutputType>Exe</OutputType>  
    <TargetFramework>net8.0</TargetFramework>  
    <LangVersion>12.0</LangVersion>  
    <ImplicitUsings>true</ImplicitUsings>  
  </PropertyGroup>  
</Project>
```

.NET 8 Tooling



[Retirement Announcement](#)

.NET 8 Tooling

Demo Time !

C#

10

- Global usings
- Implicit usings
- Extended property patterns

```
var isFromStevenKing = book is { Author.Name: "Steven King" };

string bookDescription = book switch
{
    { ISBN: "1234" } or { ISBN: "4321" } => "Book has ISBN 1234 oder 4321",
    { Author.Name: "Steven King" } => "Book is from Steven King",
    _ => "No idea"
};
```

C#

11

- Raw string literals
- Required properties
- Extended list patterns

```
const string json = $$$"  
    [  
        {  
            "firstName": "{{firstName}}",  
            "lastName": "{{lastName}}"  
        }  
    ]  
    """;  
  
public class Person  
{  
    public required string FirstName { get; set; }  
    public required string LastName { get; set; }  
    public int Age { get; set; }  
}  
  
var numbers = new int[] { 1, 2, 4, 8, 16 };  
numbers is [1, 2, 4, 8, 16]; // true  
numbers is [_, _, _, 8]; // false  
numbers is [1, ..]; // true  
numbers is [1, var a, ..]; // true
```

C#

12

- Primary Constructors
- Collection Expressions
- Default lambda parameters
- Alias any type
- (Erweiterte Data Annotations)



[Language Feature Status](#)

C#

Demo Time !

- Neue C# Features in “alten” .NET Applikationen nutzen
- Erstellt PollyFills über Source Generators
- Einschränkungen: von Runtime abhängige Features

C#

Demo Time !



ASP.NET Core 8

Architektur Übersicht

ASP.NET Core Applications

ASP.NET
Core MVC

ASP.NET Core API
Minimal API

ASP.NET
Core Razor
Pages

ASP.NET
Core Blazor

Miscellaneous

SignalR

gRPC

ASP.NET Core Platform

Model binding

Middleware

Dependency
Injection

Logging

Razor

Kestrel

ASP.NET Core 8

Keyed Service Registration

- Neues Dependency Injection feature
 - Erweiterung des Service Descriptors mit einem Key

```
// Regular registration
builder.Services.AddSingleton<ILoggingService, FileLogService>();
builder.Services.AddSingleton<ILoggingService, DatabaseLogService>();

// Keyed registration
builder.Services.AddKeyedSingleton<ILoggingService, FileLogService>("file");
builder.Services.AddKeyedSingleton<ILoggingService, DatabaseLogService>("db");
```

ASP.NET Core 8

Keyed Service Registration

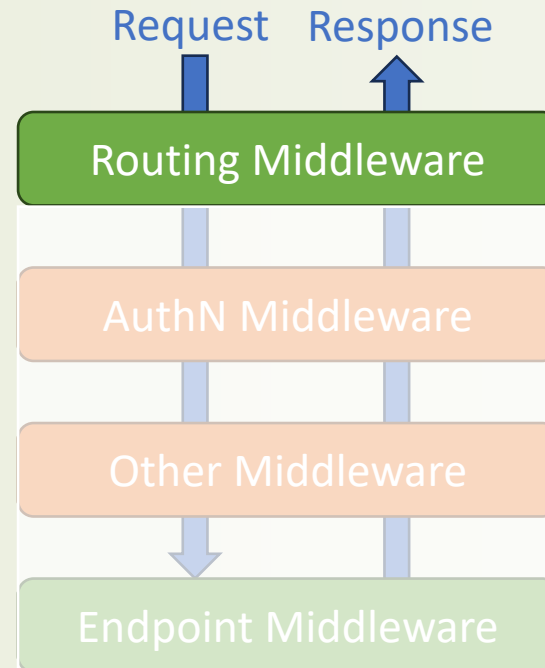
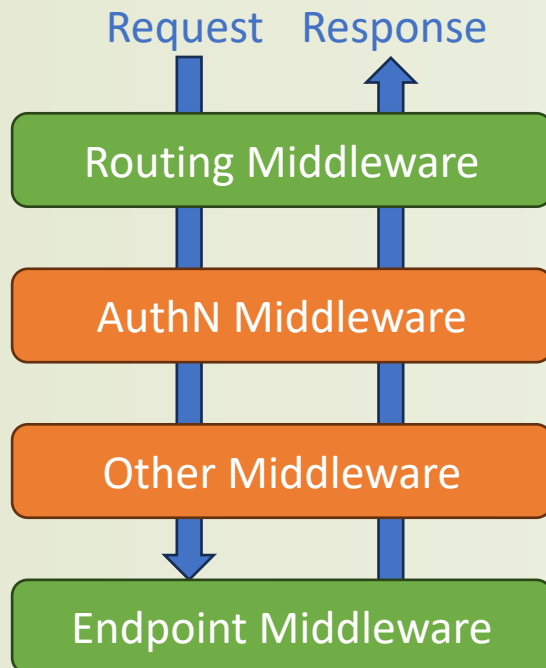
Demo Time!

ASP.NET Core 8

Short-circuit routing

```
app.MapGet('/health', () => Results.Ok()).ShortCircuit()  
app.MapShortCircuit(404, 'favicon.ico')
```

- Neue Funktion zum Überspringen von Middleware



ASP.NET Core 8

Short-circuit routing

Demo Time !

ASP.NET Core 8

Native AOT

- Aktueller Support für folgende Templates
 - gRPC Template
 - Minimal APIs

```
// Regular builder
var builder = WebApplication.CreateBuilder(args)

// AOT builder
var builder = WebApplication.CreateSlimBuilder(args)
```



[ASP.NET Core support for Native AOT](#)

ASP.NET Core 8

Improved Background Service

- Pre .NET 8
 - IHostedService (Start-, StopAsync)
 - BackgroundService BaseClass
- Ab .NET 8
 - IHostedLifecycleService

```
// Configure to start concurrently
builder.Services.Configure<HostOptions>(hostOptions =>
{
    hostOptions.ServicesStartConcurrently = true;
    hostOptions.ServicesStopConcurrently = true;
});
```

```
namespace Microsoft.Extensions.Hosting
{
    public interface IHostedLifecycleService : IHostedService
    {
        Task StartingAsync(CancellationTokentoken cancellationToken);
        // Task StartAsync(CancellationTokentoken cancellationToken);
        Task StartedAsync(CancellationTokentoken cancellationToken);
        Task StoppingAsync(CancellationTokentoken cancellationToken);
        // Task StopAsync(CancellationTokentoken cancellationToken);
        Task StoppedAsync(CancellationTokentoken cancellationToken);
    }
}
```

```
// Hosted service registration
builder.Services.AddHostedService<PreviousHostedService>();
builder.Services.AddHostedService<PreviousBackgroundService>();
builder.Services.AddHostedService<NewHostedLifecycleService>();
```

ASP.NET Core 8

Improved Background Service

Demo Time!

ASP.NET Core 8

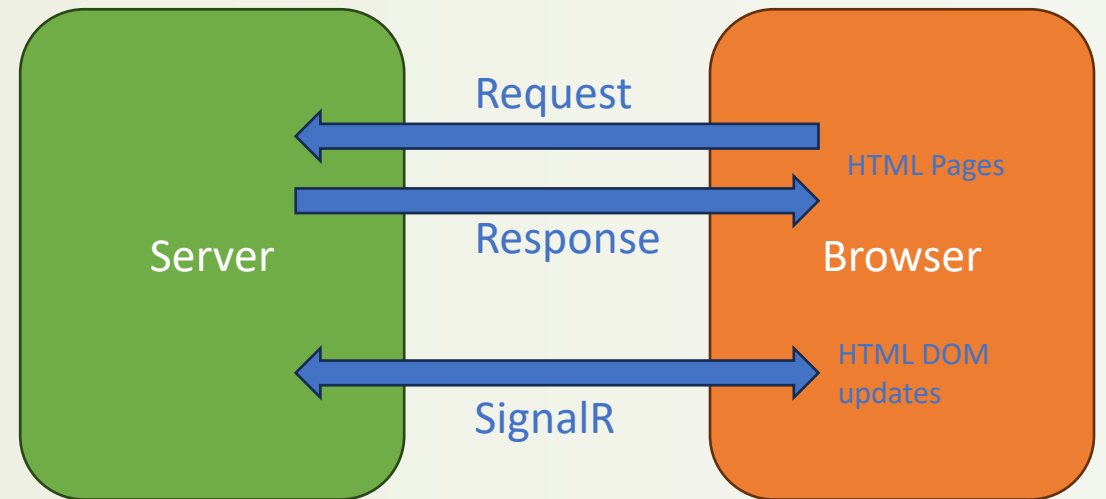
Blazor

- **Pre .NET 8**
 - Blazor Server
 - Blazor WebAssembly (WASM)
- **Ab .NET 8**
 - Blazor Full Stack Web UI

ASP.NET Core 8

Blazor Server

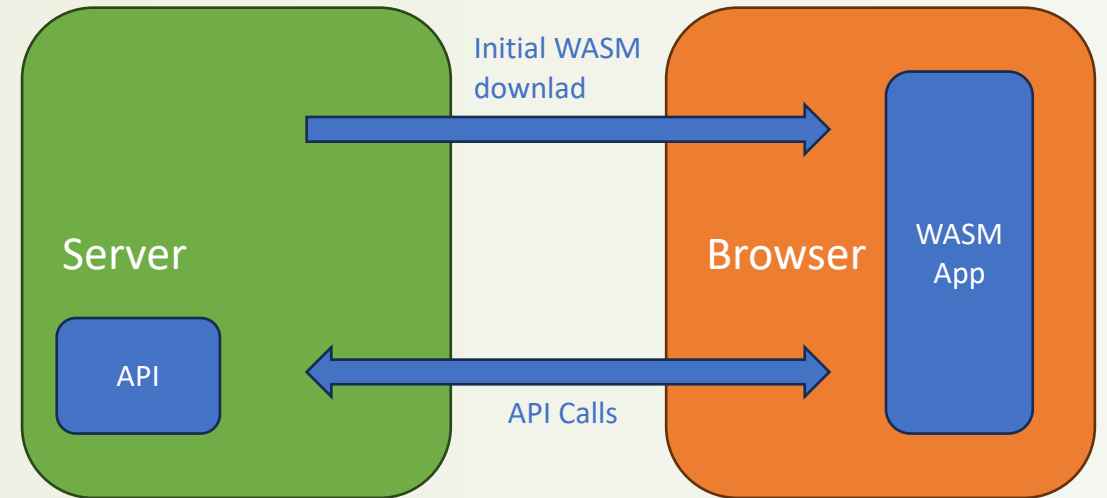
- Server-side rendering
 - Request / Response
- SignalR Verbindungen
 - WebSockets



ASP.NET Core 8

Blazor WebAssembly

- **Native (WASM) Code**
 - Client-side rendered (SPA ähnlich)
- **Backend via APIs**



ASP.NET Core 8

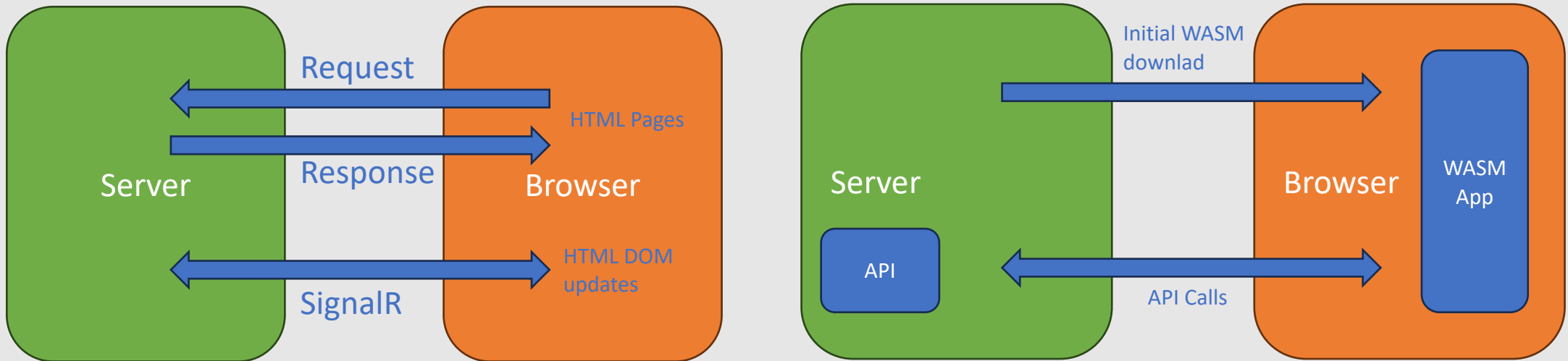
Blazor Full Stack Web UI

- Neuer Typ - Server und WASM “kombiniert”
 - Projekt Template: Blazor Web App
- @renderMode
 - Interactive- None / Server / WebAssembly / Auto
 - Definierbar pro Seite, Komponente oder Applikation

ASP.NET Core 8

Blazor Full Stack Web UI

Blazor Full Stack Web UI



ASP.NET Core 8

Blazor Full Stack Web UI

Demo Time!

ASP.NET Core 8

ASP.Net Core Identity

- **Pre .NET 8**

- Default UI Seiten (Microsoft.AspNetCore.Identity.UI)

- **Ab .NET 8**

- Default UI Seiten
 - Minimal API Endpunkte (Microsoft.AspNetCore.Identity...)

ASP.NET Core 8

ASP.Net Core Identity

Demo Time!

ASP.NET Core 8

Security Themen

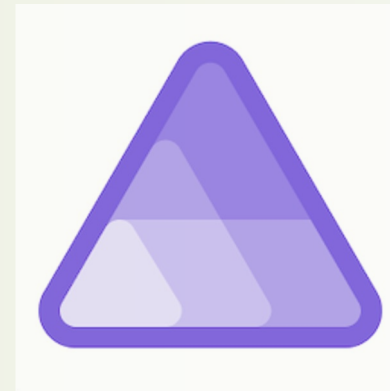
- Update der “Crypto”-Libraries
- Default support: HTTP/3
- ...
- Optional: AES256-Crypto Service Demo



.NET Aspire

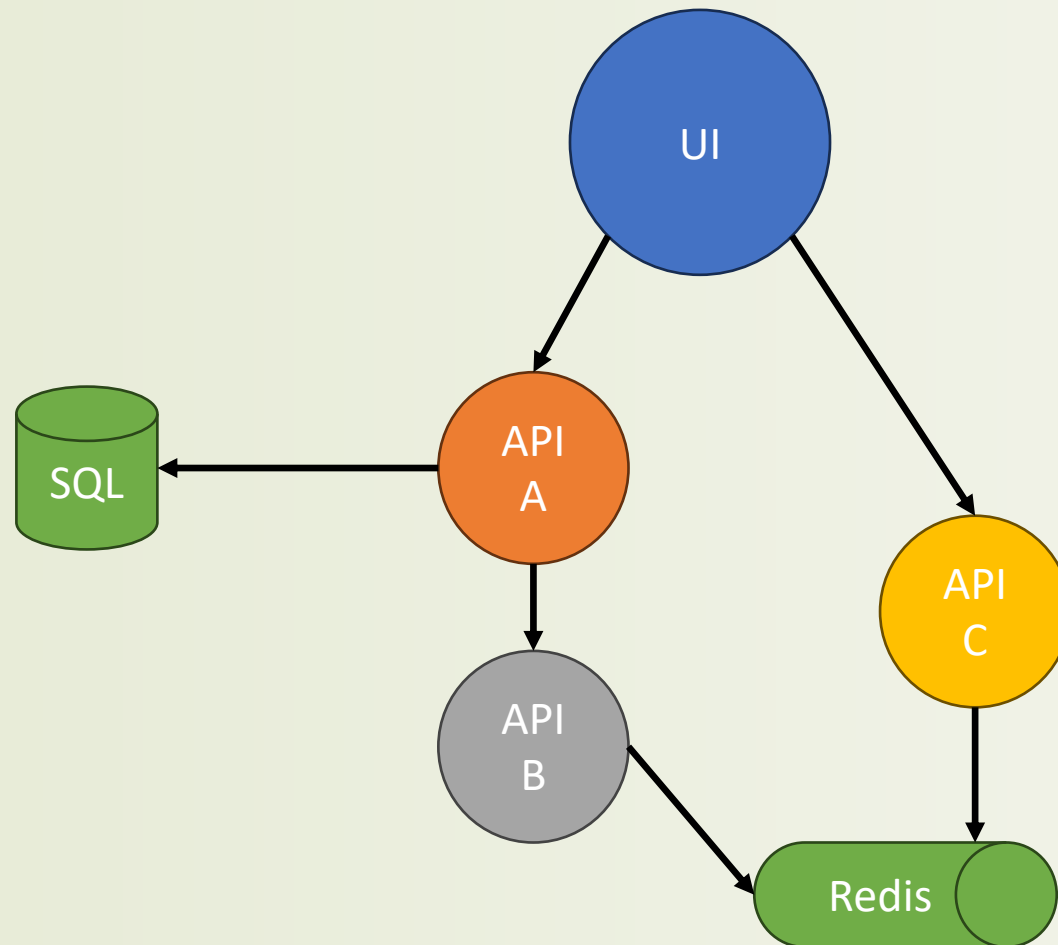
Preview 6

- Cloud-ready Stack für verteilte Anwendungen
- Übernimmt Orchestrierung von Projekten und Services
- Einbindung via NuGet Pakete



.NET Aspire

Preview 6



.NET Aspire

Preview 6

Demo Time !

.NET Aspire

Deployment

- **Aspire Manifest (JSON)**
 - Beschreibt Apps, Services und Verbindungen
- **Deployment nach Azure**
 - Azure Container Apps
- **Deployment nach Kubernetes**
 - .NET Aspire JSON -> Kubernetes YAML

.NET Aspire Deployment

```
dotnet run --project path-to-project --publisher manifest --output-path aspire-manifest.json
```

```
{
  "resources": {
    "postgres": {
      "type": "container.v0",
      "connectionString": "Host={postgres.bindings.tcp.host};Port={postgres.bindings.tcp.port};Username=postgres;Password={postgres-password.value}",
      "image": "docker.io/library/postgres:16.2",
      "env": {
        ...
        "POSTGRES_USER": "postgres",
        "POSTGRES_PASSWORD": "{postgres-password.value}"
      },
      ...
    },
    "db": {
      "type": "value.v0",
      "connectionString": "{postgres.connectionString};Database=db"
    },
    "api": {
      "type": "project.v0",
      "path": "../AspireDemo.Api/AspireDemo.Api.csproj",
      "env": {
        ...
        "ConnectionStrings__db": "{db.connectionString}"
      },
      ...
    },
    "web": {
      "type": "project.v0",
      "path": "../AspireDemo.Web/AspireDemo.Web.csproj",
      "env": {
        ...
        "services__api__http__0": "{api.bindings.http.url}",
        "services__api__https__0": "{api.bindings.https.url}"
      },
      ...
    },
    "postgres-password": {
      "type": "parameter.v0",
      "value": "{postgres-password.inputs.value}",
      "inputs": {
        "value": {
          "type": "string",
          "secret": true,
          "default": {
            "generate": {
              "minLength": 22
            }
          }
        }
      }
    }
  }
}
```

Preview 6

Vielen Dank 🙏

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