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Improving Your Validation Game

With Fluent Validation for .NET

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Say *goodbye* to
DataAnnotations

and *hello* to
FluentValidation

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Free

Consultation

bit.ly/th-offer

github.com/trailheadtechnology/fluent-validation

DataAnnotations Refresher

Refresher on DataAnnotations

```
public class Movie
 {
     [Required]
     [StringLength(200)]
     public object Title { get; set; }

     [Required]
     public object DateReleased { get; set; }
 }
```

Refresher on DataAnnotations

```
[HttpPost]
 public ActionResult Edit(Movie std)
 {
     if (ModelState.IsValid) {
         return RedirectToAction("Index");
     }
     return View(std);
 }
```

Refresher on DataAnnotations

```
@model SampleApplication.Models.Movie

@Html.ValidationSummary(true, "")

@Html.ValidationMessageFor(model => model.Title)
```

Getting Started

With FluentValidation

Supported Frameworks

.NET CORE 2.0 +

.NET FRAMEWORK 4.6.1+

Installing FluentValidation

```
dotnet add package FluentValidation
dotnet add package FluentValidation.AspNetCore

Install-Package FluentValidation.AspNetCore
Install-Package FluentValidation
```

FluentValidation

```
public class MovieValidator : AbstractValidator<Movie>
{
  public MovieValidator()
  {
    RuleFor(x => x.Title).NotEmpty()
        .WithMessage("Please specify a title");
    RuleFor(x => x.DateReleased).NotEmpty()
        .When(x => x.IsReleased);
    RuleFor(x => x.ShortSummary).Length(5, 1000);
  }
}
```

Razor Pages Demo

Switching from DataAnnotations to FluentValidation

Why Switch?

Compare and Contrast

	DataAnnotations	FluentValidation
Mixed Contexts	❌ Mixes models and validation logic	✅ Separates models from validation
Closed Models	❌ Can't validate	✅ Can validate
Conditional Validation	❌ Difficult	✅ Easy
Unit Testing	❌ Difficult	✅ Easy
Client-side Validation	✅ Supported	✅ Supported, but need to do it yourself

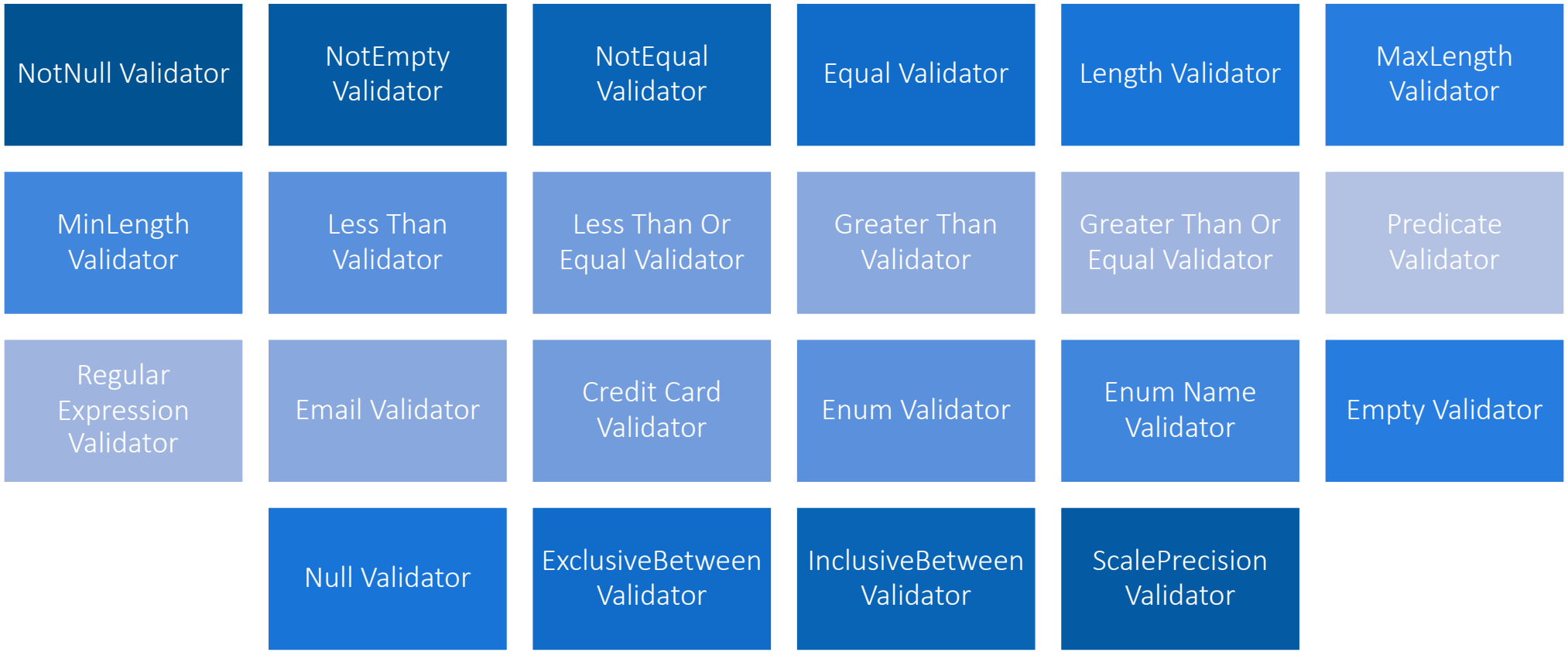
Basic Validators

With FluentValidation

Basic Validators

```
RuleFor(customer => customer.Surname).NotNull();

RuleFor(customer => customer.Surname).NotEmpty();

RuleFor(customer => customer.Surname).NotEqual("Foo",
    StringComparer.Ordinal);

RuleFor(customer => customer.Surname).Length(1, 250);

RuleFor(customer => customer.CreditLimit).GreaterThan(0);
```

Basic Validators



Custom Messages

With FluentValidation

Custom Messages

```
RuleFor(c => c.Surname)
    .NotNull()
    .WithMessage("{PropertyName} was null");

RuleFor(c => c.Surname)
    .NotNull()
    .WithName("Last name");
```

Chaining

With FluentValidation

Chaining

```
RuleFor(c => c.Surname)
    .NotNull()
    .NotEqual("foo");

RuleFor(c => c.Surname)
    .Cascade(CascadeMode.Stop)
    .NotNull()
    .NotEqual("foo");
```

Conditions

With FluentValidation

Conditions

```
RuleFor(c => c.CustomerDiscount)
    .GreaterThan(0)
    .When(c => c.IsPreferredCustomer);

When(c => c.IsPreferredCustomer, () => {
    RuleFor(c => c.CustomerDiscount).GreaterThan(0);
    RuleFor(c => c.CreditCardNumber).NotNull();
}).Otherwise(() => {
   RuleFor(c => c.CustomerDiscount).Equal(0);
});
```

Custom Validators

With FluentValidation

Custom Validators With Must()

```
public class PersonValidator : AbstractValidator<Person> {
  public PersonValidator() {
    RuleFor(x => x.Pets)
      .Must(list => list.Count < 10)
      .WithMessage(“List must contain less than 10 items");
  }
}
```

Custom Validators With Extension Method

```
public static class MyCustomValidators {
  public static IRuleBuilderOptions<T, IList<TElement>> ItemsLessThan<T, TElement>(
      this IRuleBuilder<T, IList<TElement>> ruleBuilder,
      int num)
  {
     return ruleBuilder
        .Must(list => list.Count < num)
        .WithMessage("The list contains too many items");
  }
}
```

Custom Validators With Extension Method

```
public static class MyCustomValidators {
  public static IRuleBuilderOptions<T, IList<TElement>> ItemsLessThan<T, TElement>(
      this IRuleBuilder<T, IList<TElement>> ruleBuilder,
      int num)
  {
     return ruleBuilder
        .Must(list => list.Count < num)
        .WithMessage("The list contains too many items");
  }
}

RuleFor(x => x.Pets).ItemsLessThan(10);
```

Nested Validators

With FluentValidation

Nested Validators

```
public class Customer
{
  public string Name { get; set; }
  public Address Address { get; set; }
}
```

```
public class Address
{
  public string Line1 { get; set; }
  public string Line2 { get; set; }
  public string Town { get; set; }
  public string County { get; set; }
  public string Postcode { get; set; }
}
```

Nested Validators

```
public class AddressValidator : AbstractValidator<Address>
{
  public AddressValidator()
  {
    RuleFor(address => address.Postcode).NotNull();
    //etc...
  }
}
```

Nested Validators

```
public class CustomerValidator : AbstractValidator<Customer>
{
  public CustomerValidator()
  {
    RuleFor(customer => customer.Name).NotNull();
    RuleFor(customer => customer.Address)
        .SetValidator(new AddressValidator());
  }
}
```

Include()

With FluentValidation

Include()

```
public class PersonAgeValidator :
      AbstractValidator<Person>
{
  public PersonAgeValidator()
  {
    RuleFor(x => x.DateOfBirth)
      .GreaterThan(18);
  }
}
```

```
public class PersonNameValidator :
      AbstractValidator<Person>
{
  public PersonNameValidator()
  {
    RuleFor(x => x.Surname)
      .NotNull().Length(0, 255);
    RuleFor(x => x.Forename)
      .NotNull().Length(0, 255);
  }
}
```

Include()

```
public class PersonValidator : AbstractValidator<Person>
{
  public PersonValidator()
  {
     // other validations...

     Include(new PersonAgeValidator());
     Include(new PersonNameValidator());
  }
}
```

RuleSets

With FluentValidation

RuleSets

```
public class PersonValidator : AbstractValidator<Person>
 {
   public PersonValidator()
   {
      RuleSet("Names", () =>
      {
         RuleFor(x => x.Surname).NotNull();
         RuleFor(x => x.Forename).NotNull();
      });

      RuleFor(x => x.Id).NotEqual(0);
   }
}
```

RuleSets

```
var validator = new PersonValidator();

// only name fields are validated
var result = validator.Validate(person, opts => opts.IncludeRuleSets("Names"));

// only Id is verified
var result = validator.Validate(person);

// all three fields are validated
var result = validator.Validate(person, opts => opts
   .IncludeRuleSets("Names")
   .IncludeRulesNotInRuleSet());
```

Advanced Topics

With FluentValidation

Unit Testing

```
[Test]
public void Should_have_error_when_Name_is_null()
{
    var model = new Person { Name = null };
    var result = validator.TestValidate(model);
    result.ShouldHaveValidationErrorFor(p => p.Name);
}
```

Asynchronous Validation

```
public class CustomerValidator : AbstractValidator<Customer>
{
   SomeExternalWebApiClient _client;

   public CustomerValidator(SomeExternalWebApiClient client)
   {
      _client = client;

      RuleFor(x => x.Id).MustAsync(async (id, cancellation) =>
      {
         return !(await _client.IdExists(id));
      }).WithMessage("ID Must be unique");
   }
}

var result = await validator.ValidateAsync(customer);
```

Localization

```
public class PersonValidator : AbstractValidator<Person>
{
  public PersonValidator(IStringLocalizer<Person> localizer)
  {
       RuleFor(x => x.Surname)
          .NotNull()
          .WithMessage(x => localizer["Surname is required"]);
  }
}
```

Client-Side Validation

Requires **FluentValidation.AspNetCore**

No named RuleSets are run

```
services.AddFluentValidationClientsideAdapters()
```

Rules Supported Client-Side

- NotNull/NotEmpty
- Matches (regex)
- InclusiveBetween (range)
- CreditCard
- Email
- EqualTo (cross-property equality comparison)
- MaxLength
- MinLength
- Length

Demo

Enabling Client-Side Validation

Summing Up

1. FluentValdidation improves on most aspects of validation over DataAnnotation
2. It separates your models from their validation code
3. It’s easy to read, test, maintain
4. There are many powerful ways to customize your validation rules
5. It’s compatible with most popular libraries and frameworks

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Recap

- DataAnnotations Refresher
- Getting Started
- Why Switch?
- FluentValidation Features
  - Basic and Custom Validators
  - Chaining
  - Conditions
  - Nested Validators
  - Rulesets
  - Async, Unit Testing, Localization, Client-Side Validation
- Q&A

Thanks! Questions?

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