5

Consuming 3rd party components

This chapter covers

* Learning the basic MvcContrib Grid
* Advanced MvcContrib Grid techniques
* Understanding portable areas
* Consuming a portable area

The ASP.NET MVC Framework provides a lot of control out of the box but that comes at a cost. The HTML helpers are basic and provide very simple user interface elements. This leaves you with the choice to hand craft nice user interfaces using HTML and CSS. While this is a great option for an experienced web designer, most developers find relying on a 3rd party component much more productive. This allows you to develop your application rather than spend lots of time on user interface infrastructure. This chapter will demonstrate two 3rd party components that will show you different styles of integrating with the MVC framework. The first is the Grid component available from the open source MvcContrib project that can be used to render an HTML table.. The second component is a portable area which builds on top of the areas functionality in MVC 2 with some additional features that ease the deployment of components within your application.. First let's look at the MvcContrib Grid.

5.1 The MvcContrib Grid

The MvcContrib Grid is a user interface component which creates a well formed HTML table. It uses a fluent interface, which allows you to define the configuration of the grid with a strongly typed and refactoring-friendly syntax. The refactoring support makes this style of component work very nicely with refactoring tools like JetBrains ReSharper and DevExpress Refactor Pro. This type of component generally requires a strongly typed view, which is used to drive the API of the grid. The scenario where you would want to use a grid like this would be to display a list of model objects. First let's look at the action method which would send a list or IEnumerable<Person> to a view for rendering.

Listing 5.1 The Action to render a list of Person objects

public ActionResult AutoColumns() { |#A

return View(\_peopleFactory.CreatePeople()); |#A

}

#A Passes IEnumerable<Person> to the view.

Listing 5.1 shows the action that will send a IEnumerable model to the view for rendering. This is a fairly common scenario. This example ignores more advanced features like paging. It would simply send every Person object in the application to the view for rendering. The next step is to use the MvcContrib Grid to see how easily we can get a table formatted view of our Person objects.

Listing 5.2 Rendering a table using the Grid AutoGenerateColumns

<%= Html.Grid(Model).AutoGenerateColumns() %> #A

#A Renders a table from the model.

The AutoGenerateColumns method will automatically generate columns in the table based on the public properties of the Person object, as shown in Figure 5.1. However, this is only useful in certain situations. You will see from Figure 5.1 that there are some columns for which the grid does not know how to render a value. The default behavior is to call ToString on each property value. However, this is not particularly useful for complex types as this just displays the type name, as illustrated in Figure 5.1. Because of this, AutoGenerateColumns is most useful if you're using a dedicated Presentation Model rather than a nested object hierarchy.

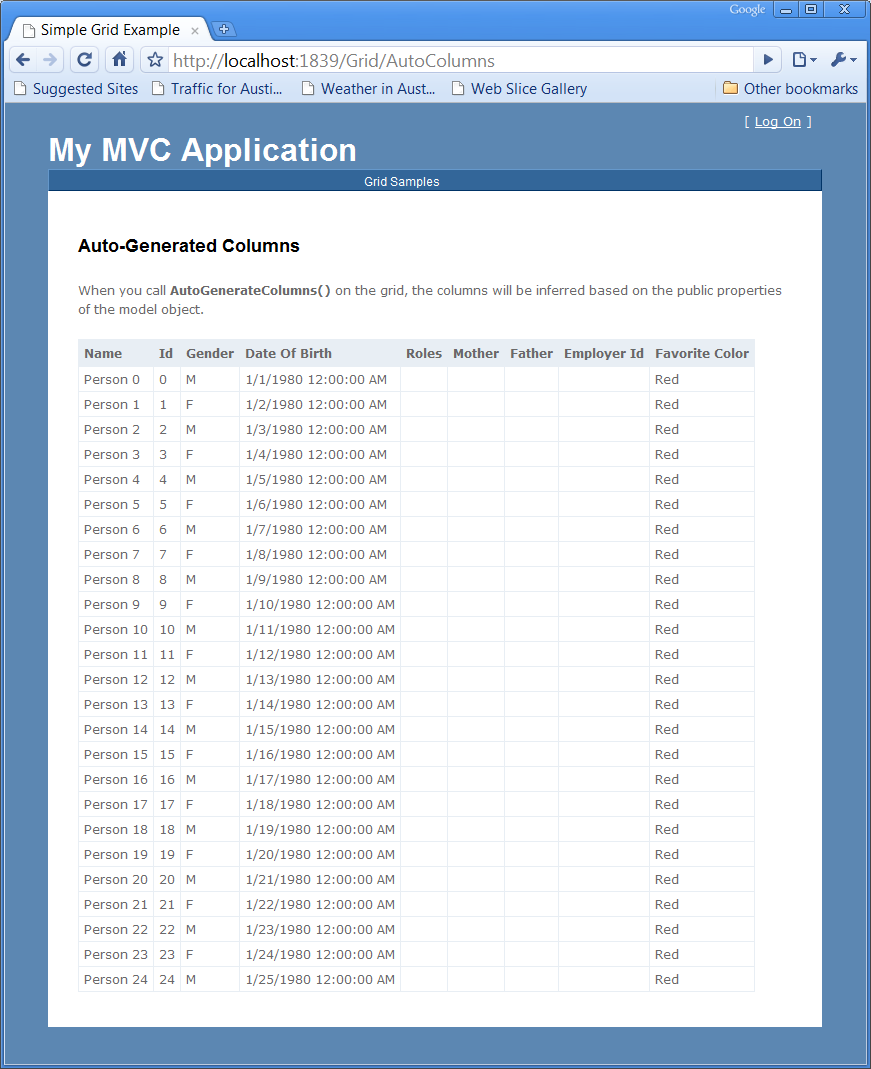


Figure 5.1 - The view of a Grid.AutoGenerateColumns

5.2 The MvcContrib Grid advanced usage

While the previous example of the MvcContrib Grid seemed to just work magically with a single line of view code, it has some pretty strong opinions about how it is going to render a model. For example, it assumes that all public properties should be rendered as columns (unless they are decorated with the ScaffoldColumn attribute). If you do not like this behavior then you do have some more options—this is where the power of the Grid really comes into play. Listing 5.3 shows how you can use the grid to customize the output for individual columns.

Listing 5.3 The MvcContrib Grid with more control

<%= Html.Grid(Model).Columns(column => { #A

column.For(x => x.Id).Named("Person ID"); #B

column.For(x => x.Name); |#C

column.For(x => x.Gender); |#C

column.For(x => x.DateOfBirth).Format("{0:d}"); #D

column.For(x => Html.ActionLink("View Person", "Show", |#E

new { id = x.Id})).DoNotEncode(); |#E

}) %>

#A Specifies individual columns

#B Overrides column name

#C Rendered using default conventions

#D Specifies custom output format

#E Defines a custom column

The MvcContrib Grid created using the view code from Listing 5.3 will render nicely in a table as shown in Figure 5.2.

The main reason to explicitly specify the columns for the grid is to be able to customize the output of various columns (for example, by using a custom string format or to add additional columns to the table). The syntax for defining the grid may look odd at first—it uses some of the newer features of the C# language. For example, lambda expressions are used to specify which properties should be rendered as columns in the table. By using this syntax, when you change the name of a property using a refactoring tool, the property gets changed in your view code. This eliminates the runtime errors that you would see when using magic strings and late binding to configure how to pull property values out of your model and render them into a table.

While the MvcContrib was one of the first components to use this method of configuration this style has caught on. The Grid was created and is currently maintained by Jeremy Skinner, a committer on the MvcContrib project. For more information about the Grid, go to the MvcContrib project at http://www.MvcContrib.org and see more information and blog posts from the creator of the grid at http://www.jeremyskinner.co.uk. There are a large number of additional features built in to the grid that we cannot cover in this chapter. The MvcContrib project has a number of samples which walk through the extensive options for using the Grid.

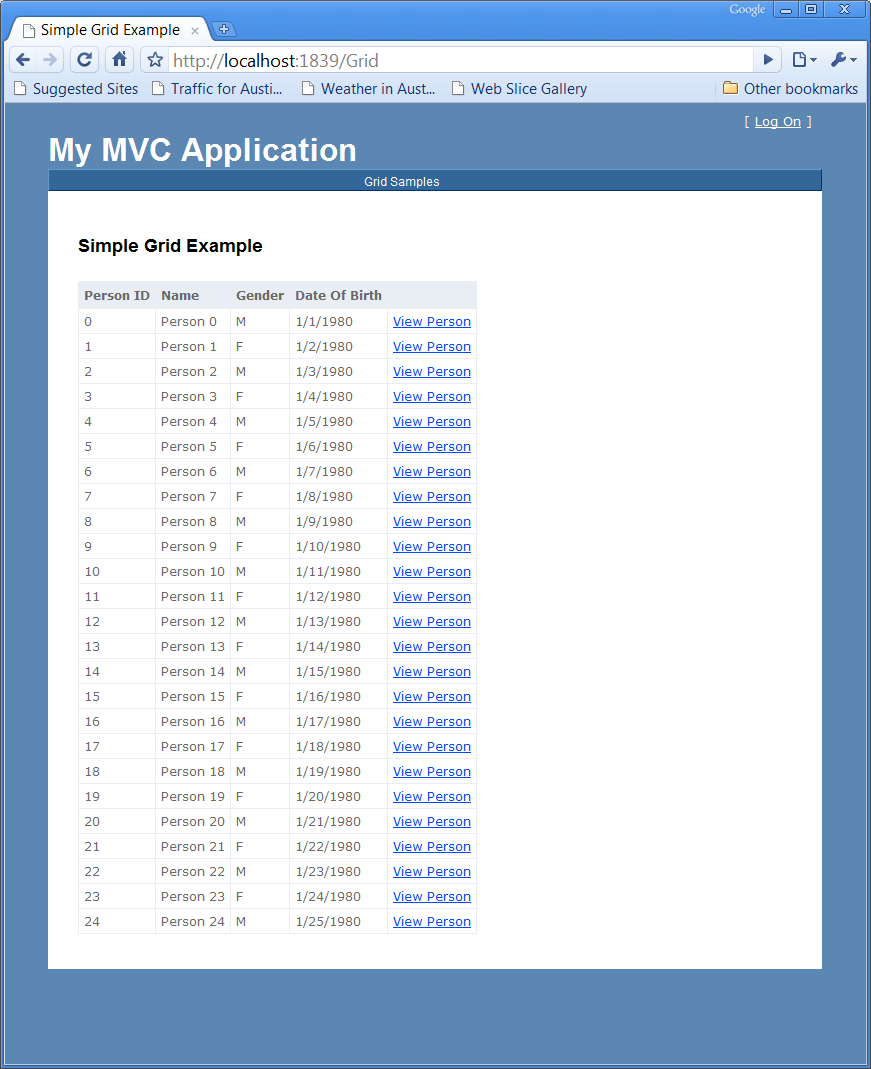


Figure 5.2 The MvcContrib Grid rendered using Column configuration

5.3 Understanding the portable area

The portable area is a concept that comes from the MvcContrib project. As the name describes it, it is a native MVC 2 area packaged up in a way that is easier to distribute and consume than an area built with the out of the box MVC 2 support. That is a pretty broad statement so let's first look at what is in an area and then cover which pieces may need to be made portable.

Areas are a subset of an MVC application that are separated in a way that gives them some physical distance from other groups of functionality in an MVC application. This means that an area will have one or more routes, controllers, actions, views, partial views, master pages and content files, such as CSS, JavaScript, and image files. These are all the pieces that may be used in an area.

Of those individual elements many of them are not part of the binary distribution of a MVC application. Only the routes, controllers, and actions get compiled into an assembly. The rest of the elements are individual files that need to be copied and managed with the other assets that are part of your application. This is reasonably trivial to manage if you build an area for your application and just use it as a way of managing smaller modules of your application. But if you want to use an area as a way for packaging up and sharing/distributing a piece of multi-page user interface functionality, managing all of the individual files make this option a bad choice when integrating someone else's component with your application.

This is where the MvcContrib project developed the idea of a portable area. By building on top of the existing area functionality, it only takes some minor changes to your area project to make it portable. A portable area is simply an area that can be deployed as a single DLL. The process of making an area portable is pretty trivial. As an area developer, instead of leaving the file assets as content items in your project, you make them embedded resources. An embedded resource is a content file that is compiled into the assembly of a project. The file still exists and it can be programmatically extracted from the assembly at runtime. This means that a portable area only contains a single file, the assembly of the project, rather than all the individual content files.

5.4 Consuming a portable area

Using a portable area in your application was designed to be simple and quick. Since a portable area can be packaged up as a single .NET assembly, in order to use a portable area you only needs to be placed in the bin folder of your ASP.NET MVC 2 web application. There are some cases when you may need to do more in your application to get the full power out of a portable area. For instance, if you use a portable area that provides an interactive Ajax grid, your application would need to integrate with controllers in the portable area. First lets walk through a simple example.

Figure 5.3 shows the project references for a MVC application, that is using a portable area. In order to use a portable area you will need a reference to the portable area assembly. You will also need a reference to MvcContrib. MvcContrib provides the plumbing needed for a portable area to be portable. The embedded resource view engine is part of MvcContrib. It is this small but extremely powerful feature that enables the views from a portable area that are embedded into the assembly to be pulled out at runtime and used by your application.

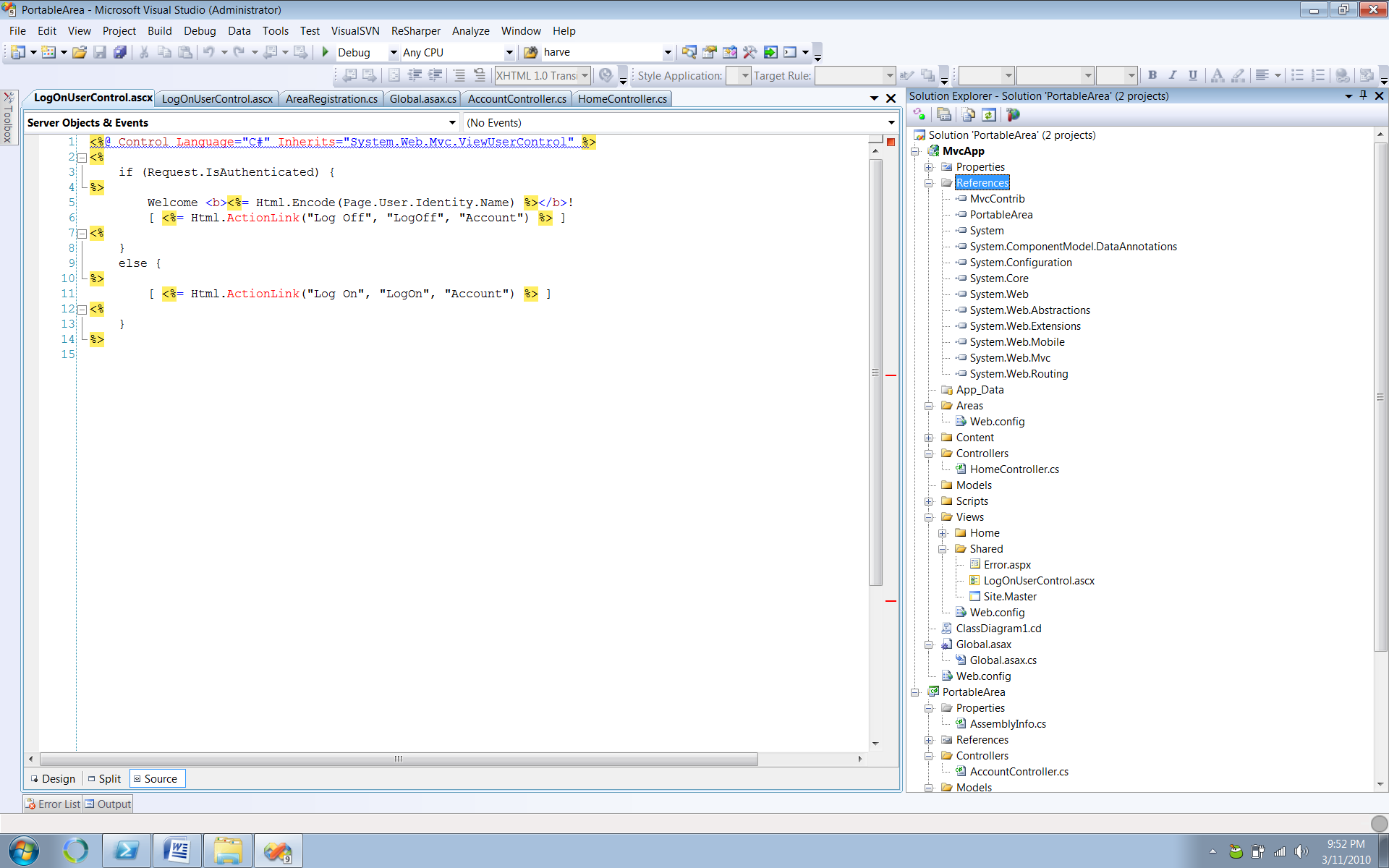


Figure 5.3 References to consume a portable area

Once the assemblies are referenced by your project there is one more configuration point that must be made for an portable area to function properly as shown in Listing 5.4.

Listing 5.4 Startup code in Global.asax to enable portable areas

protected void Application\_Start() #1

{

AreaRegistration.RegisterAllAreas(); #2

RegisterRoutes(RouteTable.Routes); #3

InputBuilder.BootStrap(); #4

}

#1 Runs on application startup

#2 Registers all areas

#3 Registers routes

#4 Initializes embedded view engine

The startup code that can be put into the Global.asax Application\_Start method is required in order to make a portable area function (#1). It is important to note that the order of these calls is critical to make everything function properly. The first call must be to RegisterAllAreas (#2). This method call tells the ASP.NET MVC framework to scan all assemblies in the bin folder and look for MVC 2 areas. When it finds them it calls an initialization method on each area. This functionality is built into MVC 2. The second call is the standard call to RegisterRoutes (#3). It is important to ensure that the RegisterRoutes method in your application does not clear the RouteCollection. If it does it will clear out area routes that are registered as part of the RegisterAllAreas method. The last step is a special call to the MvcContrib library that will register and connect the embedded resource view engine. Under the hood MvcContrib will add a new view engine to the ViewEngines collection and it will replace the default VirtualPathProvider with a specialized one that can read from embedded resources. It is important to note that since this technology uses a VirtualPathProvider, it will need to run under full trust in order to work on .NET 3.5. The requirement for full trust goes away with .NET 4 because the ASP.NET framework enabled the VirtualPathProvider to work in medium trust.

Once a reference is created and the view engine is initialized, you are ready to start using the portable areas functionality. This sample shows how to use a login portable area which provides the full authentication service and user interface elements. The first step is to call one of the portable area's HTML helper methods from your application's master page. By calling the method, shown in listing 5.5, a login widget will be displayed on the page.

Listing 5.5 Access a portable area Html Helper from the a Master page

<div id="logindisplay">

<%=Html.LoginLink() %> #A

</div>

#A An HTML helper from the portable area

Now that the Log on link is visible on the page, the hyperlink will link to a controller action inside the login portable area. This helper makes using the portable area frictionless. We recommend that portable area developers follow this practice, in order to make consuming a portable area simple and quick to integrate.

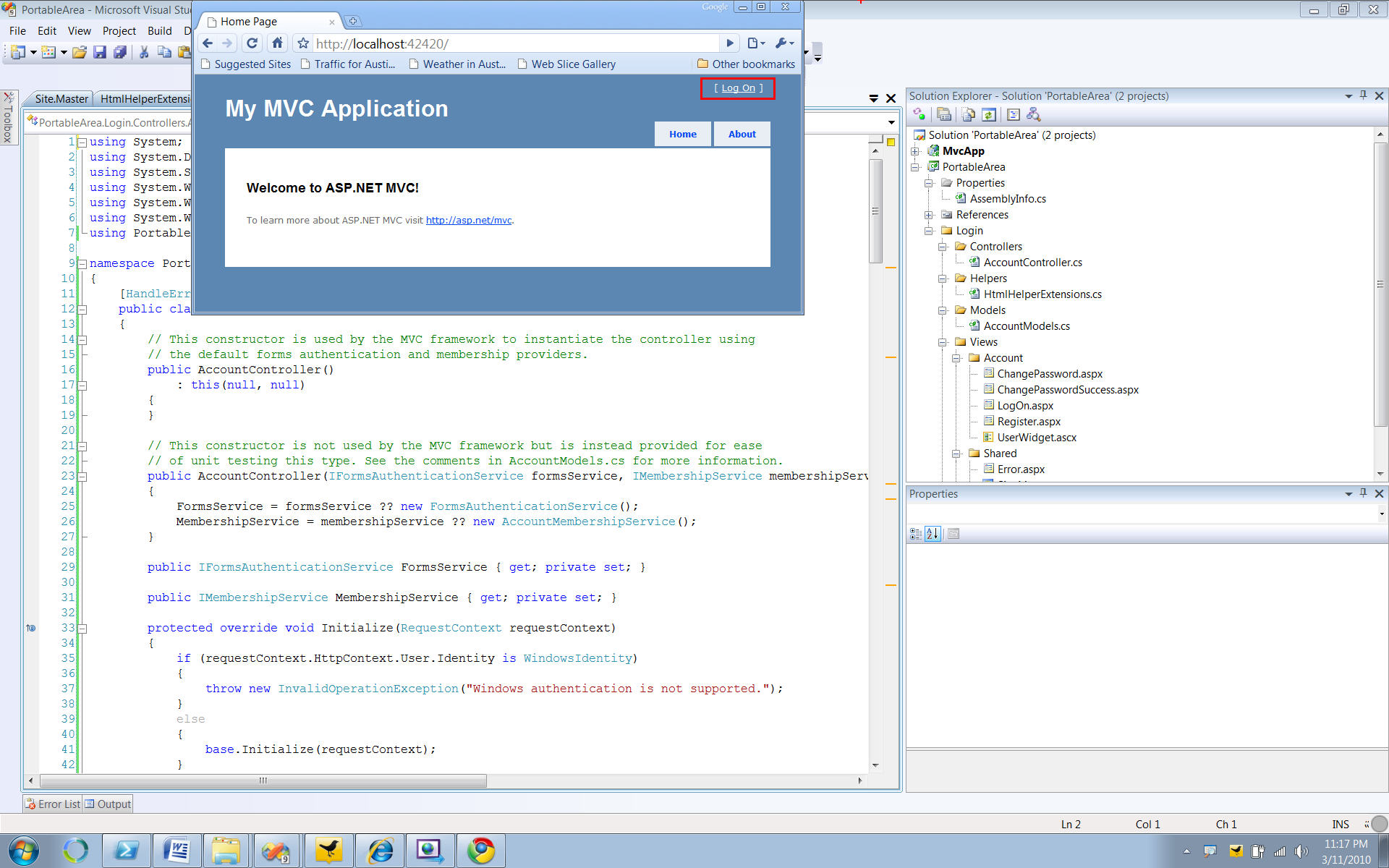


Figure 5.4 The user interface rendered from the helper method

The log on screen is now displayed and all of this functionality to log on to the application just comes across by the simple configuration of wiring in the portable area. Figure 5.5 shows the logon screen. It is important to remember that you get more than just the initial screen, there is validation logic and new user creation in this portable area as well.

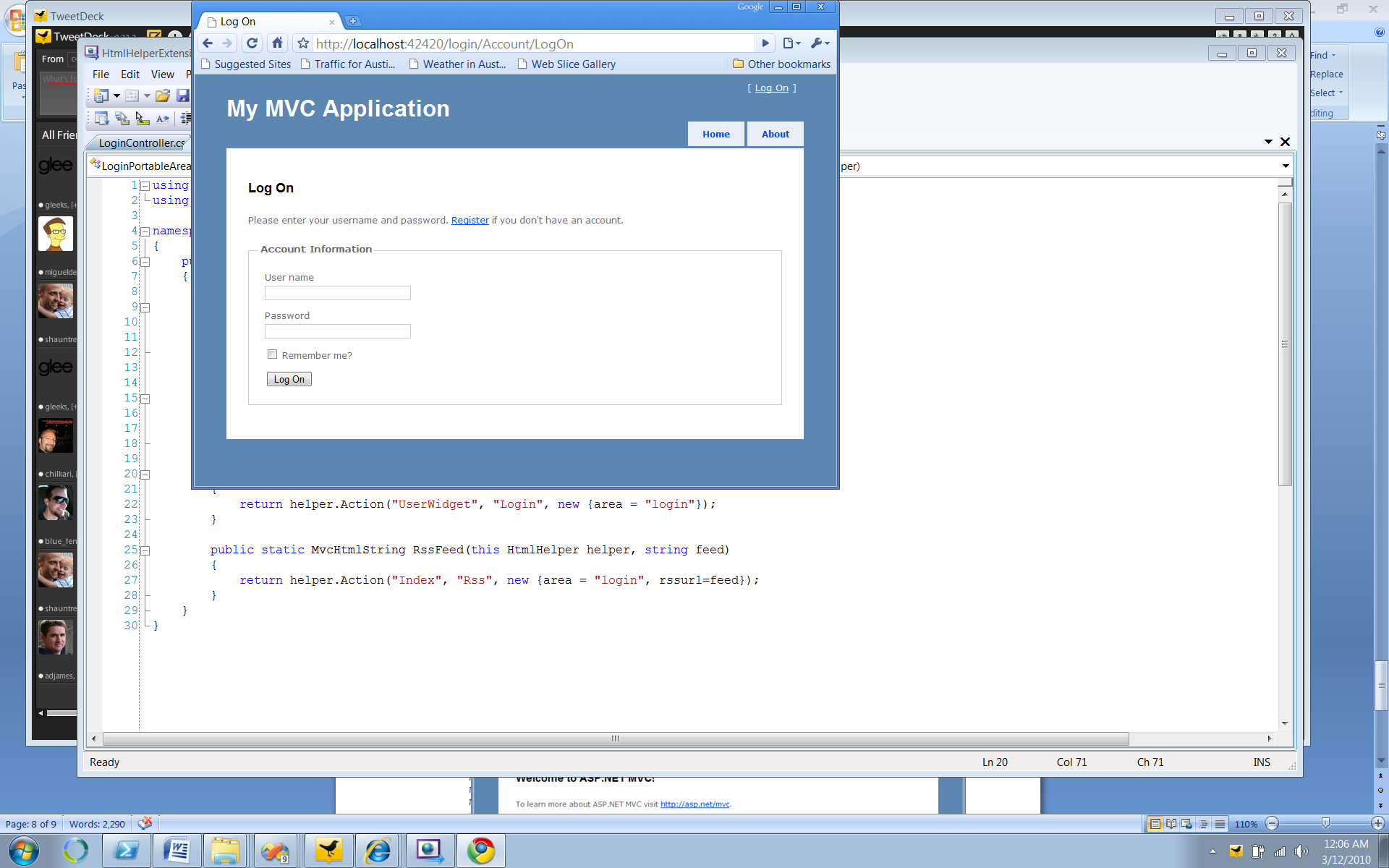


Figure 5.5 The log on screen after clicking the logon link

The real power of come across when you see that in addition to a log on screen including all the validation, a new user registration screen (see listing 5.6) is also part of the portable area.

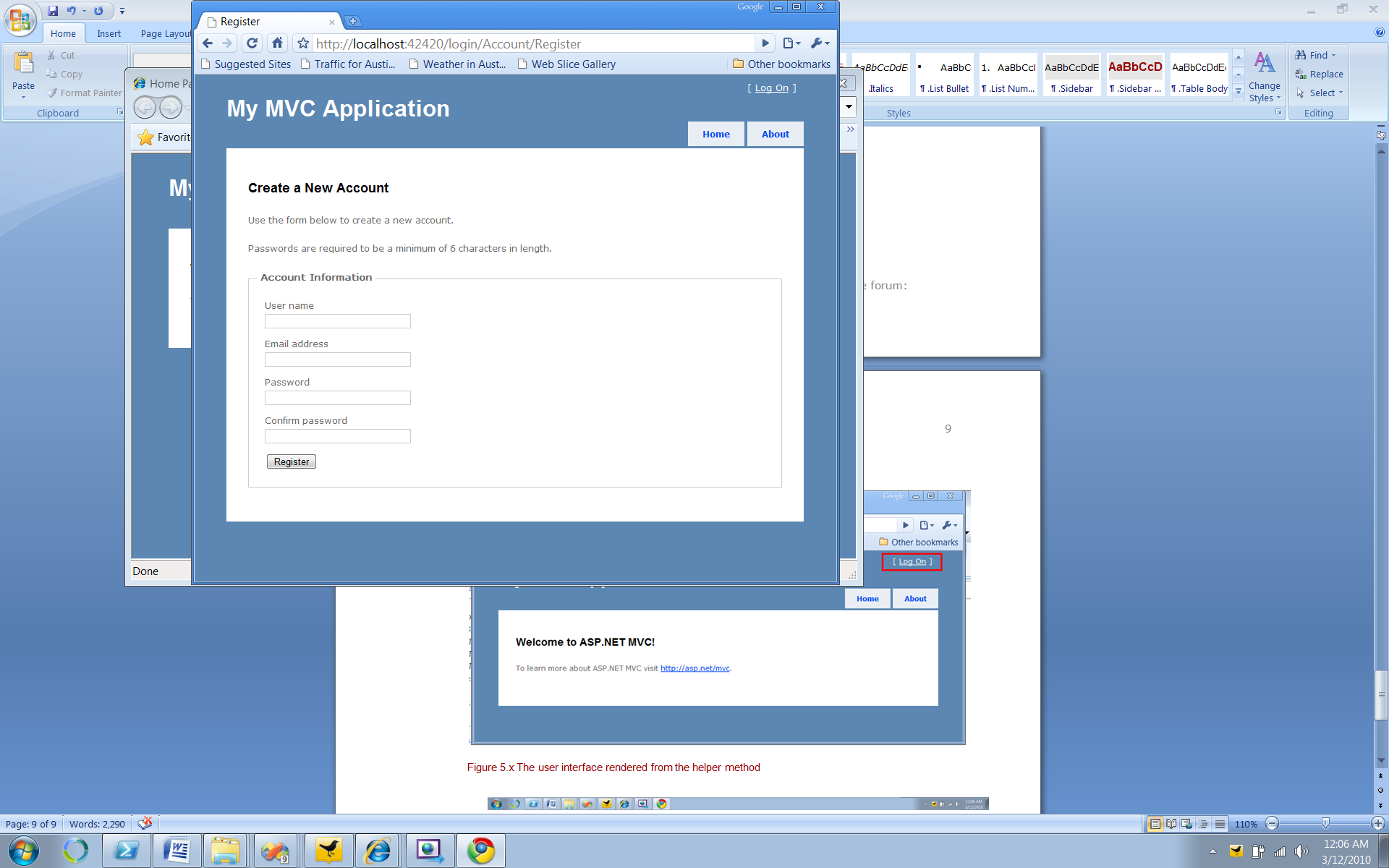


Figure 5.6 The user registration screen

Additionally the LoginLink helper that was called from the master page has another surprise. Once a user is logged in, the link now displays a user welcome message and a log off link. This is shown in Figure 5.7.

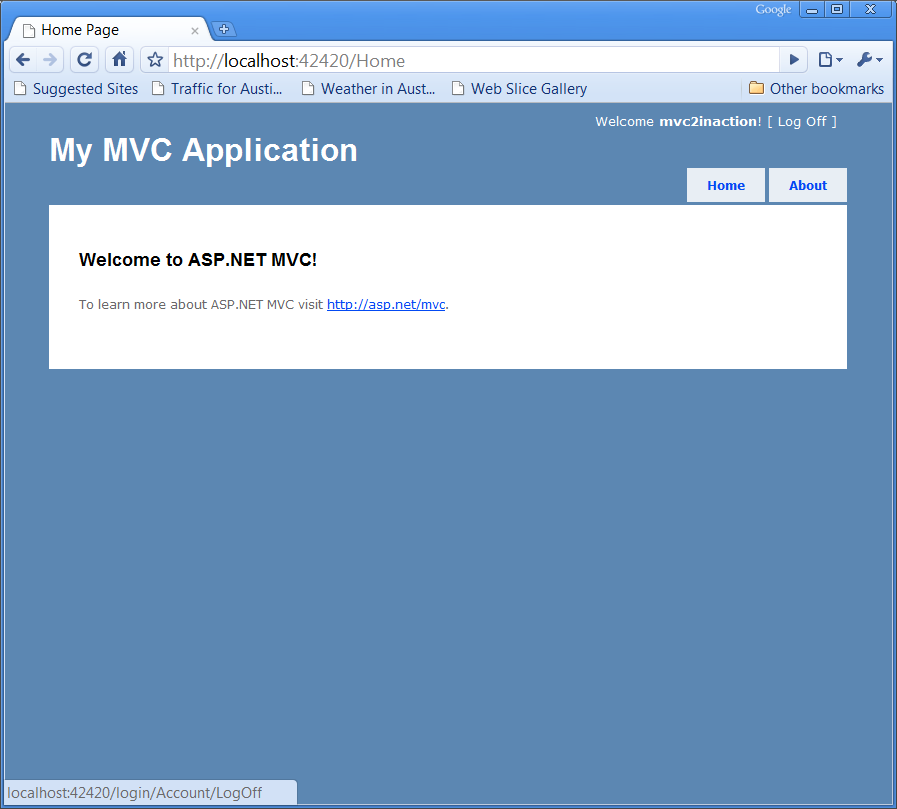


Figure 5.7 the log off link and welcome user message

All this with a tiny amount of configuration code and a link from the sites master page. That really demonstrates how portable areas can be used to provide multi page user interface features delivered as a software component.

5.5 Summary

This chapter covered using 3rd party components in an MVC application. We covered using a page level component, the MvcContrib Grid. We walked through using the Grid's AutoGenerateColumns feature for simple cases. We also demonstrated a more advanced usage of the Grid, using its powerful strongly typed API. We defined a portable area as a component which takes the MVC 2 concept of an area and packages that area into a single DLL for easy portability. We then walked through a small demonstration of how to add and use a portable area from within a MVC 2 web application project. These two different types of components show that there are different ways to look at how much functionality a component could provide. The Grid provides a single control like experience, while the portable area can provide a multi-page component. By using these components you can provide more functionality quickly. The next chapter will cover hosting a MVC application in Internet Information Server.