goto; conference aarhus

Mastering ASP.NET MVC4 in Just One Day

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INTERNATIONAL SOFTWARE DEVELOPMENT CONFERENCE

gotocon.com

Who am I

Tiberiu ’Tibi’ Covaci

Software engineer, 20 years experience

MCT since 2004, teaching .NET

Senior Trainer & Mentor in Romania (Transylvania)

MVP for Windows Azure

Father & Geek

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Administration

We start 09:00

We end 16:00

Lunch between 12:00 and 13:00

We take 2 breaks, 15 minutes each, at 10:30 and 14:30

We end the day with Q&A

Ask your questions as they come

Artifacts at: http://bit.ly/18RgM9p

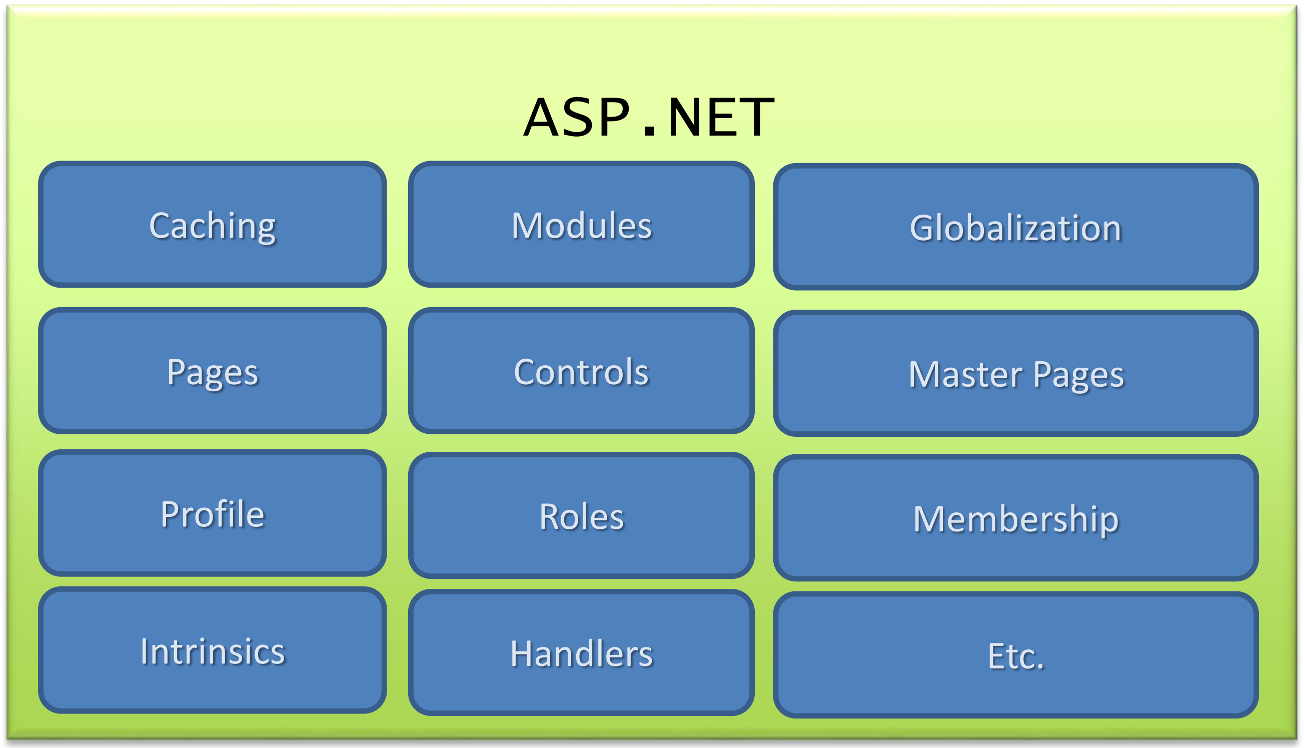
Agenda

- Introduction to ASP.NET MVC 4
- Models
- Controllers
- Views
- Routing
- Advanced Features
- If Time Permits
  - Mobile Web Applications
  - Web API/SPA

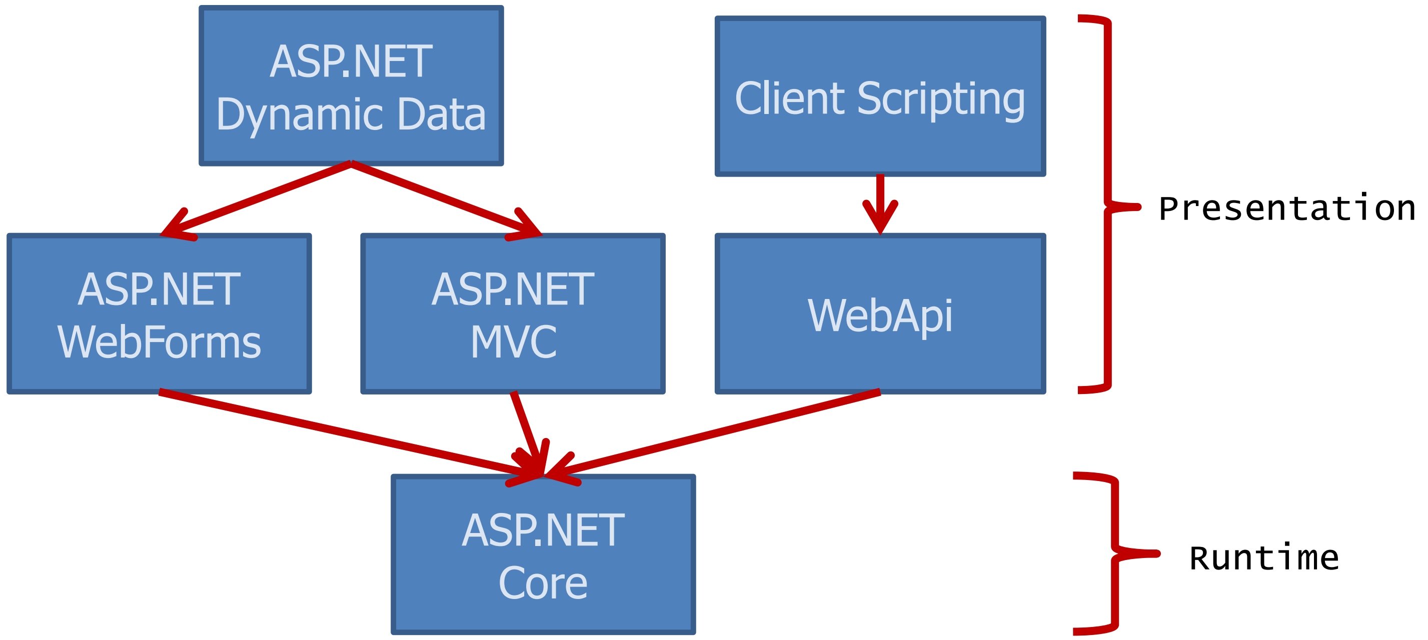
DEMO

Introduction to MVC

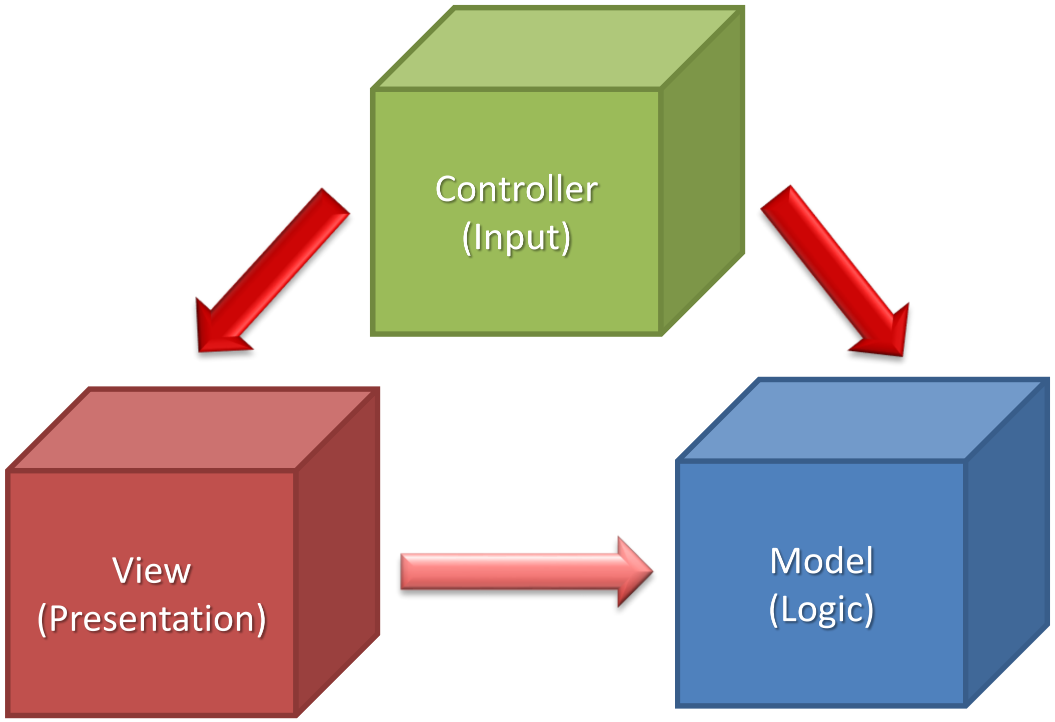
ASP.NET Before



ASP.NET Today



MVC=Model View Controller



Goals of ASP.NET MVC

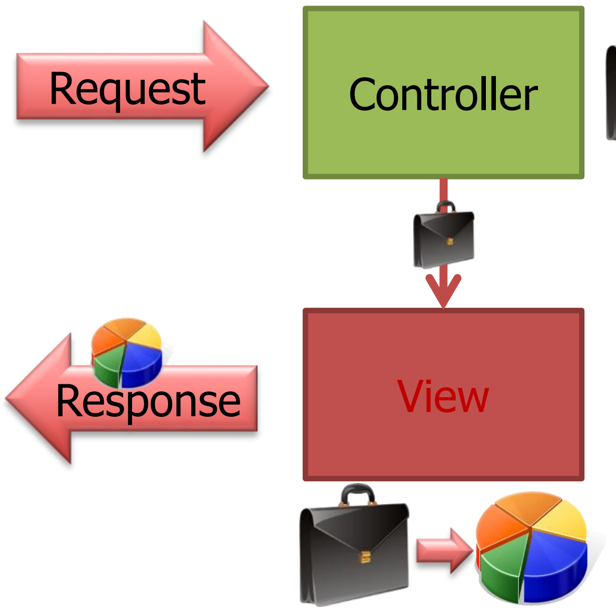
Frictionless Testability

Tight control over <markup>

Leverage the benefits of ASP.NET

Conventions and guidance

How does ASP.NET MVC works?



Controller

```
Handles input
(HTTP requests)
```

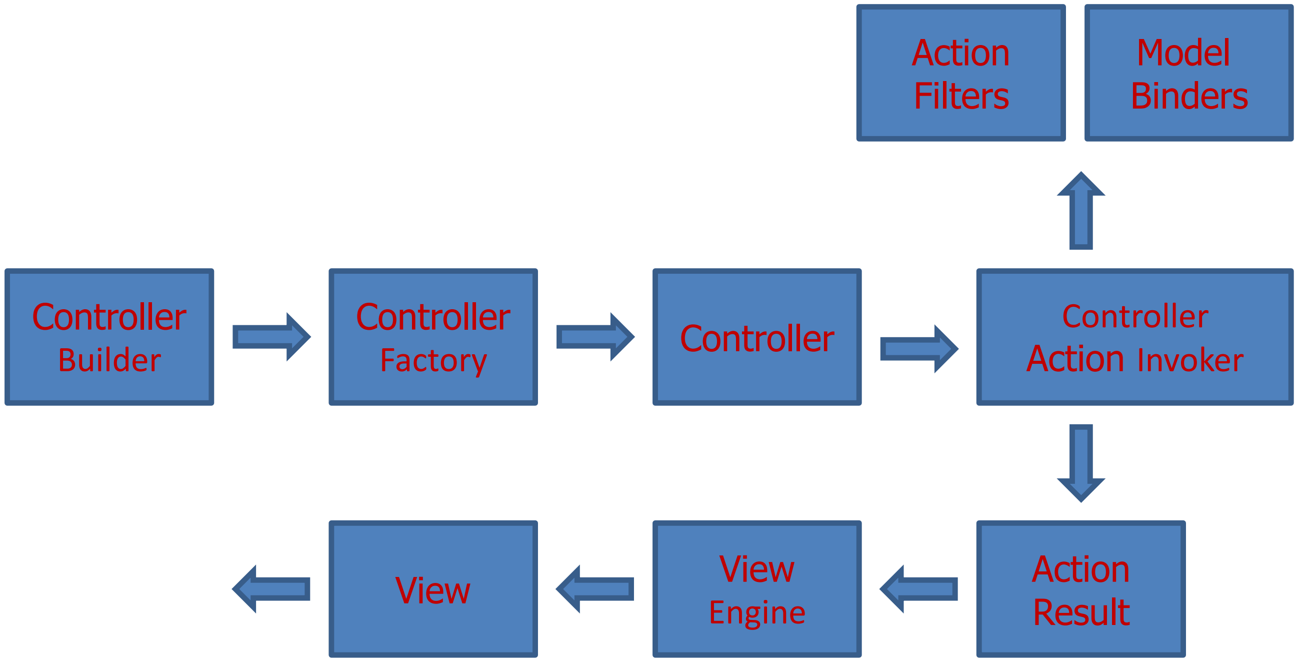
View

```
Visually represents
the model
```

How does ASP.NET MVC works?

```
Request -> UrlRoutingModule->Find a route
RouteBase(Route) -> IRouteHandler(MvcRouteHandler)
Handler->Controller->Execute()
Execute()->Action. Invoke()
Invoke(){
    var modelData = GetModelData();
    return View(modelData);
}
```

MVC Extensibility points



File=>New =>MVC

WALK BY
LA

Model

What is the model

Business data

Maps to a persistence storage like a database

Different styles of doing that

- CRUD
- DDD

CRUD

Create

Read

Update

Delete

DDD

Domain Driven Design

Capture business logic

Helps creating the Ubiquitous Language

Entities, Value objects, Aggregates

Bounded contexts

- Ubiquitous language
- Entities, Value objects, Aggregates

Patterns

- Repository pattern
  - Responsible for the interaction with the persistence layer
  - Wraps the basic CRUD methods
- Unit of Work
  - Groups several operations together to run atomic
- Service pattern
  - Encapsulates the complex logic of handling the domain objects

Creating the Model

Controller

What are they

Classes that implement IController

Each MVC request maps to an Action in a Controller

Action is a method that returns an ActionResult

Action results

ActionResult – the abstract base class
ViewResult –HTML and markup
EmptyResult – No result
RedirectResult – Redirection to a new URL
JsonResult –JSON result for AJAX application
HttpStatusCodeResult – HTTP Result code

Action results continued

JavaScriptResult –JavaScript script

ContentResult – Text result

FileContentResult – Downloadable file (binary)

FilePathResult – Downloadable file (path)

FileStreamResult – Downloadable file (stream)

Results simplified

View – Returns a ViewResult

Redirect – Returns a RedirectResult

- RedirectToAction – Returns a RedirectToRouteResult
- RedirectToRoute – Returns a RedirectToRouteResult action result.

Json – Returns a JsonResult

JavaScript – Returns a JavaScriptResult

Content – Returns a ContentResult

File – Returns one of the FileResult types

HttpNotFound

Create Controller

Add->New class *Controller

Place it under Controller folder

Add->New Controller

You can have CRUD action methods

Add Actions

Action is mapped to a method with following properties:

- The method must be public.
- The method cannot be a static method.
- The method cannot be an extension method.
- The method cannot be a constructor, getter, or setter.
- The method cannot have open generic types.
- The method is not a method of the controller base class.
- The method cannot contain ref or out parameters.
- Is not decorated with the NonActionAttribute

Passing data to the view

We can use ViewBag or ViewData

We can use TempData

By setting the Model property of the ViewData

Creating Controllers

View

What is a view

- As close to a page as it could get
- Responsible for the user interface
- Generated via ViewResult
- Two kinds of view Out of the box
  - Razor views (inherit from WebViewPage)
  - ASPX WebForm views (inherit ViewPage)

Strongly typed views

- WebForm pages Inherit from ViewPage<T>
- Razor uses the @model <T> directive
  - You get a new property called Model of type T so you can get strongly typed access to your data

Razor Syntax

Code Block	`@{` `int x = 42;` `string y = "Something";` `}`
Expression (Html Encoded)	`<span>@Model.Description</span>`
Expression (not encoded)	`<span>` `@Html.Raw(@Model.Description)` `</span>`
Combining Text and markup	`@foreach(var item in items) {` `<span>@item.Prop</span>` `}`

Razor Syntax

Mixing code and Plain text	`@if (@Model.Description != null) {`
	`  <text>Plain Text</text>`
	`}`

Mixing code and Plain text	`@if (@Model.Description != null)`
	`{`
	`  @:Description is @Model.Description`
	`}`

Comments	`@*`
	`This is a server side`
	`multiline comment`
	`*@`

HtmlHelper class

Encode()
ActionLink()
BeginForm()
CheckBox()
DropDownList()
EndForm()
DisplayFor()

Hidden()
ListBox()
Password()
RadioButton()
TextArea()
TextBox()
EditorFor()

Create your own

- Extension methods for the HtmlHelper class
- Use TagBuilder class to generate the html

Partial Views

Think UserControls in WebForms

Represent just a portion of your page

Very useful for reuse of markup

By convention in Razor partial view name starts with _

Layout Views

- Think Master page in WebForms
- Set in the view via the Layout property of the view
- By convention in Razor layout view name starts with _
- Can be set for the whole application
  - Create a view in the Views folder called _ViewStart.cshtml

Adding Views

Posting Data

Attributes

[AcceptVerbs]

Specify HTTP Verb(s)

- Get || [HttpGet]
- Post || [HttpPost]
- Head || [HttpHead]
- Put || [HttpPut]
- Delete || [HttpDelete]

[ActionName]

Specify the name of the action

Getting the data

- UpdateModel/TryUpdateModel
    - Specify the receiver of data
    - You can specify a list of allowed properties
- Use Model binders
    - They use reflection to populate the parameters of the Action

Posting Data

Routes

Why routes

/Recipes/Pizza is nicer than... /Recipe?ID=...

Part of ASP.NET (System.Web.Routing)

Introduced in .NET 3.5 (System.Web.Routing.dll)

Now is part of System.Web.dll (from .NET 4.0)

Default Route Table

Initialized in Application_Start()
Contains one route {controller}/{action}/{id}
Maps automatically to controller class

```
routes.MapRoute( "Default", // Route name
          "{controller}/{action}/{id}", // URL with
parameters
          new { controller = "Home", action = "Index", id =
"" }
          // Parameter defaults
);
```

Adding routes

Default routes are not always appropriate, so define your own.

```
routes.MapRoute( "Blog", // Route name
        "Archive/{entryDate}", // URL with
parameters
        new { controller = "Archive", action = "Entry”}
        // Parameter defaults
);
```

Order is important!

Route constraint

What happens when you send wrong data format?

```
routes.MapRoute( "Product",
        "Product/{productId}",
        new {controller="Product", action="Details”}
        , new {productId = @"\d+" }
 );
...
public class ProductController : Controller {
    public ActionResult Details(int productId) {
        return View();
    }
}
```

Custom constraints

You need to create a class that implements IRouteConstraint

```
interface IRouteConstraint {
        bool Match( HttpContextBase httpContext,
            Route route,
            string parameterName,
            RouteValueDictionary values,
            RouteDirection routeDirection );
}
```

When applied to a route if Match returns false, only that route will not match.

Routes best practices

Make simple, clean URLs

Make hackable URLs

Allow URL Parameters to clash

Keep URLs short

Avoid exposing intern Ids

Consider adding unnecessary info ☺

Creating Routes

Advanced Features

View Templates

Filters

Dependency Injection

Model Binders

Controller Factories

What are Filters?

- Defined as attributes
- A declarative way to add functionality to Actions
- Three out of the box filters
  - Authorize
  - HandleError
  - OutputCache

Which are the Filters?

- Classes that inherits from FilterAttribute
  - One property Order
- Implements one of the following interfaces
  - IAuthorizationFilter
  - IActionFilter
  - IResultFilter
  - IExceptionFilter

Mobile applications

Create a New Mobile MVC 4 Application

The Mobile Templates

Working with Display Modes

Techniques for Testing Mobile Applications

Web API

Intro to REST

Create a WebAPI Controller

Make the Controller RESTfull

Summary

- Introduction to ASP.NET MVC 4
- Models
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Thank you!

Questions ?