Introduction to .NET

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Agenda

- Best practices in Web API’s
- Fluent Validations
- AutoMapper
- Starting Microservices or “SOA done right!”
- Web API – Demo
- Questions

Best practices in Web API's

- Semantic best practices
- Technical best practices

Best practices in Web API’s - Semantic best practices

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
  - GET - http://localhost:16991/v1/cities
  - GET - http://localhost:16991/v1/cities/1/poi
  - POST - http://localhost:16991/v1/cities/1/poi
  - PUT - http://localhost:16991/v1/cities/1/poi/3

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
- Be consistent.

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DO	DO NOT
Use GETs to get data.	Use status codes in a way that is not expected. If returning a set of objects, don't return 404 if the set is empty—return the empty set. That's what people expect.
Use PUTs/POSTs to change/add data.	Use GETs to alter data or PUTs/POSTs to only get data.
Pick a few good status codes to use consistently and use them **consistently and correctly** throughout your API.	Use every status code that tangentially relates to what you're trying to tell your consumer. Use error messages to describe invalid conditions.
Use the same general endpoint structure throughout.	

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
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- Versioning Web API's

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```
[Route("v1/cities")]
[ApiController]
public class PoiController : ControllerBase
{
}
```

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
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- Versioning Web API's.
- KISS.

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  - Don't expose more than you think needs exposing.

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
- Be consistent.
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- KISS.
  - Don't expose more than you think needs exposing.
  - Don't use 43 different status codes.

Best practices in Web API's - Semantic best practices

- Think nouns, not verbs.
- Be consistent.
- Versioning Web API's.
- KISS.
  - Don't expose more than you think needs exposing.
  - Don't use 43 different status codes.
  - Keep your DTOs simple.

Best practices in Web API’s - Technical best practices

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- Use DTOs to move data back and forth.

Best practices in Web API's - Technical best practices

- Use DTOs to move data back and forth.
  - public class Poi

    {

        public int Id { get; set; }

        public string Name { get; set; }

        public string Description { get; set; }

    }

Best practices in Web API's - Technical best practices

- Use DTOs to move data back and forth.
  - public class Poi

    {

        public int Id { get; set; }

        public string Name { get; set; }

        public string Description { get; set; }

    }
  - public class PoiForCreatingDto

    {

        public string Name { get; set; }

        public string Description { get; set; }

    }
  - **public IActionResult CreatePoi(int cityId, [FromBody] PoiForCreatingDto poi)**

Best practices in Web API's - Technical best practices

- Use DTOs to move data back and forth.
- Validate everything.

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- Use DTOs to move data back and forth.
- Validate everything.
  - public class PoiForCreatingDto

```
{
    [Required]
    [MaxLength(30)]
    public string Name { get; set; }
    [Required]
    [MaxLength(200)]
    public string Description { get; set; }
}
```

Best practices in Web API's - Technical best practices

- Use DTOs to move data back and forth.
- Validate everything.

```
[HttpPost("{cityId}/poi")]
public IActionResult CreatePoi(int cityId, [FromBody] PoiForCreatingDto poi)
{
    if (poi == null)
    {
        return BadRequest();
    }
    if (!ModelState.IsValid)
    {
        return BadRequest(ModelState);
    } … }
```

Best practices in Web API's - Technical best practices

- Use DTOs to move data back and forth.
- Validate everything.
- Keep your controllers as thin as possible. Enforce separation of concerns. Separation of concerns means things are testable.

Fluent Validations

Fluent Validations

- “A small validation library for .NET that uses a fluent interface and lambda expressions for building validation rules.”
  - https://github.com/JeremySkinner/FluentValidation

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- Using: Install-Package FluentValidation.AspNetCore or Nuget package in Visual Studio

Fluent Validations

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```
using FluentValidation;

public class CustomerValidator: AbstractValidator<Customer> {
  public CustomerValidator() {
    RuleFor(customer => customer.Surname).NotEmpty();
    RuleFor(customer => customer.Forename).NotEmpty().WithMessage("Please specify a first name");
    RuleFor(customer => customer.Discount).NotEqual(0).When(customer => customer.HasDiscount);
    RuleFor(customer => customer.Address).Length(20, 250);
    RuleFor(customer => customer.Postcode).Must(BeAValidPostcode).WithMessage("Please specify a valid postcode");
  }

  private bool BeAValidPostcode(string postcode) {
    // custom postcode validating logic goes here
  }
}

Customer customer = new Customer();
CustomerValidator validator = new CustomerValidator();
ValidationResult results = validator.Validate(customer);

bool validationSucceeded = results.IsValid;
IList<ValidationFailure> failures = results.Errors;
```

AutoMapper

AutoMapper

- “AutoMapper uses a fluent configuration API to define an object-object mapping strategy. AutoMapper uses a convention-based matching algorithm to match up source to destination values. AutoMapper is geared towards model projection scenarios to flatten complex object models to DTOs and other simple objects, whose design is better suited for serialization, communication, messaging, or simply an anti-corruption layer between the domain and application layer.” -> http://docs.automapper.org/en/stable/index.html

AutoMapper

- https://dotnetcademy.net/Learn/2/Pages/2

Starting Microservices or “SOA done right!”

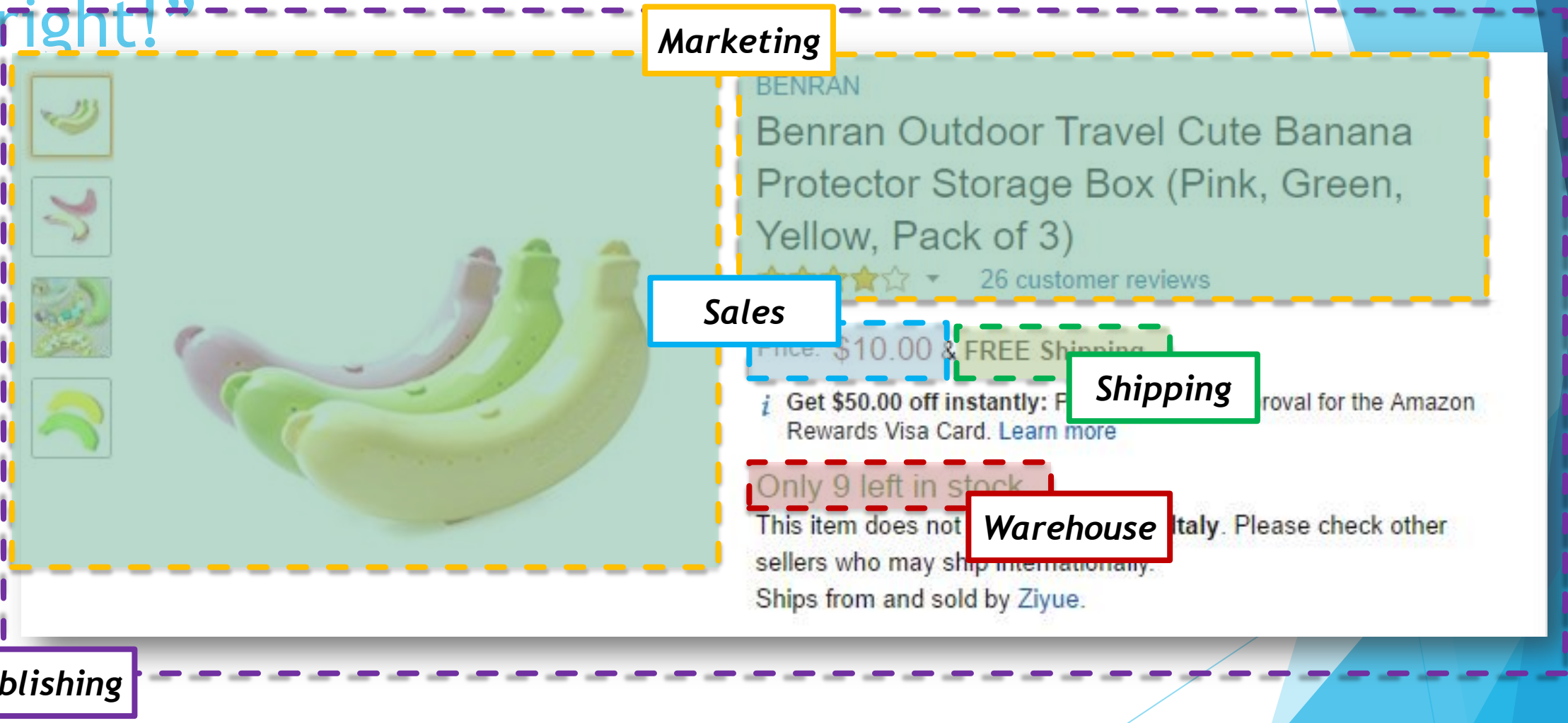
Starting Microservices or “SOA done right!”

- Copyright : Mauro Servienti => “SOA dine right!”

Starting Microservices or “SOA done right!”

- Who is in charge of changing, for example, the price?
- Who is responsible for business rules affecting shipping costs?
- Where do we store stars and customers’ reviews?

Starting Microservices or “SOA done right!”

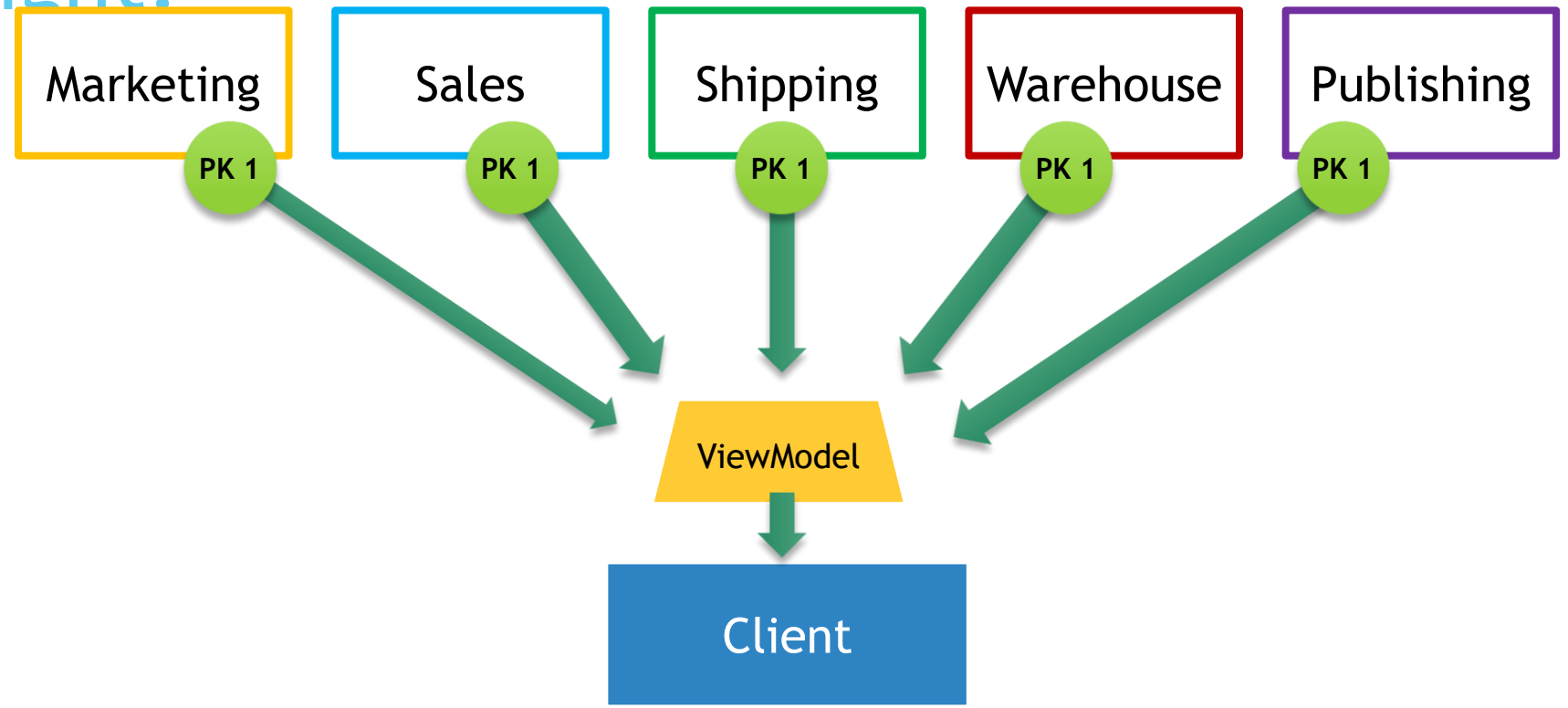


Starting Microservices or “SOA done right!”

- (micro)services owning their own piece of information.

Single Responsibility Principle

Starting Microservices or “SOA done right!”



/products/1

Starting Microservices or “SOA done right!”

- Much more next time … ☺

Web API

- Flights - Demo

One more thing…

One more thing…

Rules of Optimization:
Rule 1: Don't do it.
Rule 2 (for experts only): Don't do it yet.

Bibliography

- Pluralsight
- Mauro Servienti – “SOA done right!”


Questions?

Thanks!

See you next time! ☺