TIBCO Business Studio™

ActiveMatrix® Decisions Add-in

Tutorial

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Creating and Using Decision Services

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Overview

This tutorial shows you how to use TIBCO Business Studio to create a decision service and deploy it to TIBCO ActiveMatrix Decisions IT.

You should work through each section in turn to complete the tutorial.

The tutorial represents a complex example that randomly creates form input data. For the purposes of this tutorial, a single input and output data field is used to demonstrate a thread through the Decisions product. The 'Age' parameter is used as the input and the 'Rules Fired' parameter is used to display the output, which will be either 'Age meets minimum requirement' or 'Age fails minimum requirement'.

Key Points

Before you start this tutorial, you can become familiar with TIBCO Business Studio by completing the initial *WelcomeUsers* tutorials.

Next Step

Importing the Tutorial Project

Importing the Tutorial Project

Key Points

To avoid having to build the application from scratch and to focus just on the steps involved in defining and deploying a decision service, this tutorial provides several "work in progress" projects as a starting point.

The projects include:

- The business service that captures the input data and invokes the business process.
- The business process that invokes the decision service.
- The underlying organization model and business object model (containing the data to be passed to and from the decision service).

Procedure

To import the starting-point project and business object model and organization model to your workspace:

1. Start TIBCO Business Studio for Designers.

Following this tutorial will be simpler and clearer if you close any other projects that you may have open in your TIBCO Business Studio workspace, using the **Project** > **Close Project** menu option.

2. In TIBCO Business Studio, right-click in the Project Explorer window, and select **Import** > **Existing Studio Projects into Workspace**.
3. On the **Import Projects** dialog, click **Select root directory**, then click the **Browse** button.
4. Browse to the folder that contains the tutorial projects, for example:

STUDIO_HOME\studio\3.6\sda\sda_samples\Tutorial\EasyAsCreditCard-Initial

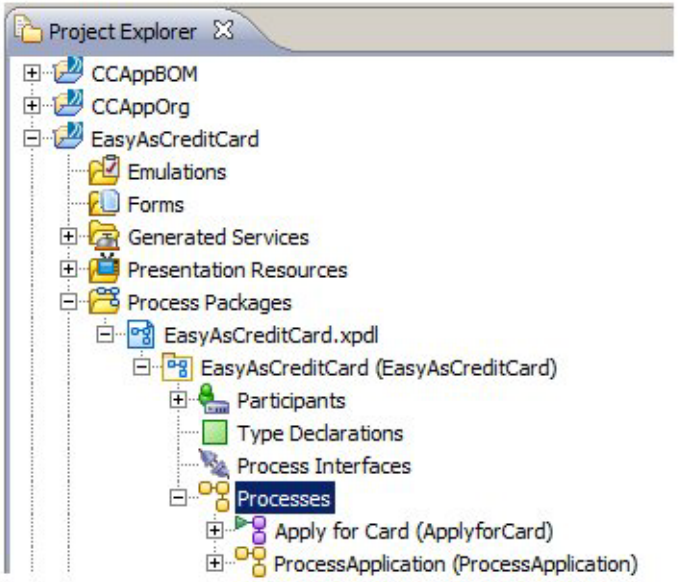
A solution to the tutorial is also available — for more information, see Installing the Tutorial Solution on page 17.

5. On the **Import Projects** dialog, select the projects (if they are not already selected), then click **Finish**.

TIBCO Business Studio imports the following into your workspace:

- **CCAppBOM** - The business object model used in the BPM application and the decision service.
- **CCAppOrg** - The organization model used in the BPM application and the Decision Model.
- **EasyAsCreditCard** - A BPM project that contains two processes:
  - The **ApplyforCard** business service, which when started by a user, displays a form that collects application data from the user, then invokes the ProcessApplication business process, passing the user's application data as input parameters.
  - The **ProcessApplication** business process, which when started, invokes the decision flow that defines the decision service, displays a form that shows the results of the credit card application.

After import, the Project Explorer looks like this:



Next Step Creating a New Decision Service Project

Creating a New Decision Service Project

Key Points

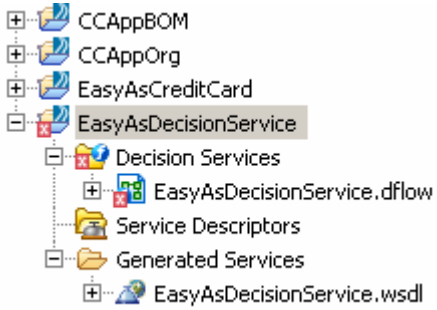
You must now create a decision service project, to define all the artifacts needed by your decision service.

Procedure

To create a new decision service project:

1. In the Project Explorer window, right-click and select **New** > **Decision Services Project** and click **Next**.
2. In the **New Decision Services Project** dialog, enter **EasyAsDecisionService** in the **Project name** field.
3. Check **BPM** and **Decisions** in the **Destination Environments** field and click **Next**.
4. On the **Asset Type Selection** dialog, click **Finish**.

   The newly-created decision service package, decision flow, and project are displayed in the Project Explorer.



For More Information

See "Getting Started" in the *TIBCO Business Studio ActiveMatrix Decisions Add-in User's Guide*.

Next Step

Define Decision Service Data

Define Decision Service Data

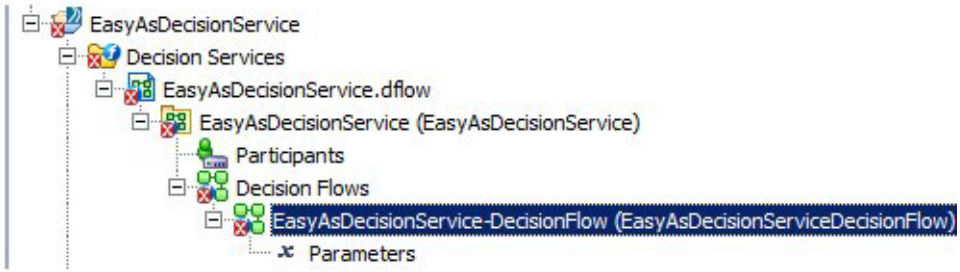
Key Points

Data is input to a decision service using parameters. You must specify the data you want to pass between the business process and the decision service. This is achieved by defining parameters that reference the business object model where the data objects are defined and mapping them to the corresponding parameters in the decision service.

Procedure

To pass data from the business process to the decision service, you must define the parameters that reference the data objects.

1. Double-click **EasyAsDecisionService-DecisionFlow** to open the decision flow in the editor:



   Note that the problem indicators are because of an empty decision table.

2. In the **Properties** view, select the **Parameters** tab.
3. Click the plus sign to the right of the **Parameters** tab. A new parameter displays.
4. Click in the **Label** column and change the label from the default "Parameter" to "Application".
5. Select the **BOM Type** field, then click the browse button to the right of the field. This allows you to map the field to an object defined outside the decision flow, in this case to a class in the business object model.
6. On the **Select Type** dialog, select the **Application** class and click **OK**.
7. Click **Yes** when you are prompted to add **CCAppBOM** as a reference project.
8. Save the changes you have made to the project.

For More Information

See "Working with Decision Flow Parameters" in the *TIBCO Business Studio ActiveMatrix Decisions Add-in User's Guide*.

Next Step

Define the Decision Table

Define the Decision Table

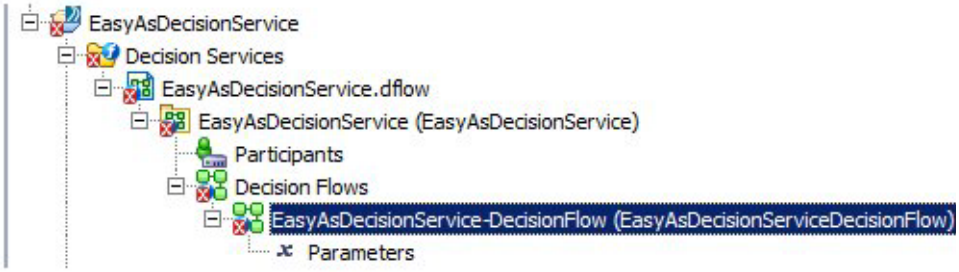
Key Points

Decision tables provide a method of building complex business rules. A decision table rule is a row in the decision table. It has one or more conditions and one or more actions. Each condition cell is equivalent to one condition in the decision table. Similarly each action cell is equivalent to one action in the decision table.

Procedure

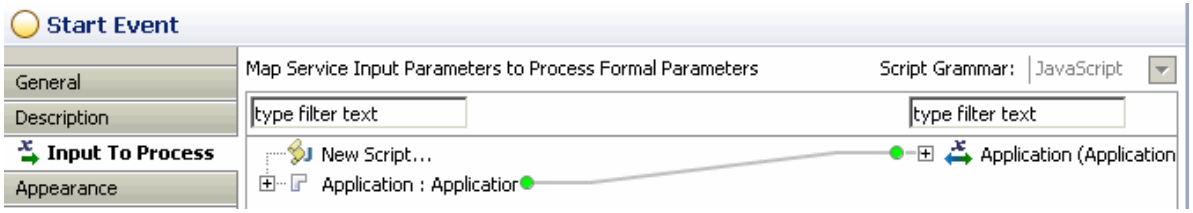
To define a decision table, you must define the conditions and actions:

1. If the decision flow editor is not already open, expand to, and double-click, **EasyAsDecisionService-DecisionFlow** to open the decision flow in the editor:



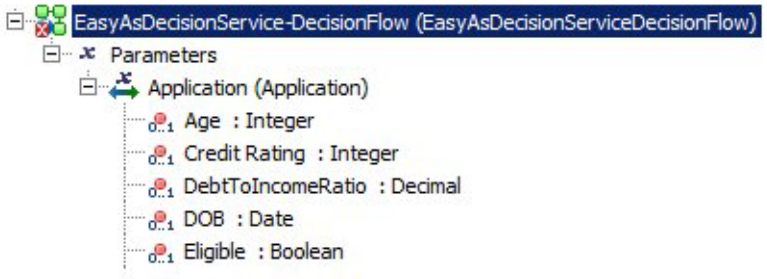
2. Click the start event in the decision flow. This should be a **message start event.**
3. Select the **Input To Process** tab in the **Properties** view.

   Note that the left and right sides have been automatically populated with the input parameter defined in the **Parameters** tab of the decision flow, and the mapping has been automatically completed.



4. Select the Decision Table task.
5. From the **Properties** view, select **General**.
6. In the **Label** box, type **Check Eligibility**.
7. Click **Edit Decision Table** (or double-click on the Check Eligibility task). The Decision Table Editor is displayed.

8. In the Project Explorer, expand the application parameters:



9. Select the **Age** attribute and drag and drop it into the Condition Area of the decision table.

   Application.age is added as a condition to the condition table.

10. Select the **Eligible** attribute and drag and drop it into the Action Area of the decision table.

    Application.eligible is added as an action to the decision table.

11. Click the **Add** button. A row is added to the decision table.
12. Click the cell under **Application.age** and change the value to **>=16**.
13. Under the **Application.eligible** cell, type **true**.
14. Click the **Custom** buttonand select **Add a Custom Action** from the drop-down list.

    Custom Action 1 is added to the Action area.

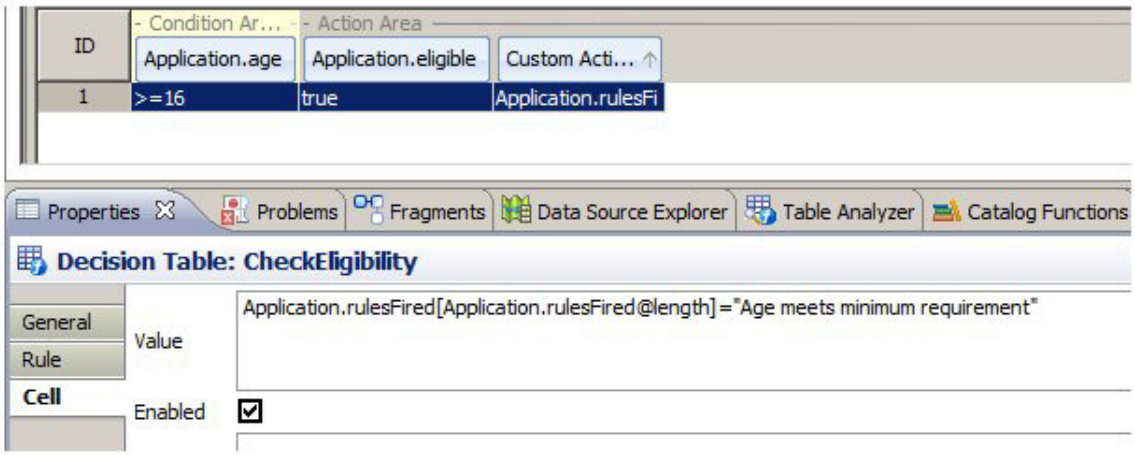
15. Click the cell under **Custom Action 1**.
16. Select the **Rules Fired** attribute and drag and drop it into the cell in row 1 under **Custom Action 1**.

    App.rulesFired[?] is added to the cell.

17. Click in the cell that contains **App.rulesFired[?]**, then click **Cell** on the **Properties** tab.
18. In the **Value** field, amend the contents to:

    Application.rulesFired[Application.rulesFired@length]="Age meets minimum requirement"

The table definition should now appear as follows:

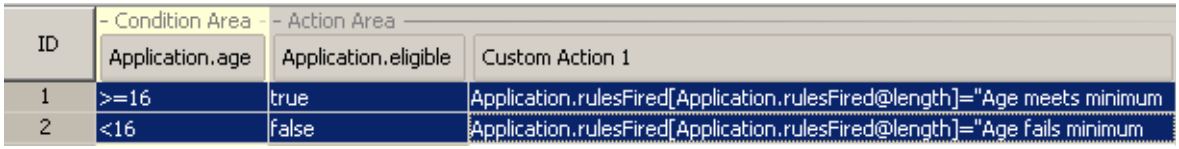


19. Click **Apply** (you may need to scroll down to see this).
20. Click the **Add** button to add a second row to the decision table.
21. In the **Application.age** column, click the cell in row 2 to select it and type **<16**.
22. In the **Application.eligible** column, click the cell in row 2 to select it and type **false**.
23. Click the cell in row 2 under **Custom Action 1**.
24. Select the **Rules Fired** attribute and drag and drop it into the cell in row 2 under **Custom Action 1**.

    App.rulesFired[?] is added to the cell.
25. Click in the cell to which you just added **App.rulesFired[?]**, then click **Cell** on the **Properties** tab.
26. In the **Value** field, amend the contents to:

    Application.rulesFired[Application.rulesFired@length]="Age fails minimum requirement"
27. Click **Apply** (you may need to scroll down to see this).
28. Click the **Fit Content** button so that you can see all of the content.

    The table definition should now appear as follows:



29. Save the project.

For More Information

See "Working with Decision Tables" in the *TIBCO Business Studio ActiveMatrix Decisions Add-in User's Guide*.

Next Step

Define a Decision Service Task

Define a Decision Service Task

Key Points

To call a decision service from a process you use a Service task of type **Decision Service**.

Procedure

To call a decision service from a process, you must:

- Add a service task of Decision Service implementation type in your business process.
- Add the data to the decision service. To do this, you must map the input and output parameters from the business process to corresponding parameters in the decision service.

Task A Add a Decision Service Task to Your Business Process

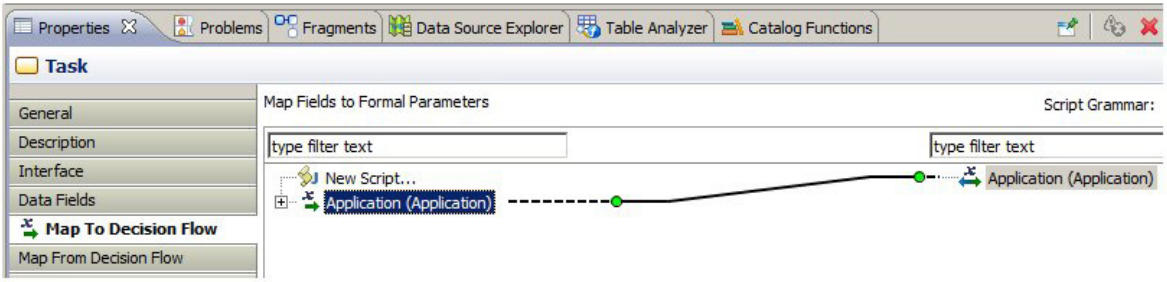
1. Open the **ProcessApplication** process in the EasyAsCreditCard project.
2. Select the **Check Eligibility** task.
3. On the **Properties** view, **General** tab, set the Activity Type to **Service Task**.
4. In the right pane, select **Decision Service** from the the **Service Type** drop-down list.
5. Click the **Open Decision-Flow** link.
6. On the **Select Decision Flow** dialog, select the **EasyAsDecisionService** decision flow and click **OK**.
7. Respond **Yes** when asked about adding EasyAsDecisionService as a reference project.

   The decision service details are automatically completed in the **General** tab of the **Properties** view.

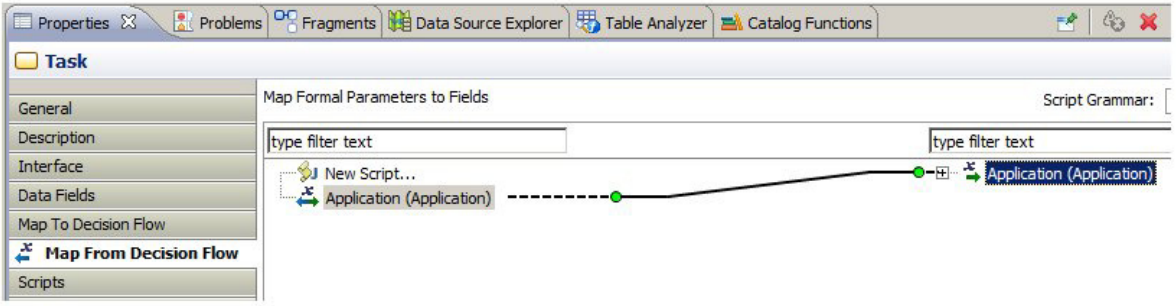
Task B Set up the Data Inputs and Data Outputs for the Decision Service

1. In the **Properties** view for the decision service task (**Check Eligibility**), click **Map to Decision Flow**. Note that the right-hand and left-hand sides have been automatically populated with the input parameter defined in the Interface tab of the decision service task (Application).
2. Click **Application** on the left, and drag the parameter on to the Application input parameter on the right to create a data mapping. When the Process Application

process calls the Check Eligibility decision service, the value of **Application** will be passed to the decision service.



3. Click **Map From Decision Flow**. Click **Application** on the right and drag the parameter to the Application input parameter on the left to create a data mapping. When the Check Eligibility decision service has completed, the value of **Application** will be passed back to the Process Application process.



4. Save the project.

For More Information See "Invoking Decision Services From a BPM Application" of *TIBCO Business Studio ActiveMatrix Decisions Add-in User's Guide*.

Next Step Deploy the Decision Service

Deploy the Decision Service

Key Points Once you have developed a decision service, its constituent elements must be deployed so that the decision service can be run as an application.

Procedure To deploy the decision service, you must do the following:

- Create and connect to a BPM deployment server. See the *How to Implement and Deploy the WelcomeUsers Application* tutorial for more information.
- Deploy the EasyAs Credit Card organization model to a node using a deployment server
- Deploy your BPM application to a node using a deployment server
- Deploy your decision service to a node using a deployment server

Task A Deploy BPM projects

To deploy the **CCAppOrg** organization model:

1. In the Deployment Server view, right-click the name of the deployment server and select **Deploy Module**.
2. On the **Select Module Type** dialog, select **Deploy BPM Project** and click **Next**.
3. Select **CCAppOrg** as the module to deploy and click **Next**.
4. On the **Administrator Configuration** dialog, click **Finish**.

   A progress dialog displays while deployment takes place. If you select the **Close Dialog** checkbox, the dialog closes when it is completed. If not, click the button or click **Close** when deployment has completed.

   In addition, a **Console** view opens. This view also displays progress messages.
5. Expand the **Deployment Server** view (Deployment Server > Server > BPM Environment > Application). **CCAppOrg** appears as a deployed application
6. Perform the steps above to deploy the **EasyAsCreditCard** project.

Task B Deploy the Decisions project

1. For your decisions runtime, find out the name of the decisions application. By default this is "com.tibco.adec.service.daa". If a different name is used, you will need to change your name to match it. To do this, go to **Window > Preferences > Decisions** and edit the Decisions Product Application Name.

2. Perform the steps described in Deploy BPM projects again, but at step 2, select **Deploy Decisions Project** and follow the steps to deploy the **EasyAsDecisionService** project.

For More Information

See "Deploying a Decision Service" in the *TIBCO Business Studio ActiveMatrix Decisions Add-in User's Guide*.

Next Step

How to Run the EasyAs Credit Card Application

How to Run the EasyAs Credit Card Application

Procedure To run the EasyAs Credit Card Application:

1. Contact your system administrator to find out how to start Openspace. You may need to enter a specific URL in your browser, or click a link from a specific web page.

   Use the Organization Browser in Openspace to map a user (in this case, Clint Hill) to the Credit Card Officer position (as this is the position to which the displayed work item will be offered).

2. Enter a **User Name** of "Clint Hill" with a **Password** of "tibco123", then click **Login**. The main Openspace user interface is displayed.

The password "tibco123" is a default defined in the LDAP.

3. Click the **Business Services** pane.
4. Expand **All Categories** > **EasyAsCreditCard**.
5. Double-click **ApplyForCard** in the right hand pane and enter a value in the box for 'Age' to test the rules set up earlier in the tutorial (Age>=16 and Age<16). Click **Submit**.

   The decision service will be used to check the age of the applicant for a credit card, and decide whether they are eligible based on their age.

6. Click **ToDo List**. You should see the work item.
7. Click the work item. The Rules Fired field on the form indicates that the service has been invoked and has processed the request by showing the text of 'Age meets minimum requirement' or 'Age fails minimum requirement' rule.

Summary and Next Steps

You have now completed this tutorial.

Summary

You should now be familiar with:

- creating and deploying a decision service
- configuring a business process to invoke a decision service

Next Steps

You can now:

- install the solution to this Tutorial and compare it with your version. See the instructions in Installing the Tutorial Solution for how to do this.
- use the "For More Information" links in this chapter to explore particular topics in more detail.

Installing the Tutorial Solution

Procedure If you want to install the solution to this tutorial:

1. Start TIBCO Business Studio for Designers.
2. In TIBCO Business Studio, right-click in the Project Explorer window, and select **Import** > **Existing Studio Projects into Workspace**.
3. On the **Import Projects** dialog, click **Select root directory**, then click the **Browse** button.
4. Browse to the folder that contains the tutorial solution:

   STUDIO_HOME\studio\3.6\sda\sda_samples\Tutorial\EasyAsCreditCard-Solution

5. On the **Import Projects** dialog, select the projects (if they are not already selected), then click **Finish**.