Advanced Developers Conference 21

Development for Professionals!

.NET 6 Neuerungen im Überblick

.NET 6, ASP.NET 6.0, Entity Framework Core 6.0 & Co.

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Meine Person- Thorsten Kansy

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Microsoft SQL Server

.NET Core

ASP.NET Core

Azure Cosmos DB

DOTNETCONSULTING

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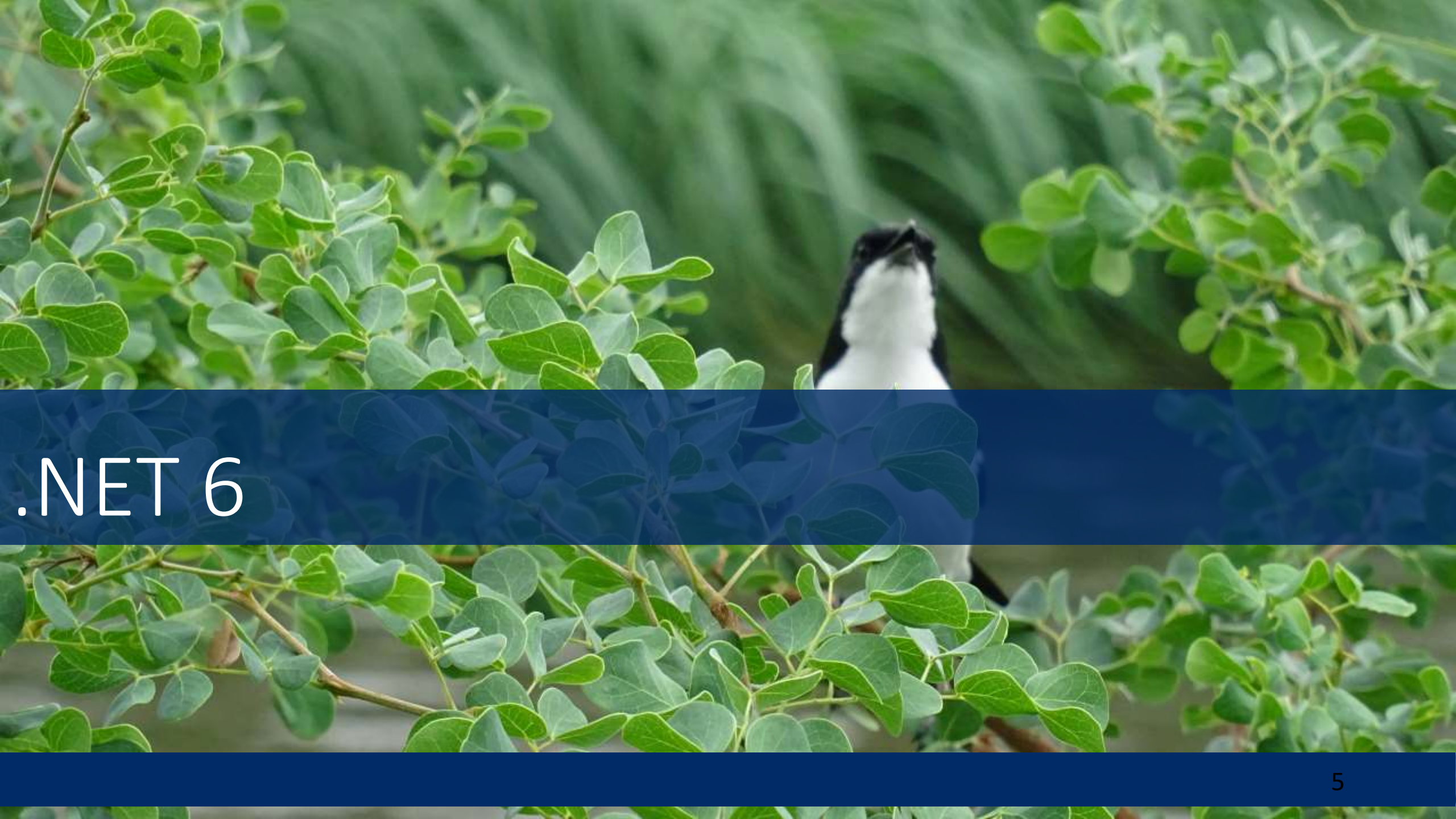
- Individuelle Inhouse Trainings
- (Online on-demand) Projektbegleitung
- Beratung
  - Problemanalyse und Lösungen
  - Technologieentscheidungen

Agenda

- .NET 6
- ASP.NET Core 6.0
- Entity Framework Core 6.0
- Breaking Changes
- Sonstiges



.NET 6

Neue Projektvorlagen

- Console und Web-App in minimaler Form
  - Top-Level-Statement (C# 9)
  - Implicit Namespace Imports (C# 10)

- Nullable reference Types aktiviert

PreCompiler switches

#IF…#ELIF…#ENDIF

Target Frameworks	Symbols
.NET Framework	NETFRAMEWORK, NET48, NET472, NET471, NET47, NET462, NET461, NET46, NET452, NET451, NET45, NET40, NET35, NET20, NET48_OR_GREATER, NET472_OR_GREATER, NET471_OR_GREATER, NET47_OR_GREATER, NET462_OR_GREATER, NET461_OR_GREATER, NET46_OR_GREATER, NET452_OR_GREATER, NET451_OR_GREATER, NET45_OR_GREATER, NET40_OR_GREATER, NET35_OR_GREATER, NET20_OR_GREATER
.NET Standard	NETSTANDARD, NETSTANDARD2_1, NETSTANDARD2_0, NETSTANDARD1_6, NETSTANDARD1_5, NETSTANDARD1_4, NETSTANDARD1_3, NETSTANDARD1_2, NETSTANDARD1_1, NETSTANDARD1_0, NETSTANDARD2_1_OR_GREATER, NETSTANDARD2_0_OR_GREATER, NETSTANDARD1_6_OR_GREATER, NETSTANDARD1_5_OR_GREATER, NETSTANDARD1_4_OR_GREATER, NETSTANDARD1_3_OR_GREATER, NETSTANDARD1_2_OR_GREATER, NETSTANDARD1_1_OR_GREATER, NETSTANDARD1_0_OR_GREATER
.NET 5+ (and .NET Core)	NET, NET6_0, NET6_0_ANDROID, NET6_0_IOS, NET6_0_MACOS, NET6_0_MACCATALYST, NET6_0_TVOS, NET6_0_WINDOWS, NET5_0, NETCOREAPP, NETCOREAPP3_1, NETCOREAPP3_0, NETCOREAPP2_2, NETCOREAPP2_1, NETCOREAPP2_0, NETCOREAPP1_1, NETCOREAPP1_0, NET6_0_OR_GREATER, NET6_0_ANDROID_OR_GREATER, NET6_0_IOS_OR_GREATER, NET6_0_MACOS_OR_GREATER, NET6_0_MACCATALYST_OR_GREATER, NET6_0_TVOS_OR_GREATER, NET6_0_WINDOWS_OR_GREATER, NET5_0_OR_GREATER, NETCOREAPP_OR_GREATER, NETCOREAPP3_1_OR_GREATER, NETCOREAPP3_0_OR_GREATER, NETCOREAPP2_2_OR_GREATER, NETCOREAPP2_1_OR_GREATER, NETCOREAPP2_0_OR_GREATER, NETCOREAPP1_1_OR_GREATER, NETCOREAPP1_0_OR_GREATER

https://docs.microsoft.com/en-us/ef/core/miscellaneous/cli/powershell

dotnet sdk check

Installierte SDKs überprüfen

```
dotnet sdk check
```

Command Prompt

```
Try out the newest .NET SDK features with .NET 6.0.100.

.NET Runtimes:
Name                              Version                      Status
-----------------------------------------------------------------------------------------
Microsoft.AspNetCore.All          2.1.30                       .NET 2.1 is out of support.
Microsoft.AspNetCore.App          2.1.30                       .NET 2.1 is out of support.
Microsoft.NETCore.App             2.1.30                       .NET 2.1 is out of support.
Microsoft.AspNetCore.App          3.1.20                       Patch 3.1.21 is available.
Microsoft.NETCore.App             3.1.20                       Patch 3.1.21 is available.
Microsoft.WindowsDesktop.App      3.1.20                       Patch 3.1.21 is available.
Microsoft.AspNetCore.App          5.0.9                        Patch 5.0.12 is available.
Microsoft.NETCore.App             5.0.9                        Patch 5.0.12 is available.
Microsoft.WindowsDesktop.App      5.0.9                        Patch 5.0.12 is available.
Microsoft.AspNetCore.App          5.0.11                       Patch 5.0.12 is available.
Microsoft.NETCore.App             5.0.11                       Patch 5.0.12 is available.
Microsoft.WindowsDesktop.App      5.0.11                       Patch 5.0.12 is available.
Microsoft.NETCore.App             6.0.0-preview.6.21352.12     Patch 6.0.0 is available.
Microsoft.WindowsDesktop.App      6.0.0-preview.6.21353.1      Patch 6.0.0 is available.
Microsoft.AspNetCore.App          6.0.0-preview.6.21355.2      Patch 6.0.0 is available.
Microsoft.AspNetCore.App          6.0.0-rc.2.21480.10          Patch 6.0.0 is available.
Microsoft.NETCore.App             6.0.0-rc.2.21480.5           Patch 6.0.0 is available.
Microsoft.WindowsDesktop.App      6.0.0-rc.2.21501.6           Patch 6.0.0 is available.


The latest versions of .NET can be installed from https://aka.ms/dotnet-core-download. For more information about .NET l
ifecycles, see https://aka.ms/dotnet-core-support.


C:\Users\tkans>_
```

Deployment

- Trimming (Tree Shaking)
  - Fraglich ob für WPF-Apps
- Single-File-Publishing
  - EnableCompressionInSingleFile: Optionale Komprimierung
  - Dateigröße vs. Startzeit

AOT (Ahead of time compilation)

Aktuell nur für Blazor WASM, verschoben auf .NET 7

```
dotnet workload install microsoft-net-sdk-blazorwebassembly-aot

dotnet publish -c Release
```

```
Install-Package Microsoft.NET.Sdk.BlazorWebAssembly.AOT
```

Projects –Datei

```
<RunAOTCompilation>true</RunAOTCompilation>
```

.NET 6 – API (Klassen)

DateOnly & TimeOnly

Nie wieder ein (Geburtstags-)Datum mit Uhrzeit :-)

```
DateOnly d1 = new(1971, 12, 18);
DateOnly d2 = DateOnly.FromDateTime(DateTime.Today);
Console.WriteLine($"{d1} / {d2}");

TimeOnly t1 = new(18, 30, 15);
TimeOnly t2 = TimeOnly.FromDateTime(DateTime.Now);
Console.WriteLine($"{t1} / {t2}");
```

LINQ-Operators

- `DistinctBy`, `UnionBy`, `IntersectBy`, `ExceptBy`
- `MaxBy` und `MinBy`
- `Chunk`
- `FirstOrDefault`, `LastOrDefault` und `SingleOrDefault`
  - Standardwert kann nun bestimmt werden (bei leeren Listen)
- VERBESSERUNGEN
  - `Zip, ElementAt, Take`
- `TryGetNonEnumeratedCount`

PriorityQueue

Priorisierte Queue

```
PriorityQueue<string, int> taskList = new();
taskList.Enqueue("Task 1", 1);
taskList.Enqueue("Task 2", 1);
taskList.Enqueue("Task 3", 3);
taskList.Enqueue("Task 4", 2);

while (taskList.TryDequeue(out string? taskName, out int prio))
{
    Console.WriteLine($"prio: {prio}, taskName: {taskName}");
}
```

JSON

```
// Node aus JSON-Text erstellen (parsen)
JsonNode jsonNode = JsonNode.Parse(@"{""Name"":""Thorsten K
```

```
JsonObject jsonObject = new()
{
    ["Professional"] = new JsonObject()
    {
        ["Name"] = "Thorsten Kansy",
        ["Topics"] = new JsonArray("Freier Consultant
    }
};

// Zugriff auf Nodes
Debug.Assert(jsonObject["Professional"]!["Topics"]![1
```

```
int value = (int)jsonNode["Age"]!;
```

```
[JsonPropertyOrder(1)]
5 references | Thorsten Kansy, 2 days ago | 1 author, 1 change
public string Id { get; set; }

[JsonPropertyOrder(3)]
2 references | Thorsten Kansy, 2 days ago | 1 author, 1 change
public string Givenname { get; set; }
```

Open Telemetry

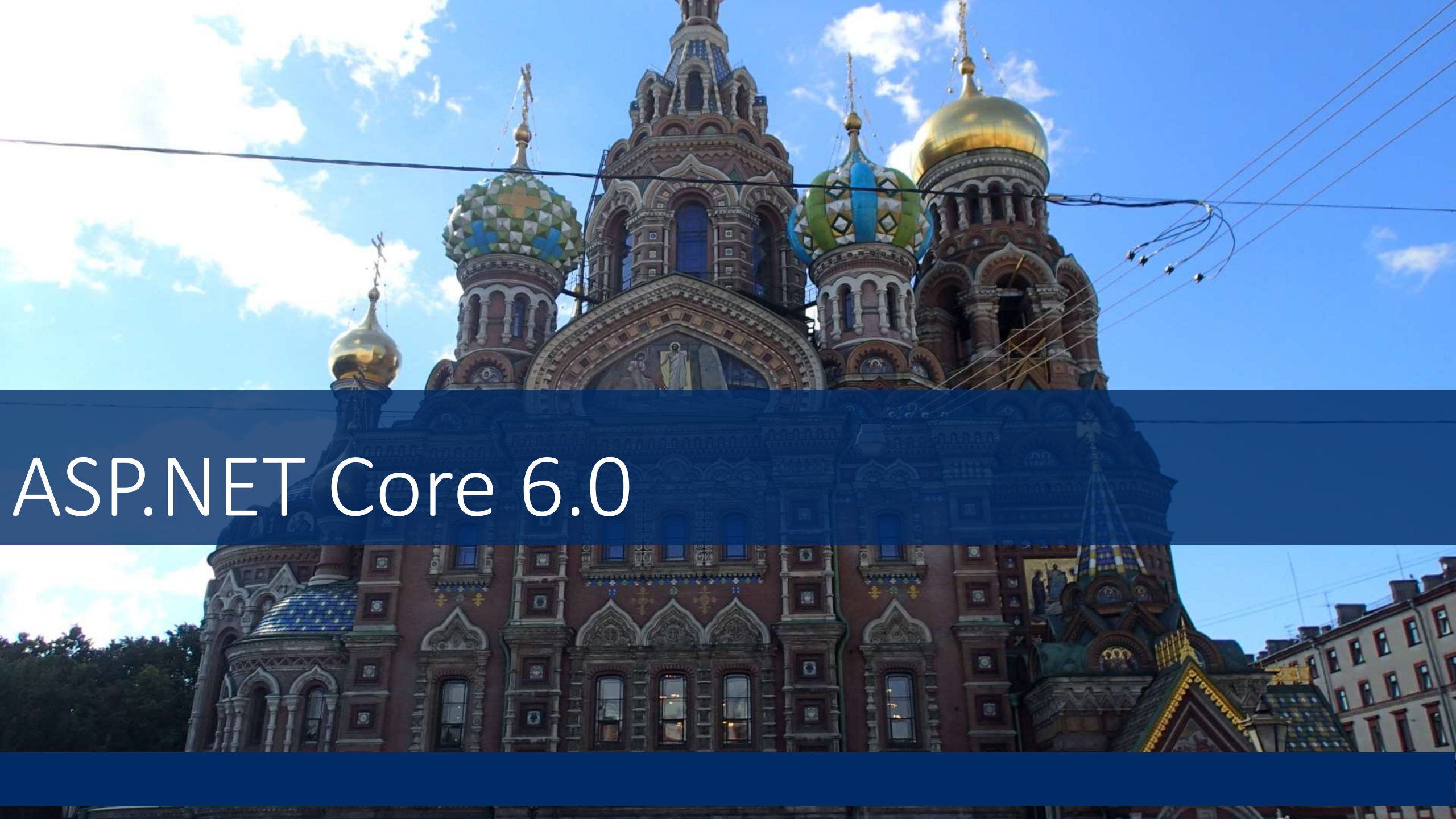
System.Diagnostics.Metrics.MeterListener („Empfänger“)

```
// Meter Listener konfigurieren
using var listener = new MeterListener();

listener.InstrumentPublished = (instrument, meterListener) =>
{
    if (instrument.Name == INSINSTRUMENTNAME && instrument.Meter.Name == COUNTERNAME)
            meterListener.EnableMeasurementEvents(instrument, null);
};
listener.SetMeasurementEventCallback<int>((instrument, measurement, tags, state) =>
{
    Console.WriteLine($"Instrument: {instrument.Name} has recorded the measurement: {measurement}
                        Tagged: {tags[0].ToString()} State: {state} ");
});

// Starten
listener.Start();
```

Open Telemetry

System.Diagnostics.Metrics.Meter („Sender“)

```
// Meter erstellen
using var meter = new Meter(COUNTERNAME, "v1.0");
Counter<int> counter = meter.CreateCounter<int>(INSINSTRUMENTNAME);

// Werte erzeugen
for (int i = 0; i < 10; i++)
{
    counter.Add(Random.Shared.Next(100),
                KeyValuePair.Create<string, object?>("Time", DateTime.Now));
}
```



ASP.NET Core 6.0

Minimal API

APIs ohne Controller

```
app.MapGet(Urls.GETWEATHER,
       (IWeatherService weatherService) => weatherService.GetWeather());


app.MapGet(Urls.GETWEATHERLOCATION,
       (IWeatherService weatherService, string location) =>
              weatherService.GetWeather(location));


// app.MapPost(...);
// app.MapPut(...);
// app.MapDelete(...);
```

Http Logging

- Loggen von Headers, Bodies, etc.

```
builder.Services.AddHttpLogging(logging =>
{
    // Customize HTTP logging here.
    logging.LoggingFields = HttpLoggingFields.All;
    logging.RequestHeaders.Add("My-Request-Header");
    logging.ResponseHeaders.Add("Sensitive");
    logging.ResponseHeaders.Add("Non-Sensitive");
    logging.MediaTypeOptions.AddText("text/html");
    logging.RequestBodyLogLimit = 4096;
    logging.ResponseBodyLogLimit = 4096;
});

app.UseHttpLogging();
```

appsettings.json

Einstellungen unter `Microsoft.AspNetCore.Kestrel.*`

```
{
  "Logging": {
    "LogLevel": {
      "Default": "Information",
      "Microsoft.AspNetCore": "Warning",

      "Microsoft.AspNetCore.Kestrel.BadRequests": "Debug",
      "Microsoft.AspNetCore.Kestrel.Connections": "Debug",
      "Microsoft.AspNetCore.Kestrel.Http2": "Debug",
      "Microsoft.AspNetCore.Kestrel.Http3": "Debug"
    }
  },
  "AllowedHosts": "*"
}
```

Blazor 6.0 WASM

PageTitle, HeadContent & HeadOutlet

```
var builder = WebAssemblyHostBuilder.CreateDefault(args);


builder.RootComponents.Add<App>("app");
builder.RootComponents.Add<HeadOutlet>("head::after");
```

Program.cs

```
...
<PageTitle>TimeTracking: @DateOnly.FromDateTime(DateTime.Today))</PageTitle>
...
<HeadContent>
  <meta name="description" content="Use this page to count things!" />
  <meta name="author" content="Niels Swimberghe">
  <link rel="icon" href="favicon.ico" type="image/x-icon">
</HeadContent>
...
```

*.razor

AoT

Leider nur bei Blazor-Anwendungen beim Deployment => .NET 7

Microsoft: 5 x schneller in der Ausführung, jedoch längere Ladezeiten

```
dotnet workload install wasm-tools
```

Blazor Query String Component Parameters

```
...
@code{
    [Parameter]
    [SupplyParameterFromQuery]
    public string Filter { get; set; }
}
...
```

```
...
@code{
    [Parameter]
    [SupplyParameterFromQuery(Name = "ParameterName")]
    public string Filter { get; set; }
}
...
```

*.razor

Required (Editor)Parameter

Pflichtparameter für den Editor, leider nur als Warnung

```
<h2>@Text</h2>
@code
{
    [Parameter, EditorRequired]
    public string Text { get; set; }
}
```

Header.razor

```
<Header />
<hr
```

dotnetconsulting.TimeTracking.BlazorWASM.Client.Shared.Controls.Header

RZ2012: Component 'Header' expects a value for the parameter 'Text', but a value may not have been provided.

Error Boundary

“Html-Try-Catch-Block”

```
...
<ErrorBoundary>
    <ChildContent>
        <BadComponent /> <!-- Löst eine Exception aus -->
    </ChildContent>
    <ErrorContent Context="ex">
        <p>
            Exception: @ex.Message
        </p>
    </ErrorContent>
</ErrorBoundary>
...
```

*.razor

Accessibility Improvements

```
<Router AppAssembly="@typeof(Program).Assembly">
    <Found Context="routeData">
        <RouteView RouteData="@routeData" DefaultLayout="@typeof(MainLayout)" />
        <FocusOnNavigate RouteData="@routeData" Selector="h1" />
    </Found>
    <NotFound>
        <LayoutView Layout="@typeof(MainLayout)">
            <p>Sorry, there's nothing at this address.</p>
        </LayoutView>
    </NotFound>
</Router>
...
```

App.razor

Entity Framework Core 6.0

IsTemporal (Fluent API)

- Temportal table (SQL Server)
- Standard: -

```
modelBuilder.Entity<MyTemporalTable>()
    .ToTable(t => t.IsTemporal(hist =>
        {
                hist.UseHistoryTable("SessionHistory");
        };
```

```
dbContext.MyTemporalTable
    .TemporalAsOf(<Date>).Where(w => …);
```

Temporal AsOf & Co

Temportal table (SQL Server)

Linq Operator	Temporal Klausel
TemporalAll()	Alle Daten aus der Tabelle und der historischen Tabelle.
TemporalAsOf(…)	Daten zu einem bestimmten Zeitpunkt einschränken.
TemporalFromTo(…)	Daten aus der Tabelle plus der historischen Tabelle exk. Einschluss der oberen Grenze.
TemporalBetween(…)	Daten aus der Tabelle plus der historischen Tabelle inkl. Einschluss der oberen Grenze.
TemporalContainedIn(…)	Nur Daten aus den der historischen Tabelle aus dem Zeitraum.

Pre-convention model configuration

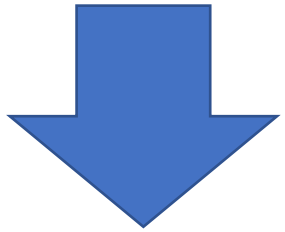
Standard Konvention

```
protected override void ConfigureConventions(ModelConfigurationBuilder configurationBuilder)
{
    // Standard Konvention festlegen
    configurationBuilder.Properties<string>()
        .HaveMaxLength(100);
    configurationBuilder.Properties<decimal>()
        .HavePrecision(18, 3);

    // Auch Interfaces sind erlaubt
    configurationBuilder.IgnoreAny<INonPersisted>();

    base.ConfigureConventions(configurationBuilder);
}
```

Migration Bundles

Migration via DevOps freundlicher EXE

```
dotnet ef migrations bundle
```



```
efbundle.exe
```

oder

```
efbundle.exe --connection {$ENVVARWITHCONNECTION}
```

Compiled Models

Geschwindigkeitsgewinn durch Vorkompilierung des Models zur Entwurfszeit

```
dotnet ef dbcontext optimize --output-dir
MyCompiledModels --namespace MyCompiledModels
```

```
optimize-dbcontext -outputdir MyCompiledModels -
namespace MyCompiledModels
```

- Keine Global Query Filter
- Kein LazyLoading (da kein Proxy Change-Tracking)

Compiled model bootstrapping

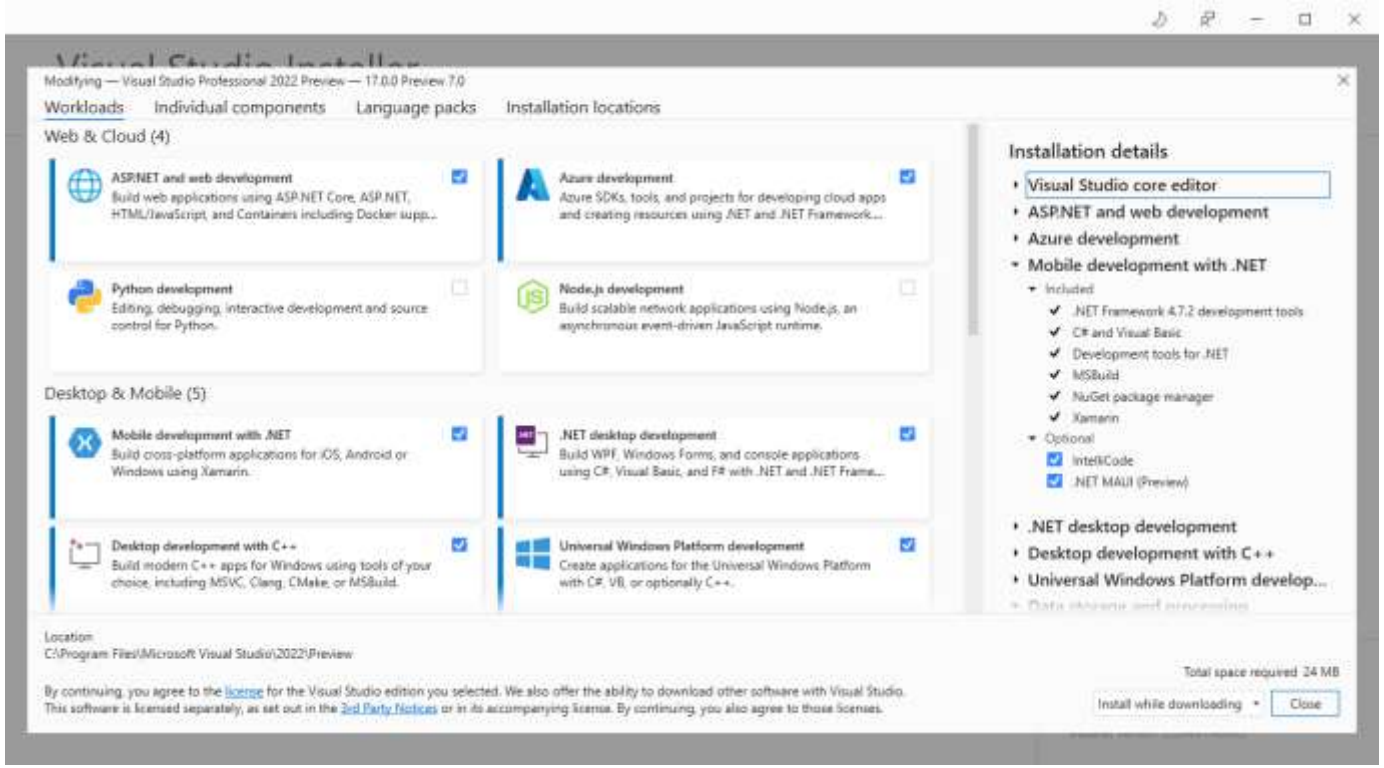
Model einbinden

```
…
optionsBuilder.UseSqlServer("<connection string>;");
optionsBuilder.UseModel(MyCompiledModels.DemoDbContextModel.Instance);
…
```

MAUI-Multi-platform App UI

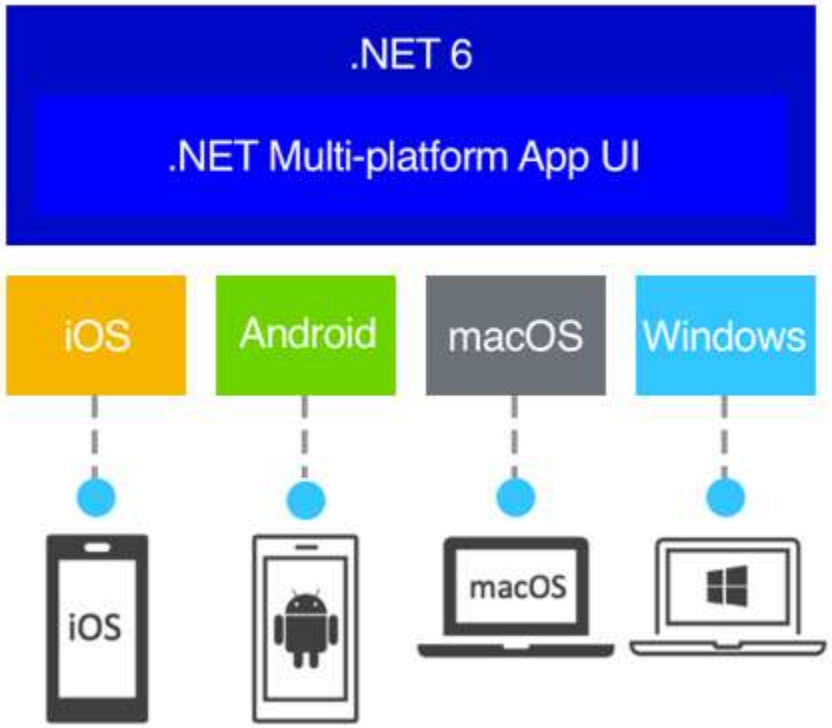
MAUI-Multi-platform App UI

Verfügbarer, aber verschoben auf Q2/2022



https://visualstudiomagazine.com/articles/2021/09/15/net-maui-delay.aspx

Eine Codebase für iOS, Android, macOS & Win



WPF

WPF

- Hot reload
- Blazor Desktop Integration (WebView2 mit Chromium engine)

WinForms

WinForms

- Hot reload
- Blazor Desktop Integration (WebView2 mit Chromium engine)
- Application-wide default font
- More runtime designers
- Accessibility improvements
- High DPI Support

Breaking Changes

Breaking Changes

Zum Glück recht überschaubar

- .NET 6
  - Breaking changes in .NET 6 - .NET | Microsoft Docs
- EF Core 6.0
  - EF Core: Breaking Changes in EF Core 6.0 | Microsoft Docs

Fragen? Jetzt oder später!

www.dotnetconsulting.eu

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Links

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