



Sample OpenRules® Configuration

OpenRules is a general purpose business rules and decision management system that allows Subject Matter Experts (SMEs) and software developers to create, test, and maintain enterprise class decision support applications. OpenRules decisions are implemented using .xls spreadsheet files, which can be edited using Microsoft Excel, OpenOffice, or Google Docs. Since business rules are often best defined by non-technical resources, the spreadsheet format provides a familiar and convenient environment. The iWay OpenRules interface allows an iWay Service Manager (iSM) application to invoke an OpenRules decision from a process flow and then retrieve its result as an XML document.

The OpenRules sample decision that is configured in this how-to consumes an HL7-related input document that contains information about a patient's doctor visit. Based on this information, this how-to demonstrates how the decision management system can recommend appropriate medication and the corresponding dosage that is specific to the patient's diagnosis. The OpenRules Decision Service (com.ibi.agents.XDOpenRulesDecisionAgent) will be configured to drive this process.

Prerequisites

This how-to has been certified with iWay Service Manager (iSM) Version 7.0 SP6 (7.0.6). When you install iSM, ensure that the *OpenRules* component is selected during the installation to have this feature available in your environment. Before continuing, ensure that you download the *openrules_samples.zip* archive file, which contains the following components that are referenced by this how-to:

- openrules.decisions.zip
- Medication_pFlow.iwp
- PatientVisit.xml

Configuring OpenRules

1. Unzip the *openrules.decisions.zip* file under your root directory. For example:

`c:\openrules.decisions`

2. Start iSM.
3. In the iSM Administration Console (or in the template to be used for the iWay Integration Application (iIA) deployment), add the following path:

`c:/openrules.decisions/openrules.config/lib/*`

to the iSM *post* classpath.

This is for the OpenRules library and its dependencies.

4. In the iSM Administration Console (or in the template to be used for the iIA deployment), add the following path:

[c:/openrules.decisions/DecisionPatientTherapyTest/bin](#)

to the iSM *pre* classpath.

This allows the required generated objects to invoke *DecisionPatientTherapy*.

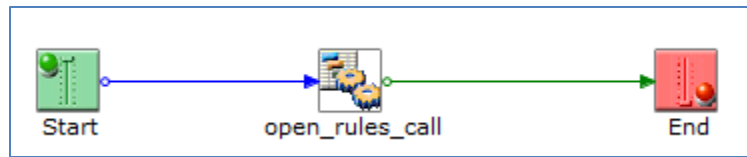
Notes:

- If you are using an iIA-based deployment, then the template will apply changes made to the runtime settings when the iIA is deployed and started.
- If you are not using an iIA-based deployment, then you can restart your iSM configuration to apply the changes made to the *pre* and *post* classpath.

5. Perform one of the following steps:

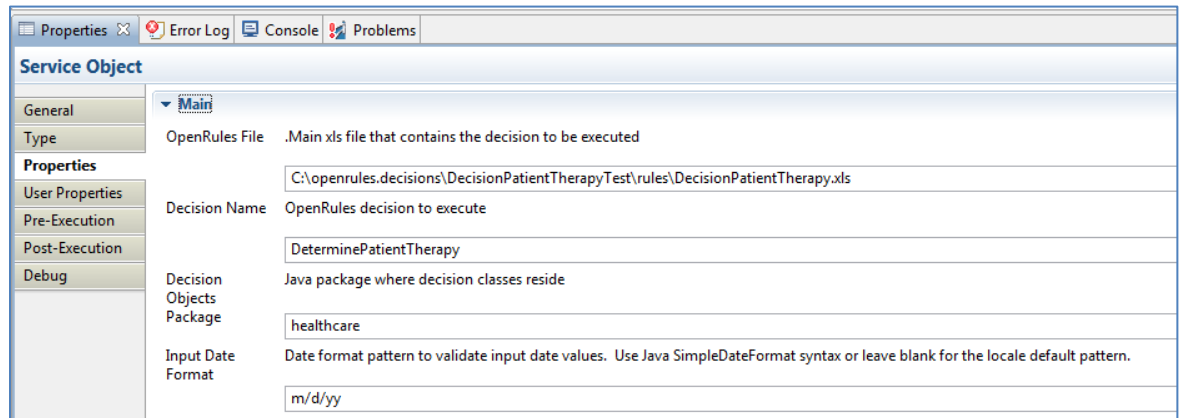
- a. Import the *Medication_pFlow* process flow that is packaged with this how-to (*Medication_pFlow.iwp*) into your iWay Integration Tools (iIT) project.

The *Medication_pFlow* process flow has the following structure:



- b. Configure a new Service object in your process flow for the OpenRules Decision Service (com.ibi.agents.XDOpenRulesDecisionAgent)

The following image shows the Properties tab selected in iIT for the OpenRules Decision Service object.



The following table lists and describes the properties for the OpenRules Decision Service (com.ibi.agents.XDOpenRulesDecisionAgent). You can copy and paste these values if you plan to configure your own service.

Property	Value	Description
OpenRules File	C:\openrules.decisions\DecisionPatientTherapyTest\rules\DecisionPatientTherapy.xls	The main .xls file that contains the decision to be executed.
Decision Name	DeterminePatientTherapy	The OpenRules decision to execute.
Decision Objects Package	healthcare	The Java package where the decision classes reside.
Input Date Format	m/d/yy	The date format pattern to validate input date values. Use Java SimpleDateFormat syntax or leave blank for the locale default pattern.

The following image shows the User Properties tab selected in iIT for the OpenRules Decision Service object.

Name	Type	Value
DoctorVisit.date	string	_xpath(/PatientVisit/DoctorVisit/date)
DoctorVisit.encounterDiagnosis	string	_xpath(/PatientVisit/DoctorVisit/encounterDiagnosis)
Patient.name	string	_xpath(/PatientVisit/Patient/name)
Patient.weight	string	_xpath(/PatientVisit/Patient/weight)
Patient.creatinineClearance	string	_xpath(/PatientVisit/Patient/creatinineClearance)
Patient.activeMedication	string	_xpath(/PatientVisit/Patient/activeMedication)
Patient.creatinineLevel	string	_xpath(/PatientVisit/Patient/creatinineLevel)
Patient.age	string	_xpath(/PatientVisit/Patient/age)
Patient.allergies	string	_replace(_xpath(/PatientVisit/Patient/allergies/allergy), ' ', ',')

The following table lists the values for the user properties for the OpenRules Decision Service (com.ibi.agents.XDOpenRulesDecisionAgent). You can copy and paste these values if you plan to configure your own service.

Name	Type	Value
DoctorVisit.date	string	_xpath(/PatientVisit/DoctorVisit/date)
DoctorVisit.encounterDiagnosis	string	_xpath(/PatientVisit/DoctorVisit/encounterDiagnosis)
Patient.name	string	_xpath(/PatientVisit/Patient/name)
Patient.weight	string	_xpath(/PatientVisit/Patient/weight)
Patient.creatinineClearance	string	_xpath(/PatientVisit/Patient/creatinineClearance)
Patient.activeMedication	string	_xpath(/PatientVisit/Patient/activeMedication)
Patient.creatinineLevel	string	_xpath(/PatientVisit/Patient/creatinineLevel)

Patient.age	string	_xpath(/PatientVisit/Patient/age)
Patient.allergies	string	_replace(_xpath(/PatientVisit/Patient/allergies/allergy),' ',';')

Note: The *Patient.allergies* user property is not scalar. The decision object API requires a comma-delimited list for these type of user properties. As a result, you must replace the vertical bar (|) character that the iFL `_xpath()` function uses with a comma (,) character for OpenRules.

6. Save your OpenRules configuration.

You can test run the process flow against the iSM instance that had changes made to the *pre* and *post* classpath.

Use the *PatientVisit.xml* file that is packaged with this how-to as the sample input document. Note that after processing has completed, the *recommendedMedication* and *recommendedDose* elements are populated by the decision, as shown in the following image.

```
<?xml version="1.0" encoding="UTF-8" ?>
<OpenRules decision="DeterminePatientTherapy" engineVersion="6.3.2 (build 02122015)"
  xlsFile="C:\openrules.decisions\DecisionPatientTherapyTest\rules\DecisionPatientTherapy.xls">
  <DecisionOutput />
  <DecisionObject name="Patient">
    <attribute name="creatinineClearance" type="double">44.42</attribute>
    <attribute name="activeMedication" type="java.Lang.String" />
    <attribute name="weight" type="double">78.0</attribute>
    <attribute name="name" type="java.Lang.String">Peter N. Johnson</attribute>
    <attribute name="age" type="int">58</attribute>
    <attribute name="creatinineLevel" type="double">2.0</attribute>
    <attribute name="allergies" type="[Ljava.Lang.String; ">
      <member type="java.Lang.String">Penicillin</member>
      <member type="java.Lang.String">Streptomycin</member>
    </attribute>
  </DecisionObject>
  <DecisionObject name="DoctorVisit">
    <attribute name="recommendedDose" type="java.Lang.String">500mg every 24 hours
      for 14 days</attribute>
    <attribute name="encounterDiagnosis" type="java.Lang.String">Acute Sinusitis
    </attribute>
    <attribute name="recommendedMedication" type="java.Lang.String">Levofloxacin
    </attribute>
    <attribute name="date" type="java.util.Date">2/15/11</attribute>
  </DecisionObject>
</OpenRules>
```

For more information on the OpenRules Decision Service (com.ibi.agents.XDOpenRulesDecisionAgent) that is referenced in this how-to, see the *iWay Service Manager Component Reference Guide*.

For more information on the `_xpath()` iFL function that is referenced in this how-to, see the *iWay Functional Language Reference Guide*.