WHITESTEIN Technologies

Living Systems® Process Suite

# Management

## Living Systems Process Suite Documentation

3.1
Tue Jan 12 2021

Whitestein Technologies AG | Hinterbergstrasse 20 | CH-6330 Cham
Tel +41 44-256-5000 | Fax +41 44-256-5001 | http://www.whitestein.com

# Contents

# Chapter 1

# Management

Management features serve to manage the LSPS Server and its resources:

- Model-related:
  - modules
  - model instances
- User-related:
  - persons
  - roles
  - security roles
- to-dos
- Execution-related:
  - logs
  - exceptions

You can perform most of the related management task with any of the following tools:

- Tools in the Management perspective: perspective in the PDS development environment
- Management Web Console: web-based front-end application intended for Management of model instances, users, and the LSPS front-end applications, that is, the Process Management Console and the Application User Interface.
- Command-Line Console: command-line management tool

  The tool is primarily intended for application and LSPS administrators. However, also process designers and application developers might benefit from its features.

Often it is possible to perform a task in any of the tools; the choice will depend on your preference and specific requirements, such as, automation of the task or integration in a script; ability to apply security restriction on the feature, etc.

> **Important:** Feature accessibility might be restricted by your security rights: Consult your administrator if necessary.

## 1.1 Module and Model Instance

Modules and model instances are the most basic concepts in LSPS, with module being the designed part and model instance the runtime part of your business process.

Generally, you can think of the module as of a package and model instance as the application: You can run multiple applications based on the same package.

### 1.1.1 Module

Modules are bundles of GO-BPMN resources with one main module that might import other modules. When uploaded, all the imported modules are uploaded to the LSPS Server.

Modules can be marked as executable: such modules can be instantiated on the server, which means that the server creates a model instance of the given module.

### 1.1.2 Model Instance

Model instances are the execution or runtime versions of models: models serve as a blueprint and the model instance follows the workflows defined by its model. Model instances store only their runtime data, that is, the data on the current and previous execution, such as, which task is currently being running and in what state it is, the current value of variables, etc.

When a Model instance is created it goes through a set of execution statuses:

- **Created**: Model context is created and contexts of individual module instances are created.

  Generally, this is a transient state and if your model instance is stuck in this state, it means that something went wrong in the first transaction and the transaction was rolled back..
- **Running**: Context data are initialized, initial values are assigned, and all BPMN-based and Goal-based processes in all executable modules are instantiated.
- **Finished**: Model instance becomes Finished, when all its Process instances are Finished.

While a model instance is **Running**, you can *suspend* or *finish* it:

- When you suspend a model instance, the execution is halted. To marked this state, the model instance and all running elements become **Suspended**. You can then resume the execution whenever required.

  > **Important:** It is not possible to resume a model instance that is being `updated`.

  For detailed information on behavior of Model instances, refer to the `GO-BPMN Model Language Guide`.

- When you finish a model instance, the execution of the model instance is halted and it instance becomes **Finished** immediately:

  For detailed information on behavior of Model instances, refer to the `GO-BPMN Model Language Guide`.

## 1.2 Persons

Users are represented by *persons* with personal details and access rights to the application.

A person defines the following:

- User information: user details, such as login, password
- Application data: person data, such as, name, email, phone
- Security roles: enable or restrict access to general system features, for example, to to-do rejection, document submit, person management, etc.
- Modeled roles: roles that define the person role in a model instance created based on organization models of the model. Typically they will restrict the access to to-dos and documents.
- Substitution: list of substitutes
- Person details: runtime custom data

You can manage all of the data from the Management perspective and the Management Console.

### 1.2.1 Substitution

**Important:** The built-in substitute mechanism is provided as a base for custom substitution mechanism.

The substitution mechanism serves to define stand-ins for persons: when activated any unlocked to-dos assigned to the user are assigned also to all their substitutes. The to-dos are displayed in the to-do lists of both the users and their substitutes.

**Note:** If a substitute lacks a modeled role required by the to-do, they cannot see the content of a to-do.

At the moment the substitution is deactivated, all to-dos listed in the substitute's to-do list which were originally allocated to the substituted person and are not locked by the substitute are removed from the to-do list of the substitute and only displayed in the to-do list of the person.

Substitution is transitive: If a substitute has also activated their substitution, the substitution applies also the to-dos assigned due to a previous substitution.

When substitution is deactivated, any unlocked to-dos listed in the substitute's to-do list are removed; locked to-dos remain in the to-do list.

Individual users can activate and deactivate substitution from their Application User Interface, while administrators can manage substitution of all users for the *Management* perspective or web console.

### 1.2.2 Roles

Modeled roles represent groups of persons that have the same role in a process. They are defined as part of a GO-BPMN Module. Once these elements are uploaded they can be assigned to persons as their runtime roles.

For parametric modeled roles, you can define the parameter values on their runtime versions.

A role is defined by the module name and its own name, *not* the module version. As a result, an organization element can define multiple parameters, which can originate from different module versions with the modeled roles.

- If another version of the same module with an updated organization definition is uploaded, the role is identified as the same role as the one created by the previous module version (assuming the role name remained unchanged).
- If another version of the same module contains the same role with a new parameter name, the parameter name is added to the already-existing parameter names of the modeled role.

You can assign a person to the role and units, and remove them as necessary either programatically using the `addPersonToRole()` function or from the management perspective and web console on runtime manually.

A typical usage of Roles is represented by To-Do performers: For example, you create an organization definition with a role. Then you create a process with a User Task. The User Task will define as its Performer parameter persons with the given role, for example, `Admins()`. When executed, the generated to-do will be allocated only to the persons with the runtime role `Admins`. Note that if you add a person to the role, the to-do is allocated to this person as well.

More information on roles and organization units is available in the GO-BPMN Modeling Language Specification.

#### 1.2.2.1 Parametric Roles

Parametric roles are modeled roles with defined parameter names. A runtime role created based on a parametric role may have a parameter value attached to the parameter name.

Runtime roles, based on parametric modeled roles, contain parameter definitions (parameter names and values).

If no parameter value is defined, the runtime role is considered superior to any roles with a parameter value and if a parameter value is defined, the runtime role is inferior to the runtime role without a defined parameter value.

> **Example:** Consider a parametric modeled role, Developer, with a parameter, Language.
>
> There are three persons in the system: Javan, Cee, and Deve. Each has the Developer runtime role but with a different Language value: Javan has the Developer role with the parameter Language set to Java, Cee with the parameter Language set to C, and Deve with no parameter value.
>
> When a process dispatches a to-do with the initial performers set to the role Developer with parameter Java, the to-do will appear in to-do lists of Javan and Deve – the person with the role with no parameter value receives to-dos assigned to the role regardless of the required parameter value. However, since Cee has the parameter set to C, he will not receive the to-do.

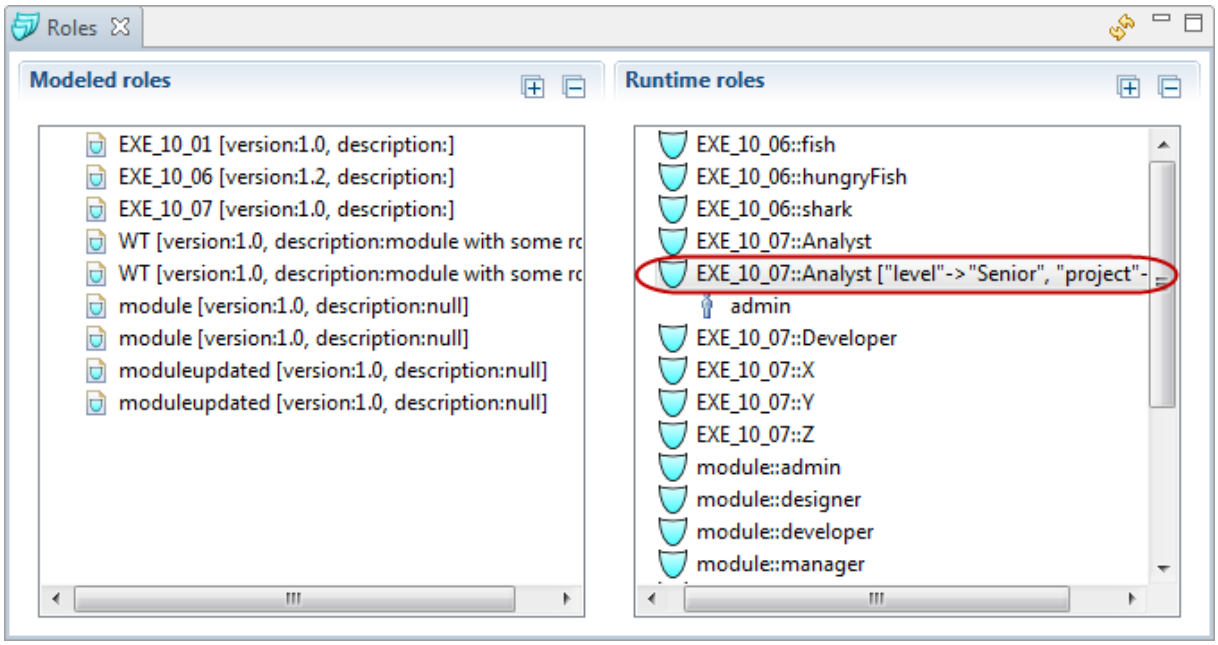



**Figure 1.1 Roles view with a parameter runtime role outlined**

### 1.2.3 Security Roles

Security management is implemented as a role-based security manager: A person's security rights are defined by the security roles the person has. Each security role defines the security rights it actually grants: The user can perform an action in front-end application (over runtime) only if they have a security role with the security right required for the action; otherwise, the respective feature is inaccessible or the action is interrupted.

The following predefined security roles are available:

- Admin represents a security role with rights of an administrator. Admin has all security rights and hence an unrestricted access to management features. The security role is read-only and cannot be deleted.
- ApplicationRoleManager can manage system users and application roles (both the modeled roles and the security roles).
- ProcessExecutor has access to end-user features.
- ProcessManager can manage model instances.

### 1.2.4 Person Details

Person details serve to define properties of a person on runtime. They are defined as maps with key-value pairs. In your model, you can get the person details with the `getPersonProperties()` function.

## 1.3 To-Dos

A *to-do* represents a job that an end user has to accomplish: it is generated by the `User Tasks`, which is a type of task provided by the Standard Library.

When the execution flow enters the User Task, the task becomes *alive*, just like any other task, and the system generates a to-do. The to-do is allocated to its initial users: it is displayed in the To-Do lists of the Application User Interface to the users defined by the Performers property of the User Task.

> **Note:** If the Performers property returns a set of Roles or Organization Units and the administrator or the system assigns or unassigns the Role or Organization Unit to a Person, the system allocates the to-do to this person accordingly.

The moment one of the users opens the to-do, it becomes *locked*: the to-do is removed from the To-Do lists of other users. Only the user who locked it, can access and accomplish the to-do. They can also decide to reset it so as to release the to-do.

As a result of such actions, assignees of the to-do change and to-do might end up with no assignees. Such to-dos are referred to as *orphaned* and require the attention of an administrator: in the Management Console, the administrator can search specifically for such to-dos.

When the user accomplishes the to-do task, that is, they submit the form of the to-do: the User Task becomes *accomplished* and the underlying process workflow proceeds to the next element.

The accessibility of the actions can be restricted by user security roles.

### 1.3.1 Delegation

**Important:** The built-in delegation mechanism is provided as a base for custom mechanism.

Delegation enables users to assign an *alive* to-do to other users, for example, to ask for assistance or simply because they know better. When a user delegates their to-do, the to-do disappears from the to-do lists of all current assignees and appears in the to-do list of the selected users–delegates. A delegate can delegate the to-do further–delegation can take place on several levels.

### 1.3.2 Escalation

To-do escalation provides the user a mechanism that sends a special type of Signal, an escalation Signal, to the server while keeping the to-do locked. The underlying Model is expected to catch the signal and process it as appropriate: hence, the underlying process flow must define how the signal is caught and handled.

> **Important:** Note that the to-do escalation mechanism is not related to the `Escalation of the GO-BPMN Modeling Language`.

### 1.3.3 Rejection

Rejection allows a front-end user who is an assignee of a to-do to reject the to-do: when rejected, the to-do is removed from their to-do list and the fact is recorded by the server.

You can check the assignees who have rejected a to-do in the *Assignees* box of a to-do detail view: They are indicated by a red assignee icon. From the view, you can cancel the rejection and reallocate the to-do to the assignee again.

### 1.3.4 Resetting

Todo reset (  ) erases the data in a saved to-do. This feature is useful if the data used by the saved to-do have changed. Note that a reset to-do remains locked by the user.

### 1.3.5 Reassignment

**Important:** The built-in reassignment mechanism is provided as a base for custom mechanism.

Reassignment enables an administrator to assign an Alive to-do to another set of performers, who become the initial performers. That means you can reassign a to-do to roles, organization units, or persons.

When you reassign a to-do, you modify the current performers as well as its initial performers: The to-do disappears from the to-do list of the original assignees and appears in the to-do lists of the new assignees, which become the current and initial assignees of the to-do. The information on original assignees are lost.

> **Important:** Reassignment cannot be undone.

## 1.4 Execution

### 1.4.1 Logs

Logs are dedicated LSPS Application logs: they are created by the `Log` tasks and `log()` functions, which are part of the Standard Library and stored in system database table LSPS_LOGS.

### 1.4.2 Exceptions

When a model instance fails with an Exception, the Execution Engine rolls back the transaction that caused the exception. Such error on model instances is recorded in the Exceptions log (for further information on transactions in model instance, refer to `Transactions in Model Instances`).

As part of the management features, you can resend inputs to such model instances.

# Chapter 2

# Management Perspective

Management perspective contains views and tools that allow you to communicate with the LSPS Server, that is, to upload and instantiate models, monitor and update model instances, manage roles and users, etc.)

Server data is presented in dedicated management views, which you can display by clicking the Management Views button (  ) in the main toolbar. The data in the views is loaded, when the view is opened. Make sure to refresh the views so you work with the most recent data (click the Refresh (  ) button in the toolbar of the view).

From the *Management Views* menu you can open the following views:

- Module Management
- Model Instances
- To-do List
- Logs
- `Model Update Logs`
- Role Management
- Persons View
- `Profiling`
- Security Roles Management
- Web Services
- Exceptions and Logs

**Note:** You can display any views, not only management views, in the perspective: Go to **Window** -> **Show View** -> **Other**.

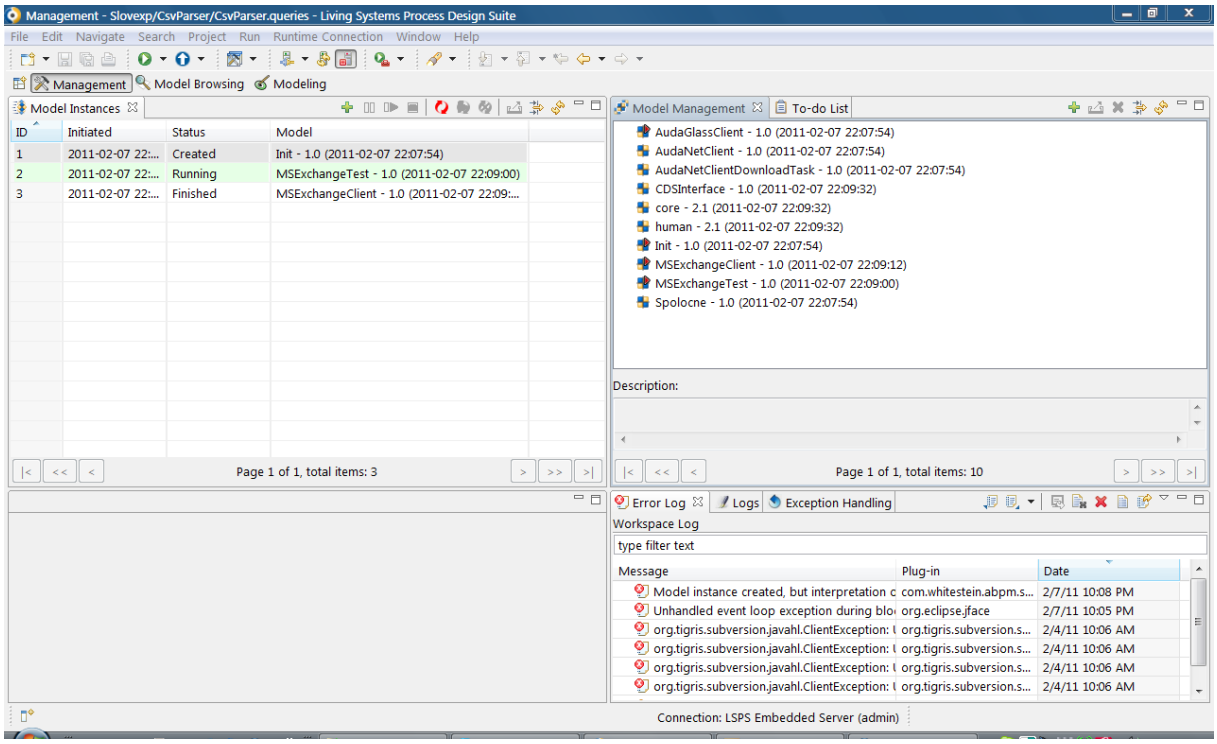



**Figure 2.1 Management perspective**

**Related topics:**

- Model and Module Management
- Model Instance Management
- User Management
- To-Do Management
- Web Services Management
- Logs and Exceptions

## 2.1 Model and Module Management

You can manage Model instances and Modules on the LSPS Server from the Module Management view. The view contains the list of uploaded Modules with their details. Using the buttons in the view toolbar, you can perform Module-related actions:

- **Upload** ( ): upload a Model exported in GO-BPMN Export to the LSPS Server;
- **Export** ( ): export an uploaded Model to a zip archive (you can import it to your workspace in the Process Design Suite using the GO-BPMN Import);
- **Unload** ( ): delete a model from the LSPS Server.

The Filters ( ) button allows you to filter the list of uploaded Models based on their name or version.

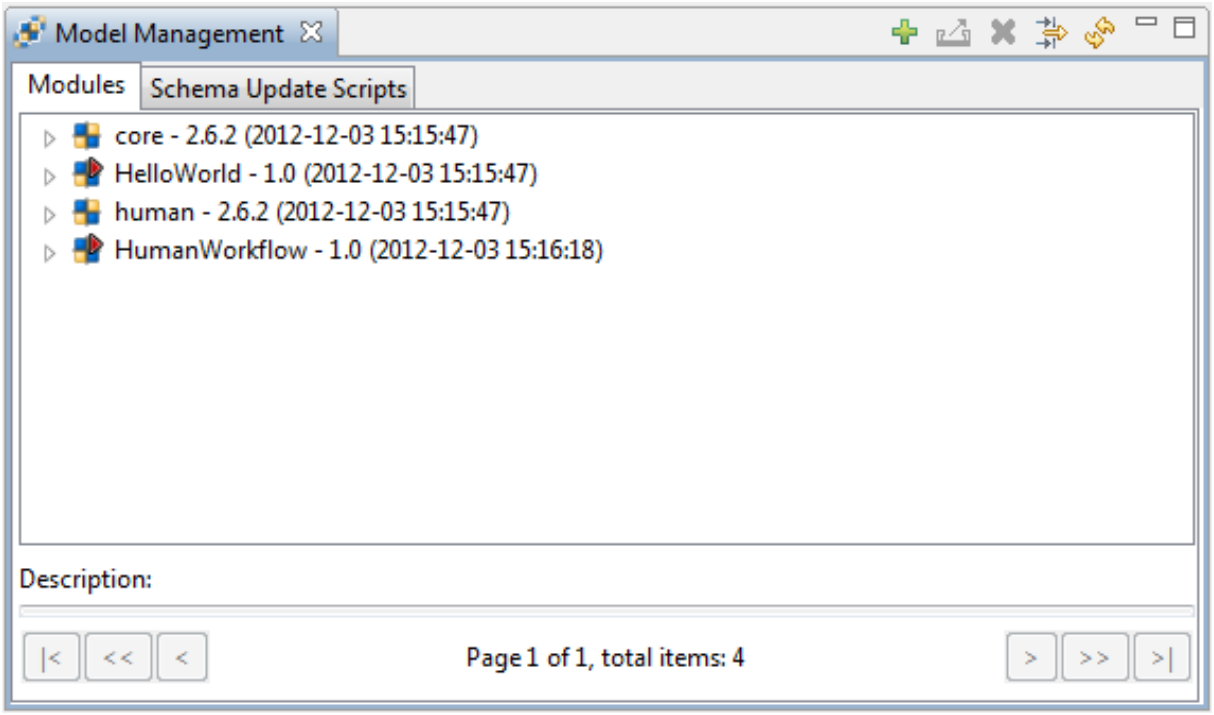



**Figure 2.2 Module Management view**

### 2.1.1 Uploading a Module

On module upload, a Module with all its Module imports is uploaded to the Module Repository on the target LSPS Server.

> **Note:** Since resources, such as shared records, can request modifications of the underlying database, consider setting the `Database Upload Strategy` on your server connection: the strategy defines how to handle the existing database schema when connecting to the server.

The upload process can require confirmation to prevent unintended model upload: to enable the confirmation set the confirmModelUpload boolean flag to true. The flag is exposed as the MXBean property com.whitestein.↩ lsps.Settings -> Attributes -> ConfirmModelUpload. You can change the setting with a database insert into the LSPS_SETTINGS table:

INSERT INTO LSPS_SETTINGS(ID, VALUE) VALUES ('CONFIRM_MODEL_UPLOAD', 'true');

You can use the *Do not execute schema update* scripts flag: if checked, the underlying database remains unchanged. However, the scripts generated for database update are not executed during the model upload regardless of the set strategy. This is applicable for the **Schema update** and **Drop and recreate** strategies.

After upload, the generated scripts are displayed in the tab Schema Update Scripts as a new entry of the table. To display the scripts, double click the respective row. The view also contains a list of problems and conflicts discovered in schema.

### 2.1.2 Unloading a Module

On unload, the module is deleted from the Module Repository, and if a module is also a model, its running Model instances are terminated. Roles and role assignments are preserved (for further information, refer to Role Management).

Note that some exploring features may become unavailable.

To unload a Module from the LSPS Server, do the following:

1. In the Module Management view select the model you wish to unload.
2. Click the Unload ( ) button in the view toolbar.
3. In the Warning dialog box, click Yes.

The Module is unloaded and no longer available. Any Model instances based on the Model are terminated.

### 2.1.3 Downloading a Module

You can download an uploaded Module from the Model Repository as an archive file and then import the Module into the Process Design Suite with the GO-BPMN Import and edit it.

To download a Module from an LSPS Server, do the following:

1. Make sure PDS is connected to the correct server.
2. In the Module Management view, select the model.
3. Click the Download button.
4. In the Save As dialog box, define the target location and edit the file name if necessary.

## 2.2 Model Instance Management

To work with Model instances on the LSPS Server, use the Model Instances view with the list of Model instances on the server. Using the buttons in the toolbar, you can do the following:

- Create a new model instance
- Suspend a model instance
- Resume a suspended model instance
- Finish a running or suspended model instance
- `Perform and manage model update`:
  - Update update a model instance based on a muc definition
  - Continue Model Update trigger the next model update phase
  - Abort Model Update of a model instance
- Export runtime data of the selected instances to XML .

- Export the model instance list  to a CSV file
- Filter  the model instances list
- Refresh  the view content

The action commands as well as additional actions are available also in the context menus of individual model instance entries:

- You can copy the displayed model instance information with the **Copy to Clipboard** option.

To copy multiple model instances to the clipboard, select them and press Ctrl + C.

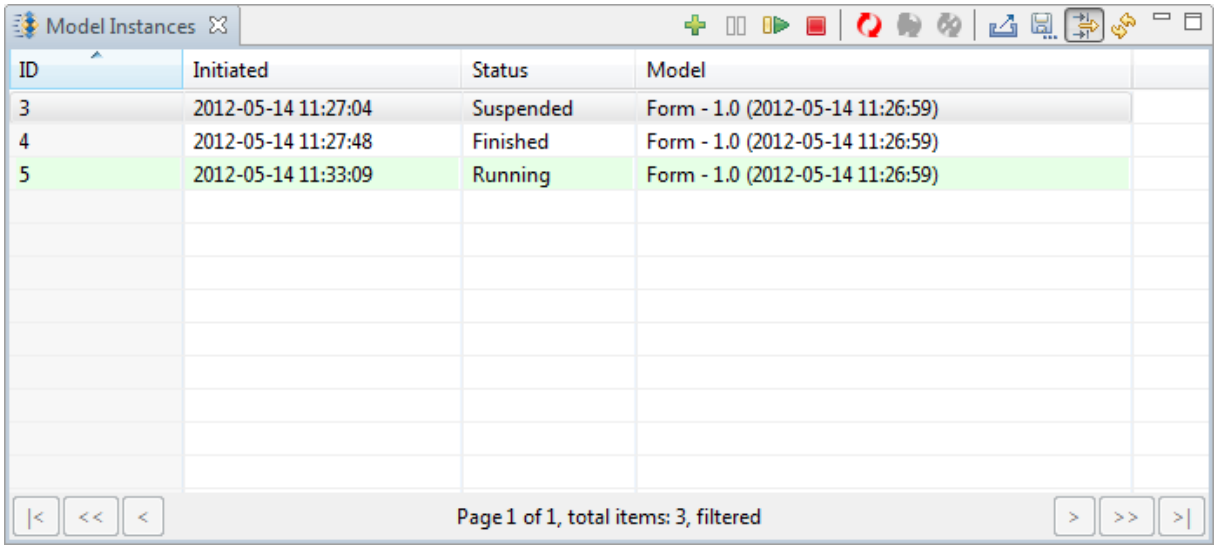



**Figure 2.3 Model instances view**

Double-click a model instance to display its detail. The details include the data related to its underlying Model and the runtime data that reflect its execution status.

A model instance detail view contains the following details:

- General Attributes
  - ID: model instance ID
  - Initiated: time when it was created
  - Status: current execution status
    If the instance is Finished, the field contains the finish time and date.
- Model Instance Explorer
  - Properties: model instance properties, such as, the InitiatorId and custom metadata values
  - Module Instances: instantiated module instances, process instances, sub-process instances in a tree structure, and their Live Diagrams)
  - Signal Queue: list of `signals` which were not consumed

  - Model Update History: details on the model update
    The node is available only if the model instance went through the model-update process.

- Expression Evaluator): tool for evaluation of expressions in the Expression Language in the context of the Model instance

Using the buttons in the toolbar of the model detail, you can do the following:

- Show To-dos generated by the model instance (filter for the respective model instance ID is applied to the To-do List view and the view is focused).
- Show Logs generated by the model instance (filter for the respective model instance ID is applied in the Logs view and the view is focused).
- Suspend and Resume ( ) a model instance.
- Finish a running or suspended model instance.
- Perform actions of `Model update`:
  - Update a model instance based on a muc definition.
  - Continue Model Update trigger the next model update phase.
  - Abort Model Update of a model instance.
- Export a model instance into an XML.
- Refresh the view content.

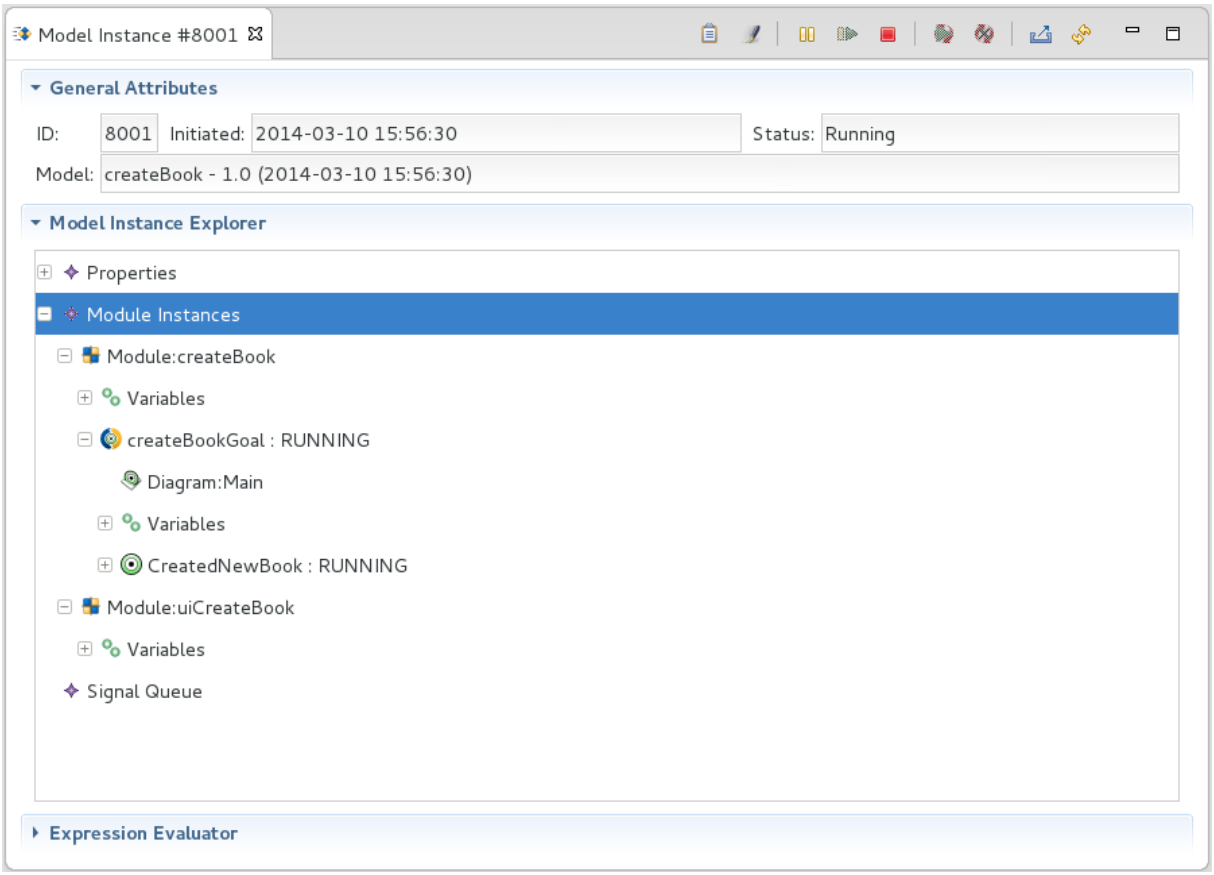



**Figure 2.4 Model instance detail view**

### 2.2.1 Creating Model Instances

To create a Model instance, do the following:

1. Open the Model Instances view.
2. Click the **Create** button in the view toolbar.
3. Select one of the uploaded models and click **Finish**.

The new model instance appears in the list of model instances.

### 2.2.2 Following Process Execution in Diagrams

You can visualize the current status of Model instance resources in their live diagrams: Live diagrams are diagrams of Process resources as defined in their Model (process, goal, plan, or sub-process diagrams). Individual execution states are indicated by colors. Diagram legend can be displayed by clicking the legend button in the view toolbar.

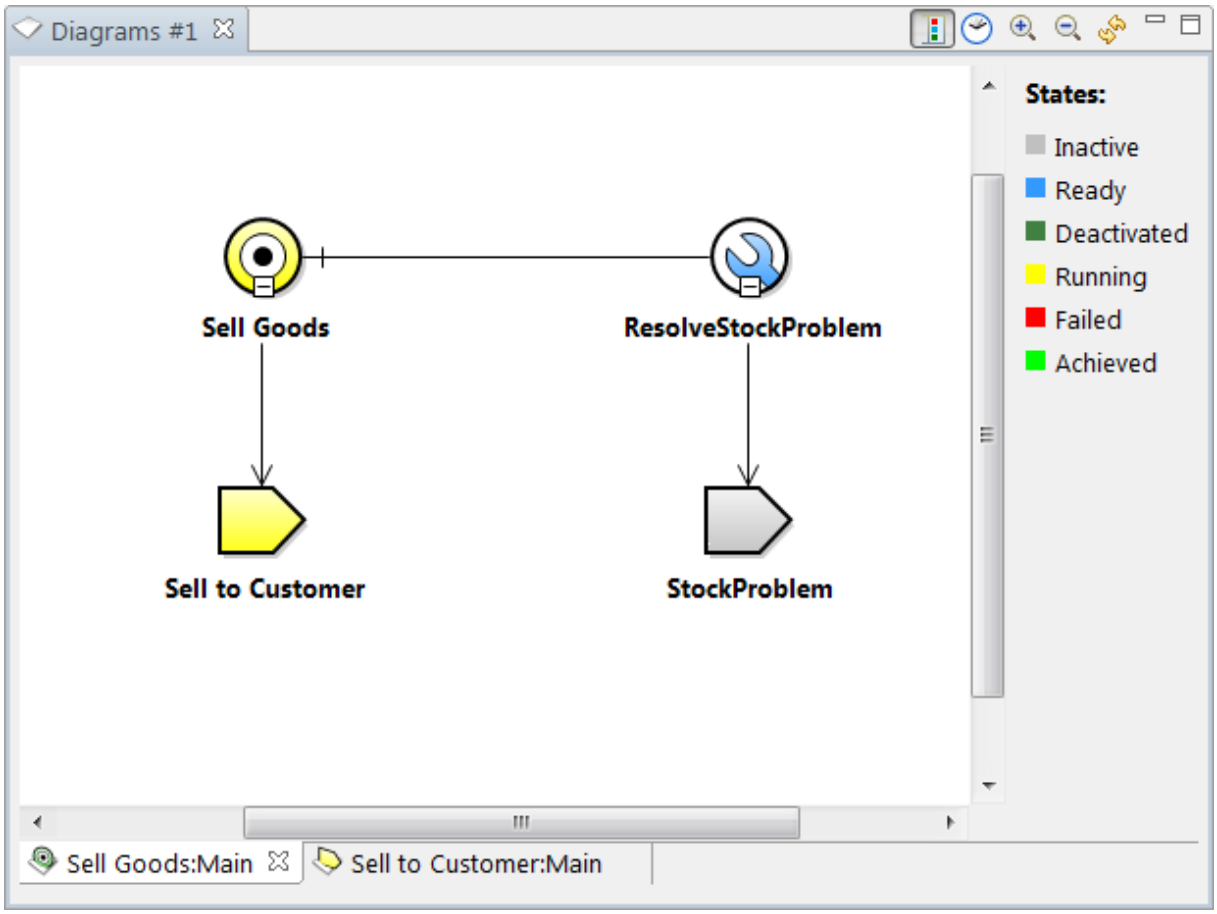



**Figure 2.5 Live Goal diagram with legend**

Goals with an implicit hyperlink (indicated by a small arrow in the top-left corner of the icon on the canvas), plans, and sub-processes are clickable: Click the element to open the respective linked live diagram.

If several live diagrams of the same model instance are activated, they are opened in the same view stacked on each other.

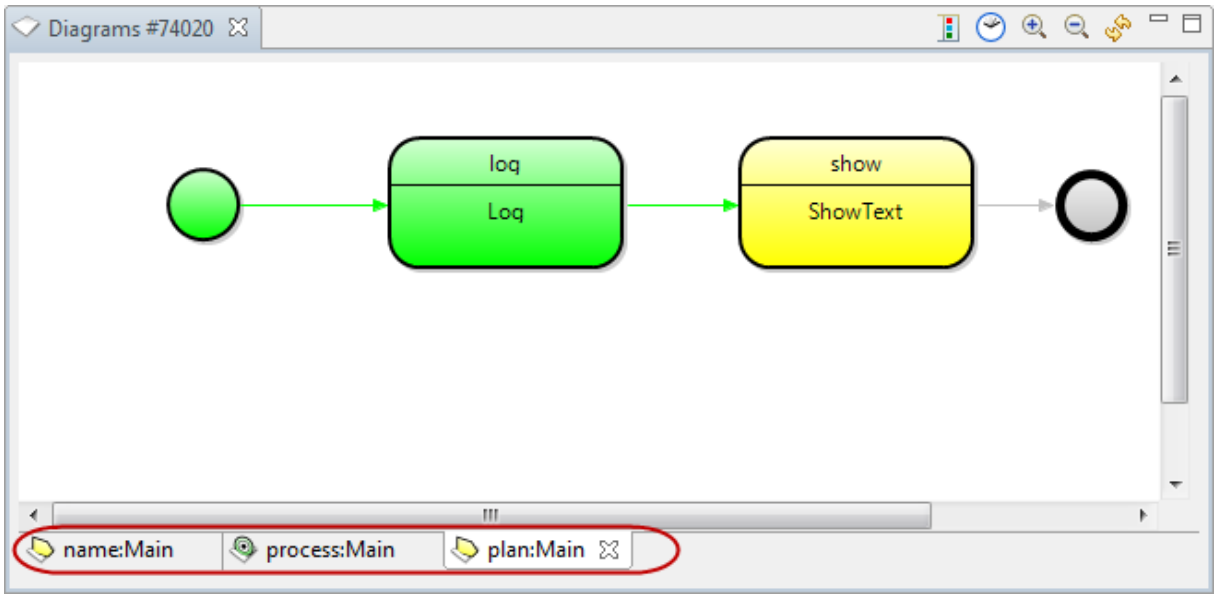



**Figure 2.6 Live diagram with multiple pages**

To display a live diagram, open the respective model instance detail view and double-click the diagram icon under Module Instances or Model Update History in the tree (also available for old module instances from before model update if applicable).

To visualize the history of the execution flow on the live diagram, click the History button in the view toolbar: You can then use the slider at the bottom of the view to view the execution workflow.

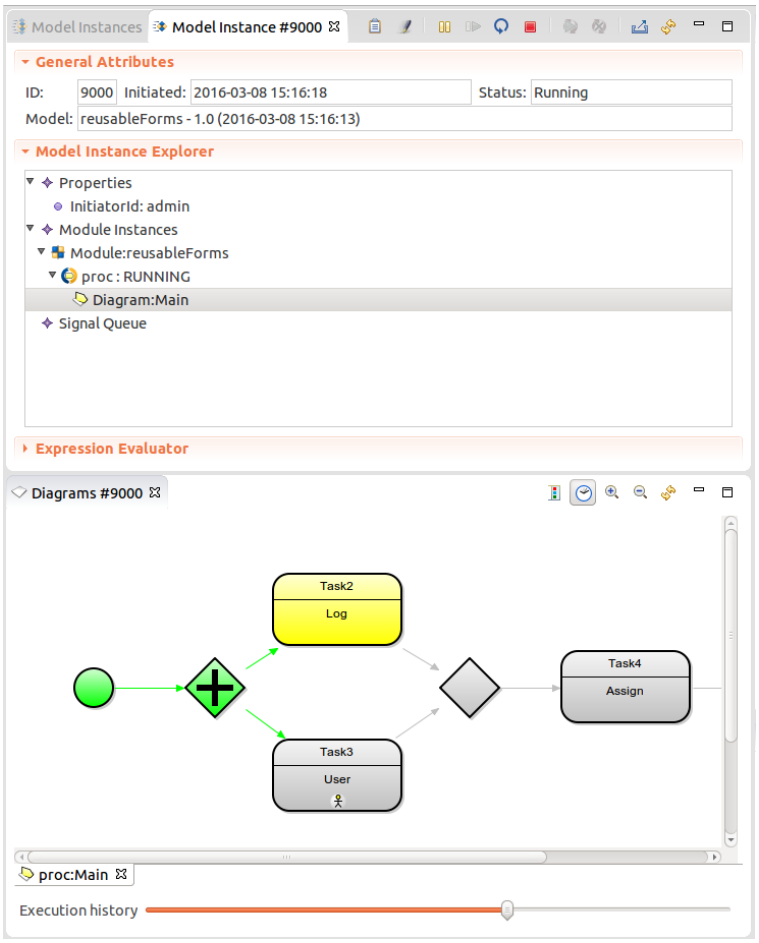



**Figure 2.7 Live diagram with execution history slider**

You can change the status colors used to indicate the element execution status in live diagrams under Window > Preferences > Process Design Suite > Management > Appearance.

### 2.2.3 Evaluating Expressions in Model Contexts

To evaluate expressions using the current context values of a Model instance, use the Expression Evaluator in the Model instance detail:

1. Open the Model instance detail view.
2. Expand the Expression Evaluator section.
3. In the tree, select the target context.

The context of the Expression Evaluator is set to the selected context: you can check the current context in the Expression Evaluator view.

The expressions can be executed in persistent or non-persistent mode:

- if in non-persistent mode, the expression is evaluated in the model instance context;

- if in persistent mode, the expression is evaluated and applied on the model instance context and on the database data if Shared Records are involved.

Information on the selected context is displayed in the Expression Evaluator: this is by default the Model instance context. To change the context to a Module, Process, Sub-Process context, select the respective element in the Model instance tree.

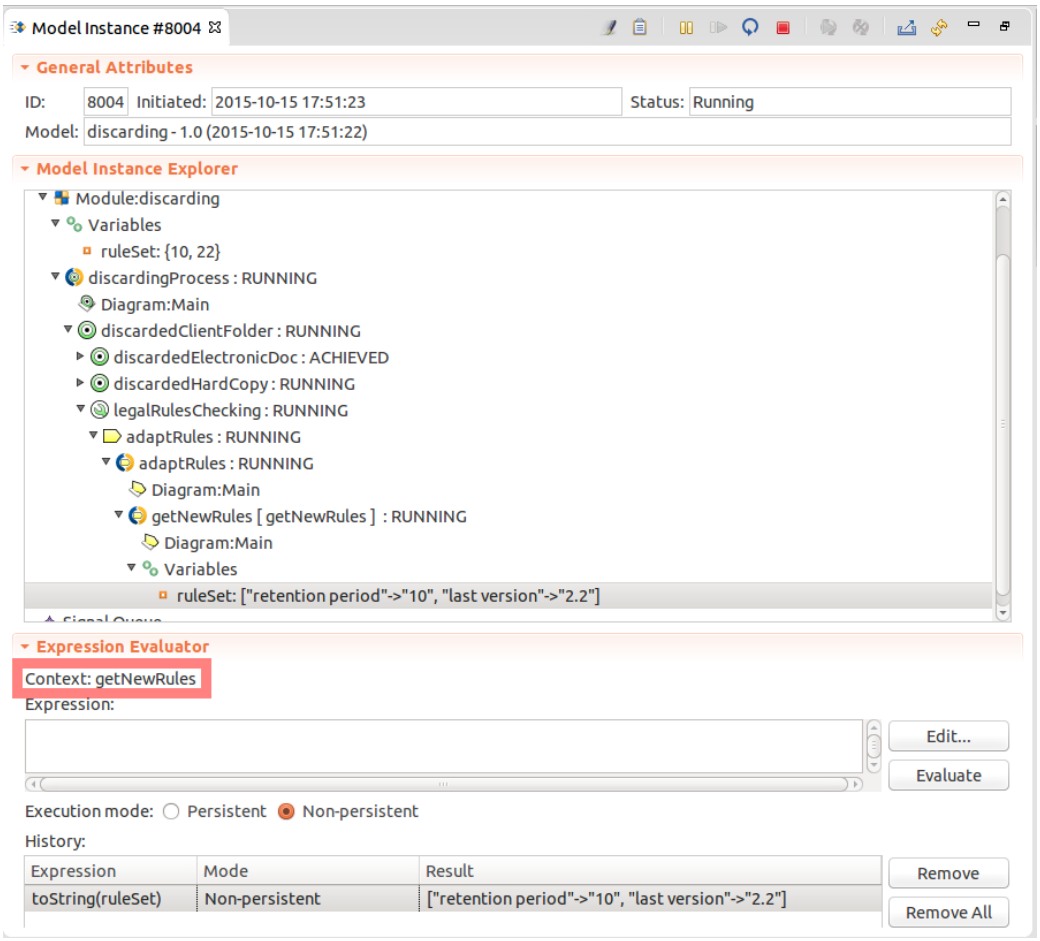



**Figure 2.8 Expression Evaluator**

### 2.2.4 Changing Values of Variables

You can change values of variables during execution either from the Expression Evaluator using assignments or from the Model instance detail.

To change the value of a variable in a running model instance, do the following:

1. Open the Model instance detail view.
2. Under Model Instance Explorer, expand Module Instances and the desired Module node (parent namespace of the context variable).
3. Expand the Variables node and double-click the required variable. Variables of a standard library type cannot be edited.
4. In the Update Variable dialog box, select:

- Value to assign the variable a particular value;

  **Note:** Depending on the variable type (basic, record, collection, etc.), the Update Variable dialog box shows relevant buttons. For basic values, provide the desired value directly; make sure you follow the Expression Language rules. Collection and record values are edited recursively, that is, if you click Edit, there are gradually "split" in less complex values, until basic values are displayed.

- Expression and type an expression to be evaluated and used as the variable value. Note the information on the declared type of the variable and the current actual type.

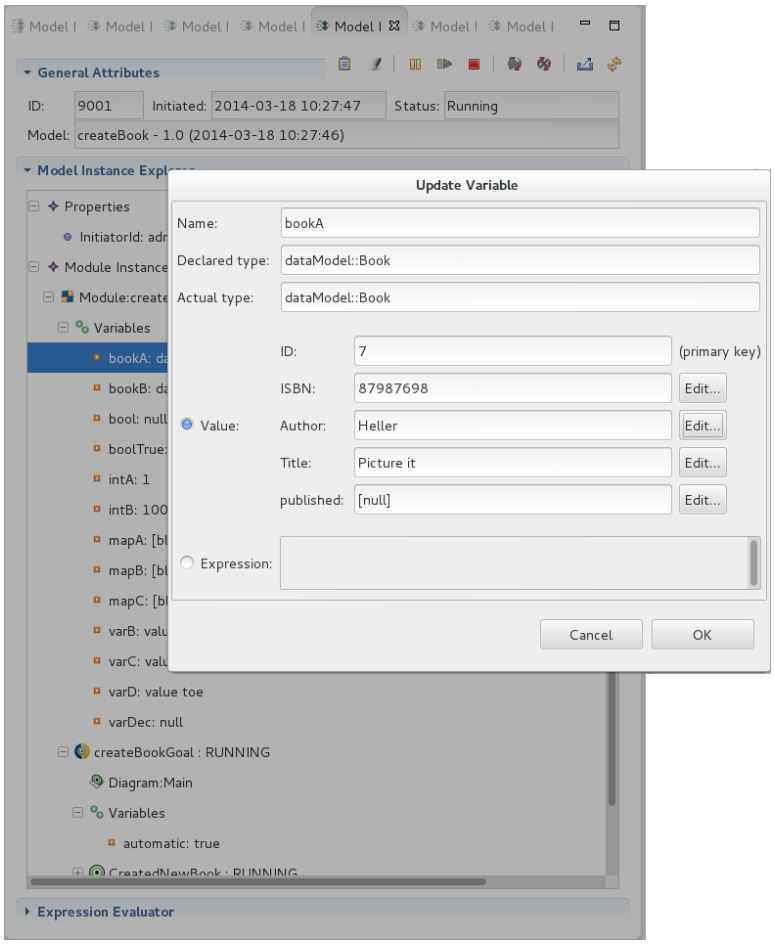



**Figure 2.9 Updating variable**

### 2.2.5 Deactivating and Activating Goals

Changing execution states of Goals during execution can help you to direct the flow of the execution. Note that you can activate or reactivate only achieved, failed, deactivated or inactive goals, and `deactivate only ready or running goals`.

To deactivate or activate a Goal, do the following:

1. Open a Model instance detail view.
2. Under Model Instance Explorer, expand Module Instances and the desired module node.
3. Expand the respective process, then right-click a goal and select Deactivate or Activate.

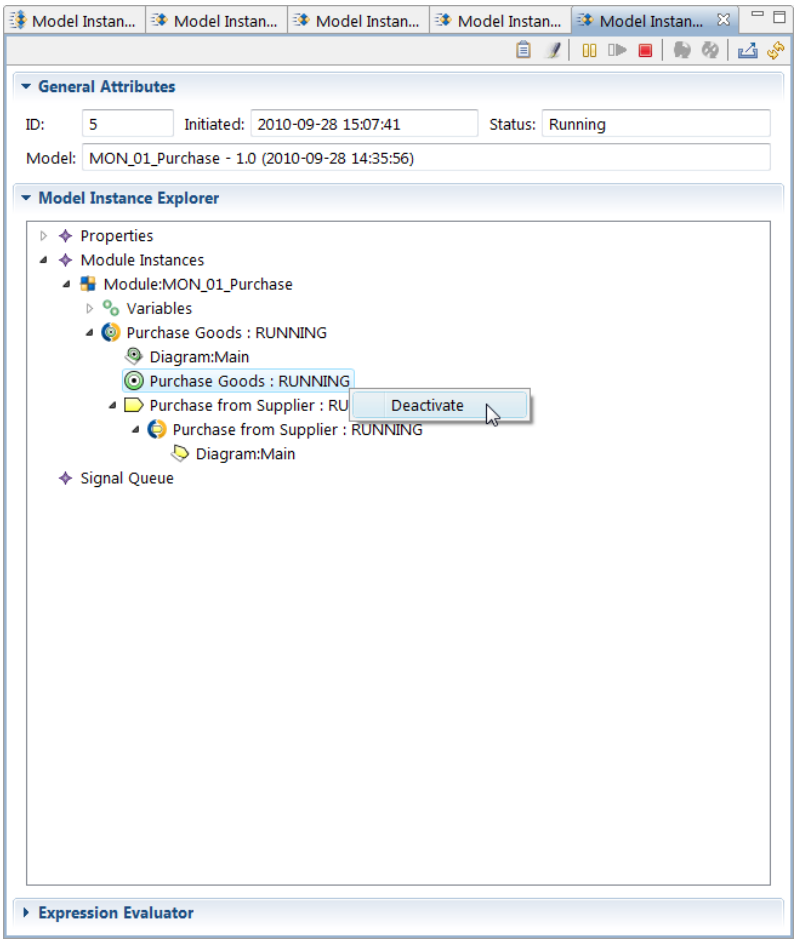



**Figure 2.10 Deactivating a Goal**

You can activate or deactivate a Goal also from its context menu in a live diagram; mind that disabled goals cannot be deactivated or activated.

### 2.2.6 Suspending and Resuming Model Instances

To suspend a running Model instance or resume a suspended Model instance, do the following:

1. Activate the Model Instances view.
2. Select the instances you wish to suspend/resume.
3. In the view toolbar, click Suspend or Resume .

On detailed behavior of Model instances, refer to GO-BPMN Model Language User Guide.

The command is available also in the context menu of individual model instances.

### 2.2.7 Invoking Model Instances

On invoke, a Model instance attempts to continue its execution: this feature is helpful if a Model instance remains in a state where it is waiting for an event which cannot occur, typically due to manual adjustments (for example, change on timer events or variable values), you can invoke the model instance to make the instance check if it can continue.

To invoke a model instance, go to Model Instances view, select the model instance and click the Invoke button.

### 2.2.8 Finishing Model Instances

The Finish feature allows you to immediately terminate a Model instance.

To finish a running Model instance, do the following:

1. Open the Model Instances view.
2. Select the instances, you wish to finish.
3. In the view toolbar, click Finish . The command is available also in the context menu of individual model instances.

### 2.2.9 Exporting Model Instances to XML

You can export Model instances as formatted XML files. Note that the XML file contains only information on the runtime status of the Model instance, not the underlying Model, and serves as an information source, for example, during Model update.

To export a model instance to an XML file, do the following:

1. Double-click the model instance in the Model Instances to display the model instance detail.
2. In the view toolbar, click Export .

   The command is available also in the context menus of individual model instances in the Model Instances view.
3. In the Model Instance Export dialog box, define export details.

## 2.3 User Management

Users are represented by *persons* with personal details and access rights to the application, which include appropriate security and modeled Roles. Optionally they can define their substitutes, that is, persons who can act on behalf of the person when the person activates their substitution (stand-ins).

List of available Persons is displayed in the Persons view. By double-clicking a person entry in the Persons view, you can display the person detail view with the person's data and settings.

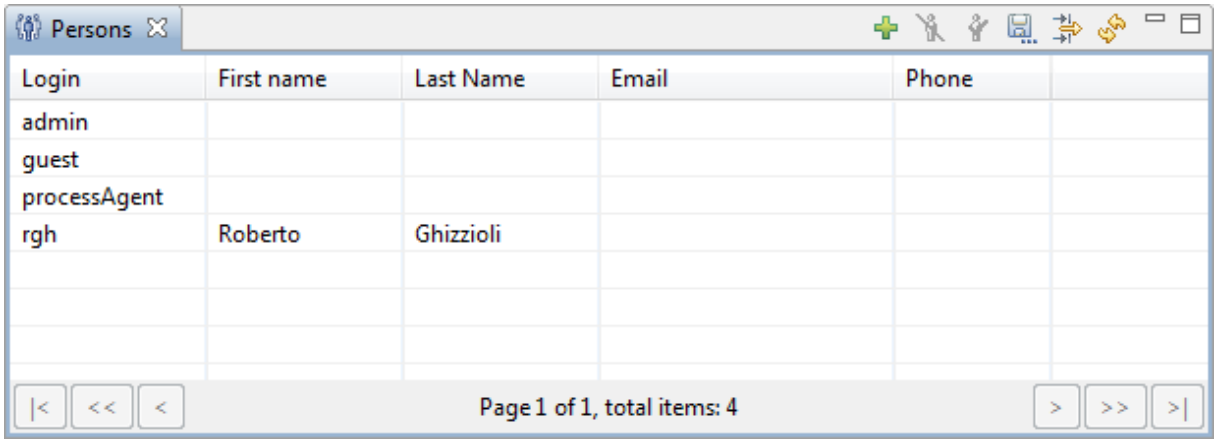



**Figure 2.11 Persons view**

### 2.3.1 Creating a Person

To create a new person, do the following:

1. Open the **Persons** view.
2. Click the **Add** button in the view menu.
3. Enter the data in the displayed person detail.
4. Click the **Save** button .

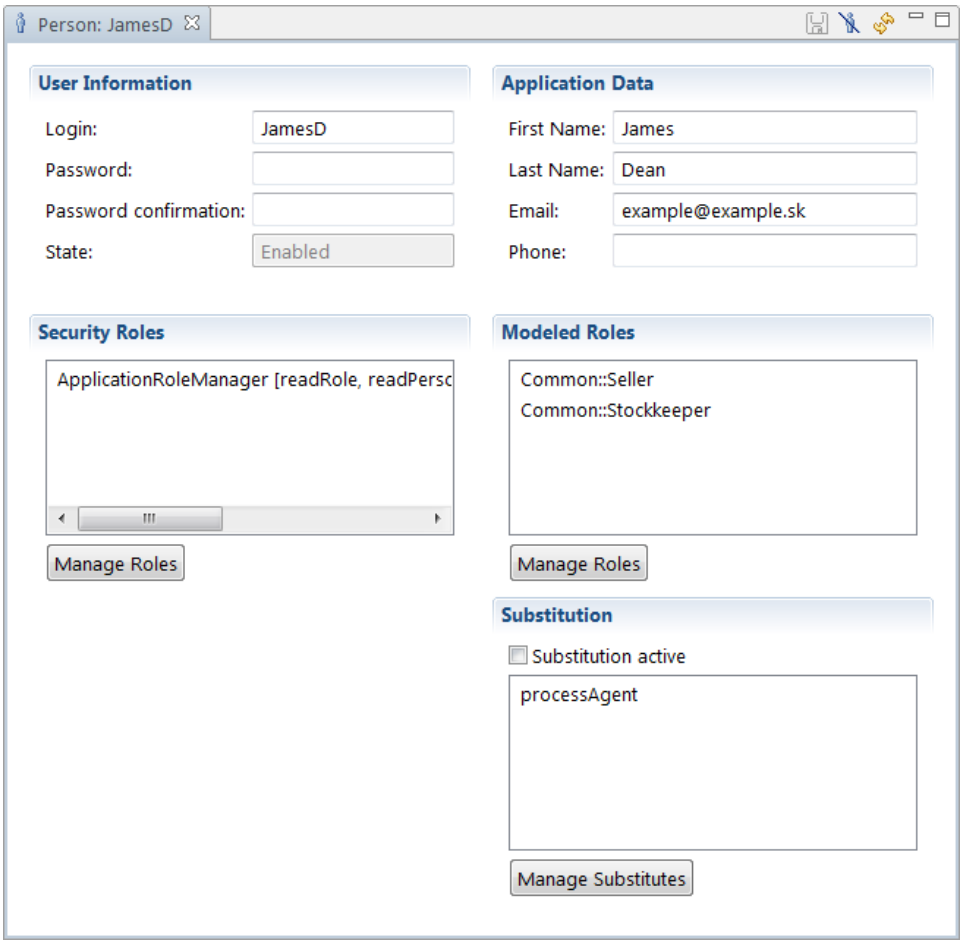



**Figure 2.12 Person detail view**

### 2.3.2 Disabling and Enabling Persons

Once a person is created, it is not possible to remove them. Instead of removing a person from the system, disable them: A person that was disabled, cannot access the LSPS Server.

When persons are disabled, the following applies:

- Any assigned security and modeled roles, and substitutes, if defined, are permanently removed.

- Any locked to-dos are unlocked and released, and assigned to another person with the respective roles. Note that if no such person is available, the to-do becomes orphaned.

A disabled person can be recovered (enabled). However, none of the removed data is retrieved.

Information about person state is shown in the respective person detail view under User Information area. In the Persons view, disabled persons are shown highlighted in red.

To enable or disable a person, do the following:

1. Open the Persons view.
2. Select the person.
3. In the view toolbar, click Disable ( ) or Enable ( ).

   **Note:** The *admin* and *processAgent* cannot be disabled. In addition, the admin user is fully read-only.

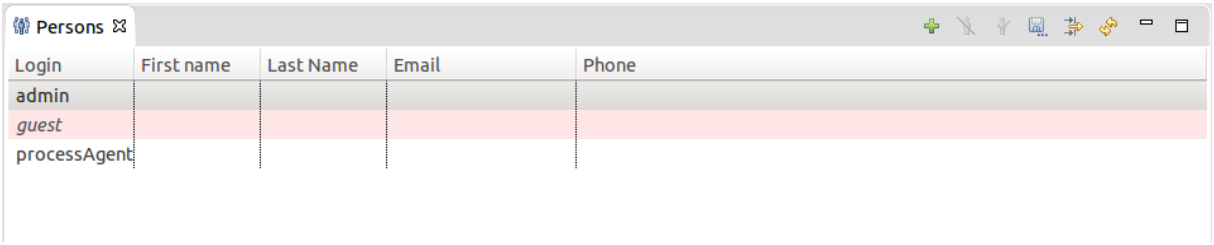



**Figure 2.13 Persons view with the guest person disabled**

### 2.3.3 Exporting Persons List

To create a new person, do the following:

1. Open the **Persons** view.
2. Filter the data so that only the entries you want to export are displayed.
3. Click the **Export Displayed Content to CSV** button .

### 2.3.4 Role Management

#### 2.3.4.1 Managing Runtime Roles

To assign a runtime role to one or more persons, do the following:

1. Open the Roles view.
2. Under Runtime Roles, right-click the respective role and select Manage Persons. If the modeled role was not assigned to any persons yet, it is not available. Go to the respective person detail and assign the person at least one modeled role.
3. In the Filter box of the Persons dialog box, type the person's name or its part. To display all available persons, type $*$ (asterisk).
4. Select a person in the box below Filter and click the right two-headed arrow to add the person to the Resulting selection.
5. Click OK.

#### 2.3.4.2 Assigning Parametric Roles

To define a parameter value of a modeled parametric role:

1. Open the respective person detail view.
2. Under Modeled Roles, click Manage Roles.
3. In the Resulting selection area, select the parametric role.
4. Edit parameter values and click Add Role.

The added parameter value is shown in the Resulting Selection.

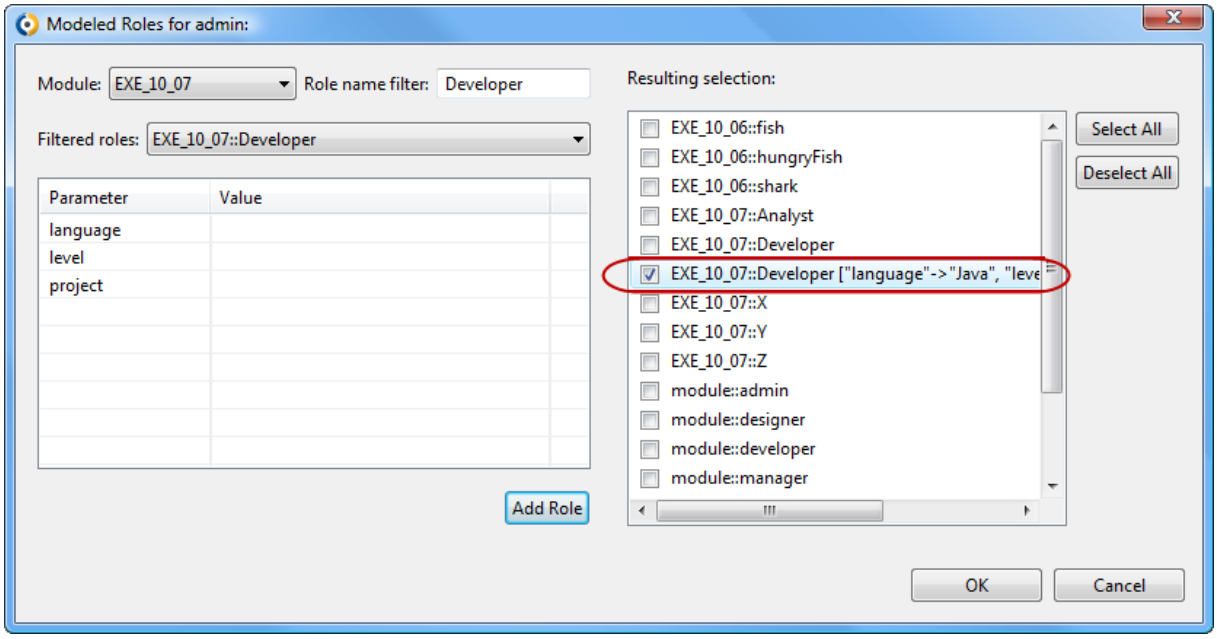



**Figure 2.14 A parametric role with a parameter**

### 2.3.5 Security Management

To manage the security rights of a person, you will create or modify a security role if necessary and assign the security role to the person.

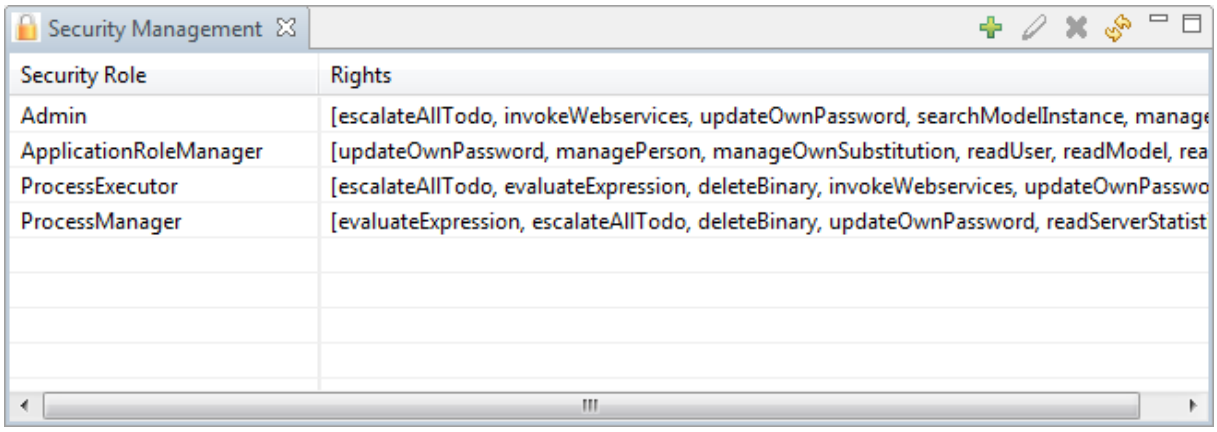



**Figure 2.15 Security Management view**

#### 2.3.5.1 Creating or Editing Security Roles

To create a security role, do the following:

1. Open the Security Management view.
2. In the Security Management view, click Add ( ) or Edit ( ) in the view toolbar.
3. In the Role Name text box of the Security Role Definition dialog box, type the security role name.
4. Select the security rights to assign to the role, and click OK.

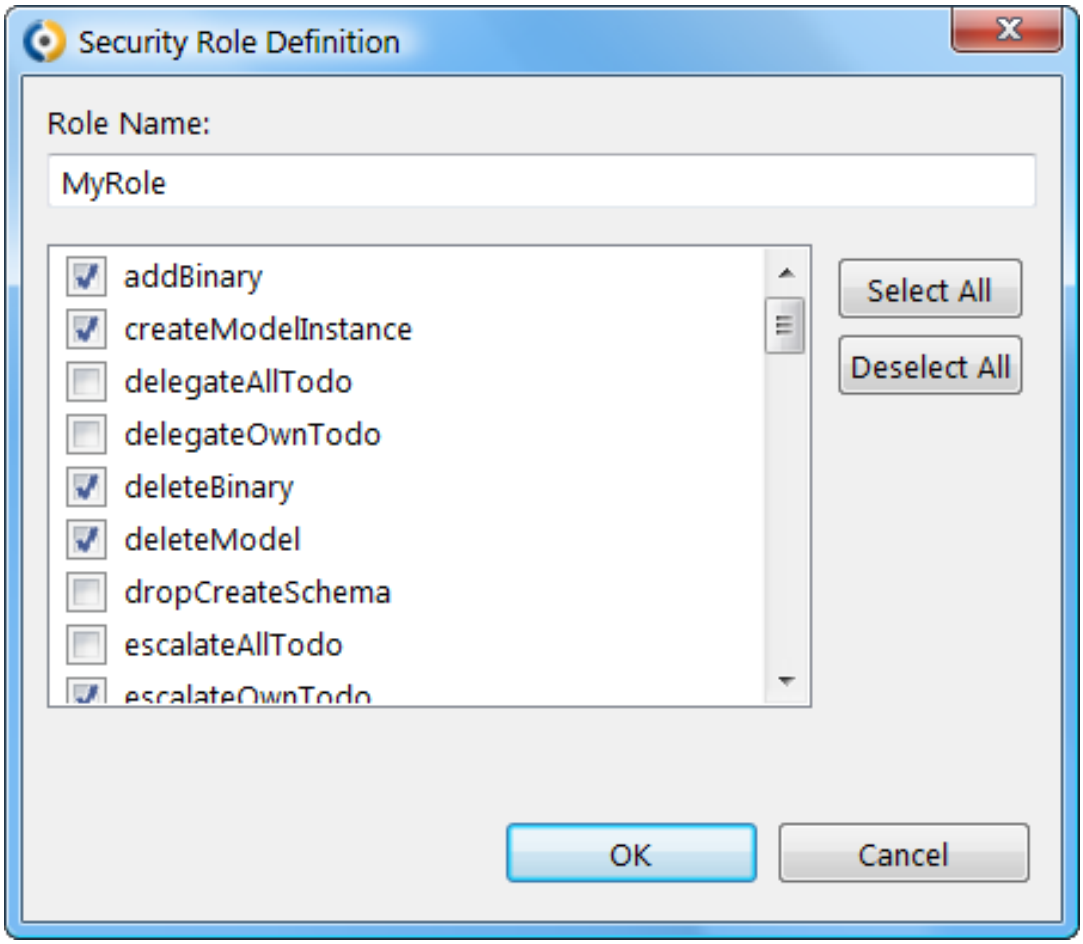



**Figure 2.16 Security role definition dialog**

#### 2.3.5.2 Managing Security Roles of a Person

To add or remove person's security roles, do the following:

1. Display the respective person detail view.
2. Under Security Roles, click Manage Roles.
3. In the displayed dialog box, select the security roles you wish to assign the person, and click OK.

### 2.3.6 User Management

#### 2.3.6.1 Defining Substitutes

To define a person's substitutes, open the Person Detail view and in the Substitution section, click **Manage Substitutes**. In the pop-up define the substitutes.

Check if the Substitution is activated for the person.

#### 2.3.6.2 Activating and Deactivating Substitution

The Substitution feature can be applied from the front-end application as well as from PDS. To activate or deactivate substitution on a person from PDS, open the Person Detail view and select or unselect the **Substitution active** option.

## 2.4 To-Do Management

To manage To-Dos generated by the LSPS Server and to open their details use the *To-Do List* view.

The view contains the following To-Do details:

- ID: unique to-do identifier
- Model Instance ID: identifier of the model instance the to-do was generated by
- Name: title of the to-do as displayed in the to-do list of a front-end application
- Status: current to-do execution status (a to-do can be Alive, Accomplished, or Interrupted; Alive to-dos are highlighted)

  **Note:** If its parent model instance is suspended, a to-do is also in the suspended status; however, this is not a to-do status by itself.
- Started: date and time when to-do was generated
- Finished: date and time when to-do was submitted or its parent humanoid task finished
- Initial Performers: set of roles or persons, who are entitled to perform the to-do as defined for the model instance at its instantiation
- Locked By: person who has locked the to-do

You can copy the table rows to the clipboard by selecting them and pressing Ctrl + C.

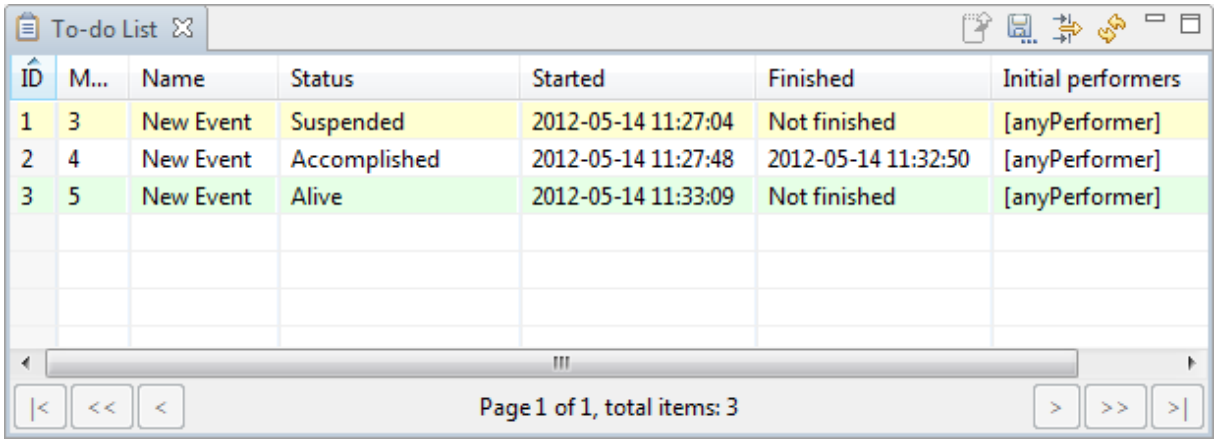



**Figure 2.17 To-Do List view**

You can view further To-Do details as well as perform actions on the to-do from its detail view: To open a to-do detail view, double-click a to-do entry in the *To-do List* view.

You can do the following when managing to-dos:

- Delegate to reversibly assign a to-do to other users
- Escalate to escalate the to-do so the underlying process processes the escalation signal
- Cancel rejection to overrule a reject from a user
- Reset allows a front-end admin user to reset to-dos
- Reassign to assign an *alive* to-do to other users, who become its initial performers

The accessibility of the actions can be restricted by user security rights.

For explanation of the concepts behind the actions, refer to To-Dos.

> **Important:** The to-do management mechanism are provided as a base for custom to-do management features and are in no way to be considered production-ready.

### 2.4.1 To-Do Detail View

A To-Do Detail view contains detailed information about a particular to-do and allows you to perform further actions available for the to-do, such as delegation, undo delegation, and cancel rejection.

To open a to-do detail view, click a to-do entry in the To-do List view.

A to-do detail view contains two areas:

- To-do Details: general information about the to-do
  - **To-do ID**: unique to-do ID
  - **Model instance ID**: ID of the owning model instance
  - **External link**: external link to the to-do
  - **To-do title**: title of the to-do
  - **Task name**: name of the task, which generated the to-do (its parent module, process definition, and task name)
  - **Task status**: execution status of the human task
  - **Issued**: date and time when the to-do was generated
  - **Finished**: date and time when the to-do was submitted or the respective human task finished (contains Not finished value, if the to-do is alive)
  - **Interruption reason**: reason why the to-do was finished (for example, timeout expired, cancel intermediate event was triggered, to-do was submitted, etc.)
  - **To-do notes**: notes added by front-end application users who had the to-do allocated or are processing it
- **Assignment**:
  - **Locked by**: the person who has locked the to-do

– **Initial performers**: set of roles (or persons), who are entitled to perform the to-do as defined in the parent model

  **Note:** This set does not include substitutes or delegates, who may have the to-do assigned by initial performers.

– **Assignees**: list of the current set of roles or persons that can perform a to-do, notes on rejection (indicated by red person icon), and the current delegation level

From the view toolbar in the upper right corner of a to-do detail view, you can perform allocation related actions (for more information refer to Escalation, and Delegation.

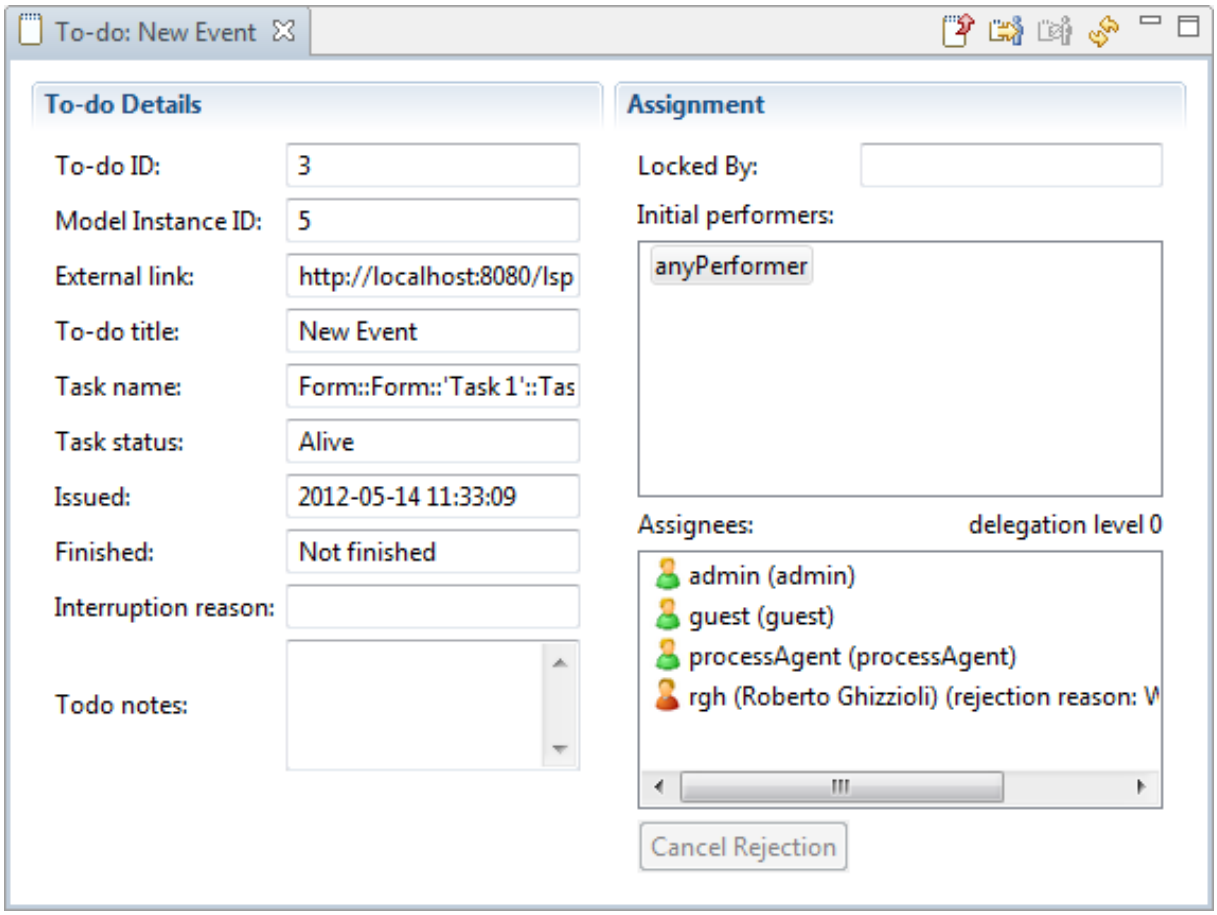



**Figure 2.18 To-Do Detail view of a rejected To-Do**

### 2.4.2 Searching for Orphaned To-Dos

An orphaned to-do is a to-do, which cannot be seen by any front-end application user, possibly as a result of such actions as escalation, delegation, etc: If a to-do was rejected by all assigned persons, or delegated to persons with insufficient security rights.

You can search for such to-dos from the To-Do List view: the view toolbar, click Filter , and check Orphaned to-dos only.

### 2.4.3 Delegating To-Dos

You can delegate a to-do from the Management perspective: Click the Delegate ( ) button in the toolbar of the To-Do Detail view and define the delegates. Delegates and the current delegation level are then displayed in the Assignees area of the respective to-do detail view.

To undo delegation, click the Undo Delegate button in the toolbar of the To-Do Detail view.

### 2.4.4 Escalating To-Dos

Escalation sends an escalation Signal to the server while keeping the to-do locked.

> **Important:** The underlying Model is expected to catch and process it as appropriate with a Signal Catch Intermediate Event or Signal Start Event: The LSPS Server does not handled this Escalation signal by default.

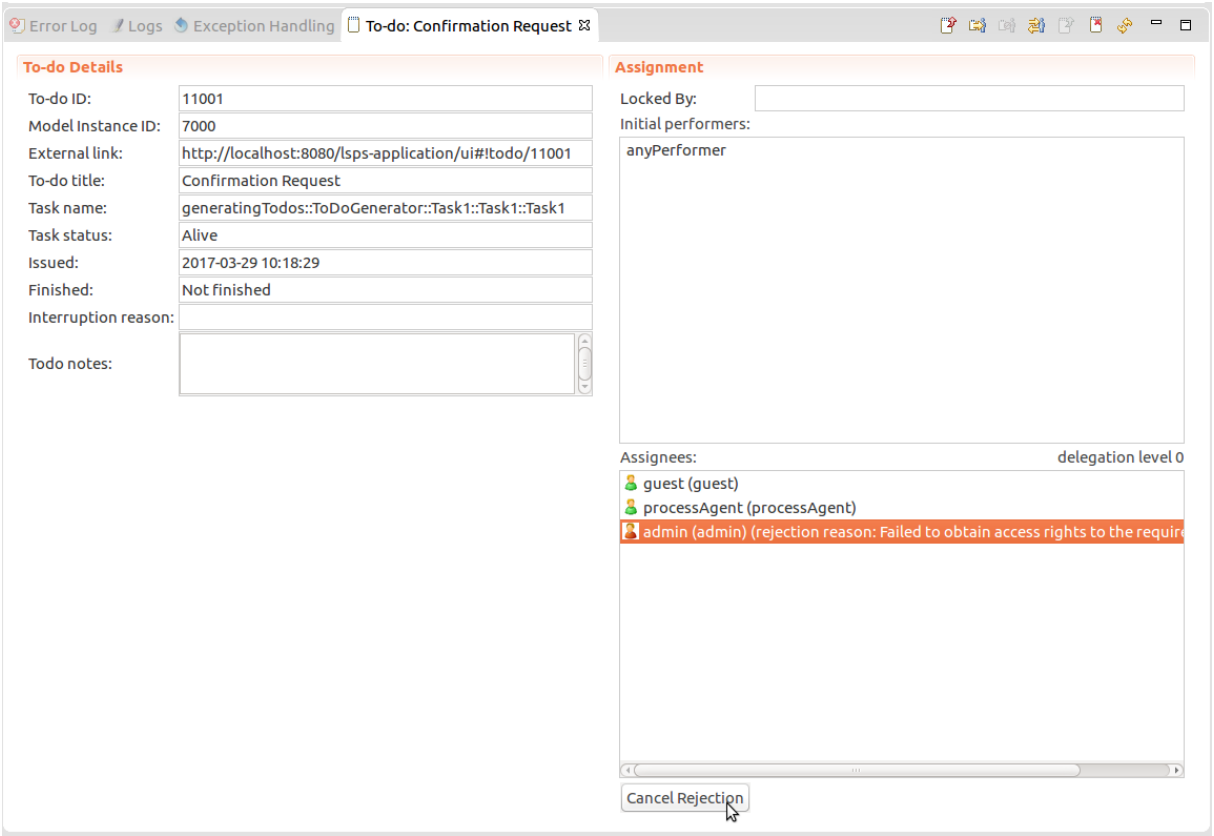
To send such an escalation signal from a to-do from the Management perspective, click the Escalate ( ) button in the toolbar of the To-Do Detail view or select the to-dos in the To-Do List and click Escalate.

Note that this escalation mechanism is **not related** to the `Escalation of the GO-BPMN Modeling Language`.

### 2.4.5 Cancelling Rejection

Rejection allows a front-end user to reject a to-do: when they do so, they are excluded from its assignees. You can cancel the rejection, so if the to-do is not locked by other users, it will reappear in their to-do list.

In the Assignees box of a to-do detail view, Assignees, who have previously rejected the to-do, are indicated by a red assignee icon. The rejection reason provided by the assignee is shown next to their icon and name. You can cancel the rejection and reallocate the to-do to the assignee from the To-Do Detail view.



### 2.4.6 Resetting a Locked To-Do

Click the to-do reset button at the top of the to-do detail to reset a to-do. Reset erases the data in a saved to-do but the to-do remains locked. This feature is useful if the data used by the saved to-do have changed.

### 2.4.7 Reassign a To-Do

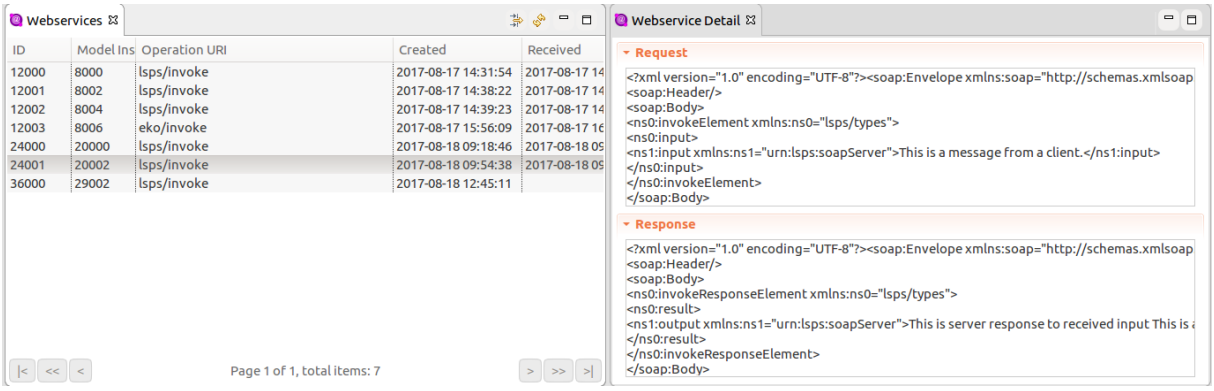
Click the to-do reassign button at the top of the to-do detail and define the roles and persons who should become new initial performers.

## 2.5 Web Service Management

You can check the status of calls to your **web-service server Processes** wait points in the *Web Services view*. The view contains a list of active and processed wait points waiting for a Web service request from a client.

If no model instance handled a Web service request, the wait point is highlighted in red.

Double-clicking a wait point entry, opens the respective **Webservice Detail** with the request and response on the wait point. Note that the request and response are available only if the underlying Task has the logXMLMessage parameter set to true since excessive request and response data could cause a significant database growth.




## 2.6 Exceptions and Logs Management

### 2.6.1 Logs

You can display application log entries in the *Logs* view with the following details:

- Model instance ID: identifier of the model instance, which executed the Log task that generated the log message
- Timestamp: date and time when the log message was created
- Level: severity of the log message (info, debug, or error)
- Description: log message content

**Note:** Availability of these logs does not depend on the CREATE_PROCESS_LOG database setting: this setting is related to the availability of module runtime data, which is displayed, for example, in the Model Instance views.

### 2.6.2 Exceptions

The LSPS Server returns an exception when a component of a model instance cannot perform the required action, for example, if data is missing, or entry data does not correspond with the expected data (a model throws an exception with the `error()` call, refer to `Exception Handling`).

The list of such exceptions is displayed in the **Exception Handling** view with their details:

- ID: unique exception identifier
- Component: component which generated the exception
- Creation Time: time when the exception occurred
- Resend: time when the task that regenerated the exception was executed successfully
- Exception: exception message

In the view toolbar in the upper-right corner, the buttons for the following actions are available:

- Remove ( ): removes the selected exception entry.
- Resend ( ): resends the request.
- Export to File ( ): saves one or multiple exceptions in a text file.
- Filter ( ): filters the content of the displayed list.
- Refresh ( ): refreshes the view content.

You can copy multiple rows to the clipboard with Ctrl + c.

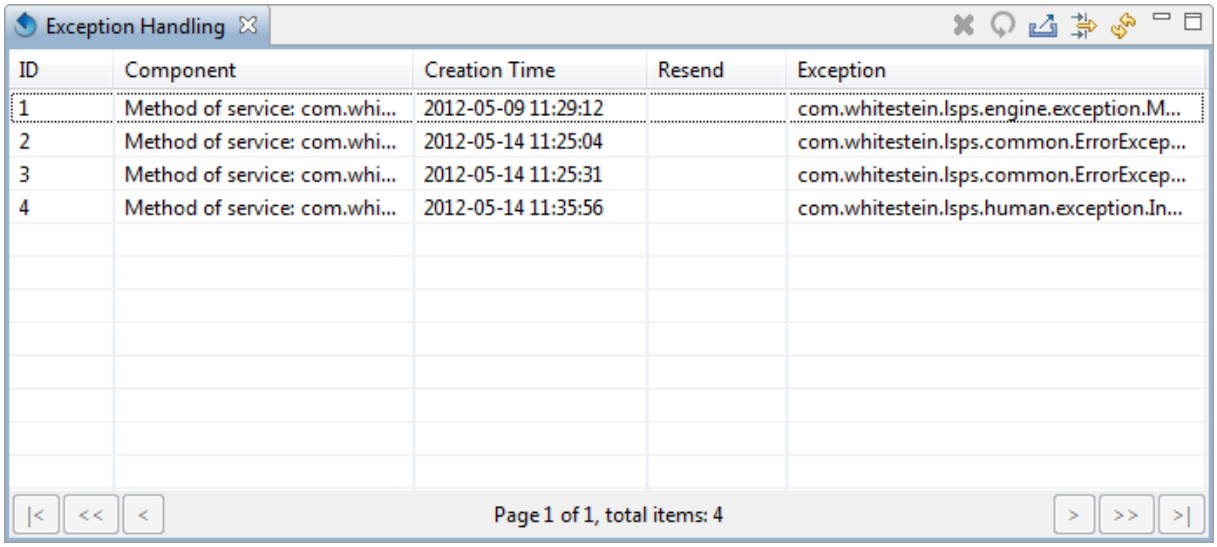



**Figure 2.19 Exception Handling view**

Double-clicking a table entry displays the respective exception detail view with detailed information about the selected exception and its complete stacktrace. From the detail view you can export the exception to a file: click the Export to File ( ) button in the view toolbar, to do so.

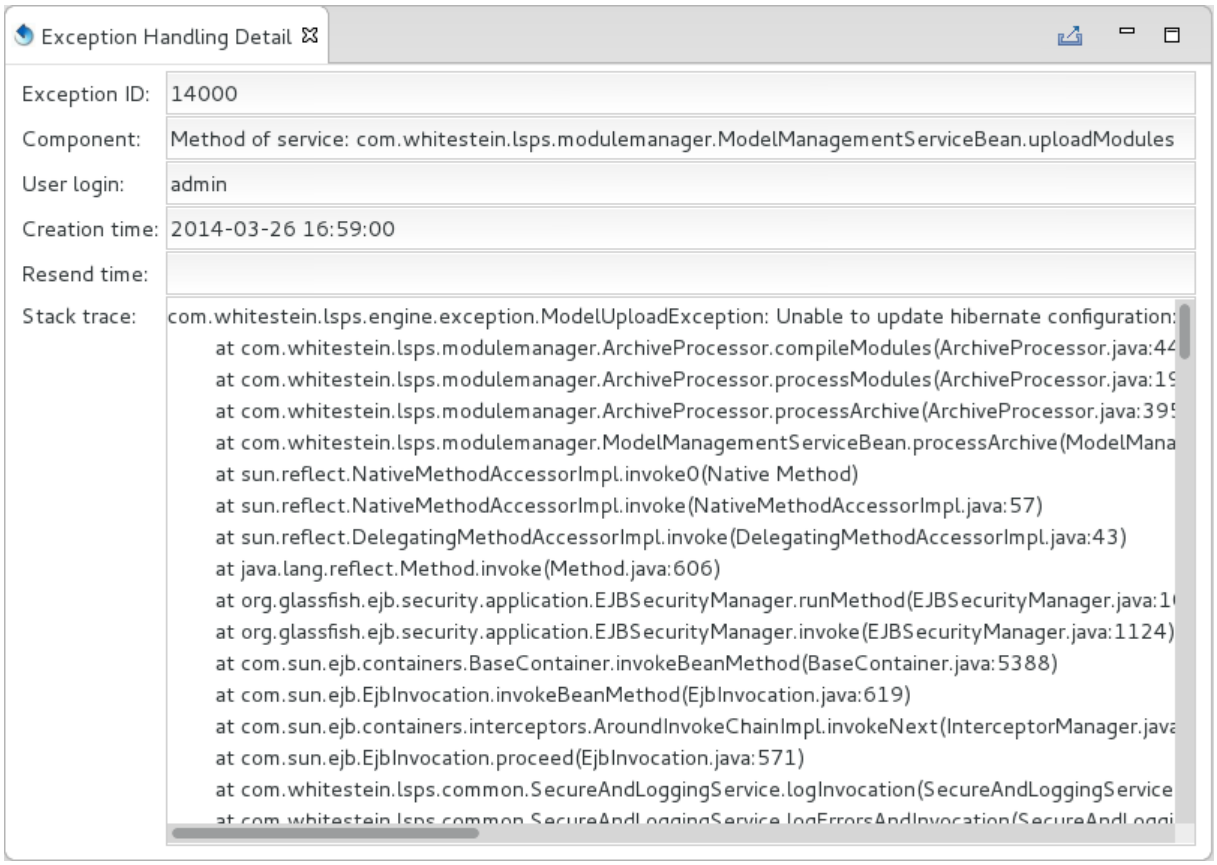



**Figure 2.20 Exception detail**

# Chapter 3

# Management Console

Living Systems Process Management Console is a web-based front-end application intended for management of model instances, LSPS users, and the LSPS front-end applications, that is, the Process Management Console and the Application User Interface.

The tool is primarily intended for application and LSPS administrators. However, also process designers and application developers might benefit from its features.

## 3.1 Accessing Management Console

Note that as an LSPS user you have to have the access rights to the Management Console to access it.

You can access the Management Console from any of the supported Web browsers:

1. Launch your web browser.
2. Go to the URL of the application.
   By default, the URL is `http://$DOMAIN/lsps-management`.
3. On the log-in page, enter your credentials.

To log out, click the drop-down icon next to your user name and in the context menu, click **Log out**.

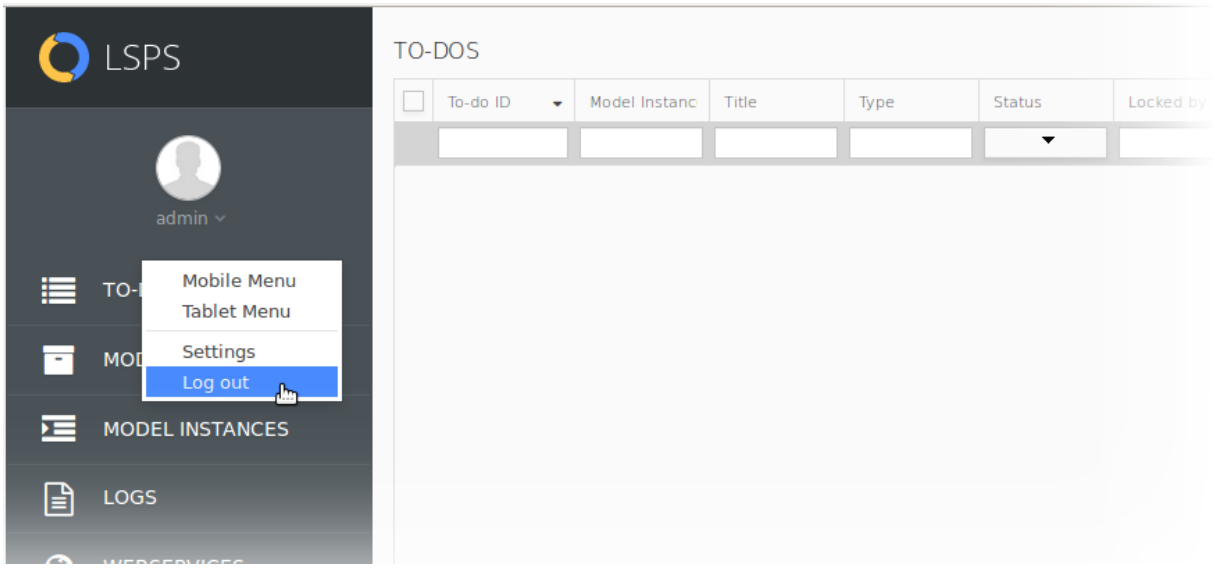



**Figure 3.1 Logging out**

**Related topics:**

- User Interface
- To-Do Management
- Module Management
- Model Instance Management
- Person Management
- Role Management
- Security Role Management
- Log Management
- Exception Management
- Application Settings

## 3.2 User Interface

To navigate through views of the Process Management Console environment, use the navigation toolbar located on the left: The relevant content is displayed in the area on the right.

The following views are available:

- To-dos: List of all To-do in the Navigation Engine
- Modules: List of Modules uploaded to the Module Repository
- Model Instances: List of Model instances in the Navigation Engine
- Logs: Logs created by Log tasks of Processes
- Webservices: Webservices requests and responses involved in Webservices Tasks of Processes
- Persons: Users with their details and rights
- Roles: Roles created based on elements of Organization Models
- Security Roles: Security Roles
- Exceptions: Exceptions logged by the Navigation Engine
- Dynamic Themes: List of available CSS themes
- Model Update Logs: Logs of model update processes

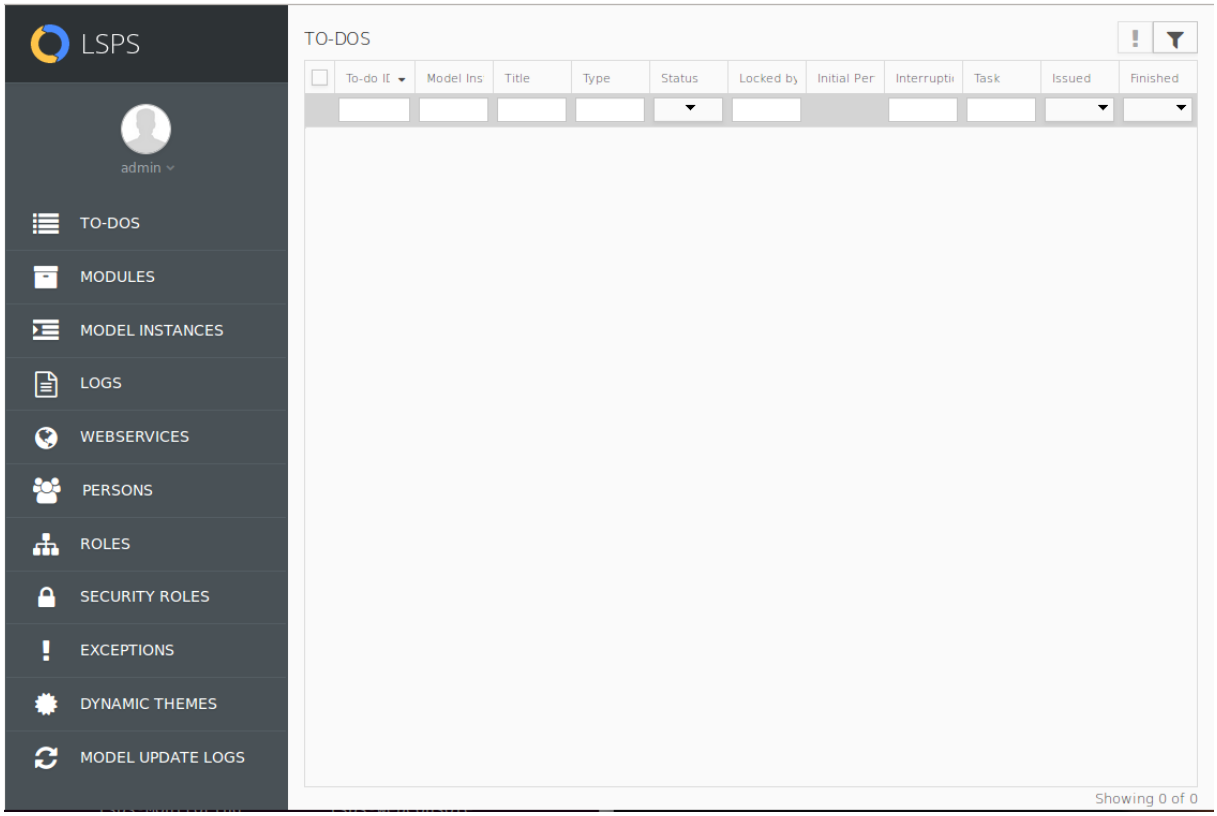



**Figure 3.2 Management Console environment**

### 3.2.1 To-dos View

The To-dos view contains a list of all to-dos dispatched by the Navigation Engine and their details.

The to-dos are listed in a table with the following data:

- To-do ID: unique to-do ID
- Model Instance ID: ID of parent model instance (the to-do was generated by a User Task of this model instance)
- Title: todo title defined by the title parameter of its User Task
- Type: name of the User Task that generated the to-do
- Status: status of the User Task (for information on the task life cycle, refer to GO-BPMN Modeling Language Guide)
- Locked by: name of the person, who has locked the to-do
- Initial Performers: the expression used to get names of the users to whom the to-do was initially allocated
- Interruption reason: the reason why the to-do was terminated, for example, the parent model instance was terminated
- Task: the full path of the User Task
- Issued: the date when the to-do was issued

- Finished: the date when the to-do was finished

Note that you can escalate alive to-dos: select them and click the Escalate button in the view toolbar.

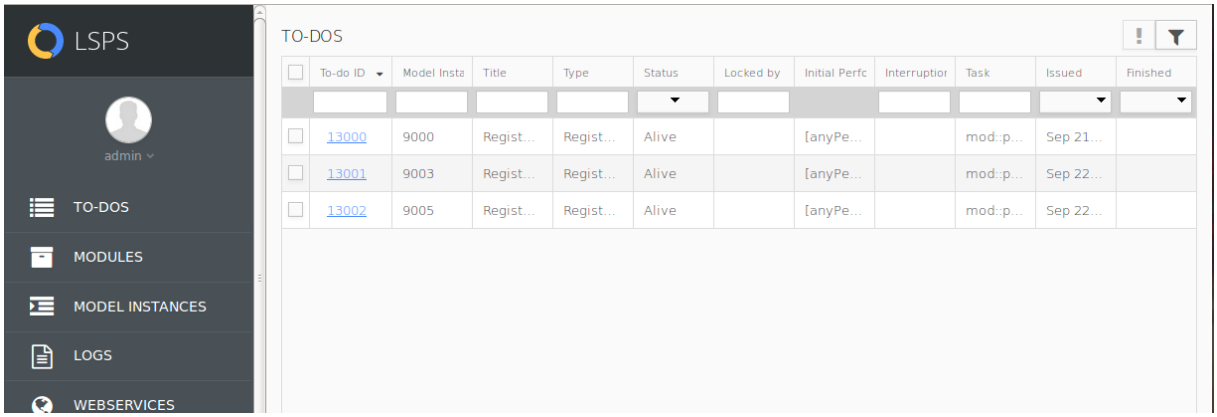



**Figure 3.3 To-dos page**

### 3.2.2 To-Do Detail

A To-do Detail appears after clicking a to-do ID or name in the To-do List or on the To-do page.

The To-do Detail page contains the following to-do information:

- To-do ID: unique to-do ID
- Model instance ID: ID of the model instance that produced the to-do
- External link: link to the to-do content
- Title: task title
- Task: namespace path and name of the to-do's user task
- Status: task execution status
- Issued: date and time, when the to-do was generated
- Initial Performs: expression used to acquire the initial potential performers for the to-do
- Assignees: users who can see the to-do
- Finished: date and time, when the to-do was finished (submitted or interrupted)
- Locked by: person who has locked the to-do
- To-do notes: notes provided by users of the Application User Interface
- Delegation level: current level of delegation

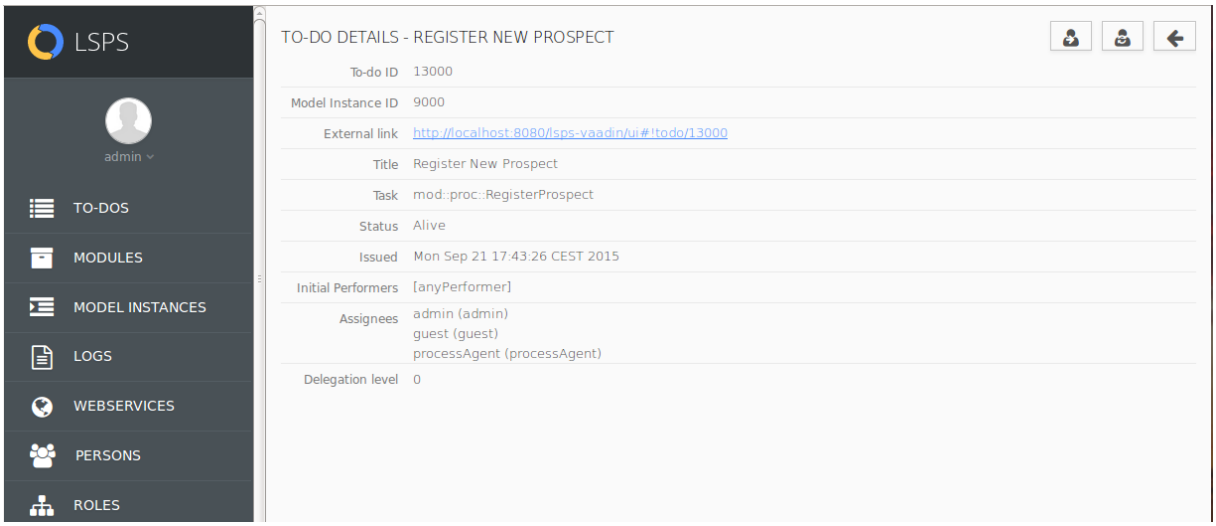



**Figure 3.4 To-Do detail**

From the to-do detail, you can delegate the to-do or undo a delegation and reassign to-dos.

### 3.2.3 Modules View

The Modules view contains a list of modules uploaded on the LSPS Server. From the view, you can perform module-related actions, including upload, unload, instantiation, and update.

You can also filter the module list based on their details.

### 3.2.4 Model Instances View

The Model Instances view contains a list of all model instances in the LSPS Server (Execution Engine) with their details:

- ID: unique ID of the model instance
- Model ID: ID of the underlying model
- Model name: name of the underlying model
- Model version: version of the underlying model
- Started: time when the model instance was created
- Finished: time when the model instance finished
- State: current execution status of the model instance

You can filter the table content by entering the filter values in the respective header cell and press ENTER.

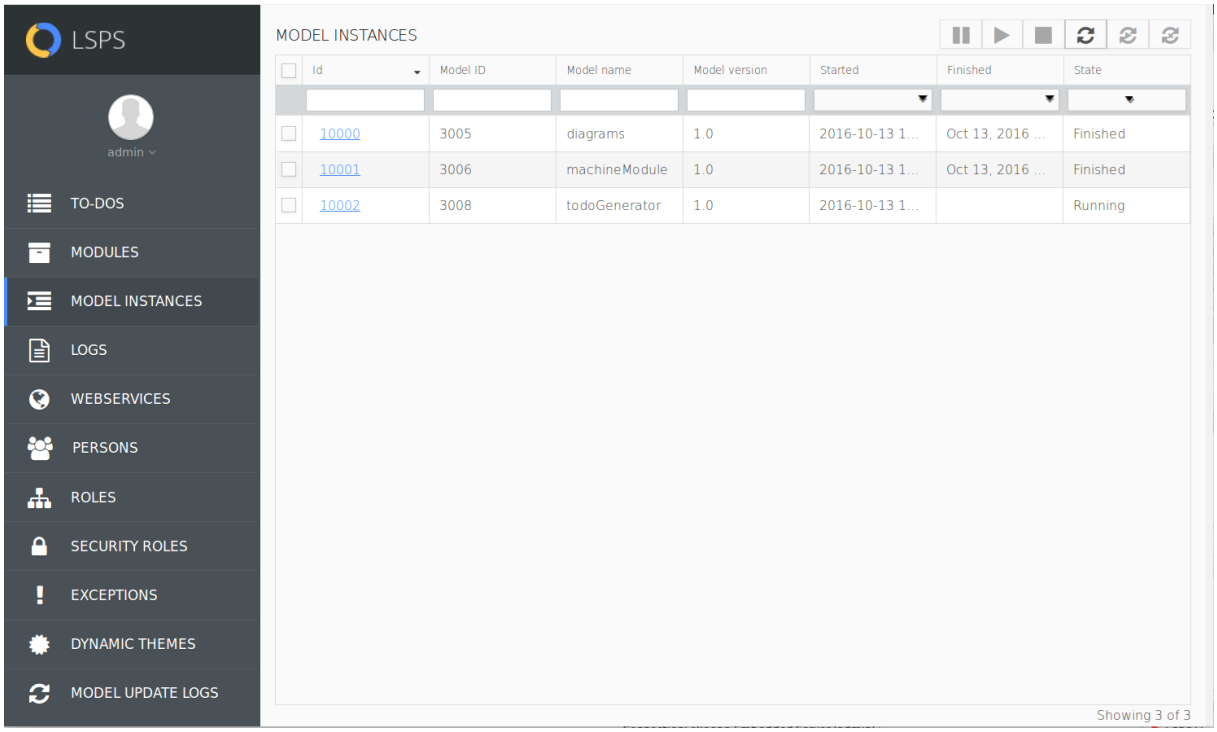



**Figure 3.5 Model Instances**

Selected model instances can be managed using the buttons in the view toolbar.

### 3.2.5 Model Instance Detail

Model instance detail view contains multiple tabs with detailed information about a model instance.

To open a detail of a model instance, click the model instance ID in the Model Instances view.

On the view toolbar, the actions related to the displayed tab are available.

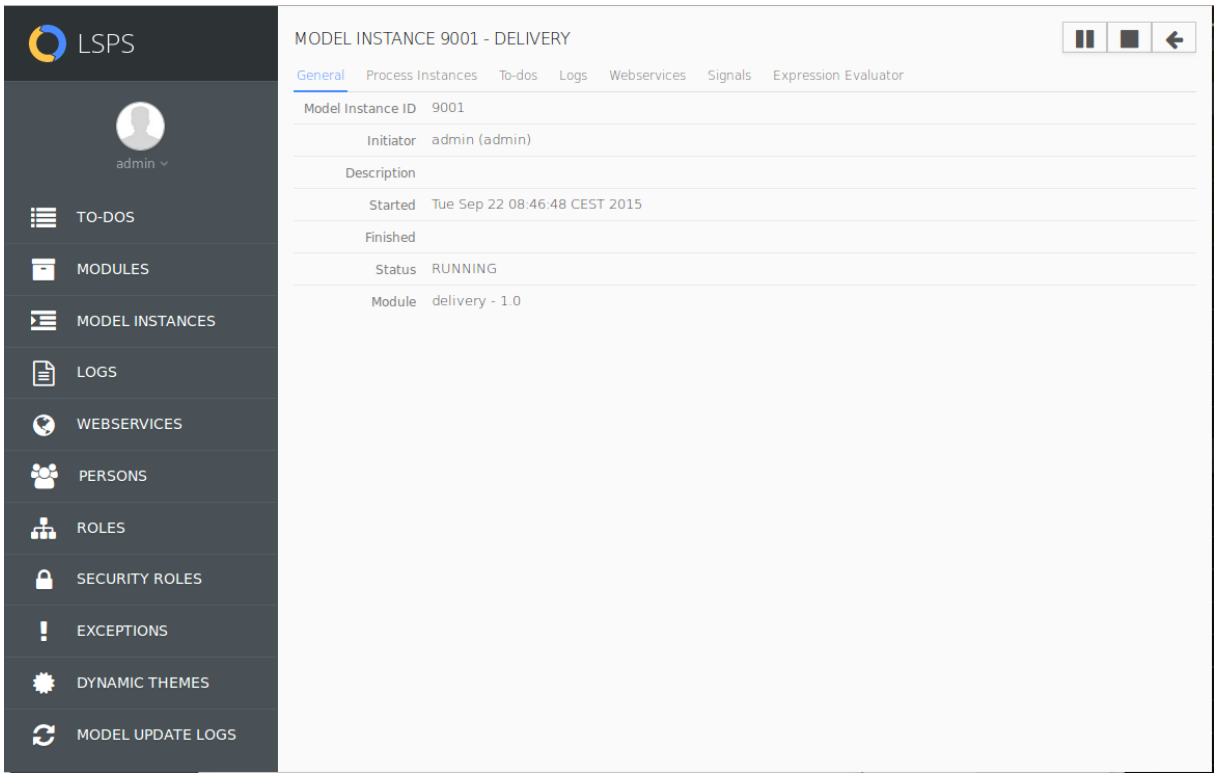



**Figure 3.6 Model Instance Detail**

### General Tab

The General tab contains general information about a model instance.

- Model Instance ID: unique model instance ID
- Initiator: person, who created the model instance
- Description: free-text description
- Started: date and time of model instance creation
- Finished: date and time of model instance termination
- Status: current execution status of the model instance
- Module: name and version of the underlying executable module

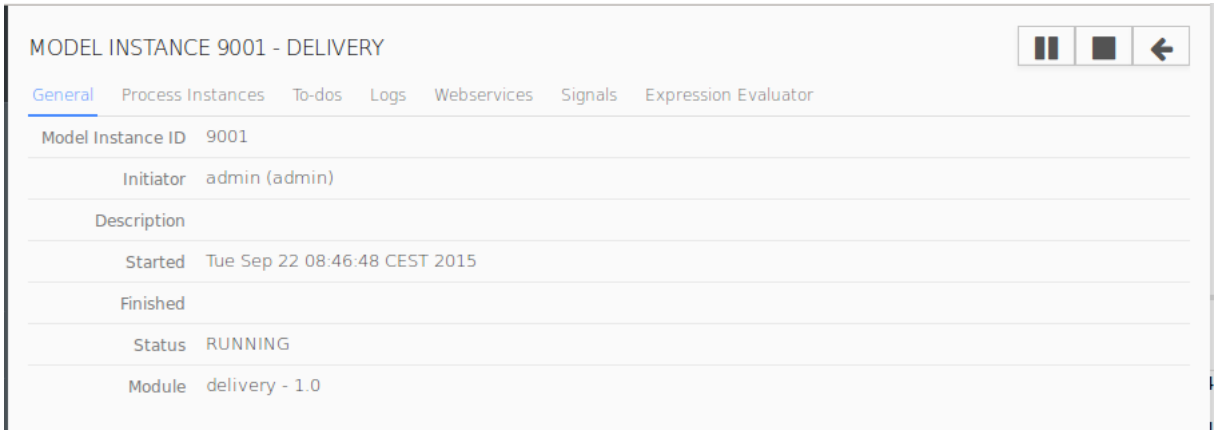



**Figure 3.7 The General tab in a Model Instance detail view**

## Process Instances Tab

The Process Instances tab contains the parameters of the model instance with their values, and a tree structure of the model instance with details on the displayed elements:

- Parameters of the model: Initiator, Description, and other metadata provided when the instance was created Value of the parameters is in the Value column.
- Tree with modules, their global variables, processes, and Goals, Plans and Diagrams: the details for individual elements are in the given table row.

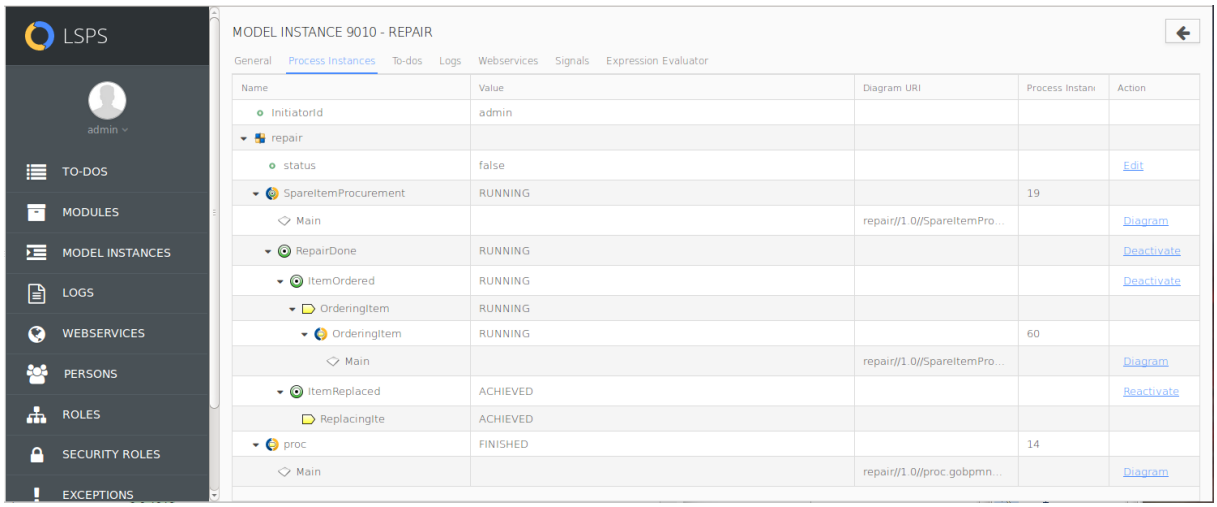



**Figure 3.8 Process Instances tab**

## To-dos Tab

The To-dos tab contains all to-dos generated by the respective model instance and their details.

- To-do ID: unique to-do ID number
- Title: title of the underlying user task
- Type: name of the user task
- Status: to-do status (`Alive`, `Accomplished`, or `Interrupted`)
- Locked By: name of the person, who has locked the to-do
- Initial Performers: names of initial performers
- Interruption reason: reason why the to-do was finished without completion if applicable (for example, due to process deactivation or model update)
- Task: task path and task name (mostly `module name::process name::plan name::task name`)
- Issued: date when the to-do was issued
- Finished: date when the to-do was finished

Clicking a to-do ID opens the to-do detail. Note that you can filter for any orphaned to-dos from this tab: click the Filter button in the upper right corner and define the filter properties.

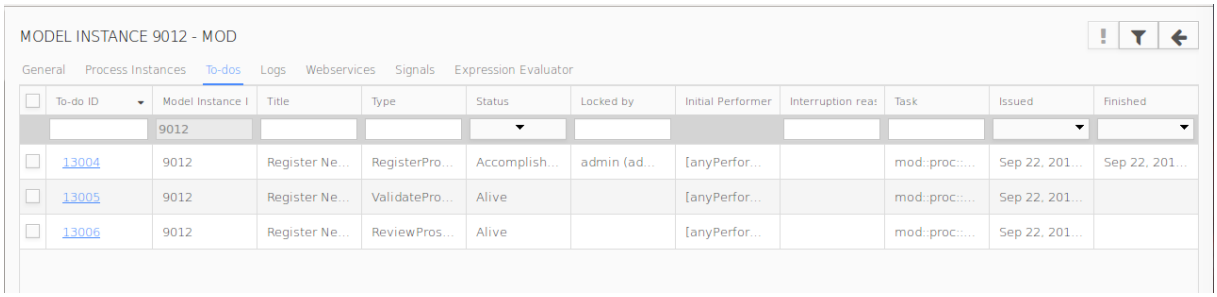



**Figure 3.9 To-dos Tab**

### Logs Tab

The Logs tab contains a table with messages logged by Log tasks, tasks of the Log task type, executed as part of the model instance.

For each log entry, the table shows:

- Log ID: unique log ID
- Timestamp: date when the message was logged
- Level: severity of the log message defined as an integer value

  If the user defines a filter values, all logs with a value greater that the defined value are displayed.
- Description: log message content

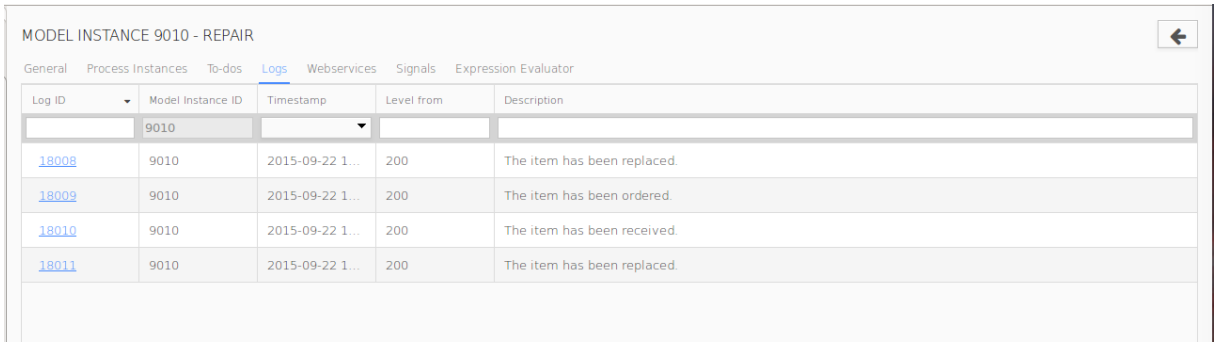



**Figure 3.10 Logs tab**

## Web Services Tab

The Web Services tab contains a list of active and processed wait points (waiting for a web-service request from a client) of a model instance.

The Web Services tab contains a table with all wait points of web service clients in the model instance:

- ID: unique wait point ID
- Operation URI (Unified Resource Identifier): identifier of the resource (if several wait-point requests are processed by the same task type, value of their operation URI is identical. However, their wait-point IDs differ)
- Created: time when the wait point was created
- Request: link to the XML received from the client
- Request Received: time when the client request was received
- Response: link to the XML sent to the client and information on the response type (`time-out`, `error`, `finished`, `terminated`)
- Finished: time when the Web service response was sent
- Response timed out: if the response time was overstepped
- Terminated: if the wait point was erased due to parent element termination
- Error response: if the received response was an error response

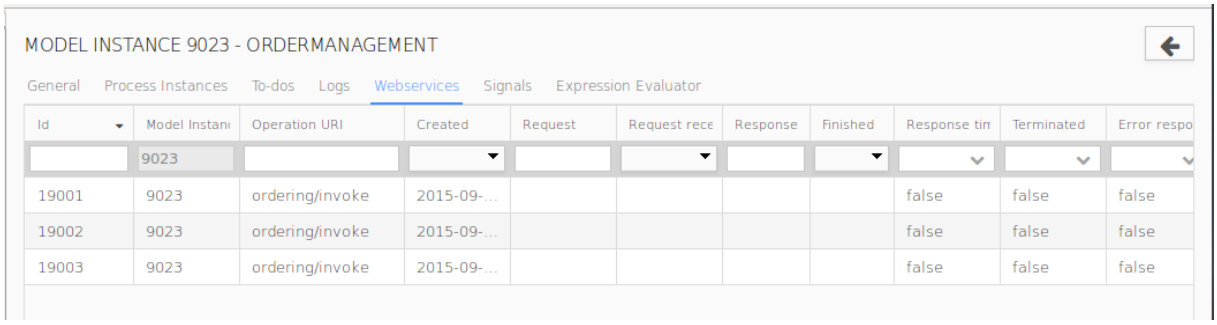



**Figure 3.11 Webservices Tab**

### Signals Tab

The Signals tab contains a list of signals waiting to be consumed generated by a model instance.

Waiting signals may be removed.


**Figure 3.12 Signals tab**

### Expression Evaluator Tab

The Expression Evaluator tab enables you to evaluate expressions defined in the Expression Language in the context of the model instance.

By default, the evaluated expressions have no impact on the persisted data, that is, on Shared Record instances. If you want to apply the expression on Shared Records, select the Persistent option.

> **Note:** You cannot use data from the local contexts of the model instance.

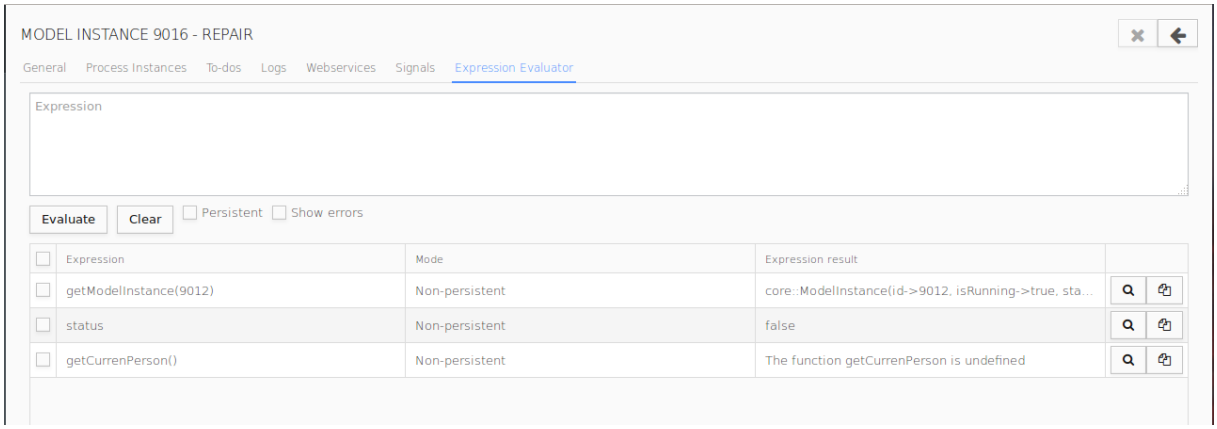



**Figure 3.13 Expression Evaluator**

Show Errors enables you to display detailed error messages in case some of the expression could not be evaluated.

### 3.2.6 Logs View

The Logs view contains a table with messages logged by Log Tasks, tasks of the Log task type, executed as part of the model instance.

For each log entry, the following details are displayed in the log table:

- Log ID: unique log ID
- Model Instance ID: ID of the parent model instance of the Log task
- Timestamp: date when the message was logged
- Level: severity of the log message

  When filtering according to the log level, any logs with severity higher that the defined value are displayed.
- Description: log message content

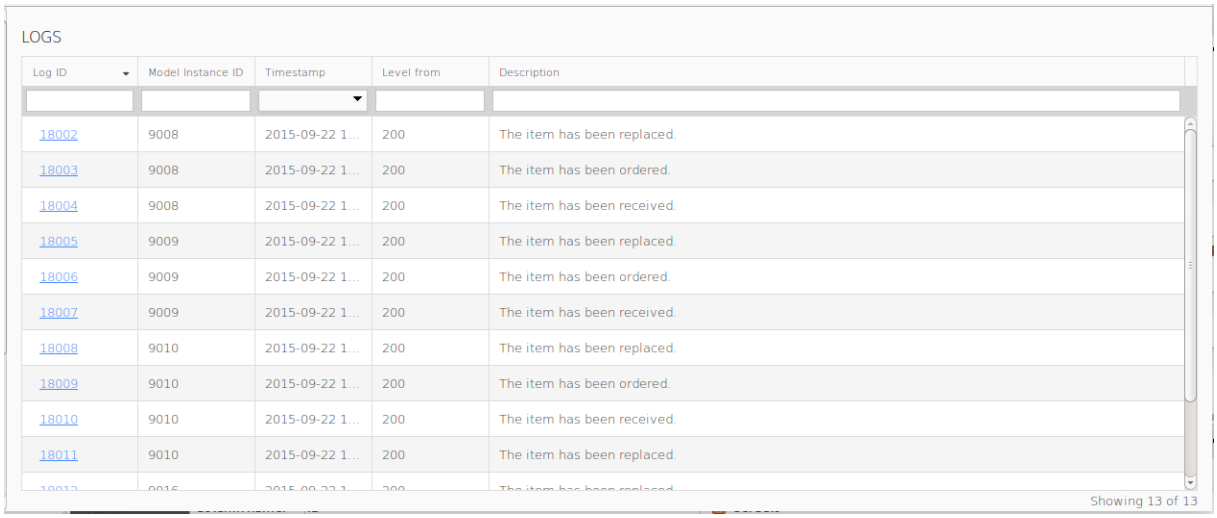



**Figure 3.14 Logs page**

### 3.2.7 Web Services View

The Web Services view contains a list of active and processed wait points (waiting for a Web service request from a client).

The Web Services view contains a table with wait points details:

- ID: unique wait point ID
- Model Instance ID: ID of the model instance processing the Web service request
- Operation URI (Unified Resource Identifier): identifier of the resource

> **Note:** If several wait-point requests are processed by the same task type, value of their operation URI is identical. However, their wait-point IDs differ.

- Created: time when the wait point was created
- Request: link to the request XML received from the client
- Request Received: time when the client request was received
- Response: link to the response XML sent to the client and information on the response type (`time-out`, `error`, `finished`, `terminated`)
- Finished: time when the Web service response was sent
- Response timed out: if the response time was overstepped
- Terminated: if the wait point was erased due to parent element termination
- Error response: if the received response was an error response

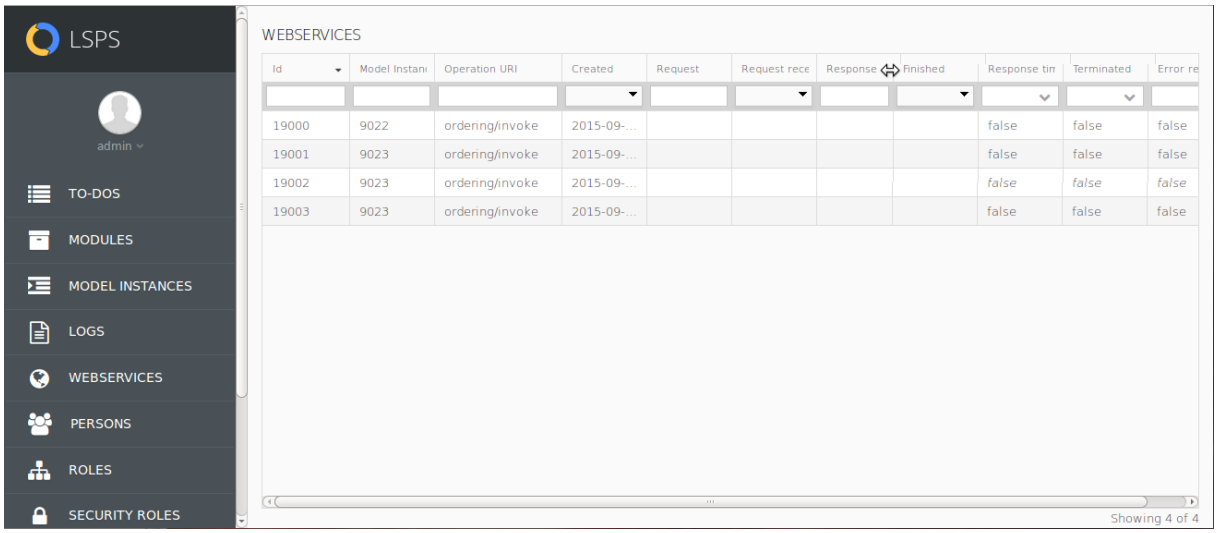



**Figure 3.15 Web Services view**

### 3.2.8 Persons View

The Persons view shows a list of persons, that is, LSPS users, as defined on the LSPS server.

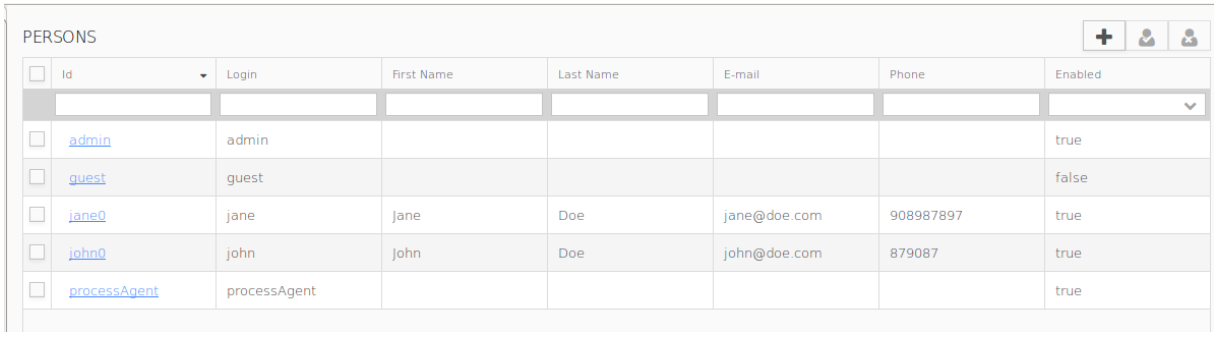



**Figure 3.16 Persons View**

By clicking a person id, you can display the person detail.

Using the buttons in the view toolbar, you can add a new person, disable selected persons, or enable selected persons.

### 3.2.9 Person Detail View

The Person Detail view shows details of a person including substitution setting, their security and modeled roles.

The detail appears after clicking a person id in the Persons or Roles view.

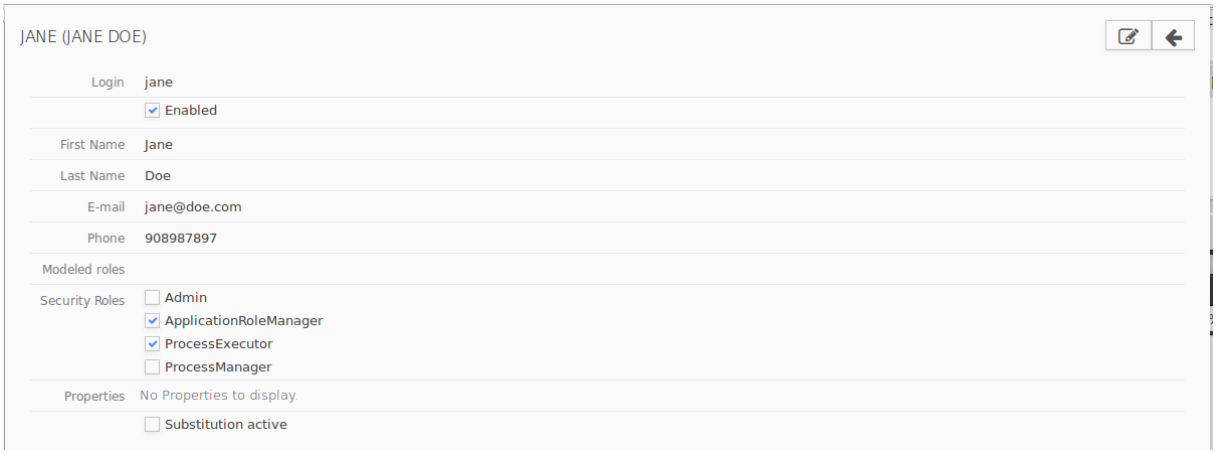



**Figure 3.17 Person Detail view**

### 3.2.10 Roles View

The Roles view contains lists of runtime and modeled roles defined in organization definitions of modules on the server.

If a runtime role is selected, persons with the runtime role are shown in a table displayed on the right.

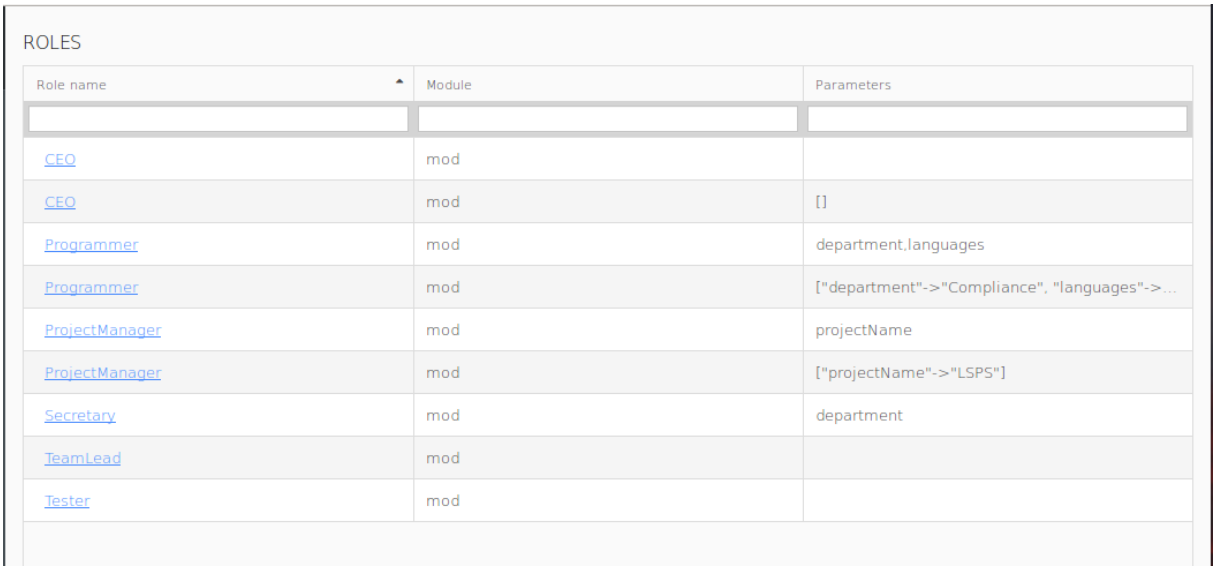



**Figure 3.18 Roles view with runtime and modeled roles**

### 3.2.11 Security Roles View

The Security view contains the list of available security roles.

Every active user has at least one security role, which restricts the actions they can perform in runtime; security roles define a particular set of security rights:

- Security right is a right to perform an action.
- Security role is a group of security rights.

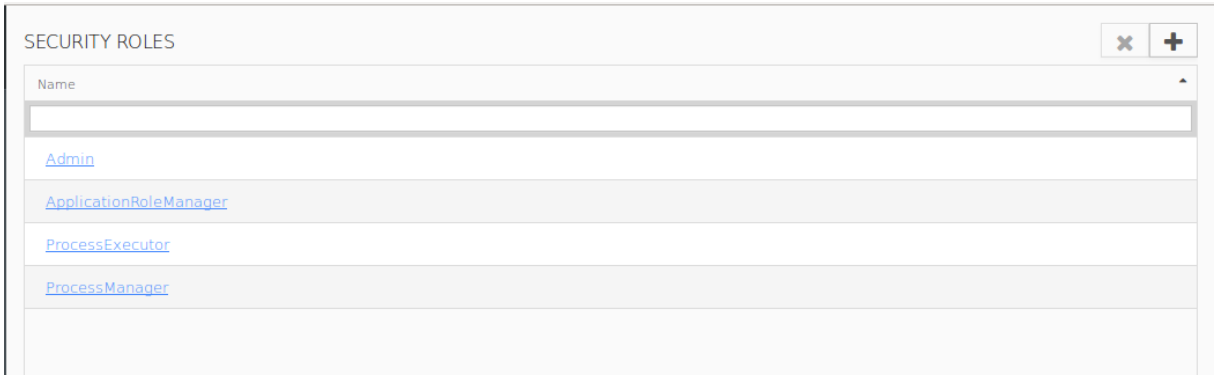



**Figure 3.19 Security view**

### 3.2.12 Exceptions View

The Exceptions view contains a list of all server exceptions and their details.

The Exceptions view contains:

- filter area to filter the exceptions listed below
- table with exception and their details:
  - ID: ID of exception
  - Exception: the first line of the exception
  - Creation Time: time when the exception occurred
  - Resend: date when the resend has successfully taken place

    To resend an exception, select it in the list and click the Resend button.
  - Invoked Component: component which generated the exception

To view the stack trace of an exception, click the exception id in the table.

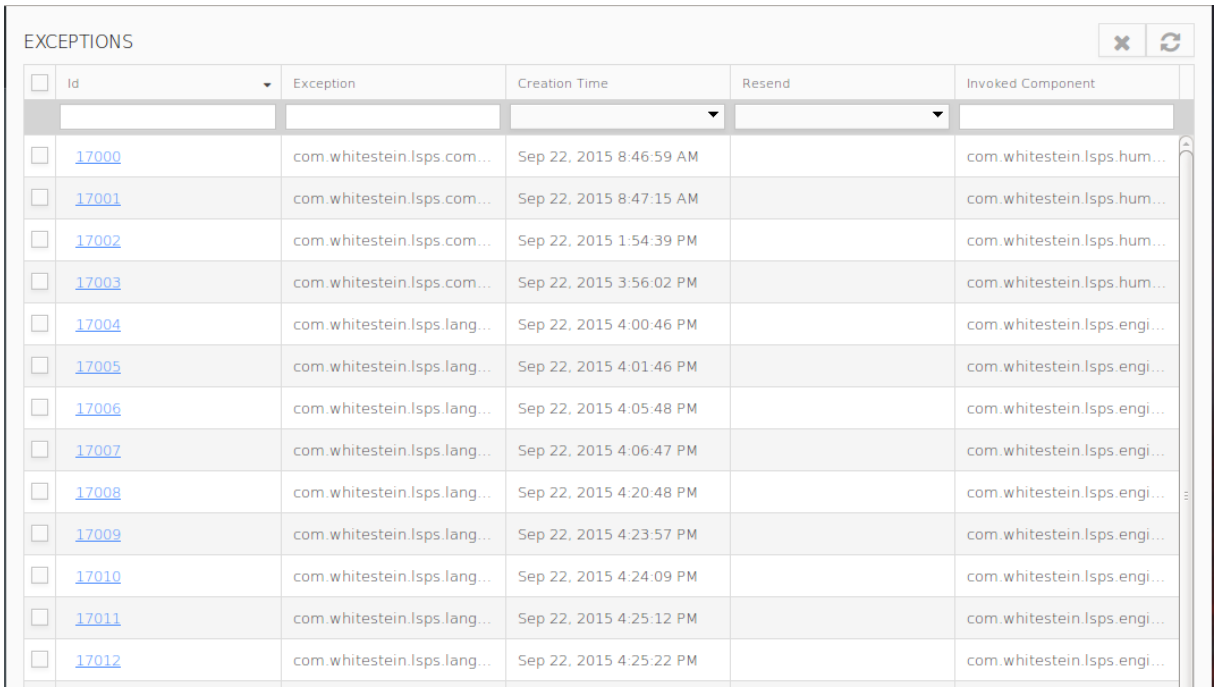



**Figure 3.20 Exceptions view**

### 3.2.13 Model Update Logs View

The Model Update Logs view contains a log entry for every updated model instance. You can display the log content by clicking the log ID.

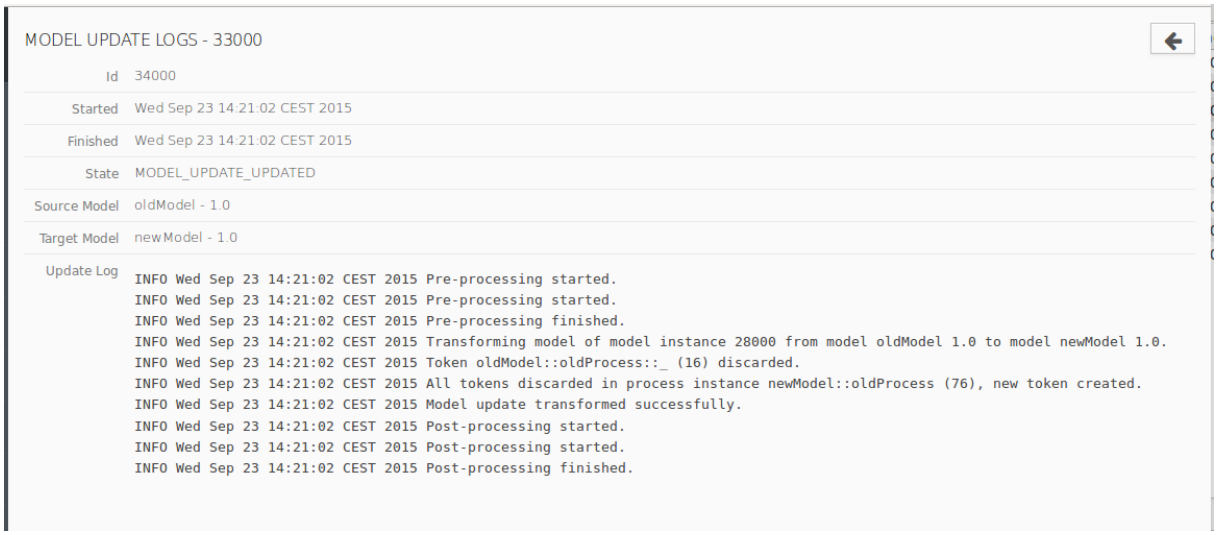



**Figure 3.21 Log content**

## 3.3 To-Do Management

Features for To-dos management are accessible from the To-Do page.

Note that you can filter the table content by setting the filter value in the header of the respective cell. Filtering is by default case-sensitive and supports wildcards (∗, ?); for example search for `Task?  ∗` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.

You can perform the following on to-dos:

- reassign locked to-dos to another person,
- reset the data in a saved to-do,
- delegate, or escalate.

  As a result of such an action, a to-do might end up with no performers. Such to-dos are referred to as *orphaned* and require the attention of an administrator: in the Management Console, the administrator can search specifically for such to-dos.

### 3.3.1 Searching for Orphaned To-Dos

To display orphaned To-dos in the table of the To-Do view, click the Filter button in the view toolbar; in the displayed dialog, select the Orphaned to-dos option and confirm.

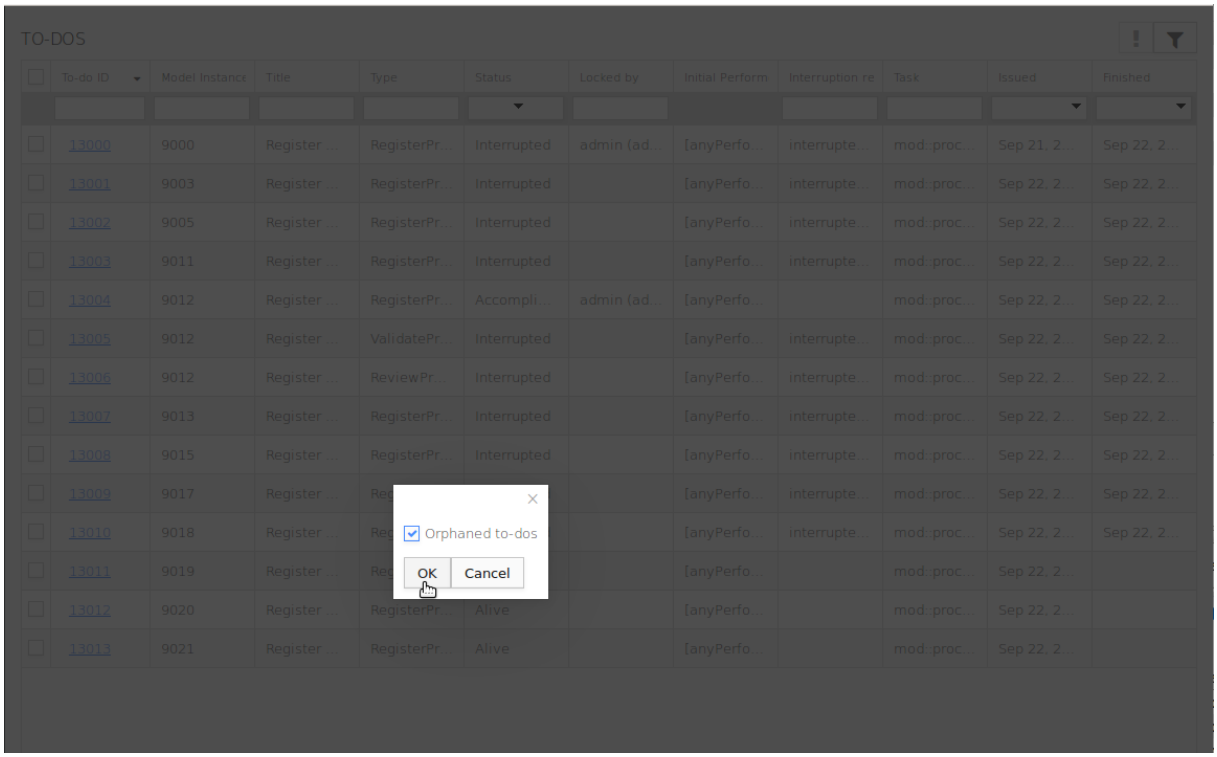



**Figure 3.22 Activating orphan to-dos filtering**

### 3.3.2 Reassigning To-Dos

Reassignment enables an administrator to assign an Alive to-do to other users, who become the initial performers.

**Note:** Reassignment cannot be undone.

To reassign a to-do, do the following:

1. Display the to-dos detail (go to To-do List view and click a to-do ID).
2. Click the Reassign  button in the view toolbar.
3. Select Persons to reassign the to-do to users or Roles to reassign the to-do to users with a runtime role.
4. In the table below, select the persons or roles.
5. In the view toolbar, click the confirmation button.

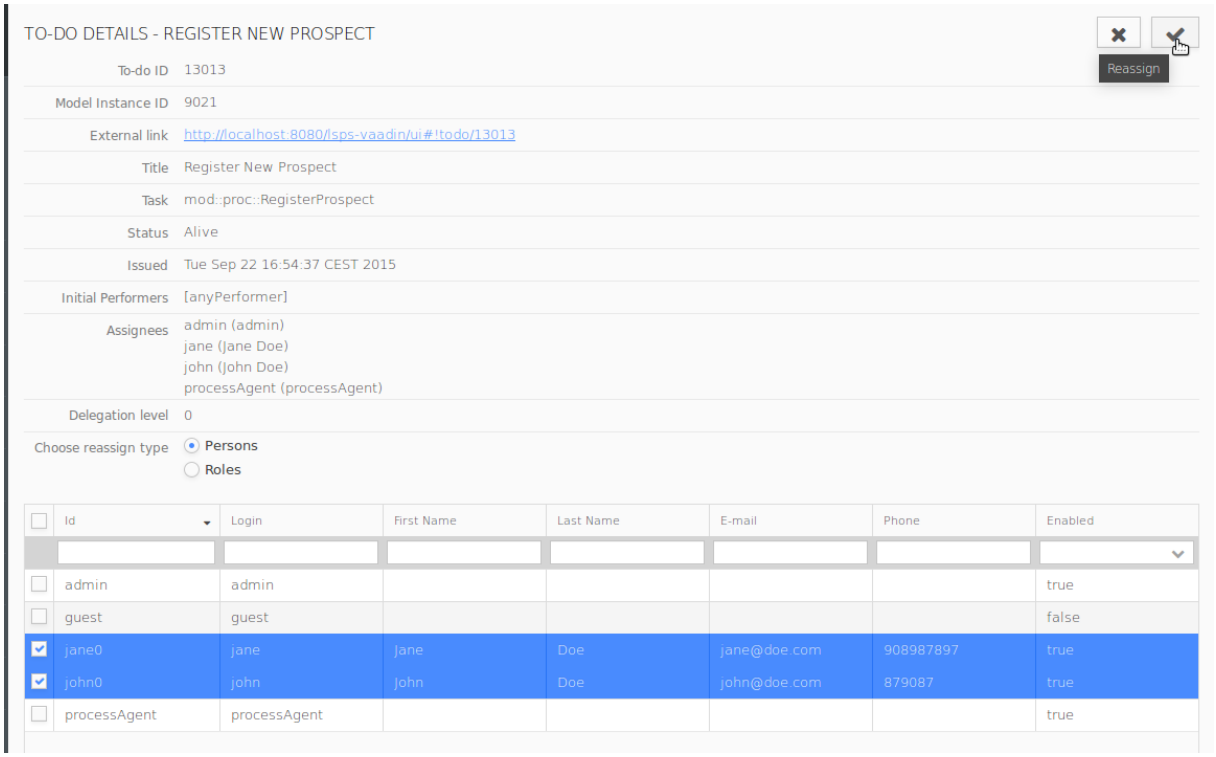



**Figure 3.23 Reassigning To-Do**

### 3.3.3 Escalating To-Dos

Escalation enables users to trigger the escalation process. Escalation might be triggered automatically (for example, after a certain period has elapsed), or manually: If a to-do is escalated, a signal with a certain value is sent to the Execution Engine. The signal can be caught and processed by a catch event. If escalation handling and catching of a particular signal is not handled within the model instance, escalation takes **no effect**. Unconsumed Signals remain in the signal queue (see Removing Waiting Signals).

> **Important:** The escalation mechanism described below is deprecated. Use the `escalation mechanism` instead; for example, call the `throwEscalation()` function on a button component and process the escalation with Catch Escalation elements.

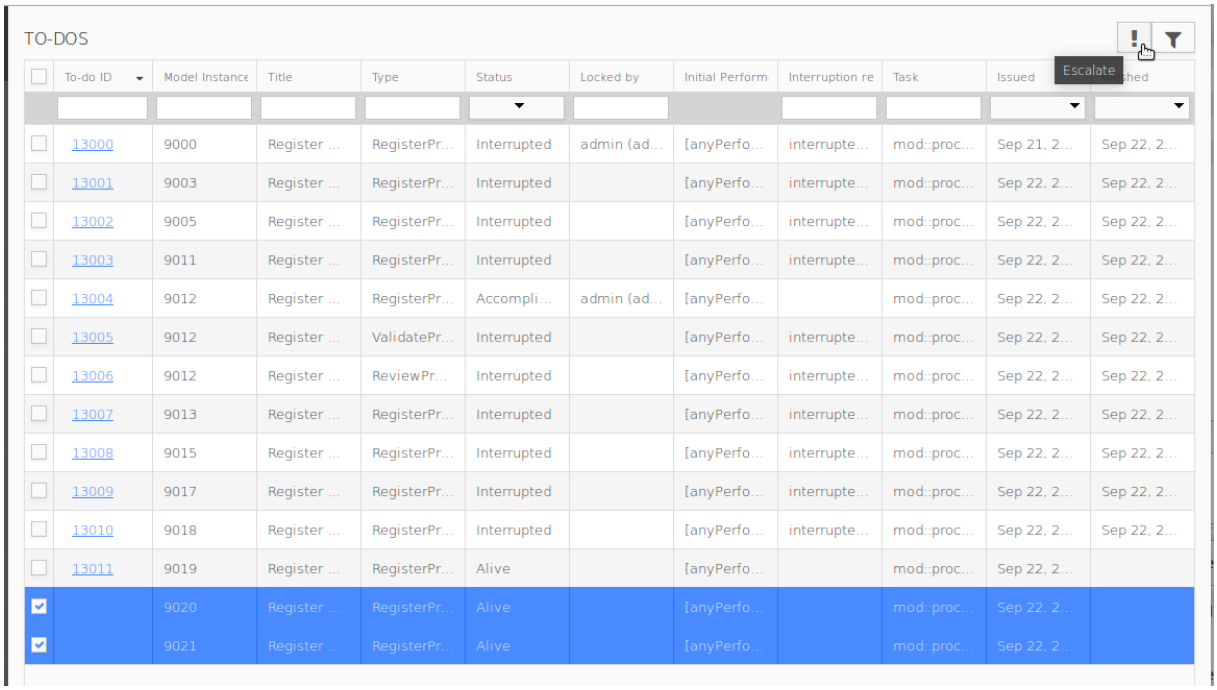



**Figure 3.24 Escalating To-Dos**

To escalate one or several to-dos, do the following:

1. Open the To-dos view.
2. Select the to-dos you want to escalate.
   Only live to-dos can be escalated.
3. Click Escalate  .
4. Type escalation reason and click Escalate.

### 3.3.4 Delegating To-Dos

To delegate a live to-do to another user, do the following:

1. Activate the respective to-do detail (To-dos To-do ID).
   Only live to-dos can be delegated.
2. Click the Delegate  button.
3. Filter out the relevant users using the filter in the column of the table header.
   Wildcard usage is supported; to display all possible substitutes, type ∗.

4. Select delegates from the table and click the Delegate button.

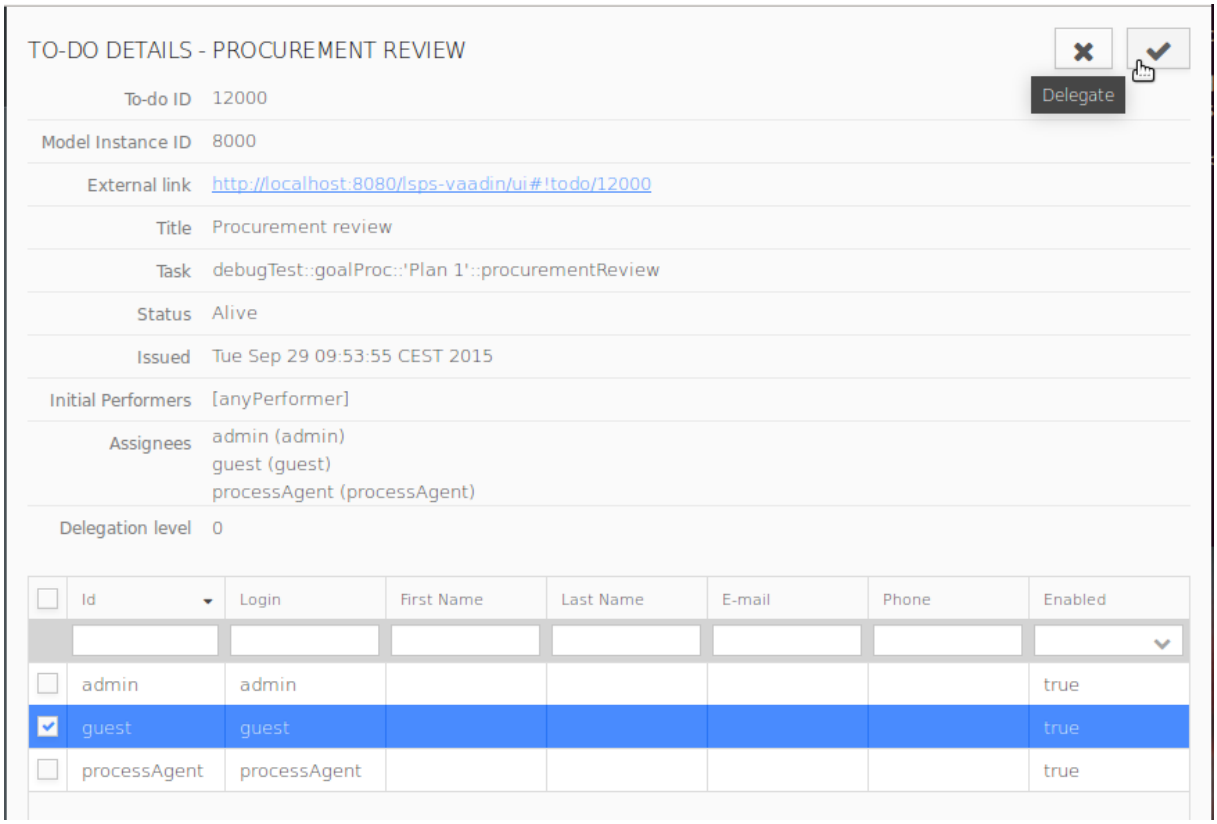



**Figure 3.25 Selecting delegates**

5. Click OK.

Delegation can be undone so the to-do is assigned to the previous users.

The respective to-do disappears from the to-do lists of all previous assignees and appears in the to-do list of delegates. If locked, to-do is unlocked and delegated as well.

#### 3.3.4.1 Undoing Delegation

Delegation can be undone only for live to-dos.

To undo delegation of a to-do, do the following:

1. Open the to-do detail (To-dos To-do ID).
2. In the view toolbar, click the Undo Delegation button.

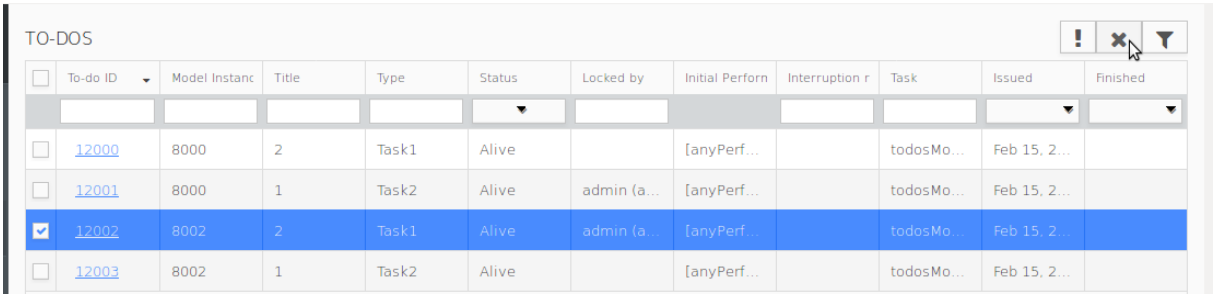
Delegation is undone and the delegation level decreases. Repeat the process to undo delegation on several levels.

### 3.3.5 Resetting To-Dos

To-do reset erases the data in a saved to-do. This feature is useful if the data used by the saved to-do have changed. Note that a reset to-do remains locked by the user.

To reset a live to-do of a user, do the following:

1. Open the To-Dos page.
2. Select the to-dos in the list.
3. Click the Reset button. Only live to-dos can be reset.




## 3.4 Module Management

Modules are parts that are either used for reuse or for creation of Model instances.

From the Management Console, you can do the following with Modules:

- upload modules to the server
- display module details
- download modules
- unloading modules

### 3.4.1 Uploading Modules

> **Important:** You can upload only Modules exported with the `GO-BPMN export`.

To upload a Module or Model, executable module with any imported modules, to the LSPS Server, do the following:

1. In the Modules view, click the Upload button.
2. Define what to do with the current database schema:
   - Do nothing with database schema: Existing schema remains unchanged.
   - Update the schema by model: New tables, columns and relationships are added; however, no data is deleted.
   - Validate schema first: Existing schema is validated against the new model schema (if inconsistencies are detected, the model launching fails).
   - Drop/create schema: Existing schema is dropped and a new schema following the new model definitions is created.
3. In the Model Upload dialog box, locate and select the model, and click Upload.
4. Click the Upload button.

The executable module appears in the list of available modules.

### 3.4.2 Displaying Module Details

To view details of a Module in the Management Console, do the following:

1. Open the Modules view.
2. Click the Module ID.
3. Expand the nodes to examine the Module structure. For Goal, Plan, and Process diagram node, you can click the *Diagram* link to display the diagram content.

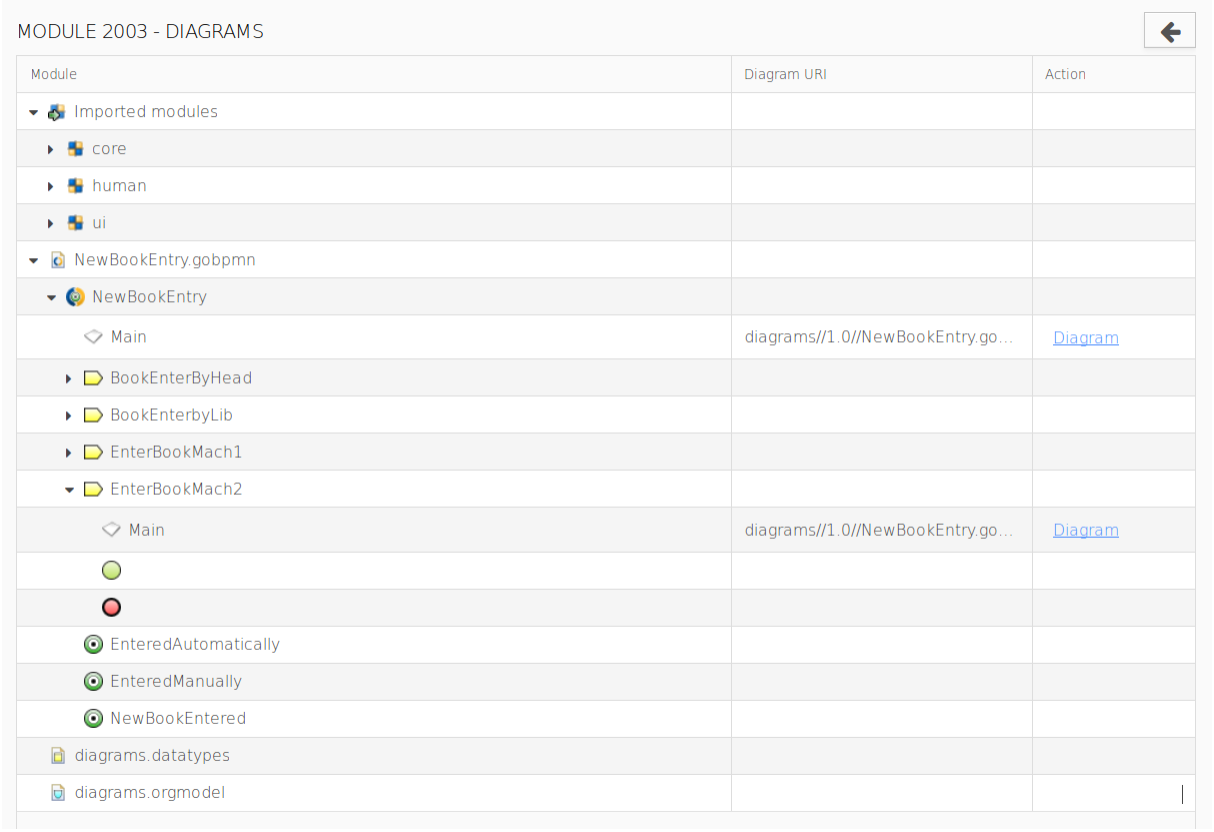



**Figure 3.26 Details of a Module**

### 3.4.3 Downloading Modules

You can download a module as a zip archive. Such an archive can be imported into PDS and edited.

To download a module from the Engine repository, do the following:

1. Open the Modules view.
2. In the modules table, select the module.
3. Click the Download  button.
4. In the dialog box, click Download.

### 3.4.4 Unloading Modules

To unload a module, do the following:

1. On the Modules page, select the module.
2. In the view toolbar, click Unload  .
3. In the displayed dialog box, click Unload.

The model is unloaded from the server and any model instances based on the model are finished. Roles and role assignments remain unchanged.

## 3.5 Model Instance Management

Model instances are execution entities that follow the execution logic defined in their Model and imported Modules.

From the Management Console, you can do the following:

- create model instances of uploaded models
- finish model instances
- suspend and resume model instances
- filter model instances
- display details of model instances
- change data of model instances
- remove a waiting signal of a model instance
- evaluate an expression in the context of a model instance
- update a model instance

### 3.5.1 Creating a Model Instance

When you run a model, a model instance based on the chosen model is created on the server and its execution is triggered. You can create multiple instances of the same model.

To create a model instance based on the chosen model, run an uploaded model:

1. Select the executable module in the list of modules.
2. Click Run Model  in the view toolbar.
3. In the Run Model dialog box, type the required data and add properties of the model instance if required (any key-value pairs).
4. Click Run.

A model instance is created and its detail appears.

### 3.5.2 Filtering Model Instances

To filter the Model Instances view, do the following:

1. Define the filtering criteria in the filtering row of the table:

   - In the Model Instance ID text box, type the model instance ID.
   - In the Status drop-down box, select the execution status.

   Where applicable, filtering is by default case-sensitive and may contain wildcards (*, ?); for example, search for `Task? *` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.

2. Press Enter.

### 3.5.3 Display Model Instance Detail

To display a model instance detail, click the model instance ID in the Model Instance view in the Model Instance ID column.

#### 3.5.3.1 Display Live Diagrams

To display a live diagram with the execution, do the following:

1. On the menu, click Model Instances.
2. On the right, click the ID of the model instance.
3. Go to Process Instances tab.
4. Locate the diagram in the tree and click Diagram in the Action column.

**Important:** The diagrams in the Management console do not display hyperlink and, lane and pool diagram elements.

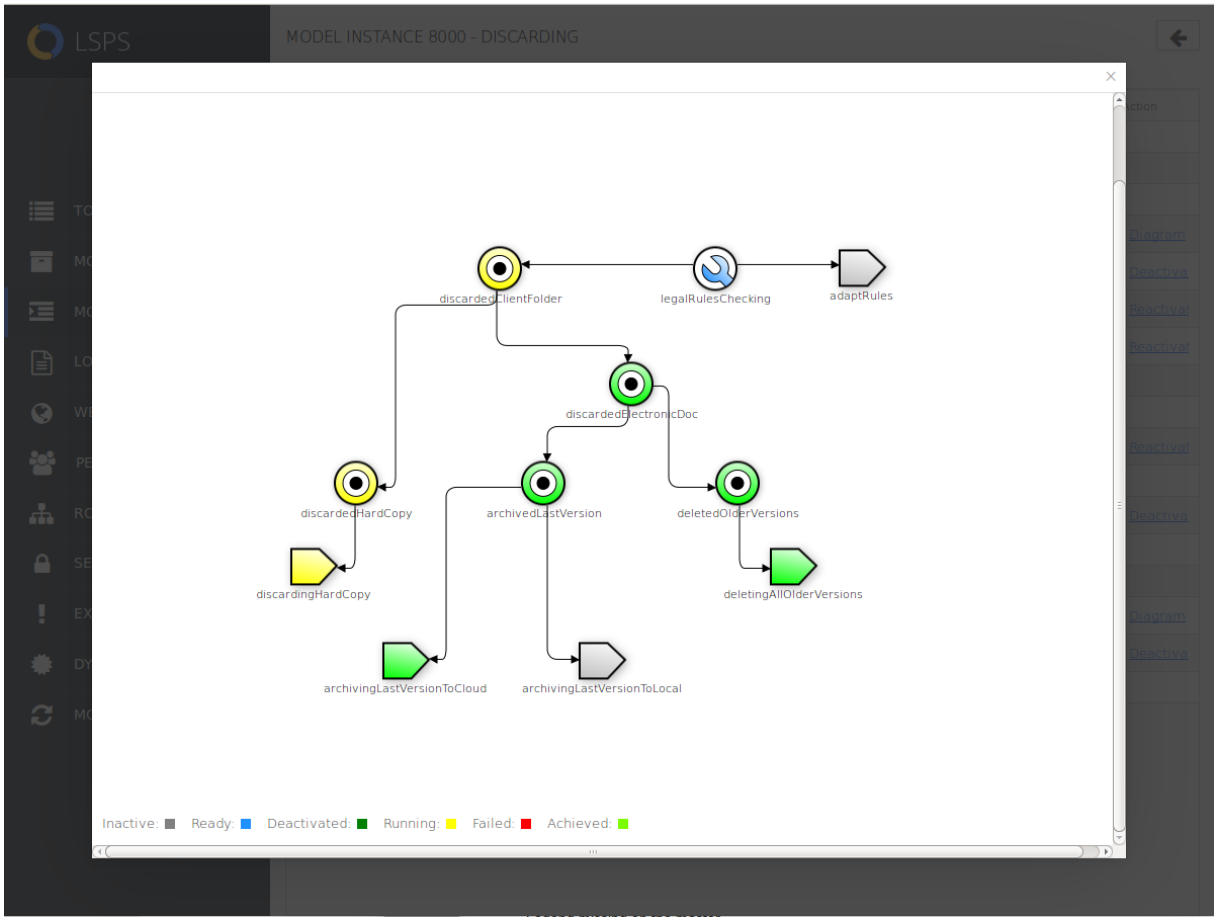



**Figure 3.27 Live Goal diagram**

### 3.5.4 Changing Model Instance Data

To change global variable values and goal status of a running model instance, do the following:

1. On the menu, click Model Instances.
2. On the right, click the ID of the model instance.
3. Go to Process Instances tab.
4. Locate the Goal or global variable:
   - For a variable, click Edit in the Action column.
   - For a Goal, click the Deactivate or Reactivate button in the Action column.

### 3.5.5 Evaluating Expressions

To evaluate an expression in the context of a model instance:

1. Display the Expression Evaluator tab (display the Model Instances view, click the desired model instance ID, and select the Expression Evaluator tab).

2. Unselect **Persistent** to evaluate the expression without changing of the data in the database.

   If the Persistent flag is selected and the expression changes the value of an entity, for example, a global variable, the change is reflected on the runtime data, that is, the variable takes the newly assigned value.

3. In **Evaluation context**, select the context you want to use.

4. Type the expression in the input field of the evaluator.

5. Click Evaluate.

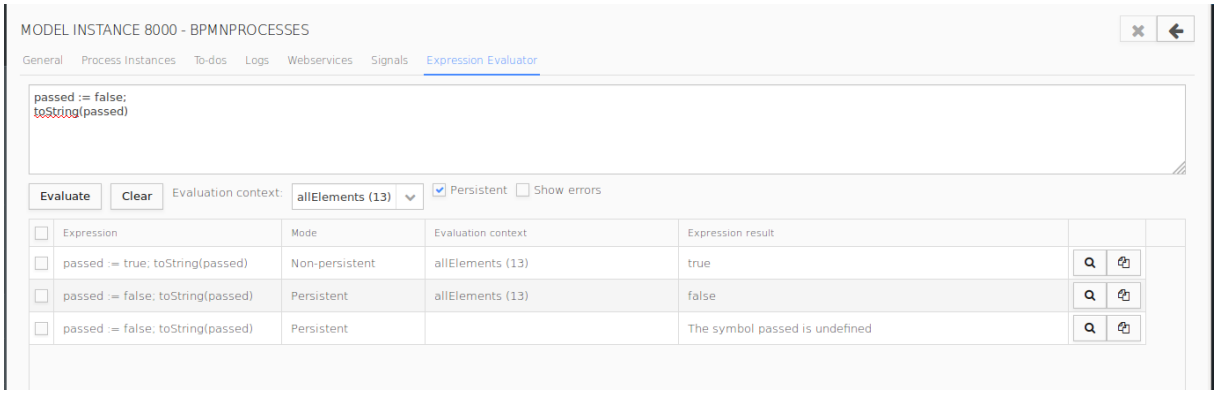



**Figure 3.28 Evaluating an expression in different contexts and modes**

To show errors, which occurred when attempting to evaluate expressions, select the Show Errors check box below the expression input field.

To remove evaluated expressions from the table, select the expressions and click the Remove (X) button in the upper right corner.

### 3.5.6 Changing Persisted Data

To change persisted data from the Expression Evaluator, do the following:

1. Display the Expression Evaluator tab (display the Model Instances view, click the desired model instance ID, and select the Expression Evaluator tab).

2. Select Persistent to have the changes on persisted data (Shared Records) in the evaluated expression reflected on the database.

3. Type the expression in the input field of the evaluator.

4. Click Evaluate.

   To display the errors that occurred when attempting to evaluate expressions, select the Show Errors check box below the expression input field.

   To remove evaluated expressions from the table, select the expressions and click Remove (X) in the upper right corner.

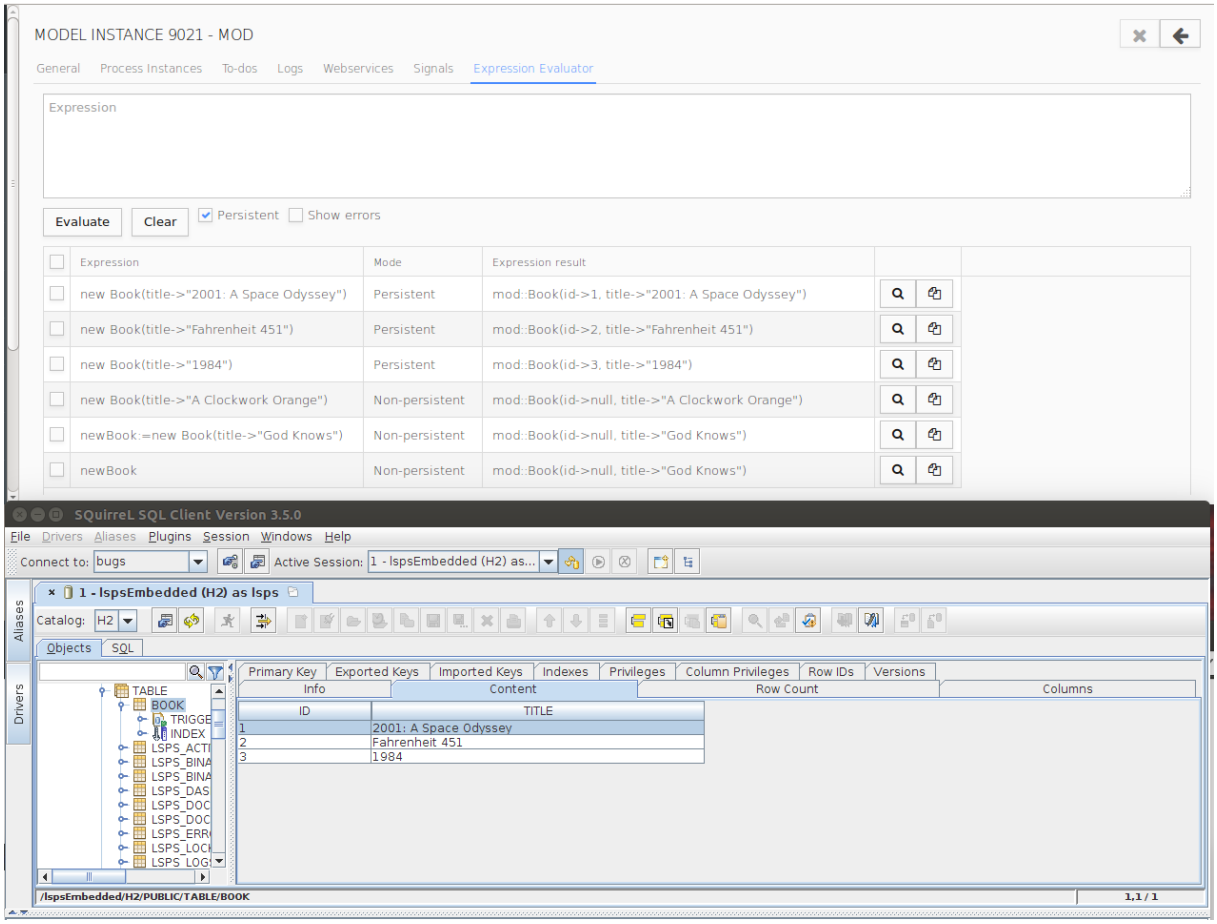



**Figure 3.29 Evaluating over a shared record**

### 3.5.7 Removing Waiting Signals

To remove a waiting signal of a model instance, do the following:

1. Display the Signal tab of a particular model instance (Model Instances model instance ID Signals).
2. Select the signals you want to remove.
3. Click the Remove (X) button in the upper right corner.

### 3.5.8 Filtering Wait Points

To apply a filter, do the following:

1. Open the Webservices view.
2. In the filtering row of the table, define the filtering criteria.

   Filtering is case-sensitive and supports wildcards (*, ?); for example, filtering `Task?` `*` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.
3. Press Enter.

### 3.5.9 Suspending and Resuming a Model Instance

A suspended model instance stops its execution. On resume, the instance continues from where it was suspended.

To suspend or resume a suspended model instance, do the following:

1. Open the Model Instances view.
2. In the displayed table with model instances, select the model instances.
3. In the view toolbar, click the Suspend or Resume command.

### 3.5.10 Finishing a Model Instance

When you finish a model instance, the running elements stop their execution immediately and the status of the model instance becomes **finished**.

To finish a model instance, do the following:

1. Open the Model Instances page.
2. In the displayed table with model instances, locate the particular model instance.
3. In the view toolbar, click the Finish button.

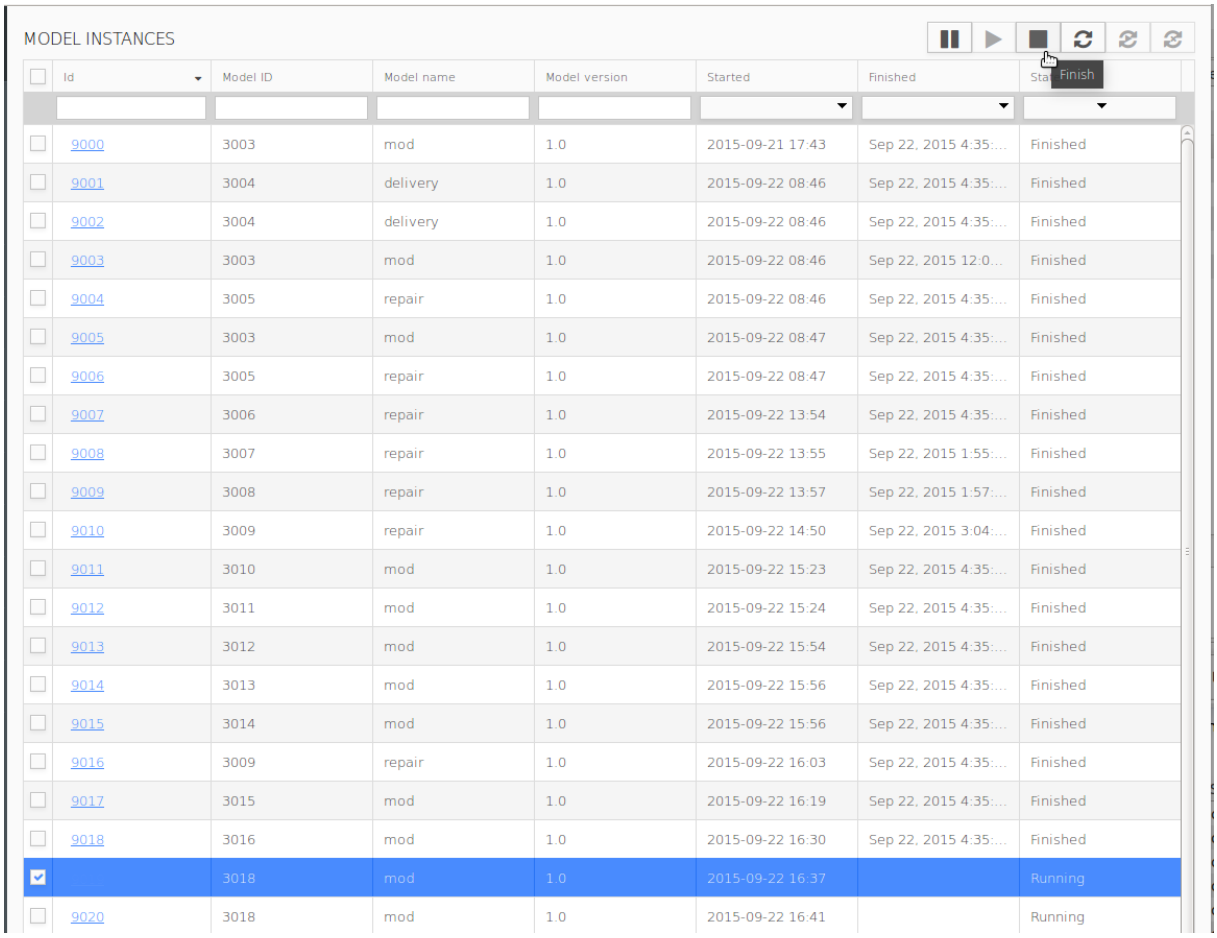



**Figure 3.30 Finishing Model Instance**

### 3.5.11 Updating a Model Instance

Any running or suspended model instances can be updated so as to follow a new model. During model update, the model instance becomes suspended and the underlying model is substituted with a new model; the model update procedure is defined in the `model update configuration file`, which is created in PDS.

However, if you have a model update configuration at hand, you can perform the update directly from the Management Console.

To update a model instance, do the following:

1. In the Model Instances view, select the model instance and click the Model Update  button.
2. In the dialog box, enter the path to the model update MUC file and the Datamapping file and click Next.
3. Check if the correct instances are selected and click Finish
4. It is recommended to check the model update log information in the Model Update Logs view.

## 3.6 Person Management

Persons represent users that interact with the system, such as, administrator, or participate in to-do execution, hence have access to the Application User Interface. As such they define credentials, such as, name, login, etc., and have a set of rights assigned.

You can view and manage all the details in the Person Detail View.

### 3.6.1 Filtering Persons

The Persons page is displayed.

To apply a filter, do the following:

1. In the filtering row of the table, define the filtering criteria.
   Filtering is case-sensitive and supports wildcards (*, ?); for example, filtering `Task?  *` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.
2. Press Enter.

### 3.6.2 Creating Persons

To add a new person to the LSPS server, do the following:

1. Open the Persons view.
2. Click the Add  button in the view toolbar.
3. In the new view, define user details.
4. Optionally, define substitution settings: select Substitution active and select the substitutes.
5. Select the modeled roles you wish to assign the person.
   Assign a person at least one security role.
6. Click Submit  in the view toolbar.

### 3.6.3 Editing Persons

To edit an existing person, do the following:

1. Open the Persons view.
2. Click the login of the person you wish to edit.
3. In person detail, click Edit  .
4. Edit the displayed user information.
5. Optionally, define substitution settings.
6. Select the roles to be assigned to the person.
7. Click Submit  in the view toolbar.

### 3.6.4 Disabling and Enabling Persons

When persons are disabled, they are denied access to the LSPS runtime environment, hence they cannot access the front-end clients.

The disabling mechanism is used when you want to remove a person: once persons are created, they cannot be deleted from the system.

When persons are disabled, the following applies:

- Any assigned security and modeled roles, and substitutes are permanently removed and are not renewed on enabling.
- Any locked to-dos are unlocked and released (to-dos are distributed to persons with the required rights, or become orphaned).

### 3.6.5 Activating Substitution

You have defined substitutes for the particular person.

To activate or deactivate substitution, do the following:

1. Open the respective person detail (Persons USER_ID)
2. Make sure you have defined your substitutes.
3. Select or unselect Substitution active.
4. Click Submit.

**Note:** The *admin* and *processAgent* users cannot be disabled.

A disabled person can be enabled. However, the removed data, for example, their roles, are not restored.

Information about person status is shown in the respective person detail (Enabled).

To enable or disable a person, do the following:

1. Open the Persons view.
2. Select the check box of the persons you want to disable or enable.
3. Click Disable Selected Persons  or Enable Selected Persons  .

Admin is a read-only person and cannot be disabled.

#### 3.6.5.1 Defining Substitutes

To define substitutes of a person, do the following:

1. Click Persons in the navigation bar.
2. In the persons table, click the person's login.
3. On the person detail page, click the Edit button.
4. Select the Modeled roles to assign a button.
   Editable person detail appears.
5. Select *Substitution active*.
6. On the Select Substitutes for Person page, type the search criteria into the search field and click Search.
   Wildcard usage is supported (to display all possible substitutes, type $*$).
7. Select a substitute in the text box and click Add.
8. Activate substitution if required: select Substitution active.
9. Click OK.

## 3.7 Role Management

After a GO-BPMN module is uploaded, the Execution Engine creates roles and organization units defined by organization schema in the module. The elements are defined by their name and parent module and are referred to as *modeled roles*.

You can assign these roles to persons as *runtime roles*, which are server versions of the modeled roles possibly with parameter values.

For information on how parametric roles work, refer to Roles and the GO-BPMN Modeling Language Guide.

### 3.7.1 Assigning a Role to multiple Persons

To assign a role to multiple persons, do the following:

1. Open the Roles view and select on of the tabs with roles.
2. Click the role name.
3. In the displayed role detail, click Edit .
4. Select the persons and click Submit button.


**Figure 3.31 Assigning a runtime role to multiple persons**

### 3.7.2 Assigning multiple Roles to a Person

To assign a person a role, do the following:

1. Open the Persons view.
2. Click the person id.
3. Click the Edit  button.
4. Select the Modeled roles to assign as runtime roles to the person.

   To assign the modeled roles with a parameter specified, click the *Add parametric role* button and enter the details in the popup.
5. Click the Submit  button.

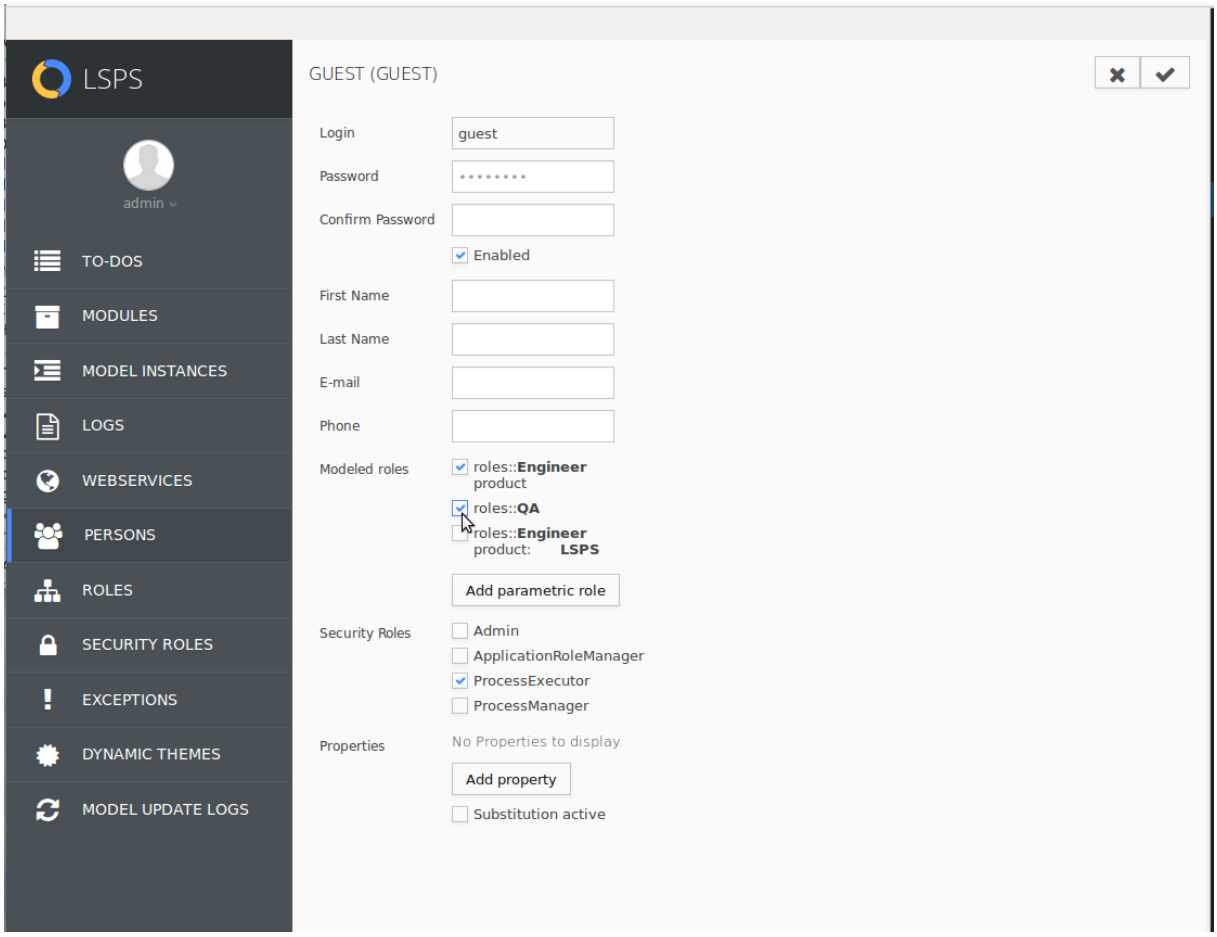



**Figure 3.32 Assigning multiple roles to a person**

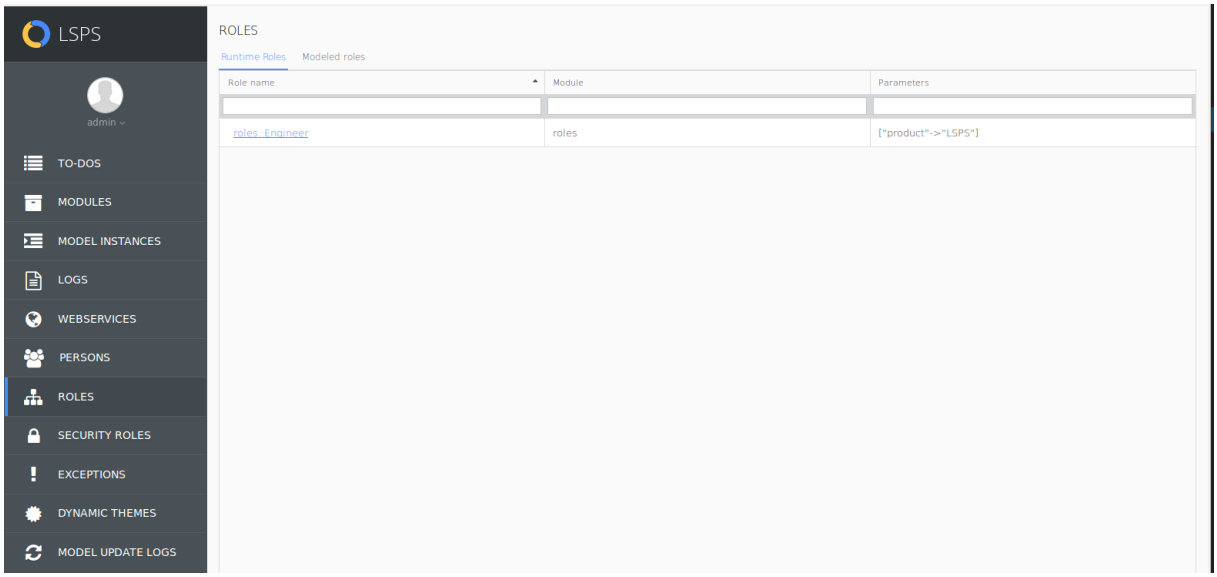



**Figure 3.33 Runtime Roles tab**

## 3.8 Security Role Management

Security roles are sets of security rights which can be assigned to users.

> **Important:** If a person does not have a security right for an action, the result is absence of the respective GUI components in the Application User Interface; for example, if a person does not have a security role with the right `Todo:Read_Own`, the To-do List navigation item will not be displayed in the application when the person is signed in.

### 3.8.1 Creating Security Roles

You can create security roles with a custom set of security rights.

To create a new security role, do the following:

1. Open the Security Roles view.
2. Click Add Role  .
   A new page with a list of security rights appears.
3. In the Role name text field, enter the new security role name.
4. Select security rights for the person.
5. Click the Submit  button.

The new security role is available in the list in the Security view and is ready to be assigned to a user.

### 3.8.2 Assigning Security Roles

To assign a person a security role, do the following:

1. On the Persons page, click person‘s login.
2. In the person detail view, click the Edit  button.
   Editable person detail appears.
3. In the Security Roles area, select the security roles of the person.
4. Click Submit  .

### 3.8.3 Deleting Security Roles

To delete a security role, do the following:

1. Display the Security Roles view.
2. Select the roles to be deleted.
3. Click Delete  .

The deleted security roles disappear from the list and their assignation is discarded (the security roles are removed from all persons).

## 3.9 Log Management

### 3.9.1 Filtering Logs

The Logs page is displayed.

To apply a filter, do the following:

1. In the filtering row of the table, define the filtering criteria.
   Filtering is case-sensitive and supports wildcards (*, ?); for example, filtering `Task?  *` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.
2. Press Enter.

The log list shows only logs meeting the defined criteria.

## 3.10 Exception Management

When a model instance fails with an Exception, the Execution Engine rolls back the transaction that caused the exception. Such model instances are recorded on the Exceptions page (for further information on transactions in model instance, refer to *Transactions in Model Instances* in the *Software Development Kit* guide).

From the Management Console, you can do the following over Exceptions:

- filter the listed exceptions
- display their stacktraces
- remove exceptions from the log
- resend input to the transaction

### 3.10.1 Filtering Exceptions

The Exceptions view is displayed.

To apply a filter, do the following:

1. In the filtering row of the table, define the filtering criteria.

   Filtering is case-sensitive and supports wildcards (*, ?); for example, filtering `Task?  *` returns results containing the word `Task` followed by any character, a space, and any subsequent characters.
2. Press Enter.

The table with exceptions shows exceptions containing the defined stacktrace part.

### 3.10.2 Displaying Exception Stacktrace

The Exceptions view is displayed.

To display an exception stack trace, click the exception id. If you need the full stacktrace, open PDS, connect to your server and inspect the exception in the Exception view of the Management perspective.

### 3.10.3 Removing Exceptions

To remove an exception entry, in the Exceptions view, select the exception and click the Remove button.

### 3.10.4 Resending Inputs on Model Instances with an Exception

*Resend* attempts to execute again a transaction that previously failed: on resend the system resends the inputs which caused the exception to the model instance. Before using this function you will typically fix the underlying data of the model instance or database data, or make sure that an external service was fixed, etc.

To resend the data, do the following:

1. Select the exceptions in the table.
2. Click the Resend button in the upper right corner.

## 3.11 Application Settings

### 3.11.1 Switching Languages

The application can be localized into multiple languages. For the Sample Application, German and English localization is available by default. To switch the local, click the arrow next to your user name; change the locale on the Settings page and click Save.

### 3.11.2 Changing User Details

To edit user details, such as password, email address, phone number, and avatar, click the arrow next to your user name; change the details and click Save.

### 3.11.3 Dynamic Themes

The Dynamic Themes view contains a list of custom CSS themes present on the server.

In the Management Console, you can create new themes for your front-end applications, modify them, preview them, and deploy them once satisfied with the outcome.

> **Note:** To modify themes programmatically and include them in the application, you will need the SDK and generate the LSPS sample application. For details, refer to Software Development Kit.

#### 3.11.3.1 Creating Themes

> **Important:** It is not possible to change the theme of the Process Management Console. Custom themes apply only to Application User Interface.

To create a theme and upload it to the server from the Management Console, do the following:

1. In the Management Console, go to **Dynamic Themes**.
2. Click the Sampler  button in the upper right corner.
3. In the Sampler view, define the attributes of the theme:
   - On the General tab, define the overall theme attributes.
   - On the Menu tab, define the attributes of the side menu.
     By default, the color of the menu background is computed based on the background color. To use a custom color, unselect the compute check box.
   - On the Layout tab, define the margins of the layout components used in to-do and document definitions.
   - On the Logo tab, upload the logo and define its properties.
   - You can reset the theme to the default state with the Reset  button.

4. Click the *Preview changes* button to preview the theme.

   Note that the theme preview is applied only to the Dynamic Themes view and is dropped when you leave the page. However, the page retains the most recent theme settings.

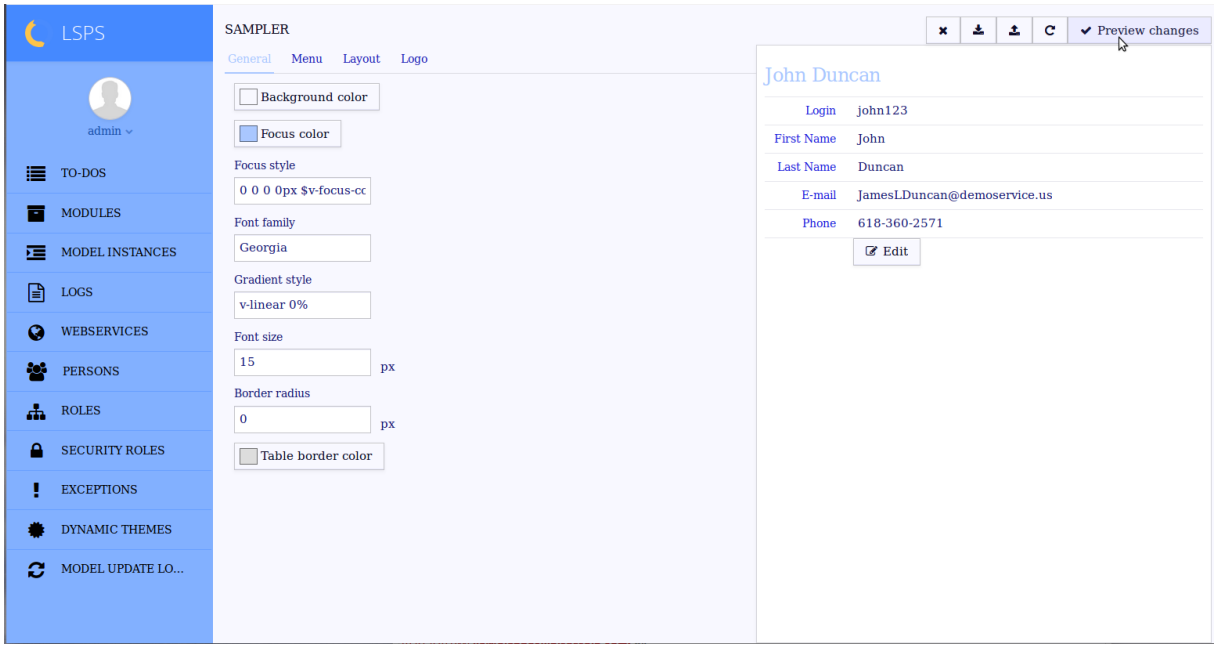



**Figure 3.34 Previewing theme**

5. Once you are satisfied with the changes, you can upload the theme to the server with the Upload button.

The theme will become available in the Application Settings of the user details (click the user name in the menu bar and select Settings from the context menu). Uploaded themes are available to all users with access to their Settings.

#### 3.11.3.2 Modifying Themes

Every user can modify only properties within Sampler and hence only the last theme from the Process Management Console. It is not possible to modify or download other uploaded themes.

#### 3.11.3.3 Deploying Themes

To upload a zip archive with CSS themes for the Application User Interfaces, do the following:

1. In the Management Console, go to Dynamic Themes.
2. Click the Upload button in the upper right corner.
3. In the popup dialog, enter the path to your CSS zip file and click Upload.

The theme is now available in the Application Settings of the user details (click the user name in the menu bar and select Settings from the context menu). Uploaded themes are available to all user with access to their Settings.

#### 3.11.3.4 Undeploying Themes

To undeploy a themes from the server, do the following:

1. In the Management Console, go to Dynamic Themes.
2. Select the theme from the list.
3. Click the Unload  button in the upper right corner.

#### 3.11.3.5 Downloading the Sampler Theme

To download a zip archive with the CSS files of the last modified theme for the Application User Interfaces, do the following:

1. In the Management Console, go to Dynamic Themes:
2. Click the Sampler button.
3. In the toolbar above the theme details, click the Download  button in the upper right corner.
4. In the popup dialog, enter the path to your CSS zip file and click Download.

# Chapter 4

# Command-Line Console

The Command Line Console is a command-line client that enables you to perform administrative action on the LSPS Server from command line. It is provided as batch and bash file `lsps-cli` in the `$LSPS_RUNTIME_H↩ OME/cli-tools` folder of the LSPS Runtime package.

> **Note:** Before using the Command Line Console, make sure you have installed a `supported JDK` and set up the environment variable JAVA_HOME since the batch and shell scripts are wrapper scripts that run the respective java method with the LSPS libraries on the classpath and forward it the call parameters.

To send a call using the Command Line Console, do the following:

1. Open your command line interface.
2. On the prompt, run the lsps-cli script with the respective parameters. The supported parameters are described in Command Line Console Commands.

Note that `--properties` and `--filterProps` are defined as pairs of values, for example, `property1 value property2 value2`. If the properties use whitespaces, use the quotes for the given property or value, for example, `"property 1" value property2 "value 2"`

The lsps-cli tool provides the following commands:

## 4.1 Model Management

**modelList** lists the models in the model repository on the LSPS Server;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--name` | -n | model name (supports wildcards) |
| `--version` | -v | model version (supports wildcards) |

```
~/lsps-runtime/cli-tools$ ./lsps-cli.sh modelList --host http://localhost:8080/lsps-ws --username admin
       --password admin
    Found 5 model(s).
    Id      Model name    Model version
    2003    15224         1.0
    18000   15224         1.0
    2002    ui            2.8
    2000    core          2.8
    2001    human         2.8
```

**modelUpload** uploads a model;

> **Important:** You can upload only Modules exported with the GO-BPMN export.

| Long Option | Short Option | Description |
|---|---|---|
| --host | -h | host URL (required) |
| --username | -u | user name (required) |
| --password | -p | password (required) |
| --model | -m | list of model filenames or directories |
| --dbUpdateStrategy | | strategy for database handling (required);possible values: nothing, update, validate, drop |

```
lsps-cli modelUpload -host http://localhost:8080/lsps-ws -model "C:/models/TestUploadInvalidModel-1.0.zip"
       -user admin -password admin
```

```
~/lsps-runtime/cli-tools$ ./lsps-cli.sh modelUpload --host http://localhost:8080/lsps-ws --username admin
       --password admin --model /home/eko/lsps-workspace/Queries/ --dbUpdateStrategy validate
Info: Uploading files from /home/eko/lsps-workspace/Queries
Uploading files from /home/eko/lsps-workspace/Queries has finished.
```

**modelUnload** removed the module from the server; note that roles and role assignment remain unchanged.

| Long Option | Short Option | Description |
|---|---|---|
| --host | -h | host URL (required) |
| --username | -u | user name (required) |
| --password | -p | password (required) |
| --name | -n | model name (supports wilcards) |
| --force | | do not prompt on unload |

```
~/lsps-runtime/cli-tools$ ./lsps-cli.sh modelUnload --host http://localhost:8080/lsps-ws --username admin
       --password admin --name 15224
Found more models:
Are you sure to remove model '15224 (1.0)' from repository? (Y/N)y
Model 15224 (1.0) successfully unloaded.
Are you sure to remove model '15224 (1.0)' from repository? (Y/N)y
Model 15224 (1.0) successfully unloaded.
Unloading models from repository has finished.
```

## 4.2 Model Instance Management

When calling any of the management commands, make sure to define the model instances you perform the command on. If you want to work with one model instance with a particular id, define its id using the --model↩ Instance parameter. If you want to perform the command over multiple instances, use one of the filter parameters:

- `--modelInstanceFile` parameter with a file with the IDs
- filter parameters, `--filterStatus`, `filterFrom` and `filterTo`, `--filterProps`, etc. for multiple model instances based on their properties.

**modelInstanceList** returns possibly filtered list of model instances;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance ids |
| `--modelInstanceFile` | | file containing the base model |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterStatus` | | models in the defined execution status (CREATED, RUNNING, SUSPENDED, FINISHED) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |

```
./lsps-cli.sh modelInstanceList --host http://localhost:8080/lsps-ws --username admin --password admin
      --filterProps "my property" value "another property" "another value" --filterFrom "2017-10-31 12:14:00"
```

**export** exports a model instance as an XML file;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance IDs |
| `--modelInstanceFile` | | file with model instance IDs |
| `--location` | | output location and file prefix (model instance IDs are appended to the prefix) |

**suspend** suspends model instances;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance IDs |
| `--modelInstanceFile` | | file with model instance IDs to be requested |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |

| Long Option | Short Option | Description |
|---|---|---|
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

```
./lsps-cli.sh suspend --testFilter --host http://localhost:8080/lsps-ws --username admin --password admin
      --filterProps myProperty "value" --filterFrom "2017-10-31 12:14:00"
```

**resume** resumes model instances;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance IDs |
| `--modelInstanceFile` | | file with model instance IDs to be resumed |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name pattern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

**finish** finishes model instances

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance IDs |
| `--modelInstanceFile` | | file with model instance IDs to be resumed |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |

| Long Option | Short Option | Description |
|---|---|---|
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

### 4.2.1 Model Update

When calling any of the model update commands, the commands will be executed on all model instances of the model as defined in the provided muc file.

If you want to work only with one model instance with a particular id, define its id using the `--modelInstance` parameter. If you want to perform the command over multiple instances, use one of the filter parameters:

- `--modelInstanceFile` parameter with a file with the IDs (each ID on a new line)
- filter parameters, `--filterStatus`, `filterFrom` and `filterTo`, `--filterProps`, etc. for multiple model instances based on their properties.

Consider using the `--testFilter` parameter to trigger a dryrun and check the resulting set of model instances.

> **Note:** To acquire the model update command, you can set up a test model update and use the `Show command line script` feature in PDS.

#### Example model update command

```
lsps-cli modelUpdate --host http://localhost:8080/lsps-ws --username admin --password admin --muc
       "D:/my_workspaces/my.muc"  --filterStatus RUNNING SUSPENDED UPDATED
```

**modelUpdate** updates models instances based on the provided muc file

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--muc` | | muc file (required) |
| `--datamapping` | | data mapping definition |
| `--modelInstance` | | model instance IDs |
| `--modelInstanceFile` | | file with model instance IDs to be updated |
| `--filterStatus` | | only model instances in the defined execution status are updated (RUNNING, SUSPENDED, UPDATED, UPDATE_ABORTED) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by |

**continueTransform** triggers the transformation phase of update on the model instances;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance ids |
| `--modelInstanceFile` | | file containing the base model |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

**continuePostprocess** triggers the postprocess phase of model update;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model insance ids |
| `--modelInstanceFile` | | file containing the base model |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

**abortModelUpdate** aborts update of model instances;

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelInstance` | | model instance ids |

| Long Option | Short Option | Description |
|---|---|---|
| `--modelInstanceFile` | | file containing the base model |
| `--filterModelId` | | IDs of the base models |
| `--filterModelName` | | model name patern (wildcards supported) |
| `--filterModelVersion` | | model version (wildcards supported) |
| `--filterFrom` | | model instance(s) initiated after TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterTo` | | model instance(s) initiated before TIMESTAMP, format: yyyy-MM-dd HH:mm:ss |
| `--filterProps` | | model instance properties defined as `key1 value1 key2 value2` |
| `--filterExpression` | | boolean expression; Only the model instances for which the expression evaluates to true are returned. |
| `--testFilter` | | boolean expression; displays the model instances affected by the command (the command is not executed) |

**startModelInstance** instantiates and starts a model instance

| Long Option | Short Option | Description |
|---|---|---|
| `--host` | -h | host URL (required) |
| `--username` | -u | user name (required) |
| `--password` | -p | password (required) |
| `--modelName` | | base model name |
| `--modelVersion` | | base model version |
| `--modelId` | | base model ID |
| `--properties` | | model instance properties defined a list of key-value pairs |

```
./lsps-cli.sh startModelInstance --host http://localhost:8080/lsps-ws --username admin --password admin
       --modelName orderModule --properties customerType enterprises compliant yes
# alternatively:
./lsps-cli.sh startModelInstance --host http://localhost:8080/lsps-ws --username admin --password admin
       --modelName orderModule --properties "customer type" "enterprises" "compliant" "yes"
```

## 4.3 Invoking Command-Line Console from Java

To use the command-line tool from a Java program, do the following:

1. Include the mconsolecl dependency in your pom.xml:

```
<dependency>
    <groupId>com.whitestein.lsps.mconsolecl</groupId>
    <artifactId>lsps-mconsole-cl</artifactId>
    <version>${project.version}</version>
</dependency>
```

2. Call the main method with the cli command as its String[] argument.

```
com.whitestein.lsps.mconsolecl.Main.main(new String[]{"arg 1", "arg 2"});
```

# Chapter 5

# Reference

## 5.1 Security Rights

A security role given to a person allows the person to perform actions based on the assigned security rights.

The following security rights are available:

| Security right | Description |
|---|---|
| Binary:Add | adding binary resources |
| Binary:Delete | removing binary resources |
| Binary:Read | reading binary resources |
| Debugger:Manage | managing debugger–setting, activating, deactivating the debug mode, and adding, updating and removing breakpoints |
| Document:Read | reading documents |
| Document:Submit | editing and submitting documents |
| Exception:Read | retrieving rollback information |
| Exception:Remove | removing rollback info |
| Exception:Resend | resending task data from the Exception Handling view |
| Expression:Evaluate | evaluating expressions in runtime (in the Expression Evaluator) |
| Form:Preview | running form previews (note that you need the Model:Manage right to be able to preview forms) |
| GoalState:Update | changing states of goals |
| Lock:Manage | acquiring or releasing data locks |
| Model:Delete | deleting model instances |
| Model:Manage | adding and uploading models to the repository and exporting uploaded models to archive files |
| Model:Read | finding, reading, and updating models and GO-BPMN modules in the repository and reading resources (files) for a given model |
| ModelInstance:Create | creating model instances |
| ModelInstance:Notify | notifying model instance from a Web Service |
| ModelInstance:Read | retrieving model instance related information |
| ModelInstance:Suspend | suspending running model instances |
| ModelInstance:Terminate | terminating running model instances |
| ModelInstance:Update_Model | changing the model for running model instances |
| Person:Change_Own_Password | changing own password |
| Person:Manage | managing general information and associations to modeled roles of persons |

| Security right | Description |
|---|---|
| Person:Read | retrieving person related information |
| Report:Dashboard_Management | enables the definition of common dashboard tabs |
| Report:Read_All | reading all available reports (this right overrides the security setting defined for the report) |
| Report:Read_Own | reading reports, which the user is entitled to |
| Role:Manage | managing role |
| Role:Read | reading roles (read-only access) |
| Schema:DropCreate | availability of drop-create strategy for business objects |
| Schema:Update | updating strategy of business objects |
| Schema:Validate | validating schema of business objects |
| SecurityRole:Manage | adding, renaming, and removing security roles to/from the persistent storage and assigning rights to security roles and acquiring a set of all rights |
| SecurityRole:Read | retrieving security roles and associated users |
| Signal:Remove | removing a signal from the model instance queue |
| Signal:Send | sending signals to model instances |
| Testing:All | internal security right; Do not assign this right to any users. |
| Todo:Delegate_All | delegating any to-dos |
| Todo:Delegate_Own | delegating to-dos of the particular person |
| Todo:Escalate_All | escalating any to-dos |
| Todo:Escalate_Own | escalating to-dos assigned to the particular user |
| Todo:Process | getting, submitting and canceling a to-do |
| Todo:Read | acquiring list of to-dos meeting the given criteria |
| Todo:Read_All | reading all available to-dos (this right overrides the security setting defined for the to-do) |
| Todo:Read_Assignees | displaying to-do assignees (in to-do details) |
| Todo:Read_Own | reading to-dos, which the user is entitled to |
| Todo:Reassign | reassigning to-dos |
| Todo:Reject | rejecting to-dos |
| Todo:Undo_Reject | cancelling to-do rejection |
| Variables:Update | changing values of variables of the given context |
| Webservice:Invoke | platform specific right |
| Webservice:Read | monitoring of current Web Services |