



PNMsoft Knowledge Base  
Sequence User Guides  
**API Setup Guide**

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## General Document Information

### Purpose

This document is designed to instruct you on how to integrate Sequence Flowtime data display with an independent ASP.Net web application, taking advantage of the Sequence .NET API. This document provides step-by-step information on how to set this up.

### Prerequisites

- Knowledge
  - Sequence Workflow Editor
  - .Net development using C#
- Environments
  - A Sequence server environment
  - A Sequence **SharePoint-less** environment
  - Visual Studio .NET 2010 or higher

*Note: It is highly advised to involve standard development practices such as error handling while utilizing these code samples in any software development project.*

## Step 1: Setting up the Developer Environment

The quickest way to set your developer environment with all the required functionality is to install the “Sequence SharePoint-less Flowtime” (see Appendix A for more details).

Before you launch the setup verify that:

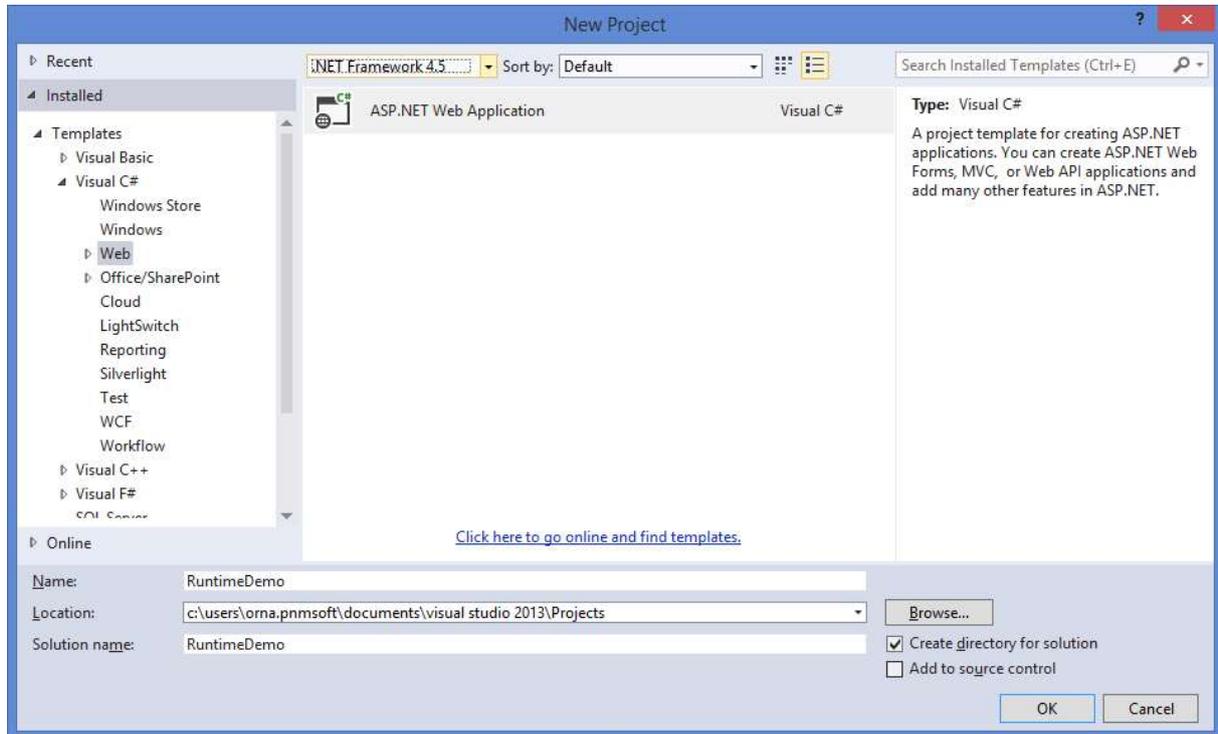
- ✓ You have the correct privileges on your machine.
- ✓ You have installed the IIS feature on your machine.
- ✓ The installation has created the Flowtime site.

After installation, you will get:

- All the relevant dlls in your GAC.
- A valid web.config file in the website folder.
- All the relevant runtime files available.
- A Shared Resource folder with all the relevant files.

## Step 2: Creating an ASP.NET Application Project

1. Open Visual Studio and create a new ASP.NET web application. Give the project a meaningful name (e.g. RuntimeDemo). In the following screen select “Web Forms”.

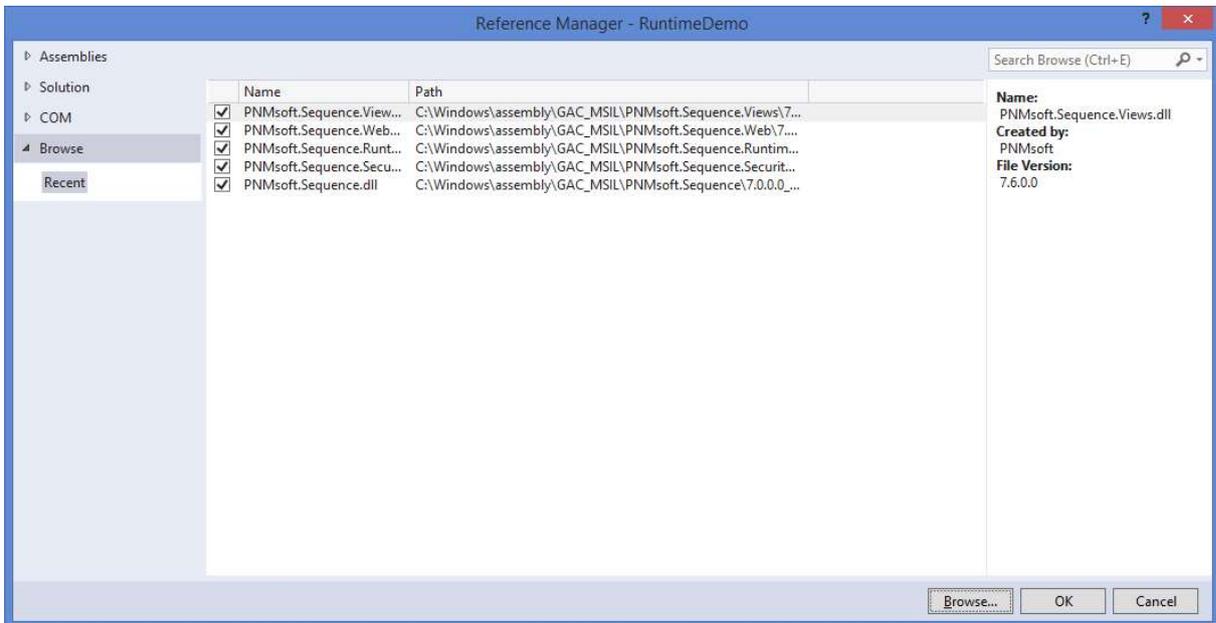


**ASP.NET Web Application**

As this is an ASP.NET solution, the Sequence Http Module will handle the authentication for you.

## Adding references to your project:

2. In the solution window right-click the reference node and click **Add**.
3. Check the browse option and browse to c:\windows\assembly\GAC\_MSIL



4. Select:
  - PNMsoft.Sequence
  - PNMsoft.Sequence.Security
  - PNMsoft.Sequence.Runtime
  - PNMsoft.Sequence.Web
  - PNMsoft.Sequence.Views

*Note: other references might be required depending on the application you are building.*

## Modifying the config File

5. Merge these sections from the web.config found in the Flowtime site to the target config:
  - Sequence.engine Config section
  - Sequence.engine section
  - Handlers section - merge all keys which include PNMsoft elements, exclude any element of Rad.Web.UI
  - Modules section - merge all keys which include PNMsoft element Assemblies, exclude any element of Rad.Web.UI
  - Diagnostics – copy the entire section

Other scenarios may require the following sections as well:

- Location
- appSettings

- Controls (If you are hosting or displaying Sequence forms in your solution)
6. Change the Database Key to match your environment database properties.
  7. Change the trace directory to match your local machine properties.

Your web.config file should look like this:

```
<configuration>
  <configSections>
    <sectionGroup name="system.web.extensions"
type="System.Web.Configuration.SystemWebExtensionsSectionGroup, System.Web.Extensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=31BF3856AD364E35">
      <sectionGroup name="scripting"
type="System.Web.Configuration.ScriptingSectionGroup, System.Web.Extensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=31BF3856AD364E35">
        <section name="scriptResourceHandler"
type="System.Web.Configuration.ScriptingScriptResourceHandlerSection, System.Web.Extensions,
Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" requirePermission="false"
allowDefinition="MachineToApplication" />
        <sectionGroup name="webServices"
type="System.Web.Configuration.ScriptingWebServicesSectionGroup, System.Web.Extensions,
Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35">
          <section name="jsonSerialization"
type="System.Web.Configuration.ScriptingJsonSerializationSection, System.Web.Extensions,
Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" requirePermission="false"
allowDefinition="Everywhere" />
          <section name="profileService"
type="System.Web.Configuration.ScriptingProfileServiceSection, System.Web.Extensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=31BF3856AD364E35" requirePermission="false"
allowDefinition="MachineToApplication" />
          <section name="authenticationService"
type="System.Web.Configuration.ScriptingAuthenticationServiceSection, System.Web.Extensions,
Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" requirePermission="false"
allowDefinition="MachineToApplication" />
          <section name="roleService"
type="System.Web.Configuration.ScriptingRoleServiceSection, System.Web.Extensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=31BF3856AD364E35" requirePermission="false"
allowDefinition="MachineToApplication" />
        </sectionGroup>
      </sectionGroup>
    </sectionGroup>
    <sectionGroup name="applicationSettings"
type="System.Configuration.ApplicationSettingsGroup, System, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089">
      <section name="PNMsoft.Sequence.ReportServer.Properties.Settings"
type="System.Configuration.ClientSettingsSection, System, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" requirePermission="false" />
    </sectionGroup>
    <sectionGroup name="sequence.engine"
type="PNMsoft.Sequence.Configuration.WorkflowEngineConfigurationSectionGroup, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1">
      <section name="authentication"
type="PNMsoft.Sequence.Security.Configuration.AuthenticationConfigurationSection,
PNMsoft.Sequence.Security, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
      <section name="workflowExecution"
type="PNMsoft.Sequence.Configuration.WorkflowExecutionServiceConfigurationSection, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
allowDefinition="MachineToApplication" />
      <section name="notifications"
type="PNMsoft.Sequence.Configuration.NotificationServiceConfigurationSection, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
allowDefinition="MachineToApplication" />
      <section name="dynamicProxyRuntime"
type="PNMsoft.Sequence.Dynamic.Configuration.DynamicProxyRuntimeConfigurationSection,
PNMsoft.Sequence.Dynamic, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
      <section name="services"
type="PNMsoft.Sequence.Configuration.WorkflowEngineServiceConfigurationSection, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
allowDefinition="MachineToApplication" />
      <section name="persistence"
type="PNMsoft.Sequence.Configuration.WorkflowEnginePersistenceConfigurationSection, PNMsoft.Sequence,
```

```

Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
allowDefinition="MachineToApplication" />
    <section name="obs"
type="PNMsoft.Sequence.Configuration.ObsConfigurationSection, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <sectionGroup name="activities"
type="PNMsoft.Sequence.Configuration.ActivitiesConfigurationSection, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></sectionGroup>
    <section name="forms"
type="PNMsoft.Sequence.Configuration.FormsConfigurationSection, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <section name="mimeTypes"
type="PNMsoft.Sequence.Configuration.MimeTypesConfigurationSection, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <section name="resources"
type="PNMsoft.Sequence.Configuration.ResourcesConfigurationSection, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <section name="web"
type="PNMsoft.Sequence.Web.Configuration.WebConfigurationSection, PNMsoft.Sequence.Web,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <section name="data.services"
type="PNMsoft.Sequence.Data.Services.Configuration.DataServicesConfigurationSection,
PNMsoft.Sequence.Data.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    </sectionGroup>
</configSections>
<appSettings>
    <add key="PNMsoft.Rad.Web.UI.ResourcePath" value="~/Shared
Resources/Resources/Sequence/Rad" />
    <add key="sequence.clientHelper.enableUncontrolledQueries" value="false" />
    <add key="PNMsoft.Sequence.Forms.Web.UI.FormControl.Theme" value="Metro" />
    <add key="PNMsoft.Sequence.Forms.Web.UI.FormControl.Theme.Controls.Skin" value="Metro"
/>
    <add key="PNMsoft.Sequence.Forms.AttachmentLinkExpiration" value="180" />
    <add key="PNMsoft.Sequence.Flowtime.Theme" value="default" />
</appSettings>
<sequence.engine>
    <authentication impersonate="false">
        <providers>
            <add type="PNMsoft.Sequence.Security.WindowsAuthenticationProvider,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            <add type="PNMsoft.Sequence.Security.UsernameAuthenticationProvider,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
        </providers>
    </authentication>
    <workflowExecution redirectMode="Manual" />
    <notifications />
    <!-- Clear; Encrypted; Hashed -->
    <obs userCacheEnabled="true" userCacheCapacity="500" groupCacheEnabled="true"
groupCacheCapacity="500" />
    <services>
        <add type="PNMsoft.Sequence.Runtime.AuthorizationService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.Sql.SqlNotificationService,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowPersistenceService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowDefinitionService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowDesignService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
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PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.ObsService, PNMsoft.Sequence.Runtime,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.WorkflowCategoriesViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.DelegatorsViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.DelegationsViewService,
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        <add type="PNMsoft.Sequence.Views.WorkflowTemplateViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.WorkflowInstancesViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.WorkflowActivityLogViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
path="C:\Program Files\PNMsoft\Shared
Resources\Components\WorkflowLog\Config\WorkflowLog.config"></add>
        <add type="PNMsoft.Sequence.Views.MessageViewService, PNMsoft.Sequence.Views,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Administration.AdministrationService,
PNMsoft.Sequence.Administration, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.DelegationService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.Debug.WorkflowDebugService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.BlobResourceService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowMessagingService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.AuthenticationService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowDataPropagationService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.WorkflowStatisticsService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Activities.SubWorkflowActivityListenerService,
PNMsoft.Sequence.Activities, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Monitoring.MonitoringService,
PNMsoft.Sequence.Monitoring, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Dynamic.DynamicProxyRuntime,
PNMsoft.Sequence.Dynamic, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.FormDefinitionService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Runtime.FormDesignService,
PNMsoft.Sequence.Runtime, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.GroupMessagesViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.EntityModelWorkspaceService,
PNMsoft.Sequence.Extensions, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Flowtime.Services.FlowtimeEngineService,
PNMsoft.Sequence.Flowtime.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
/>
        <add type="PNMsoft.Sequence.Views.MessagesAggregationViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Views.WorkflowInstancesAggregationViewService,
PNMsoft.Sequence.Views, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
    </services>
    <persistence>
        <database provider="System.Data.SqlClient"
credentials="d0tg/dWG6Q1TJDAVqHLX6YzTx1z6qrQoBRzyFXAUK7+0Tw/FuwB210H3uMQnJeleocvDumai9rty4WUPq/n7WQ=="
connectionString="packet size=4096;data source=SQLSERVER;persist security info=False;initial
catalog=Sequence;MultipleActiveResultSets=true;" commandTimeout="1200" />
    <providers>
        <add type="PNMsoft.Sequence.Data.Sql.SqlAuthenticationDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.Sql.SqlAuthorizationDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.WorkflowDefinitionDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.Sql.SqlWorkflowExecutionDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.DbSystemDataSourceProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add type="PNMsoft.Sequence.Data.Sql.SqlObsDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
        <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlMessagesViewDataProvider, PNMsoft.Sequence.Views.Data,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>

```

```

                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlWorkflowInstancesViewDataProvider,
PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlDelegatorsViewDataProvider, PNMsoft.Sequence.Views.Data,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlDelegationsViewDataProvider, PNMsoft.Sequence.Views.Data,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
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type="PNMsoft.Sequence.Views.Data.Sql.SqlWorkflowTemplatesViewDataProvider,
PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlWorkflowActivityLogViewDataProvider,
PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlWorkflowCategoriesViewDataProvider,
PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Administration.Data.Sql.SqlAdministrationDataProvider,
PNMsoft.Sequence.Administration.Data, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add type="PNMsoft.Sequence.Data.Sql.SqlWorkflowDebugDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add type="PNMsoft.Sequence.Data.Sql.SqlMessagingDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add type="PNMsoft.Sequence.Data.Sql.SqlDelegationDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Monitoring.Data.Sql.SqlMonitoringDataProvider, PNMsoft.Sequence.Monitoring.Data,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add blobType="Image"
type="PNMsoft.Sequence.Data.Sql.SqlImageResourceProvider, PNMsoft.Sequence.Data, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add type="PNMsoft.Sequence.Data.Sql.SqlOcaAuthenticationDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add type="PNMsoft.Sequence.Data.Sql.SqlAttachmentsDataProvider,
PNMsoft.Sequence.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"></add>
                <add
type="PNMsoft.Sequence.Data.Sql.SqlWorkflowStatisticsDataProvider, PNMsoft.Sequence.Data,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                <add
type="PNMsoft.Sequence.Views.Data.Sql.SqlMessagesAggregationViewDataProvider,
PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
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PNMsoft.Sequence.Views.Data, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            </providers>
        </persistence>
        <dynamicProxyRuntime>
            <providers>
                <add name="WebServiceConsumerProvider"
type="PNMsoft.Sequence.Web.Services.WebServiceConsumerProxyFactoryProvider,
PNMsoft.Sequence.Web.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                <add name="WebServiceListenerProvider"
type="PNMsoft.Sequence.Web.Services.WebServiceListenerProxyFactoryProvider,
PNMsoft.Sequence.Web.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
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type="PNMsoft.Sequence.Externals.ExternalServiceProxyFactoryProvider, PNMsoft.Sequence.Externals,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                <add name="WcfServiceConsumerProvider"
type="PNMsoft.Sequence.ServiceModel.ServiceConsumerProxyFactoryProvider, PNMsoft.Sequence.ServiceModel,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                <add name="RestWcfServiceConsumerProvider"
type="PNMsoft.Sequence.ServiceModel.Web.RestServiceConsumerProxyFactoryProvider,
PNMsoft.Sequence.ServiceModel, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            </providers>
        </dynamicProxyRuntime>
        <forms>
            <validationExtensionTypes>

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                <add
type="PNMsoft.Sequence.Forms.FileUploadFieldMimeTypeValidationExtension, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </validationExtensionTypes>
            </forms>
            <mimeTypes fileLocation="C:\Program Files\PNMsoft\Shared
Resources\Configuration\MimeTypes.config" reloadOnChanges="false" />
            <resources resXFilesLocation="C:\Program Files\PNMsoft\Shared Resources\Resources\" />
            <activities></activities>
            <web>
                <security>
                    <xrsrfProtection enabled="true" throwOnFailure="true"
enabledOnServices="false" />
                </security>
                <pageAdapters>
                    <add name="XrsrfProtectionTokenPageAdapterFactory"
type="PNMsoft.Sequence.Web.UI.Security.XrsrfProtectionPageAdapterFactory, PNMsoft.Sequence.Web,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </pageAdapters>
            </web>
        </sequence.engine>
        <connectionStrings />
        <location path="SequenceServices">
            <system.web>
                <httpHandlers>
                    <remove verb="*" path=".asmx" />
                    <add verb="*" path="*.asmx" validate="false"
type="PNMsoft.Sequence.Web.Services.WebServiceListenerHttpHandlerFactory,
PNMsoft.Sequence.Web.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </httpHandlers>
            </system.web>
        </location>
        <location path="SequenceServices/odata">
            <system.web>
                <httpHandlers>
                    <remove verb="*" path=".svc" />
                    <add verb="*" path="*.svc" validate="false"
type="PNMsoft.Sequence.Data.Services.Activation.DataServiceHttpHandler, PNMsoft.Sequence.Data.Services,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </httpHandlers>
            </system.web>
            <system.webServer>
                <handlers>
                    <remove name="DataServiceHttpHandler" />
                    <add name="DataServiceHttpHandler" verb="*" path="*.svc"
type="PNMsoft.Sequence.Data.Services.Activation.DataServiceHttpHandler, PNMsoft.Sequence.Data.Services,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" precondition="integratedMode" />
                </handlers>
            </system.webServer>
        </location>
        <sequence.engine>
            <authentication impersonate="false"></authentication>
            <data.services>
                <handlers>
                    <add
type="PNMsoft.Sequence.Data.Services.EntityBoundActivityDataServiceRequestHandler,
PNMsoft.Sequence.Data.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                    <add
type="PNMsoft.Sequence.Analytics.Data.Services.DashboardDataServiceRequestHandler,
PNMsoft.Sequence.Analytics, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </handlers>
            </data.services>
        </sequence.engine>
    </location>
    <location path="SequenceForms">
        <system.web>
            <compilation batch="false">
                <expressionBuilders>
                    <add expressionPrefix="sq"
type="PNMsoft.Sequence.Web.Compilation.SqExpressionBuilder, PNMsoft.Sequence.Extensions,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
                </expressionBuilders>
            </compilation>
        </system.web>
    </location>

```

```

        <pages compilationMode="Auto"
pageParserFilterType="PNMsoft.Sequence.Forms.Web.UI.FormControlParserFilter, PNMsoft.Sequence.Forms,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1">
        <controls>
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Web.UI"
assembly="PNMsoft.Sequence.Extensions, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Forms.Web.UI"
assembly="PNMsoft.Sequence.Forms, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sq"
namespace="PNMsoft.Sequence.Forms.Web.UI.Controls" assembly="PNMsoft.Sequence.Forms.Web,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sqr" namespace="PNMsoft.Rad.Web.UI"
assembly="PNMsoft.Rad.Web.UI, Version=2012.03.1017.0, Culture=neutral, PublicKeyToken=29ac1a93ec063d92"
/>
        </controls>
    </pages>
</system.web>
</location>
<location path="PNMsoft.Rad.RadUploadProgressHandler.ashx">
    <system.web>
        <authorization>
            <allow users="*" />
        </authorization>
    </system.web>
</location>
<location path="PNMsoft.Rad.Web.UI.WebResource.axd">
    <system.web>
        <authorization>
            <allow users="*" />
        </authorization>
    </system.web>
</location>
<location path="_vti_bin">
    <sequence.engine>
        <authentication impersonate="false" />
    </sequence.engine>
</location>
<system.web>
    <!--
        Set compilation debug="true" to insert debugging
        symbols into the compiled page. Because this
        affects performance, set this value to true only
        during development.
    -->
    <compilation defaultLanguage="c#" debug="true">
        <assemblies>
            <add assembly="System.Core, Version=3.5.0.0, Culture=neutral,
PublicKeyToken=B77A5C561934E089" />
            <add assembly="System.Data.DataSetExtensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=B77A5C561934E089" />
            <add assembly="System.Web.Extensions, Version=3.5.0.0,
Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
            <add assembly="System.Xml.Linq, Version=3.5.0.0, Culture=neutral,
PublicKeyToken=B77A5C561934E089" />
            <add assembly="PNMsoft.Sequence.Security, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            <add assembly="PNMsoft.Sequence, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
            <add assembly="PNMsoft.Rad.Web.UI, Version=2012.03.1017.0,
Culture=neutral, PublicKeyToken=29ac1a93ec063d92" />
            <add assembly="AjaxControlToolkit, Version=3.5.50508.0,
Culture=neutral, PublicKeyToken=28f01b0e84b6d53e" />
        </assemblies>
        <buildProviders>
            <add extension=".sqasmx"
type="PNMsoft.Sequence.Web.Services.Compilation.WebServiceListenerBuildProvider,
PNMsoft.Sequence.Web.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
        </buildProviders>
    </compilation>
    <!--
        The <authentication> section enables configuration

```

```

of the security authentication mode used by
ASP.NET to identify an incoming user.
-->
    <webServices>
        <protocols>
            <add name="HttpPost" />
            <add name="HttpGet" />
        </protocols>
        <soapExtensionTypes>
            <!--<add
type="PNMsoft.Sequence.Web.Services.Diagnostics.SoopMessageTraceSoapExtension,
PNMsoft.Sequence.Web.Services, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />-->
        </soapExtensionTypes>
    </webServices>
    <authentication mode="Windows" />
    <identity impersonate="true" />
    <authorization>
        <allow users="*" />
    </authorization>
    <trace enabled="false" requestLimit="10000" pageOutput="true" traceMode="SortByTime"
localOnly="false" />
    <sessionState mode="InProc" cookieless="false" timeout="601" />
    <globalization culture="en-GB" uiCulture="en-GB" requestEncoding="utf-8"
responseEncoding="utf-8" fileEncoding="utf-8" />
    <!--
    The <customErrors> section enables configuration
    of what to do if/when an unhandled error occurs
    during the execution of a request. Specifically,
    it enables developers to configure html error pages
    to be displayed in place of a error stack trace.
    -->
    <customErrors mode="On"></customErrors>
    <pages validateRequest="false" enableEventValidation="false"
enableViewStateMac="true">
        <controls>
            <add tagPrefix="asp" namespace="System.Web.UI"
assembly="System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
            <add tagPrefix="asp" namespace="System.Web.UI.WebControls"
assembly="System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
            <add tagPrefix="ajaxToolkit" namespace="AjaxControlToolkit"
assembly="AjaxControlToolkit, Version=3.5.50508.0, Culture=neutral, PublicKeyToken=28f01b0e84b6d53e" />
            <add tagPrefix="seq" namespace="PNMsoft.Sequence.Runtime.UI.Controls"
assembly="PNMsoft.Sequence.Runtime.UI.Controls, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sqr" namespace="PNMsoft.Rad.Web.UI"
assembly="PNMsoft.Rad.Web.UI, Version=2012.03.1017.0, Culture=neutral, PublicKeyToken=29ac1a93ec063d92"
/>
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Forms.Web.UI.Controls"
assembly="PNMsoft.Sequence.Forms.Web, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Web.UI"
assembly="PNMsoft.Sequence.Extensions, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Linq.Web.UI"
assembly="PNMsoft.Sequence.Linq, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
            <add tagPrefix="sq" namespace="PNMsoft.Sequence.Flowtime.Controls"
assembly="PNMsoft.Sequence.Flowtime.Controls, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" />
        </controls>
    </pages>
    <httpRuntime maxRequestLength="4096" executionTimeout="1200" />
    <xhtmlConformance mode="Transitional" />
</system.web>
<system.serviceModel>
    <serviceHostingEnvironment aspNetCompatibilityEnabled="true" />
    <services>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Messages.UserMessagesService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Messages.IUserMessagesService" />

```

```

        </service>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Messages.GroupMessagesService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Messages.IGroupMessagesService" />
        </service>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Instances.UserInstancesService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Instances.IUserInstancesService" />
        </service>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Instances.ProcessInstancesService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Instances.IProcessInstancesService" />
        </service>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Delegation.DelegationService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Delegation.IDelegationService" />
        </service>
        <service
name="PNMsoft.Sequence.Flowtime.Services.Delegators.DelegatorsService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding"
contract="PNMsoft.Sequence.Flowtime.Services.Delegators.IDelegatorsService" />
        </service>
        <service name="PNMsoft.Sequence.Flowtime.Services.UtilityService">
            <endpoint address="" binding="webHttpBinding"
bindingConfiguration="webHttpBinding" contract="PNMsoft.Sequence.Flowtime.Services.UtilityService" />
        </service>
    </services>
    <bindings>
        <webHttpBinding>
            <binding name="webHttpBinding">
                <security mode="TransportCredentialOnly">
                    <transport clientCredentialType="Windows" />
                </security>
            </binding>
        </webHttpBinding>
    </bindings>
</system.serviceModel>
<system.codedom>
    <compilers>
        <compiler language="c#;cs;csharp" extension=".cs" warningLevel="4"
type="Microsoft.CSharp.CSharpCodeProvider, System, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089">
            <providerOption name="CompilerVersion" value="v3.5" />
            <providerOption name="WarnAsError" value="false" />
        </compiler>
    </compilers>
</system.codedom>
<!--
The system.webServer section is required for running ASP.NET AJAX under Internet
Information Services 7.0. It is not necessary for previous version of IIS.
-->
    <system.webServer>
        <validation validateIntegratedModeConfiguration="false" />
</modules>
        <remove name="ScriptModule" />
        <add name="ScriptModule" preCondition="managedHandler"
type="System.Web.Handlers.ScriptModule, System.Web.Extensions, Version=3.5.0.0, Culture=neutral,
PublicKeyToken=31BF3856AD364E35" />
        <add name="SequenceAuthenticationModule"
type="PNMsoft.Sequence.Web.AuthenticationModule, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />

```

```

        <add name="SequenceModule"
type="PNMsoft.Sequence.Web.WorkflowEngineHttpModule, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
        <add name="SequenceFormsModule"
type="PNMsoft.Sequence.Forms.Web.AspFormsHttpModule, PNMsoft.Sequence.Forms, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
        <add name="RadUploadModule" precondition="integratedMode"
type="PNMsoft.Rad.Web.UI.RadUploadHttpModule, PNMsoft.Rad.Web.UI, Version=2012.03.1017.0,
Culture=neutral, PublicKeyToken=29ac1a93ec063d92" />
    </modules>
<handlers>
    <remove name="WebServiceHandlerFactory-Integrated" />
    <remove name="ScriptHandlerFactory" />
    <remove name="ScriptHandlerFactoryAppServices" />
    <remove name="ScriptResource" />
    <remove name="svc-Integrated" />
    <add name="ScriptHandlerFactory" verb="*" path="*.asmx"
preCondition="integratedMode" type="System.Web.Script.Services.ScriptHandlerFactory,
System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
    <add name="ScriptHandlerFactoryAppServices" verb="*" path="*_AppService.axd"
preCondition="integratedMode" type="System.Web.Script.Services.ScriptHandlerFactory,
System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
    <add name="ScriptResource" precondition="integratedMode" verb="GET,HEAD"
path="ScriptResource.axd" type="System.Web.Handlers.ScriptResourceHandler, System.Web.Extensions,
Version=3.5.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" />
    <add name="PNMsoft.Rad.RadUploadProgressHandler_ashx" verb="*"
preCondition="integratedMode" path="PNMsoft.Rad.RadUploadProgressHandler.ashx"
type="PNMsoft.Rad.Web.UI.RadUploadProgressHandler, PNMsoft.Rad.Web.UI, Version=2012.03.1017.0,
Culture=neutral, PublicKeyToken=29ac1a93ec063d92" />
    <add name="PNMsoft.Rad.Web.UI.WebResource" precondition="integratedMode"
path="PNMsoft.Rad.Web.UI.WebResource.axd" verb="*" type="PNMsoft.Rad.Web.UI.WebResource,
PNMsoft.Rad.Web.UI, Version=2012.03.1017.0, Culture=neutral, PublicKeyToken=29ac1a93ec063d92" />
    <add name="AdvancedComboItems" path="AdvancedComboItems.axd"
type="PNMsoft.Sequence.Web.Forms.AdvancedComboItemsHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="POST, HEAD" />
    <add name="ClientHelper" path="ClientHelper.axd"
type="PNMsoft.Sequence.Web.ClientHelperHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="GET, HEAD, POST" />
    <add name="DisplayImage" path="DisplayImage.axd"
type="PNMsoft.Sequence.Web.DisplayImageHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="GET, HEAD, POST" />
    <add name="FilteredComboItems" path="FilteredComboItems.axd"
type="PNMsoft.Sequence.Web.Forms.FilteredComboItemsHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="POST, HEAD" />
    <add name="GetSPComboItems" path="GetSPComboItems.axd"
type="PNMsoft.Sequence.Web.Forms.SPComboItemsHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="POST, HEAD" />
    <add name="ListFieldItems" path="ListFieldItems.axd"
type="PNMsoft.Sequence.Forms.HtmlView.ListFieldHttpHandler, PNMsoft.Sequence.Forms.HtmlView,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="POST, HEAD" />
    <add name="MemberInfo" verb="GET, HEAD, POST" path="MemberInfo.axd"
type="PNMsoft.Sequence.Web.MemberInfoDetailsHttpHandler, PNMsoft.Sequence.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" />
    <add name="PNMsoft.Sequence.Forms.Web.UI.WebResource"
path="PNMsoft.Sequence.Forms.Web.UI.WebResource.axd"
type="PNMsoft.Sequence.Forms.Web.UI.Controls.WebResource, PNMsoft.Sequence.Forms.Web, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" verb="*" />
    <add name="DisplayUserPicture" verb="GET, HEAD, POST"
path="DisplayUserPicture.axd" type="PNMsoft.Sequence.Web.DisplayUserPictureHttpHandler,
PNMsoft.Sequence.Web, Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1"
preCondition="integratedMode" />
    <add name="svc-Integrated" path="*.svc" verb="*"
type="System.ServiceModel.Activation.HttpHandler, System.ServiceModel, Version=3.0.0.0,
Culture=neutral, PublicKeyToken=b77a5c561934e089" precondition="integratedMode" />
</handlers>
<defaultDocument>
<files>
    <remove value="Default.htm" />
    <remove value="Default.asp" />
    <remove value="index.htm" />
    <remove value="index.html" />
    <remove value="iisstart.htm" />

```

```

        <remove value="default.aspx" />
        <add value="Default.asp" />
        <!--<add value="FormLogin.aspx"/>-->
    </files>
</defaultDocument>
<directoryBrowse enabled="false" />
</system.webServer>

<system.web.extensions>
    <scripting>
        <scriptResourceHandler enableCompression="false" enableCaching="true" />
        <webServices>
            <jsonSerialization maxLength="2147483647" />
        </webServices>
    </scripting>
</system.web.extensions>
<system.diagnostics>
    <trace autoflush="true" indentSize="4" />
    <sources>
        <source name="sequence.runtime" switchName="SourceSwitch"
switchType="System.Diagnostics.SourceSwitch">
            <listeners>
                <remove name="Default" />
                <!--<add name="RuntimeLog"
type="PNMsoft.Sequence.Diagnostics.SvcFormatWorkflowRuntimeTraceListener, PNMsoft.Sequence,
Version=7.0.0.0, Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" traceDirectory="C:\temp\Logs"/>-->
                <add name="EventLogListener"
type="PNMsoft.Sequence.Diagnostics.EventLogTraceListenerEx, PNMsoft.Sequence, Version=7.0.0.0,
Culture=neutral, PublicKeyToken=0a1a1b90c1c5dca1" initializeData="Panam">
                    <filter type="System.Diagnostics.EventTypeFilter"
initializeData="Warning" />
                </add>
            </listeners>
        </source>
        <source switchType="System.Diagnostics.SourceSwitch"
switchName="ObsTracingSwitch" name="sequence.obsTracing">
            <listeners>
                <remove name="Default" />
                <add traceData="tblTraceObs"
type="PNMsoft.Sequence.Diagnostics.DbTraceListener, PNMsoft.Sequence, Version=7.0.0.0, Culture=neutral,
PublicKeyToken=0a1a1b90c1c5dca1" name="DbListener" />
            </listeners>
        </source>
    </sources>
    <switches>
        <add name="SourceSwitch" value="All" />
        <add value="All" name="ObsTracingSwitch" />
    </switches>
</system.diagnostics>
</configuration>

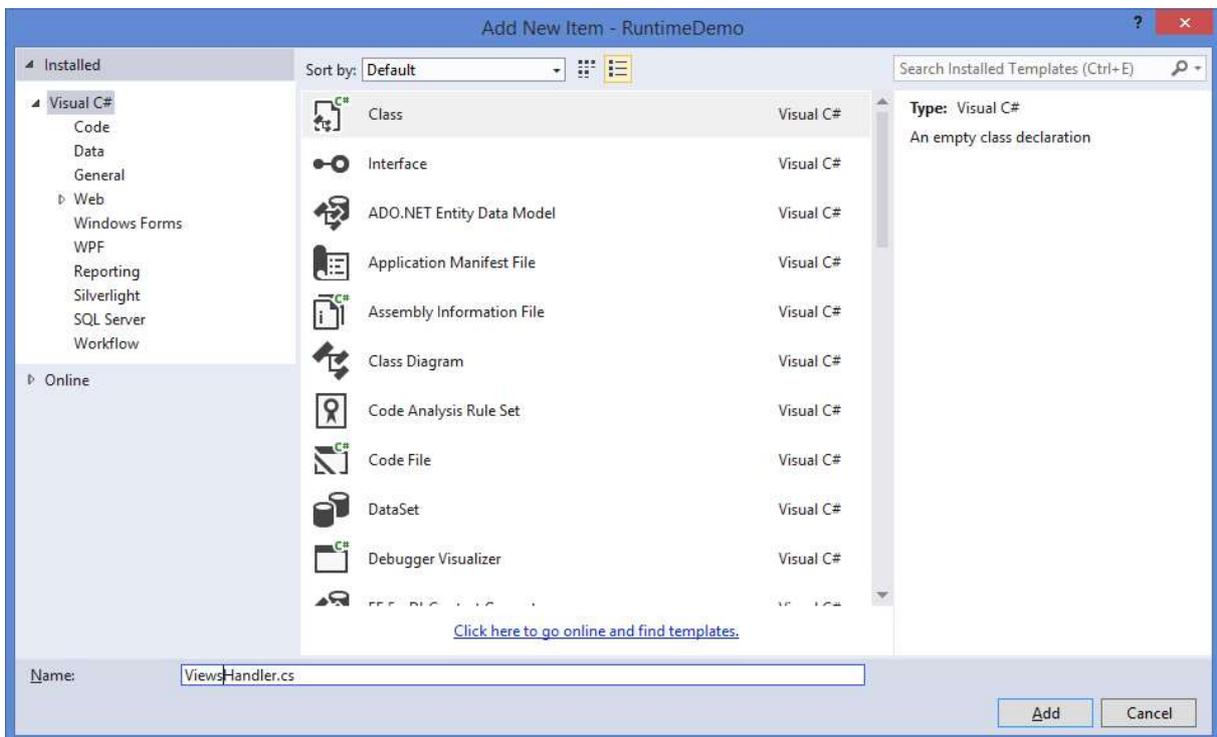
```

## Step 3: Creating the Views Handler Class

*Note: This document is aimed to get you started with Sequence API. The View Handler Class is an example. When you build your own project, place your API code instead of this example.*

The Views Handler class deals with the Sequence API and introduces several methods that return an `ObjectReader` to an **Aspx** page. This `ObjectReader` will be used as the data source for a grid view.

1. Select **Project > Add Class** from the Visual Studio toolbar, then add a new class.
2. Give your class a meaningful **Name** (e.g. ViewsHandler).



### New Class

3. Add the following statements to the 'using' statements section:

```
using PNMsoft.Sequence.Messaging;  
using PNMsoft.Sequence.Views;  
using PNMsoft.Sequence.Runtime;  
using PNMsoft.Sequence.Security;  
using PNMsoft.Sequence.Web;  
using PNMsoft.Sequence;
```

## Step 4: Creating the Inbox Display Method

### Adding a Method to the ViewsHandler Class

1. Copy and paste the code below to your `ViewsHandler.cs`.

```
//Return the logged in user's inbox
internal static ObjectDataReader GetMessagesData()
{
    //Get the messages view service fromt the Engine
    IMessageViewService messageViewService =
WorkflowRuntime.Engine.GetServiceWithCheck<IMessageViewService>();

    //Create the Setting object
    MessagesViewSettings settings;
    settings = messageViewService.CreateViewSettings() as MessagesViewSettings;
    //Define the view setting
    // The displayed page
    settings.PageNum = 1;
    //Number of items to retrieve (Page quota);
    settings.PageSize = 15;
    //Sort by , you can use any of the returned column
    settings.SortField = "Received";
    //Sort order
    settings.SortDirection = SortDirection.Descending;
    //Messages item type (Task\Notifications\All)
    settings.MessageInstanceViewItemtype = MessageInstanceViewItemtype.All;
    //Message instance state (Open\Closed\OverDue)
    settings.MessageInstanceViewType = MessageInstanceViewType.Open;

    //Call getView using the setting object
    return messageViewService.GetView(settings);
}
```

Understanding the `GetMessageData` method code:

- *messageViewService* - instance object of `PNMsoft.Sequence.Views.IMessageViewService` - this object is used to get the view data by passing a relevant setting object.
- *setting* – instance of `MessagesViewSettings` - this object is used as parameter in the `GetView` method. The above example uses a basic setting. You can explore this object and find other interesting options to use when retrieving the inbox view.

**Note:** Each view has its own setting object. E.g. *IMessageViewService* will use *MessagesViewSettings* to get the view results.

## Step 6: Authentication and Execution

This sample assumes you are using Windows-based authentication. The Sequence `SequenceAuthenticationModule` handles the authentication and impersonation for you.

If your scenario is different:

- Add this method to your code:

```
public static void Authenticate(string userName, string password)
{
    AuthenticatedUser authenticatedUser =
    WorkflowRuntime.Engine.GetService<IAuthenticationService>().Authenticate(userName,
    password);
    SecurityManager.Impersonate(authenticatedUser);
}
```

- Add calls to this method prior to any other method call.

Authentication should be used wisely. For more information about Authentication in Sequence, please refer to [this guide](#).

## Customization

Please note that this guide provides on a quick start example. To check if the code above works, you should customize the project. In this customization, call the `GetMessagesData` method to debug the returned object (the returned object is the list of open action items.)

## Learn more

More step-by-step samples can be found here:

<http://members.pnmsoft.com/Online%20Help/Pages/Sequence%20and%20ASP.NET%20Applications.pdf>

This document describes how to integrate Sequence Flowtime Workflow and Task execution with an independent ASP.NET web application.

## Appendix A – Setting Up the Developer Environment

The quickest way to set your developer environment with all the required functionality is to install the “Sequence SharePoint-less Flowtime” ([see the guide](#)).

Before you launch the set up verify that:

- ✓ You have the correct privileges on your machine.
- ✓ You have installed the IIS feature on your machine.
- ✓ The installation has created the Flowtime site.

After installation, you will get all the relevant dlls in your GAC and a valid web config in the website folder.

If you are using other components from the Sequence product, you can add your solution virtual directory to the Shared Resources folder.