

TESTIRANJE APLIKACIJ S HTTP KLICI

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AGENDA

- Vzorčni projekt
- Trije nivoji testiranja
 - Poslovna logika
 - Klici HTTP
 - Storitvev kot celota
- Pregled orodij

ARHITEKTURNI DIAGRAM

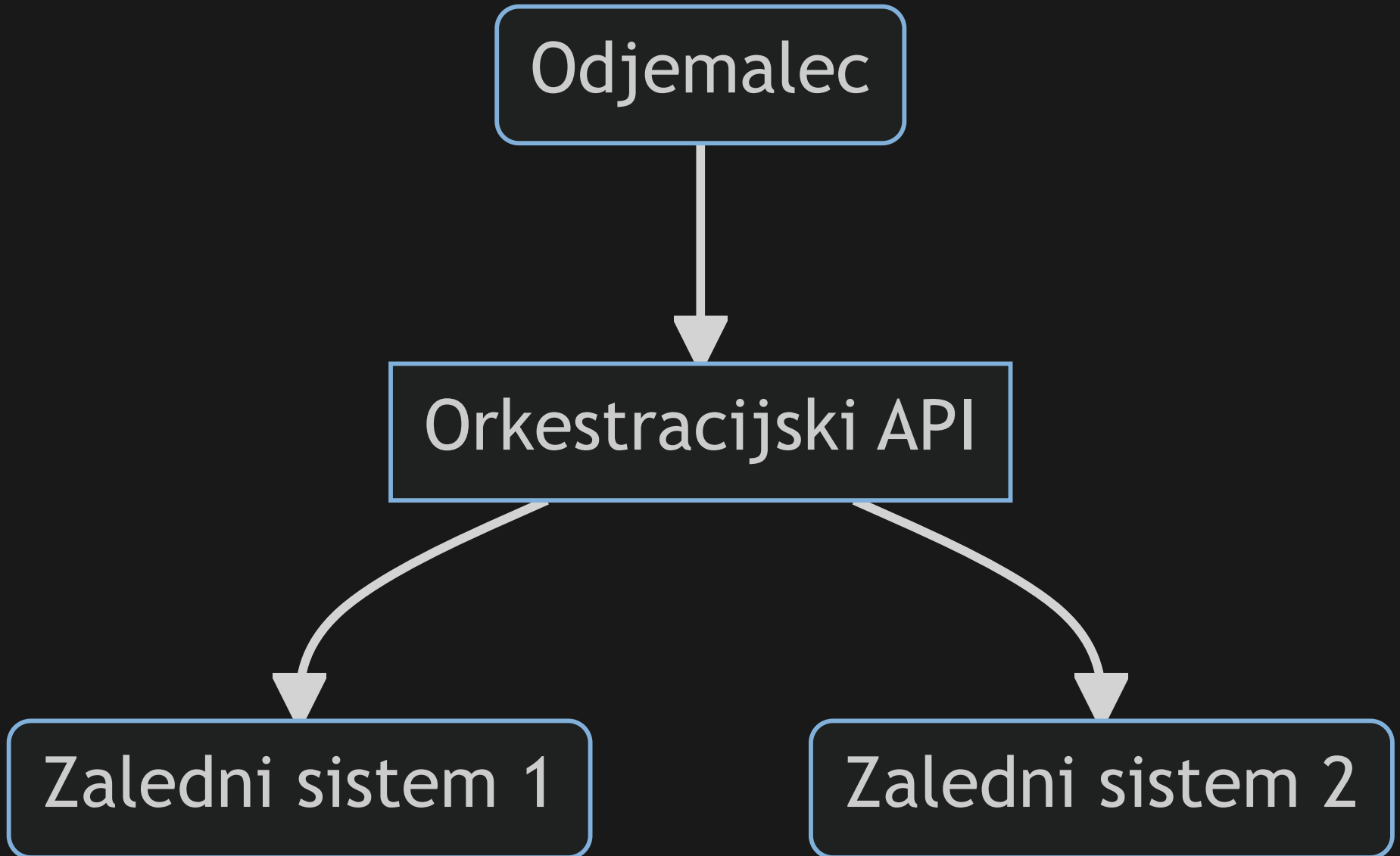
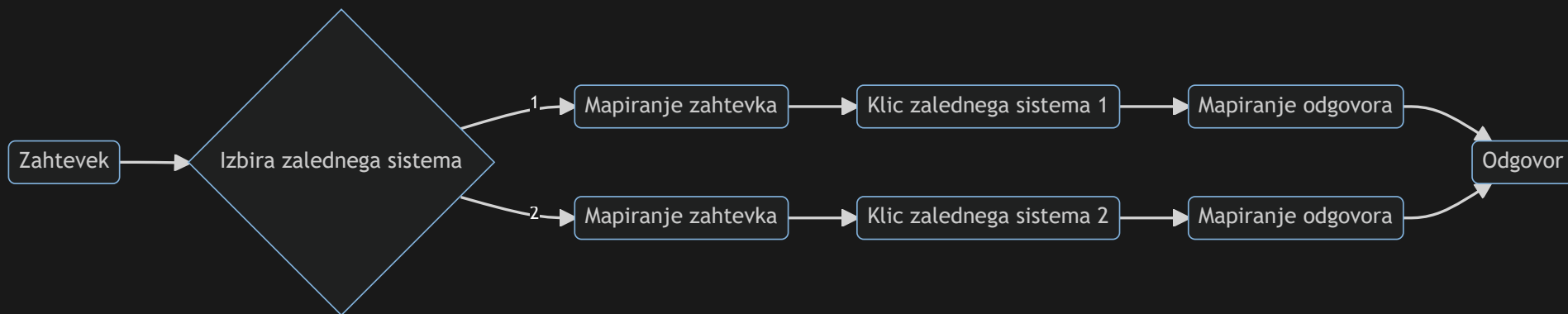
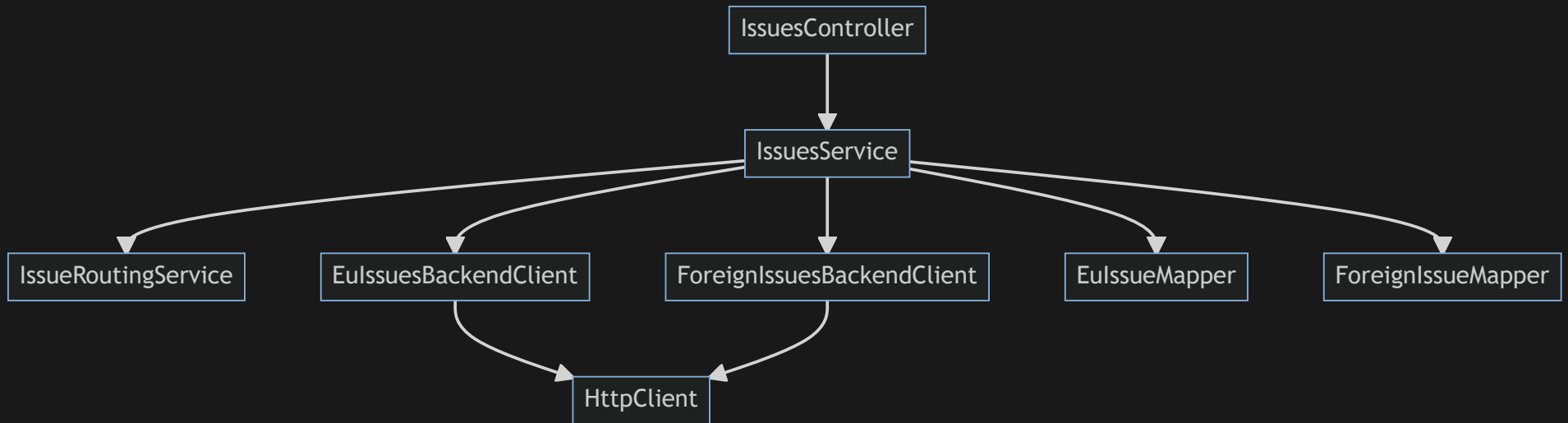


DIAGRAM POTEKA



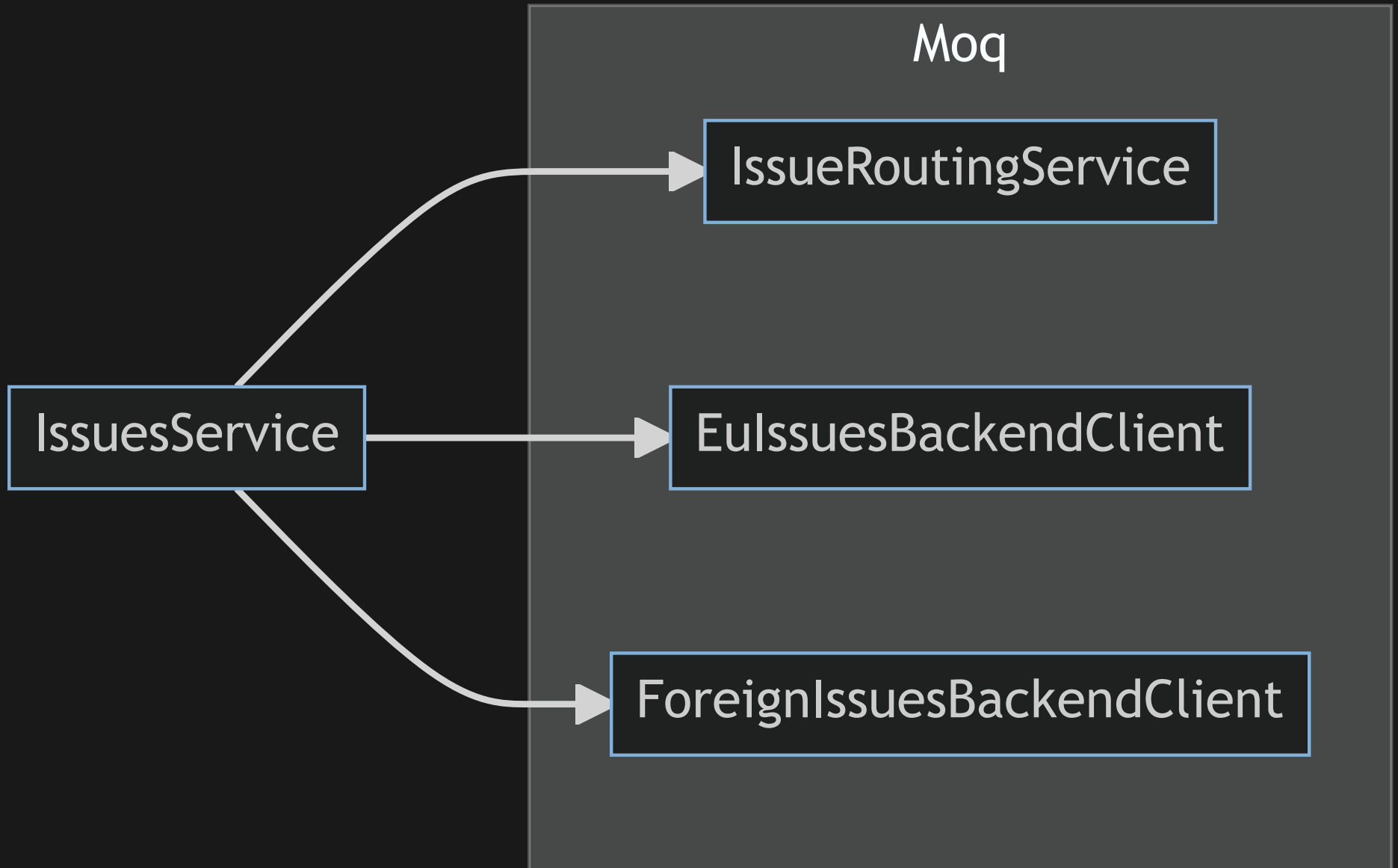
RAZREDNI DIAGRAM



TESTIRANJE POSLOVNE LOGIKE

Demo

TESTIRANJE POSLOVNE LOGIKE



TESTIRANJE KLICEV HTTP

Demo

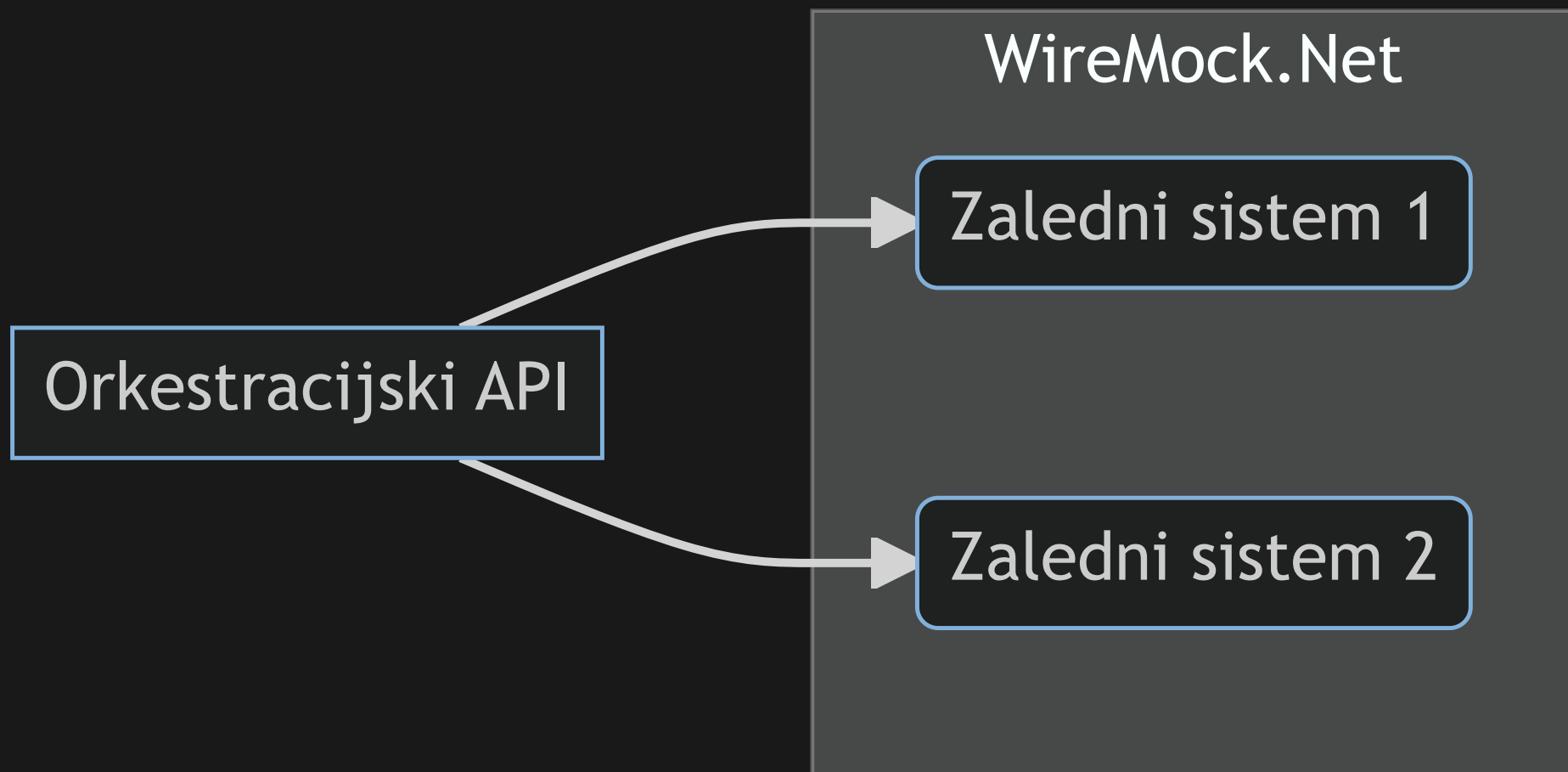
TESTIRANJE KLICEV HTTP



TESTIRANJE STORITVE KOT CELOTE

Demo

TESTIRANJE STORITVE KOT CELOTE



ORODJA: NUNIT

- paketi NuGet:
 - [NUnit](#)
 - [NUnit.Analyzers](#)
 - [NUnit3TestAdapter](#)
- običajni testi: [Test]
- testi s parametri: [TestCase]
- priprava pred testom: [SetUp]
- pospravljanje po testu: [TearDown]
- alternative: xUnit, MSTest

ORODJA: FLUENTASSERTIONS

- paket NuGet: [FluentAssertions](#)
- dokumentacija: <https://fluentassertions.com/>
- zmogljivejše preverjanje vrednosti

```
issue.SubmittedAt
    .Should() .BeBefore (DateTime.UtcNow)
    .And.BeAfter (callTime);
```

- bolj jasne napake

```
Expected issue.SubmittedAt to
be after <2024-08-16 16:38:42.4588737>,
but found <2024-08-16 16:38:42.4587074>.
```

- alternative: NUnit, xUnit, MSTest

ORODJA: MOQ

- paket NuGet: [Moq](#)
- posnemanje razredov
- nastavljanje odgovorov

```
var mock = new Mock<IForeignIssuesBackendClient>();  
mock.Setup(m => m.SubmitAsync(It.IsAny<ForeignIssueRequest>()))  
    .ReturnsAsync(response);
```

- preverjanje klicev

```
mock.Verify(x => x.SubmitAsync(  
    It.Is<ForeignIssueRequest>(r => IsExpected(r)),  
    Times.Once  
));
```

- alternative: NSubstitute, FakeItEasy

ORODJA: MOQ.AUTOMOCK

- paket NuGet: [Moq.AutoMock](#)
- samodejno priskrbi nadomestne razrede

```
var mocker = new AutoMocker();  
var service = mocker.CreateInstance<IssuesService>();
```

- prilagajanje nadomestnih razredov

```
var mock = mocker.GetMock<IIssueRoutingService>();
```

- določanje nadomestnih razredov

```
mocker.Use(httpClient);
```


ORODJA: MOQ.CONTRIB.HTTPCLIENT

- paket NuGet: [Moq.Contrib.HttpClient](#)
- poenostavi konfiguriranje nadomestnega `HttpClient`

```
var handler = new Mock<HttpMessageHandler>();
handler
    .SetupRequest(
        HttpMethod.Post,
        baseUrl.AppendPathSegment("claims"),
        async request => await IsValid(request)
    )
    .ReturnsJsonResponse(response);
var httpClient = handler.CreateClient();
httpClient.BaseAddress = new Uri(baseUrl);
```

- alternative: [RichardSzalay.MockHttp](#)

ORODJA: WEBAPPLICATIONFACTORY

- paket NuGet: [Microsoft.AspNetCore.Mvc.Testing](#)
- dokumentacija: <https://learn.microsoft.com/en-us/aspnet/core/test/integration-tests>
- zažene aplikacijo znotraj testnega procesa

```
var factory = new WebApplicationFactory<Program>()
    .WithWebHostBuilder(builder =>
    {
        builder.ConfigureAppConfiguration((context, config) =>
        {
            config.AddInMemoryCollection(configDictionary);
        });
    });
var client = factory.CreateClient();
```

- potrebuje javno dostopen razred aplikacije

```
public partial class Program { }
```

ORODJA: WIREFMOCK.NET

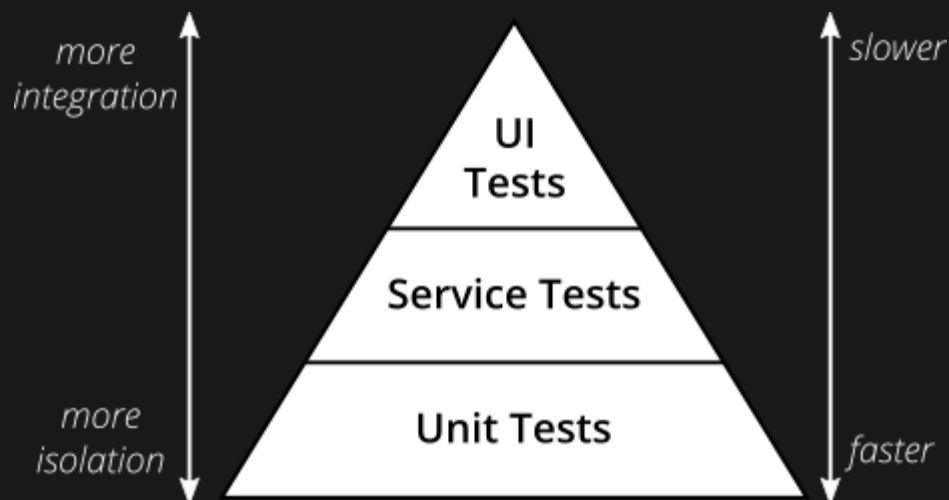
- paket NuGet: [WireMock.Net](#)
- dokumentacija: <https://github.com/WireMock-Net/WireMock.Net/wiki/>
- zažene nadomestni strežnik znotraj testnega procesa

```
var server = WireMockServer.Start();
server
    .Given(Request.Create()
        .WithPath("/eu/claims")
        .UsingPost()
    )
    .RespondWith(Response.Create()
        .WithStatusCode(200)
        .WithBodyAsJson(euIssueResponse)
    );
```

ORODJA: TESTCONTAINERS

- paket NuGet: [Testcontainers](#)
- dokumentacija: <https://dotnet.testcontainers.org/>
- zažene začasno instanco storitve v Dockerju
- Uporabno za zunanje odvisnosti v integracijskih testih
 - podatkovne zbirke
 - sporočilne vrste
 - ...

KATERI PRISTOP TESTIRANJA IZBRATI?



Martin Fowler: The Practical Test Pyramid

VIRI

- damirscorner.com/link/
 - [HttpTestingGitHub](#)
 - [HttpTestingHttpClient](#)
 - [HttpTestingIntegration](#)
 - [HttpTestingWireMock](#)