

BPMS - Designer Manual

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Interfacing Technologies Corporation

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1. 1. A Comprehensive Guide to the Digital Business Platform



2. 2. Module Installation Requirements

The prerequisites for installing the modules are:

1. **IIS Services**

- a. For more info, refer to Chapter [14.1](#)
- b. Note that IIS 6 Management Compatibility is required

2. **Microsoft SQL Server 2016 or higher**

3. **Net Framework**

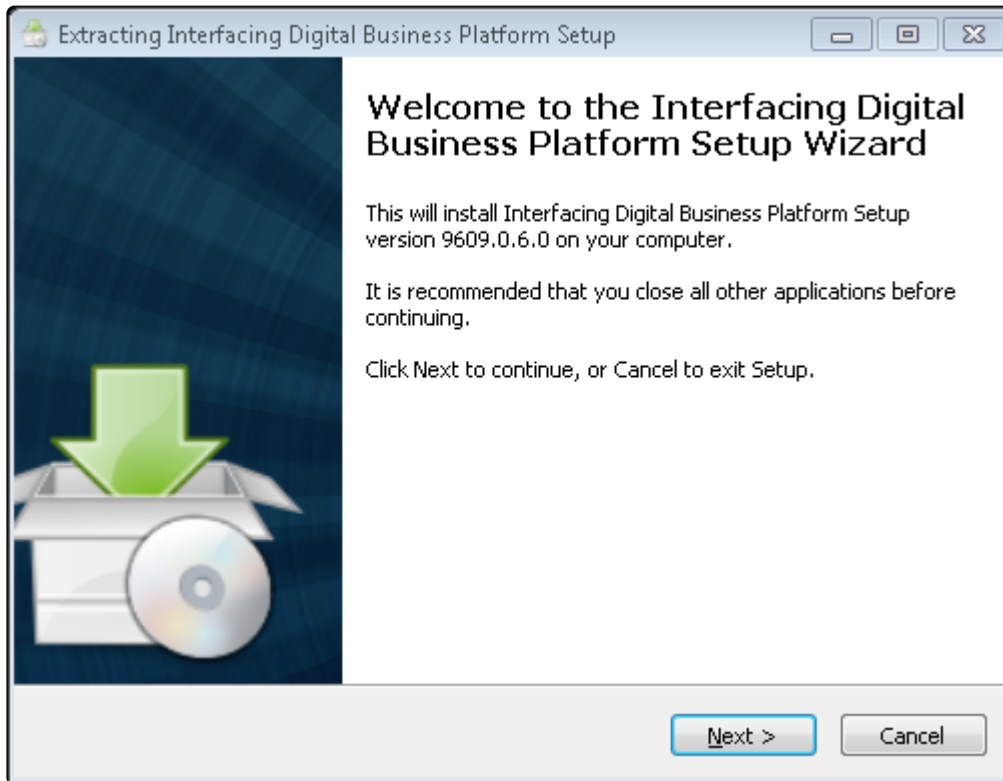
- a. Admin Console (designer): .net 4.7.2
- b. Web: .net 4.7.2
- c. Connection Form: 3.5 service pack 1

4. **MSDTC Services**

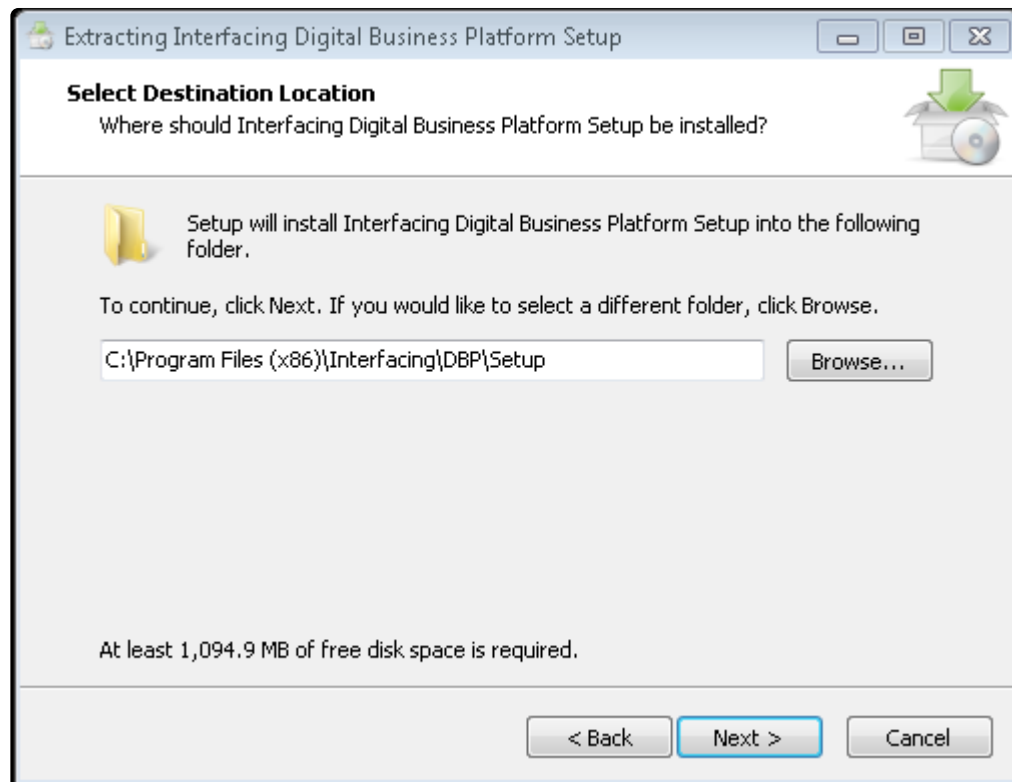
- a. For more info, refer to Chapter [14.3](#)

3. 3. Installing the System

To install the Digital Business Platform system, extract the installation files to your computer. After extracting the installation files, double-click on the Setup program and select the “Next” button.

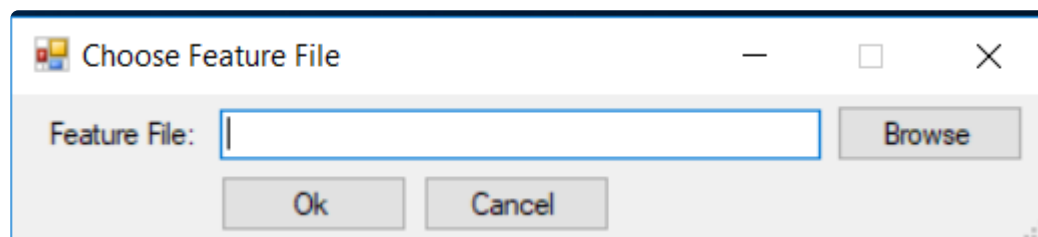


You will be asked to select the directory in which the Digital Business Platform will be installed to.



By selecting the “Next”, the Digital Business Platform will be installed to the specified path. You will be then asked to select a Feature.dat file

Note: The Feature.dat file is a system software lock that assigns access level to the tool module and is provided in accordance with the customer’s contract.

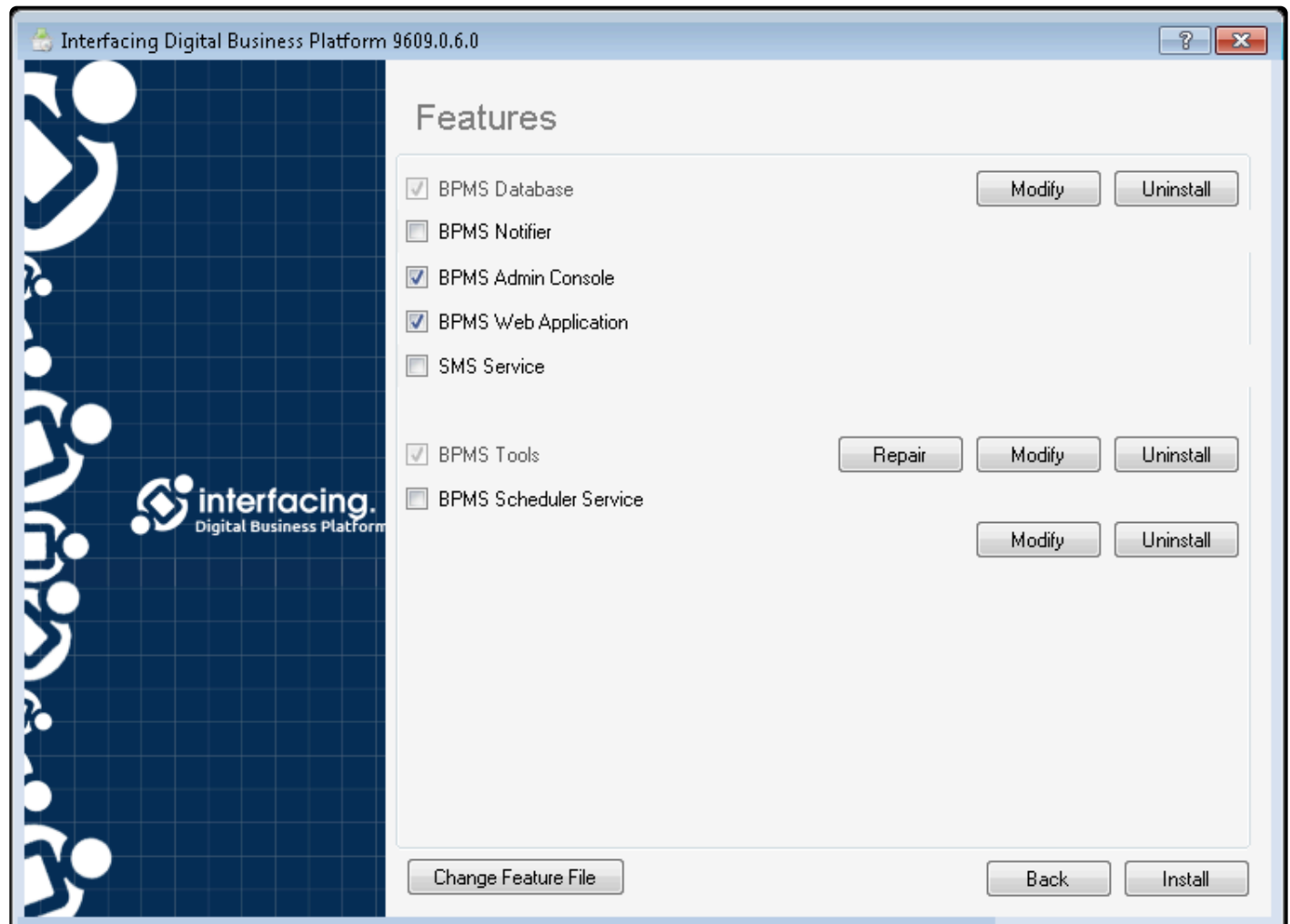


Select the file using the “Browse” button and then click the “OK” button. If the module is installed for the first time in the system, the “Installing modules” form will be displayed, otherwise the “Update” form will be displayed.

3.1. 3.1 Installing Modules

The “Features” installer allows users to install, modify, and update modules.

Note: The module or demonstration features in this form are displayed based on the Feature.dat file selected during installation.



The items and buttons in the “Features” installer may vary according to whether a module has been installed or not.

Change Feature File button: This button is used to select or change the software lock, or the feature.dat file.

Repair button: This button is displayed next to each module for repair and re-installation.

Modify button: This button is displayed next to each module for reinstalling the items in the modules.

Uninstall button: This button is displayed next to each module to remove the installation.

Update button: If you need to update a module to a new version, this button is displayed to update all installed modules.

Install button: Installs the module(s) for the system.

To install the module, first tick the checkbox next to the desired module, then click the “Install” button.

Note: If the checkbox is ticked and disabled next to a particular module, then the module is already installed on your system

Depending on the selected module, after clicking the “Install” or “Update” button, the settings associated with each module will be displayed on a single page. The sections below contain installation configurations associated with each module:

3.1.1. 3.1.1 Database

By selecting the “BPMS Database” module in the Features installer, the “Database Configuration” is displayed for updating or installing the database:

Note: Setting up a Digital Business Platform requires a database that stores information about the design and build of the system and the operating data of the processes.

Note: Installing and updating this module is mandatory.

Interfacing Digital Business Platform 9609.0.2.1

Database Configuration

☐ Connect To Existing Database **1. Connect To Existing Database**

☒ Create New Database **2. Create New Database**

Server: **3. Server**

Database Name: **4. Database Name**

DB Username: **5. Database UserName & Password**

DB Password: **5. Database UserName & Password**

Server Username: **6. Server UserName & Password**

Server Password: **6. Server UserName & Password**

7. Check Connection

1. Connect to existing Database

☒ Connect To Existing Database

By choosing this option, the installation is performed on the DBP database in the system.

Note: This option is the default mode when the modules are updated

2. Create New Database

☒ Create New Database

By selecting this option and then entering the database profile, the DBP database is created with the chosen name.

Note: This option is the default mode when the modules are installed.

3. Server

Server:

The name or IP of the server where the database is located can be typed in this box

4. Database Name

Database Name:

The name of the database that you want to update or create can be typed here.

5. DB Username and Password

DB Username:

DB Password:

The user name “ray ” and password of the owner of the database is typed in this section.

6. Server Username and Password

Server Username:

Server Password:

You need to input a username for the server for Sys Admin (ex: sa) and its password.

Note: This section is enabled only if the option “Create New Database” is selected.

7. Check Connection

Clicking this button will verify the connection to the database.

3.1.2. 3.1.2 AdminConsole

By checking the “BPMS AdminConsole” module in the Features installer, the “Admin Console Configuration” form is displayed to update or install the AdminConsole.

Note: Installing and updating this module is mandatory.

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Admin Console Configuration

Installation Folder:

1. Installation Folder

Scheduler Settings

If you want to install the scheduler service on another server, change the settings below.

2. Scheduler Server

Scheduler Server:

Scheduler Port: Scheduler Service Name:

1. Installation Folder

Installation Folder:

The AdminConsole installation path

2. Scheduler Server

Scheduler Server:	<input type="text" value="IPAddress Or ComputerName"/>	
Scheduler Port:	<input type="text" value="555"/>	Scheduler Service Name: <input type="text" value="BPMSScheduler"/>

If the Web Application is on a separate platform from the computer (AdminConsole), or if the Web server's IP address is different from the computer's for any reason, then in this section you can define the link between the Windows server and the server when the timed service is installed.

Note: If the web server and computer addresses are the same, there is no need to complete this section.

- Scheduler Server: The name or IP of the server to which the Scheduler is installed is specified in this box.
- Scheduler Port: The port number used in the scheduling service is specified in this box.
- Scheduler Service Name: The name of the scheduler service is specified in this box.

3.1.3. 3.1.3 Web Application

By checking “BPMS AdminConsole” in the next step you’ll see the “Admin Console Configuration” form to set the details of the installation for this module.

Note: This module contains all of the designer (form designer, entity designer, rule designer, etc.) tools to build/manage BPM applications.

Note: Updating and installing this module is mandatory

Interfacing Digital Business Platform 9609.0.2.1

Web Application Configuration

☒ Use Existing Web Application ^{1.}
☐ Create New Web Application ^{2.}

Physical Folder: ^{3.Physical Folder}

URL: ^{4.URL}

☐ Install Files ^{5.Physical Folder}

Local Web Sites: ^{6.Local Websites}

Application Name: ^{7.Application Name}

Lock Server: ^{8.Lock Server}

Sync

SyncServer URL:

☐ Use Sync

☐ Enable SSL(Secure login)

SSO Setting

☐ UseSSO(old version)
☐ UseSSO(new version)
☒ None

Back Next

1. Use Existing Web Application

☒ Use Existing Web Application

By choosing this option, the installation/update is performed on the existing web application on the system.

Note: This option is the default mode when the modules are updated.

2. Create New Web Application

☐ Create New Web Application

By choosing this option and then defining the web application profile, the web application is created with the insert name.

3. Physical Folder

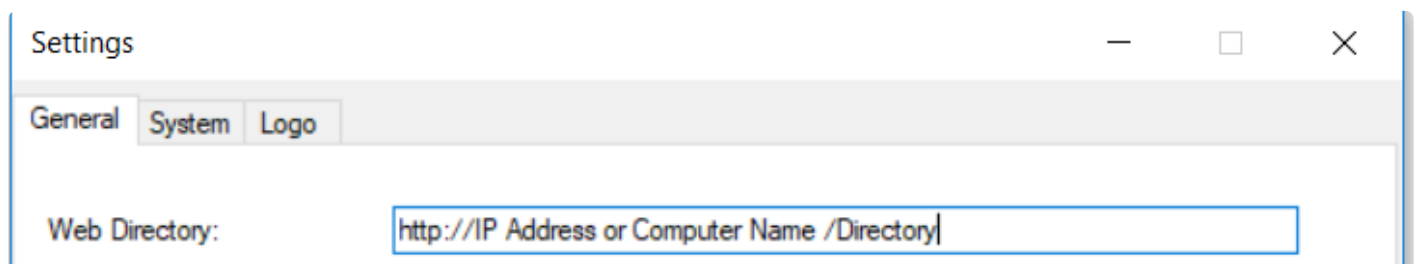
Physical Folder:

The physical path of the web folder.

4. URL

URL:

Note: Users can change the path after installation of the application by going into Application Settings in Admin Console.



5. Physical Folder

☐ Install Files

By choosing this option, the installation files are placed into the IIS physical path

6. Local Website



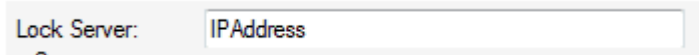
The website defined is included in this box

7. Application Name



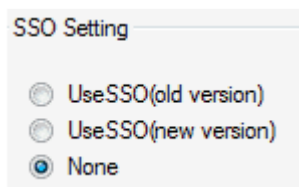
The web application name is entered in this box.

8. Lock Server



The name or IP of the server where the hardware locks are located.

9. SSO Setting



An SSO is a called service that provides a secure connection between the BPMS system (ARPG & Eoffice plugins).

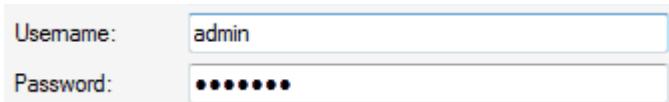
- Use SSO-old version: Connect with the old SSO version.
- Use SSO-New version: Connect to the new SSO version.
- None: No connection to SSO.

10. User Name



The name or IP of the mail server and its port number.

11. Password and Username



Username: admin

Password: ••••••••••

The user name and admin password.

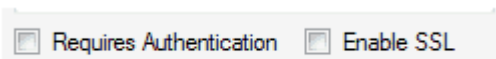
12. Default Email



Default EMail:

The default email is included in this box.

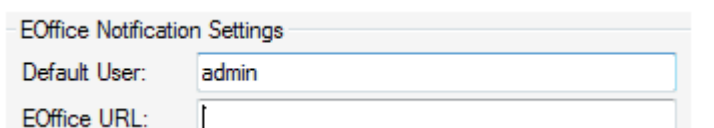
13. Enable SSL



☐ Requires Authentication ☐ Enable SSL

Enable authentication or SSL

14. Default User and Eoffice URL



EOffice Notification Settings

Default User: admin

EOffice URL: |

The default user name and password for EOffice notifications

3.1.4. 3.1.4 SMS Service

By choosing the “BPMS SMS Service” module in the Features installer, the SMS Service Configuration will be displayed for updating or installing the SMS Service:

Note: Setting up this service allows users to send and receive SMS for process management purposes.

Interfacing Digital Business Platform 9609.0.2.1

SMS Service Configuration

☒ Use Existing Web Application **1.**
☐ Create New Web Application **2.**

Physical Folder: **3. Physical Folder**

URL: **4. URL**

☐ Install Files **5. Install Files**

Local Web Sites: **6. Local Websites**

Application Name: **7. Application Name**

Send Agent: **8. Send Agent**

1. Use Existing Web Application

☒ Use Existing Web Application

By choosing this option, the installation is performed on the existing SMS Service available on the system.

Note: This option is selected by default when the modules are updated.

2. Create New Web Application

☒ Create New Web Application

By selecting this option and then defining the profile, the SMS Service will be created with the chosen name.

Note: This option is selected by default when the modules are installed.

3. Physical Folder

Physical Folder:

The physical path of the service folder.

4. URL

URL:

The web service access path.

5. Install Files

☒ Install Files

By choosing this option, the installation files will be placed into the IIS physical path.

6. Local Website

Local Web Sites:

The local/default website

7. Application Name

Application Name:

The web service name.

8. Send Agent

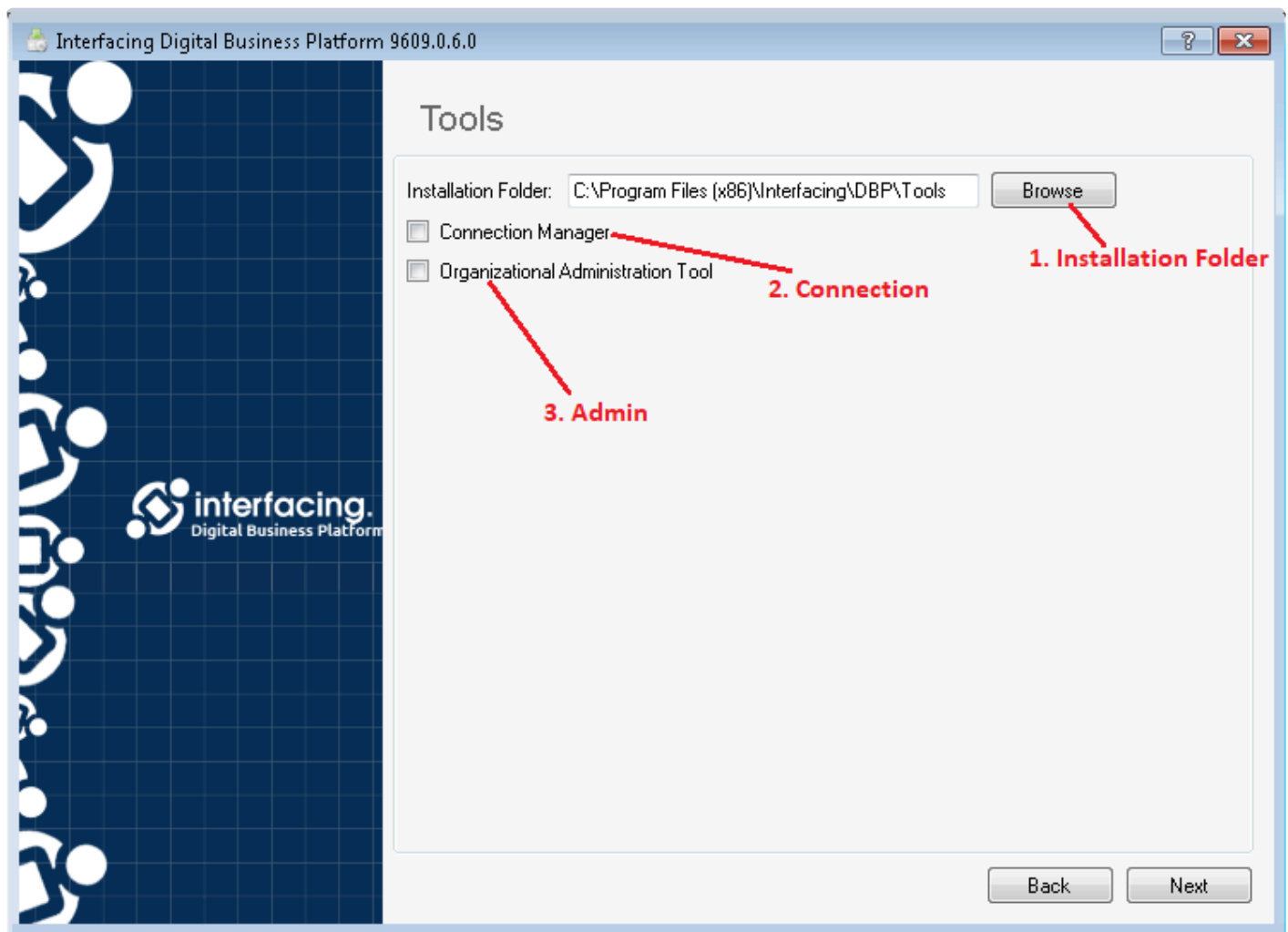
Send Agent:

The server used to send SMS

3.1.5. 3.1.5 Tools

Update or install Tools by selecting the “Tools” module in the Features form (see 3.1 to view the Features form):

Note: By implementing this module, the tools necessary to your work processes’ management system will be installed in the following specified path:

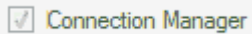


1. Installation Folder

Installation Folder: C:\Program Files (x86)\Interfacing\BPMS\Tools Browse

The path of the installation folder for the Tools module

2. Connection



By selecting this option, the Connection Manager will be installed in the specified path. It is possible to determine the relationship between Web applications and Windows Web applications within the database.

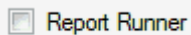
3. Admin



By choosing this option, Admin.Exe will be installed in the specified path.

Access to the default database management information system will be possible in the Eoffice Catalog Connection.exe program.

4. Report Runner:



By selecting this option, Report Runner will be installed in the specified path.

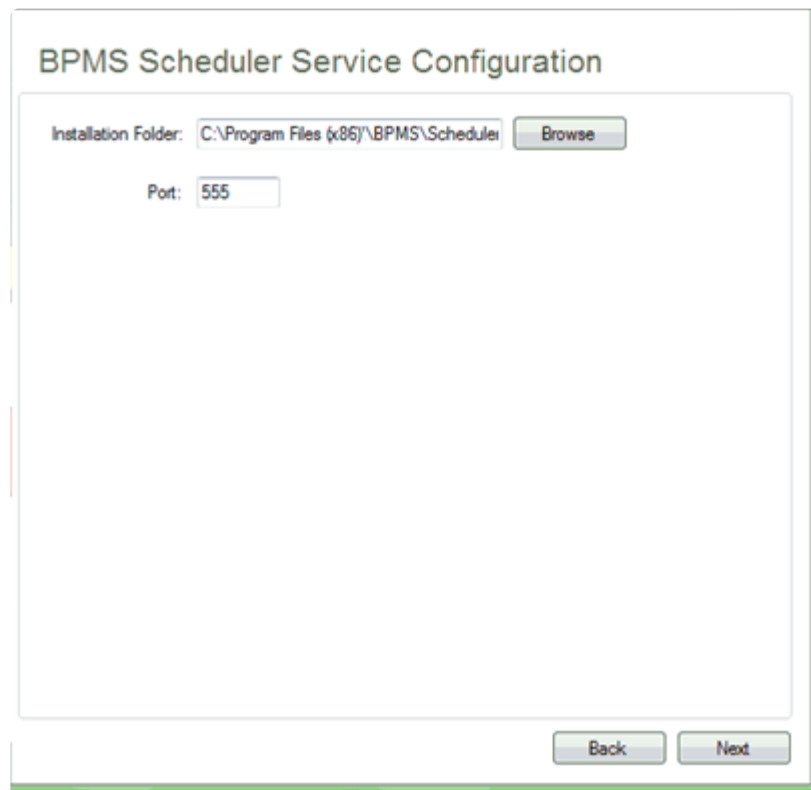
Access to the default database reporting system is possible in the ARPG catalog of Connection.exe.

3.1.6. 3.1.6 BPMS Scheduler Service

By selecting the “BPMS Scheduler Service” module in the Features installer, the “BPMS Scheduler Service Configuration” form is displayed to update or install the Scheduler Service.

Note: Implementing this module allows the use of scheduled events in the system.

Note: This service must be installed on the Web server.



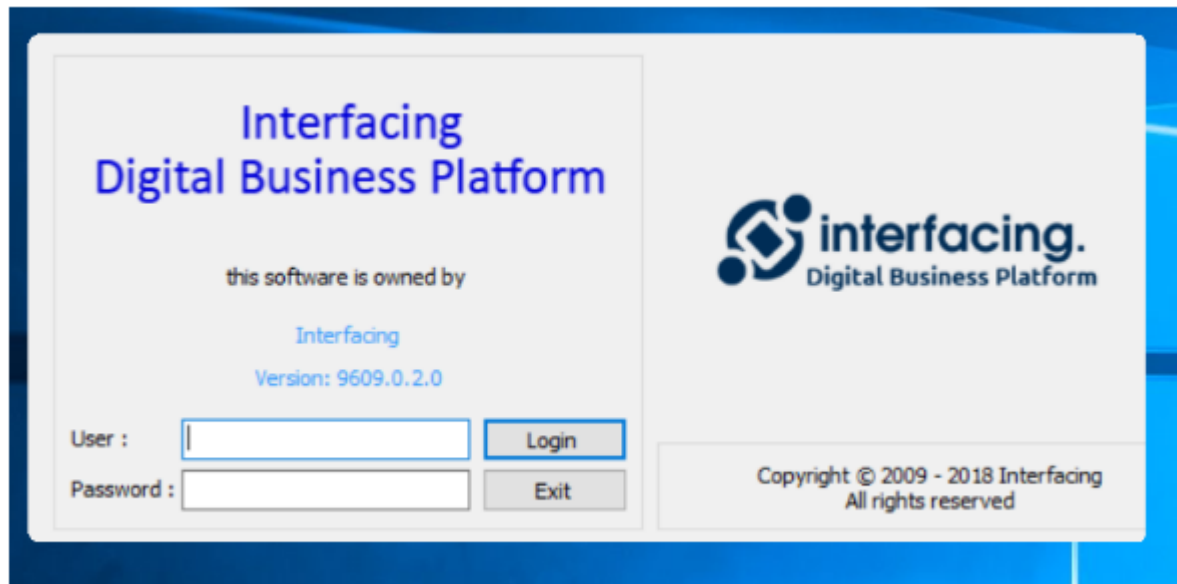
The screenshot shows a window titled "BPMS Scheduler Service Configuration". Inside the window, there is a section for "Installation Folder:" with a text box containing "C:\Program Files (x86)\BPMS\Scheduler\" and a "Browse" button. Below this, there is a "Port:" label and a text box containing "555". At the bottom right of the window, there are "Back" and "Next" buttons.

- Installation Folder: The path to install the scheduler service.
- Port: The port used by the scheduling service.

4. 4. Admin Console General Features

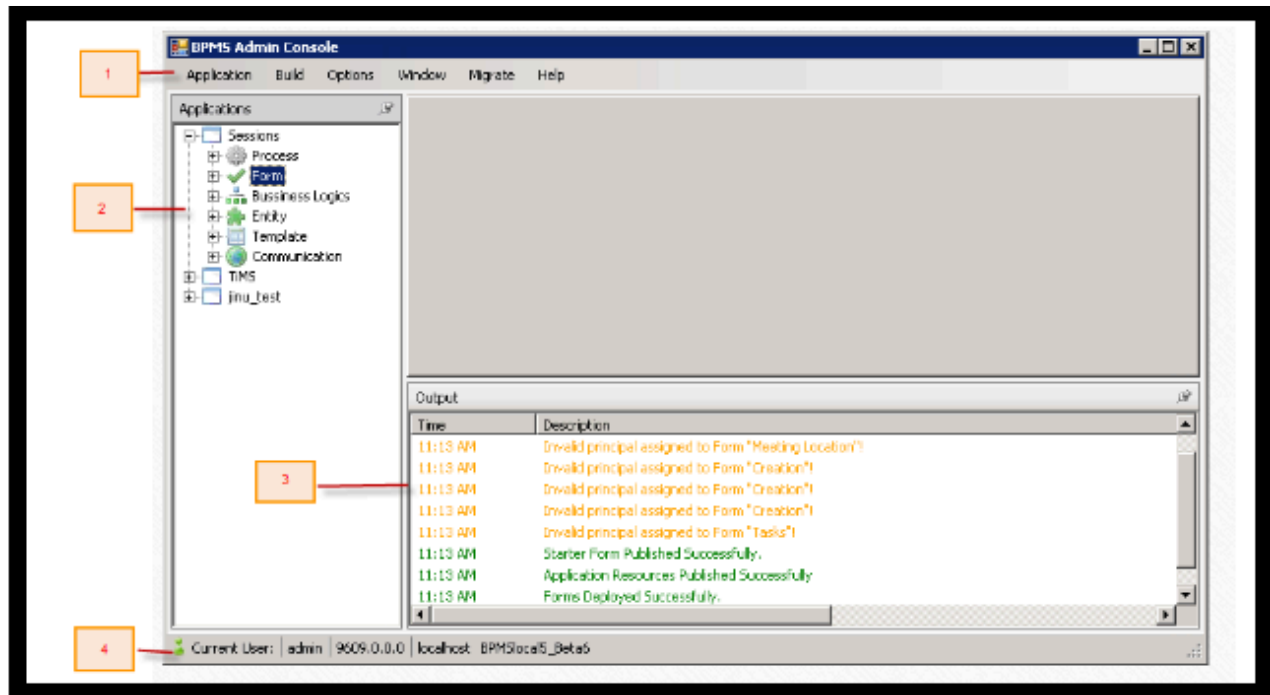
After running the “AdminConsole” module, you can access the Digital Business Platform system by running a program called “AdminConsole” on the computer

Users will be asked for credentials after Running the Admin Console exe file.



Authentication can be enabled or on windows based on the access specified in Admin.exe or during installation

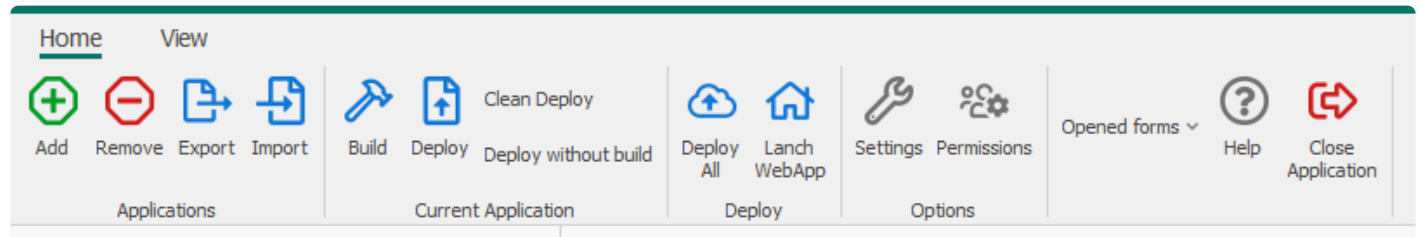
After logging in, the main window of the program is displayed, consisting of the following sections:



1. [Menu](#)
2. [Application Tree](#)
3. [Log](#)
4. [System Information](#)

4.1. 4.1 Menu

The menu toolbar is located at the top of the Admin Console:

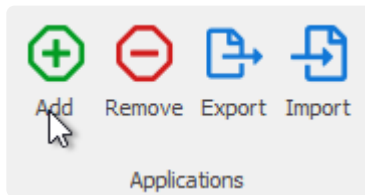


This section provides access to features such as:

1. [Application](#)
2. [Current Application](#)
3. [Deploy](#)
4. [Options](#)
5. [Opened Forms](#)
6. [Help](#)
7. [Close Application](#)

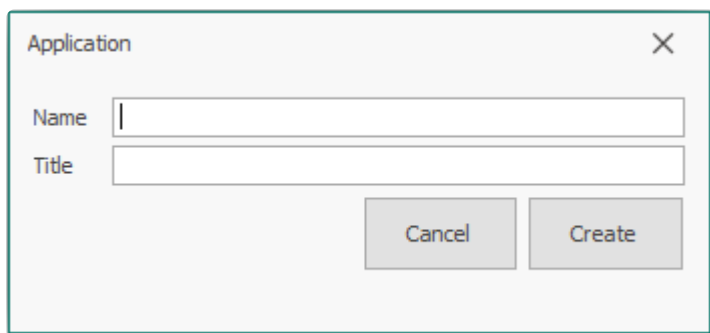
4.1.1. 4.1.1 Application

The Application menu contains the following items:



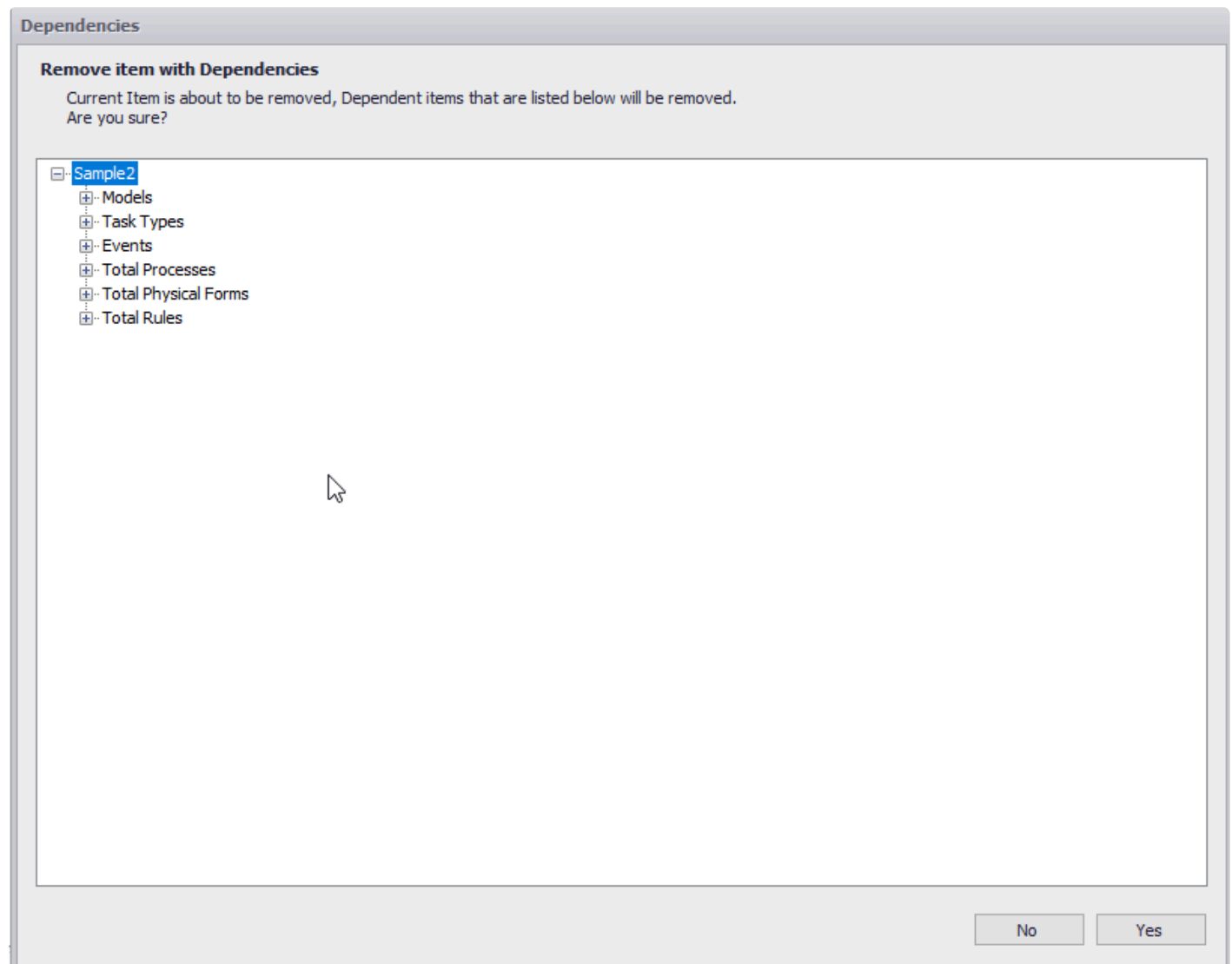
Add:

The “BPM Application” form is displayed to create and save a new application with a Name and Title

A dialog box titled 'Application' with a close button (X) in the top right corner. It contains two text input fields: 'Name' and 'Title'. Below the input fields are two buttons: 'Cancel' and 'Create'.

Remove:

The “Dependencies form will appear. You can remove items by selecting it in the tree and clicking on the “Yes” button



Export Application:

By selecting this option, depending on the export form setting, the selected application will create a backup file in the rba format.

Export Menu

Export

Settings

Application Name: Sessions

Export File: [Redacted]

Password: [Empty] Confirm Password: [Empty]

Model Entities

	Export	Name	Columns
▶	<input checked="" type="checkbox"/>	Action items	[Empty]
	<input type="checkbox"/>	Notes	[Empty]
	<input type="checkbox"/>	Action items	[Empty]
	<input type="checkbox"/>	Meeting Location	[Empty]
	<input type="checkbox"/>	Change date	[Empty]
	<input type="checkbox"/>	Copy	[Empty]
	<input type="checkbox"/>	Members	[Empty]
	<input type="checkbox"/>	Type	[Empty]

Progress

[Empty progress bar]

Cancel Save

1. **Application Name:** The application you need to export can be selected from the drop-down list.

2. **Export file:** The path to which the file will be exported to is specified here.

3. **Password:** By entering the password in this box, the output file will be locked can only be used by entering the password

4. **Data transfer:** The entity or field data of the application can be transferred to a database.

Model Entities

	Export	Name	Columns
▶	<input type="checkbox"/>	Action items	
	<input type="checkbox"/>	Notes	
	<input type="checkbox"/>	Action items	
	<input type="checkbox"/>	Meeting Location	
	<input type="checkbox"/>	Change date	
	<input type="checkbox"/>	Copy	
	<input type="checkbox"/>	Members	
	<input type="checkbox"/>	Type	

The list of selected application entities is displayed within this box. Each application can be selected by clicking the “Export” option.

✿ Selecting an entity automatically selects all attributes of that entity. That can be changed using the “Select” button

Model Entities

	Export	Name	Columns
▶	<input checked="" type="checkbox"/>	Action items	
	<input checked="" type="checkbox"/>	Notes	
	<input checked="" type="checkbox"/>	Action items	
	<input checked="" type="checkbox"/>	Meeting Location	
	<input checked="" type="checkbox"/>	Change date	
	<input checked="" type="checkbox"/>	Copy	
	<input checked="" type="checkbox"/>	Members	
	<input checked="" type="checkbox"/>	Type	

Progress

ColumnSelector


Notes

	Name	Not Copy	Copy If Destination To Null	Copy If Destination To Null	Default Value
▶	Title	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Leaf	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Description	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	EndDate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Attach	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	BPMSProcessInfoString	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Done	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Ok

Import:

An application can be imported into the DBP using the Import option.

To import an application, first click the  button to select the rba file and then select the “Import” button.

Import

Settings

File Address

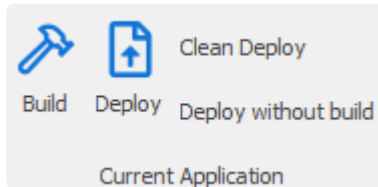
Progress

☒ Get Backup before import.

! It is advisable to backup existing data before importing data.

4.1.2. 4.1.2. Current Application

This menu contains the following items:



Build Current Application: The selected application is built, and the result is displayed in the Log section in the main window of the system.

Deploy Current Application: The deployment operation is performed on the selected application, and the result is displayed in the Log section in the main window of the system. The deployed application will be updated in the web server.

Clean Deploy Current Application: The changes in the last deployment are removed from the Web Server.

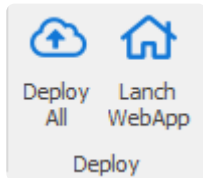
Deploy Without Build: The application is deployed without being published in the Web Server.

NOTE: You must deploy the application to see it in the Web Application

NOTE: Deployment Definition – Application deployment means creating application-specific files and copying them into the program's Web directory path.

4.1.3. 4.1.3 Deploy

This menu contains the following items:



Deploy all: Deployment is performed on all applications, and the result is displayed in the Log section in the main window of the system.

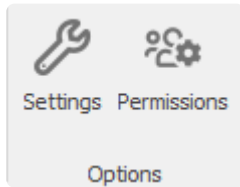
Launch WebApp: Deployment is performed on all applications and the browser is redirected to the web address of the application immediately.

NOTE: You must deploy the application to see it in the Web Application

NOTE: Deployment Definition – Application deployment means creating application-specific files and copying them into the program's Web directory path.

4.1.4. 4.1.4 Options

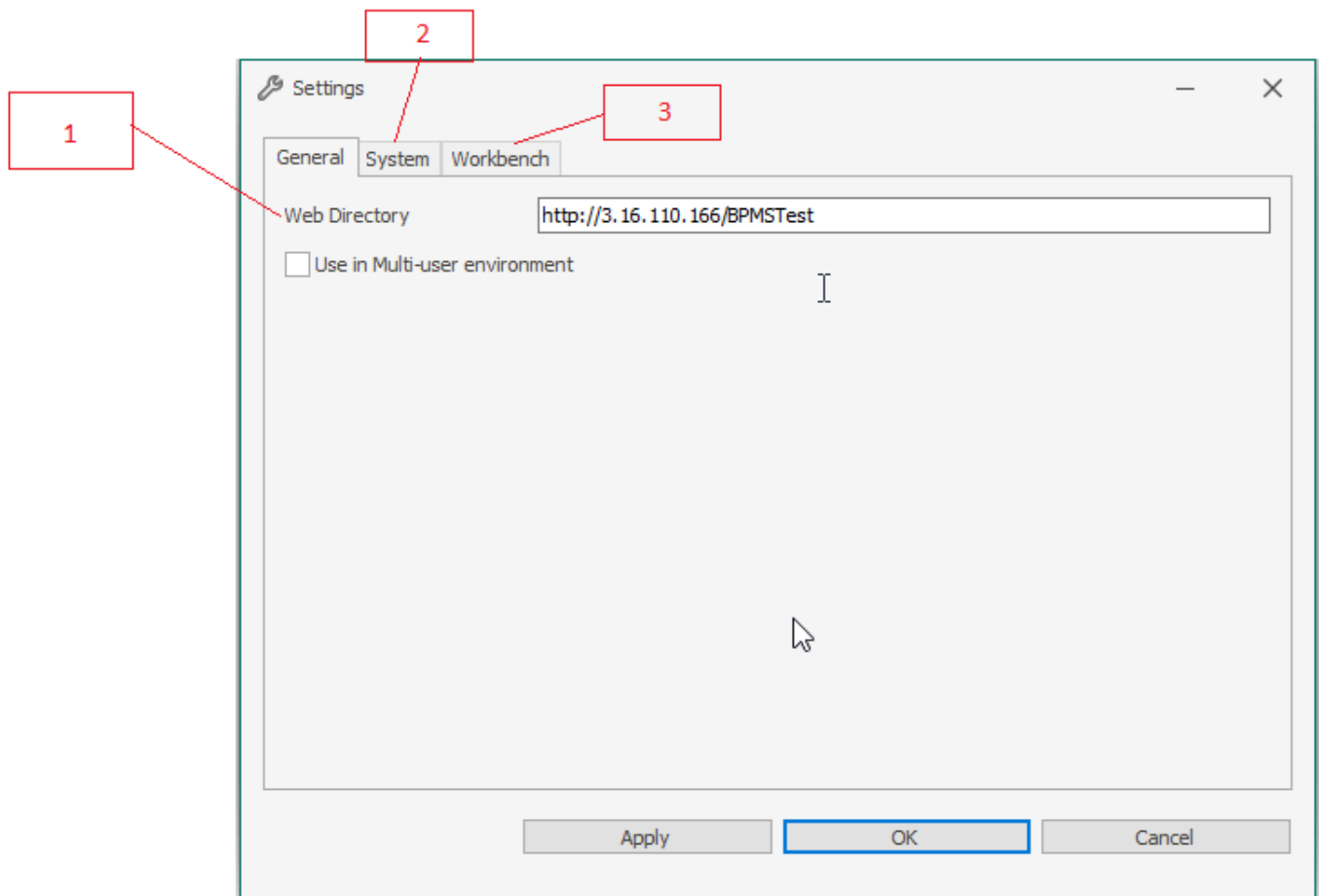
The Options menu contains the following items:



1. [Settings](#)
2. [Permissions](#)

4.1.4.1. 4.1.4.1 Settings

The “Settings” form is displayed.

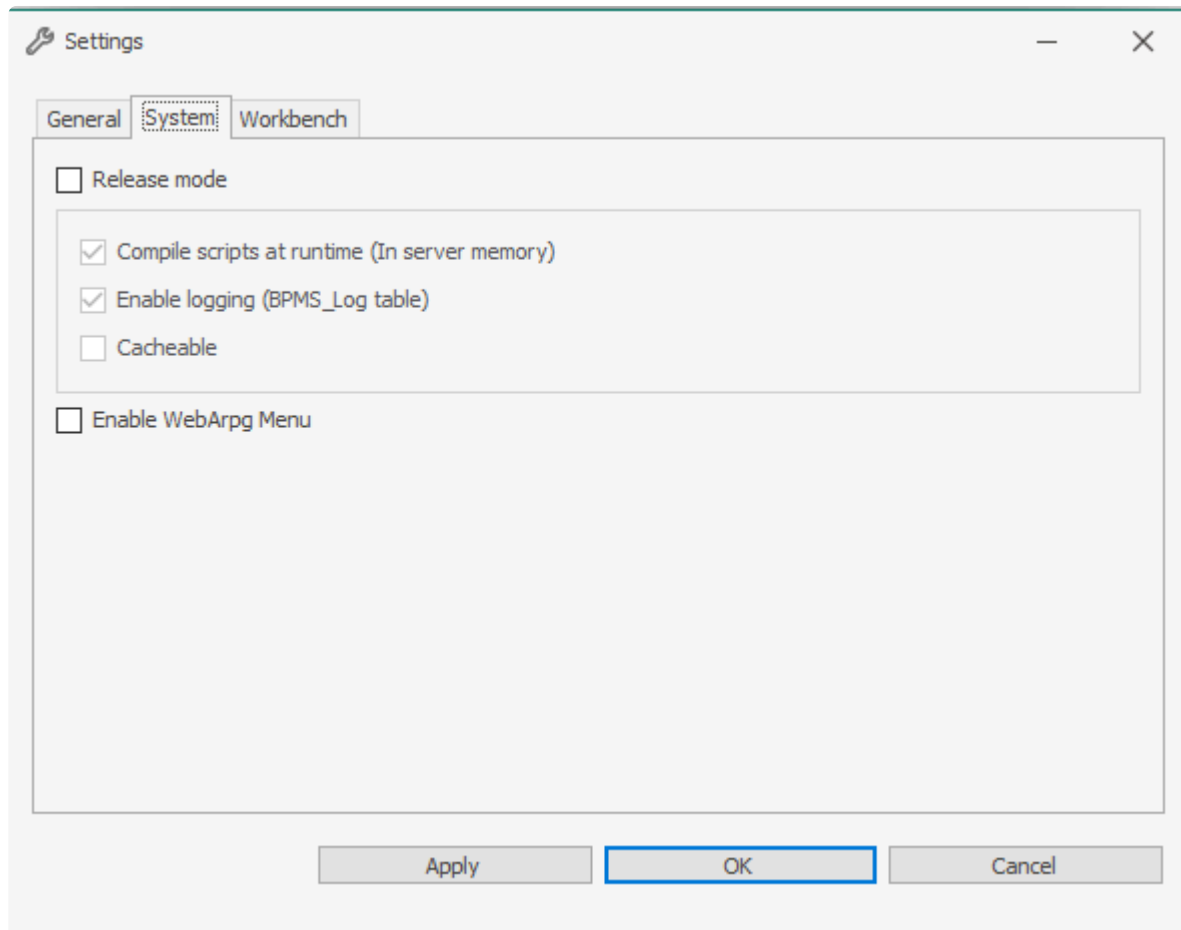


1. Web Directory

The web address of the BPM application can be specified here.

NOTE: To view the Web application, the Web Directory must be entered correctly

2. Systems Tab

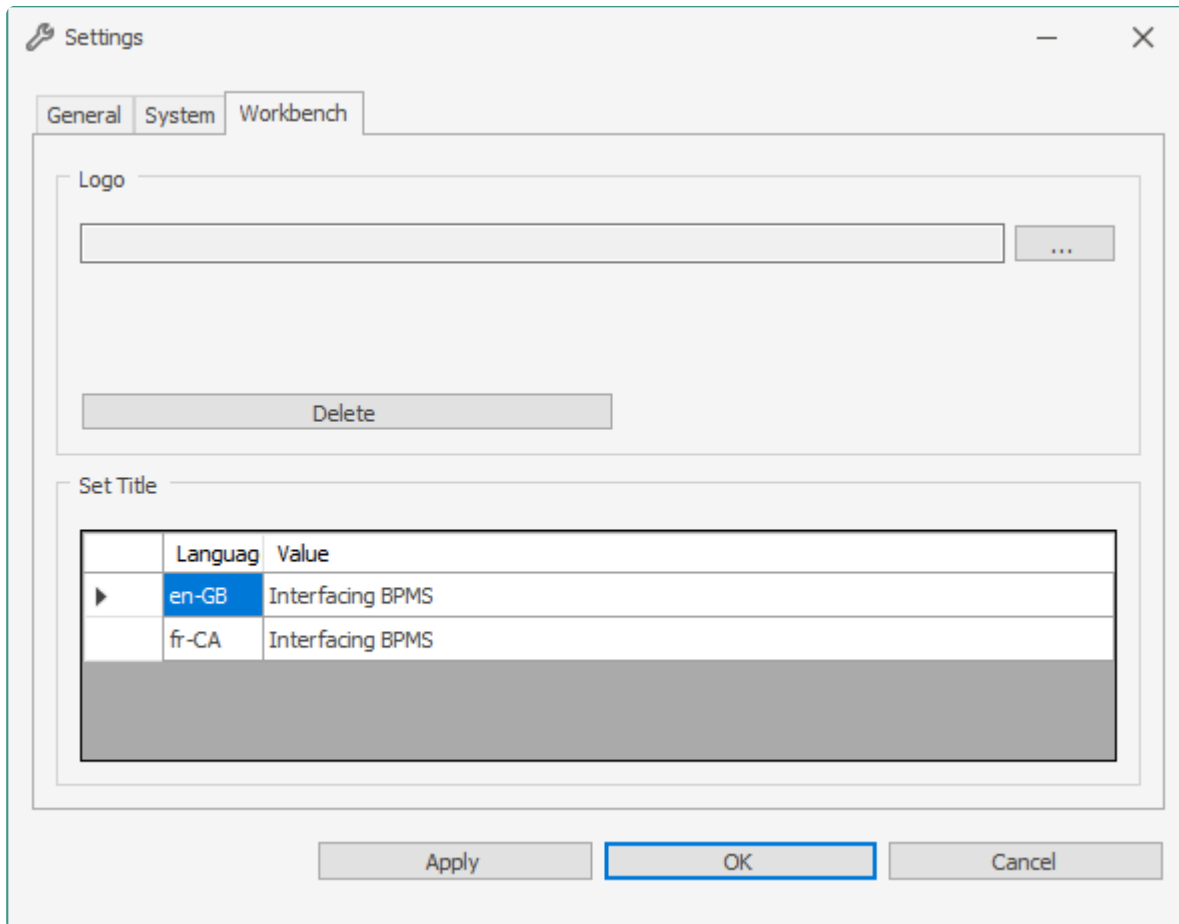


- Release Mode: If checked, the program runs in Release mode. In this mode, there is no need to deploy the application every time modifications are made.

! Checking release mode will check Cacheable and uncheck the 2 previous options

- Compile scripts at run time: Changing the script and saving it does not require the application to be deployed
- Enable logging(BPMS_Log table): The activities performed in the system are stored in the relevant table.
- Cacheable: Data retrieval from the server memory is activated.
- Enable WebArpg Menu: The Web Reporting Maker menu is enabled. The ARPG module is not enabled in this version

3. Workbench



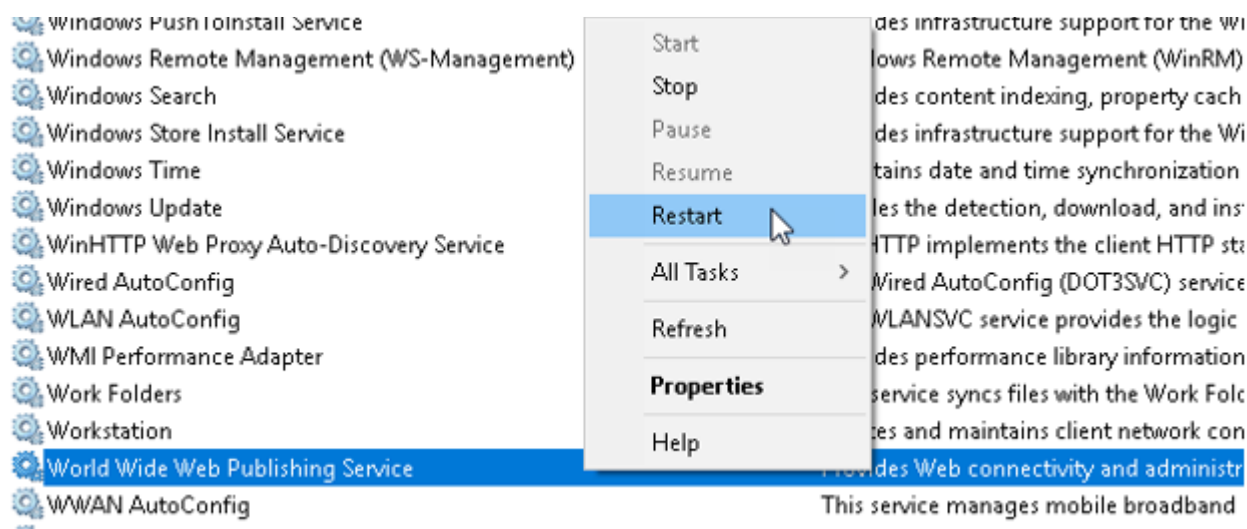
To add a customer logo, first select the “...” button and then select the desired image.

The image can be removed by selecting the “Delete” button.

To set the web application title we can define the custom title under Set Title for each language.



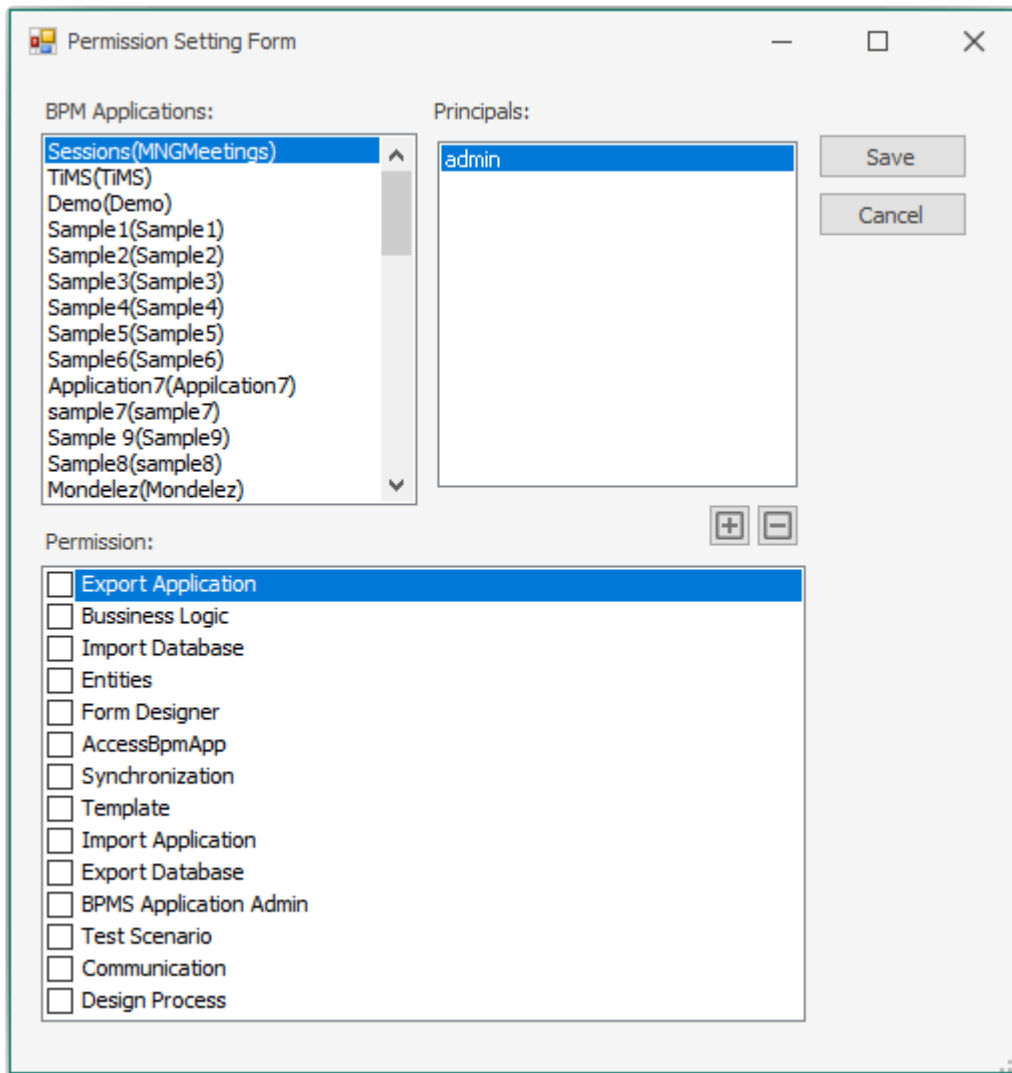
To update the web application we need to restart the “World wide web publishing” service in windows services to clear the cache.



4.1.4.2. 4.1.4.2 Set Permissions

The “Permission Setting Form” is displayed when clicked


NOTE: This section is used to define permissions to the AdminConsole features.



The screenshot shows the "Permission Setting Form" dialog box. It has a title bar with a standard Windows icon and window controls. The form is divided into three main sections:

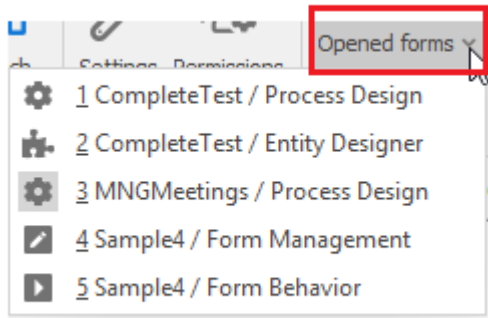
- BPM Applications:** A list box containing the following items: Sessions(MNGMeetings), TIMS(TIMs), Demo(Demo), Sample1(Sample1), Sample2(Sample2), Sample3(Sample3), Sample4(Sample4), Sample5(Sample5), Sample6(Sample6), Application7(Appilcation7), sample7(sample7), Sample 9(Sample9), Sample8(sample8), and Mondelez(Mondelez). The "Sessions(MNGMeetings)" item is selected.
- Principals:** A list box containing the item "admin", which is selected.
- Permission:** A list box containing the following items, each with an unchecked checkbox: Export Application, Bussiness Logic, Import Database, Entities, Form Designer, AccessBpmApp, Synchronization, Template, Import Application, Export Database, BPMS Application Admin, Test Scenario, Communication, and Design Process. The "Export Application" item is selected.

Below the "Principals" list box are two buttons: a "+" button and a "-" button. To the right of the "Principals" list box are two buttons: "Save" and "Cancel".

To add a user with specific access rights, first select the application in the “BPM Applications” box, then select the  button to add the user to the list. You can then select the user and choose their access rights by checking/unchecking permissions. Save the changes with the Save button.

4.1.5. 4.1.5 Opened Forms

All windows/tabs within the Admin Console currently opened will be displayed

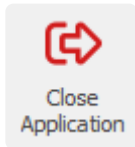


4.1.6. 4.1.6 Help

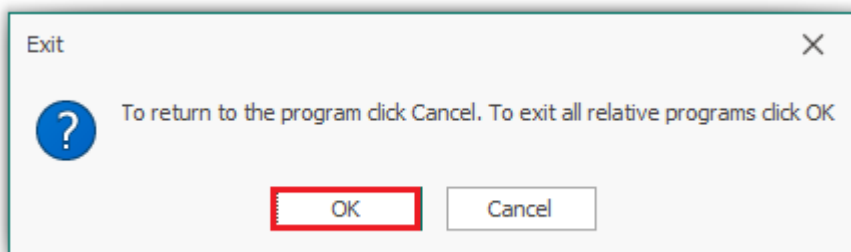
Displays the Help Center of BPMS.

4.1.7. 4.1.7 Close Application

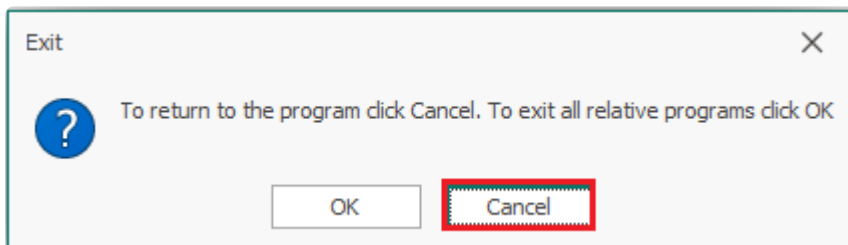
Selecting The Close Application Button Will give you Options either to exit or cancel



Clicking on OK Button will close the Application

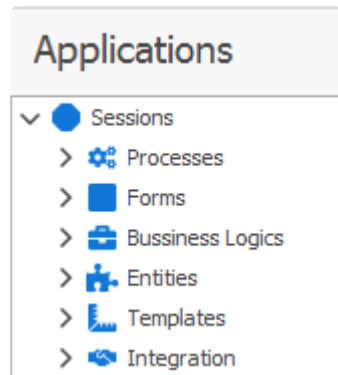


Clicking on Cancel Button will Route Back to Application

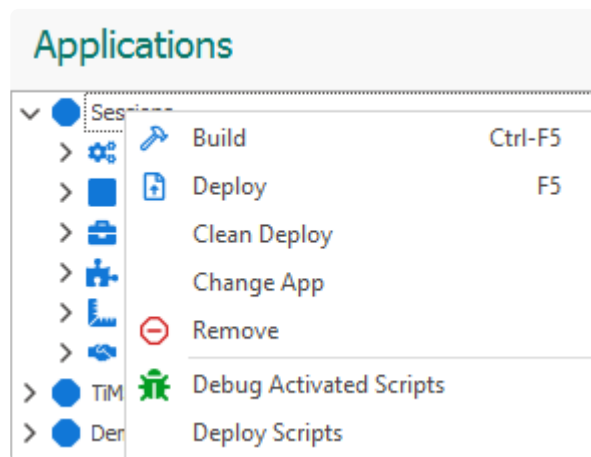


4.2. 4.2 Application Tree

The list of applications created with each of their modules are displayed in the application tree.



Right clicking each application will display a list of functions, as shown below:



4.3. 4.3 Log

By installing or creating an application, a validity check is performed on of the items in the application is checked and the results are displayed in this box.

3:50 PM	[Sample4] RAG File Build failed.
3:50 PM	[Sample4] chart or gauge Build finished with errors.
3:50 PM	[Sample4] Table "FleetSearch-->RayGenericGrid" Contains a null KPI.
3:50 PM	[Sample4] No activated bussiness logic 'Control's form action'
3:50 PM	[Sample4] No activated bussiness logic 'Action'
3:50 PM	[Sample4] No activated bussiness logic 'Guard'
3:50 PM	[Sample4] No activated bussiness logic 'PreStarterFormAction'
3:50 PM	[Sample4] No activated bussiness logic 'PostStarterFormAction'
3:50 PM	[Sample4] No activated bussiness logic 'PreFormAction'
3:50 PM	[Sample4] No activated bussiness logic 'PostFormAction'
3:50 PM	[Sample4] No activated bussiness logic 'InfoTemplate'
3:50 PM	[Sample4] No activated bussiness logic 'Rule'
3:50 PM	[Sample4] Debug activated bussiness logic 'DynamicTaskInstance':
3:50 PM	[Sample4] 1 failed.'DynamicTaskInstance'
3:50 PM	[Sample4] The type or namespace name 'Model' does not exist in the namespace 'Ray.BPMApp.Sample4' (are you missing an assembly reference?)
3:50 PM	[Sample4] Debug activated bussiness logic 'DynamicParameters':

Color	Description
Orange	Warning; error can be repaired if necessary
Black	The items were properly built or deployed
Red	There is an error that prevents building/deployment and should be resolved

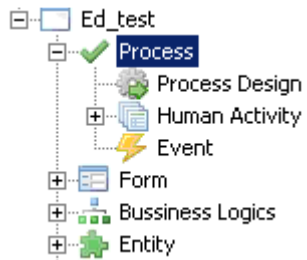
4.4. 4.4 System information



System related information such as the current user name, server name, version and database name are displayed on this bar.

5. 5. Process

The Process module contains these following items



1. [Process Design](#)
2. [Activity](#)
3. [Event](#)

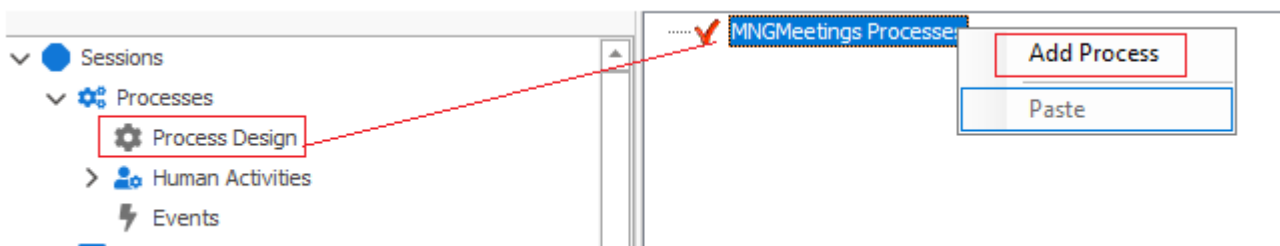
5.1. 5.1 Process Design

A “Process” is a set of interconnected work activities that work together produce a result.

Designing a process using the advanced environment

To design the process using the advanced environment, follow the steps below:

1. Select the “Process Design” sub-category from the Open Application Tree, and then right-click on the “[YourAppName] Processes” and select the “Add Process” option.



2. The process edit form will be displayed to allow the user to enter the process specifications.

Type: Any process in an organization can be defined in three ways: human, state machine, and simple. The toolbox features will vary according to each type (See 6.1.1.2).

- Human process is a type of process in which the important roles in its execution are individuals/Users

and can be used as tools such as human activities, system activity, public activity, subprocess, general aggregation, sum.

- State machine: entities have two types of attributes: attributes with a dynamic nature and static nature. Dynamic attributes changes based on the circumstances and events of that entity. In this system, dynamic attributes can be implemented as “state machine”.

Name: The unique name for the process.

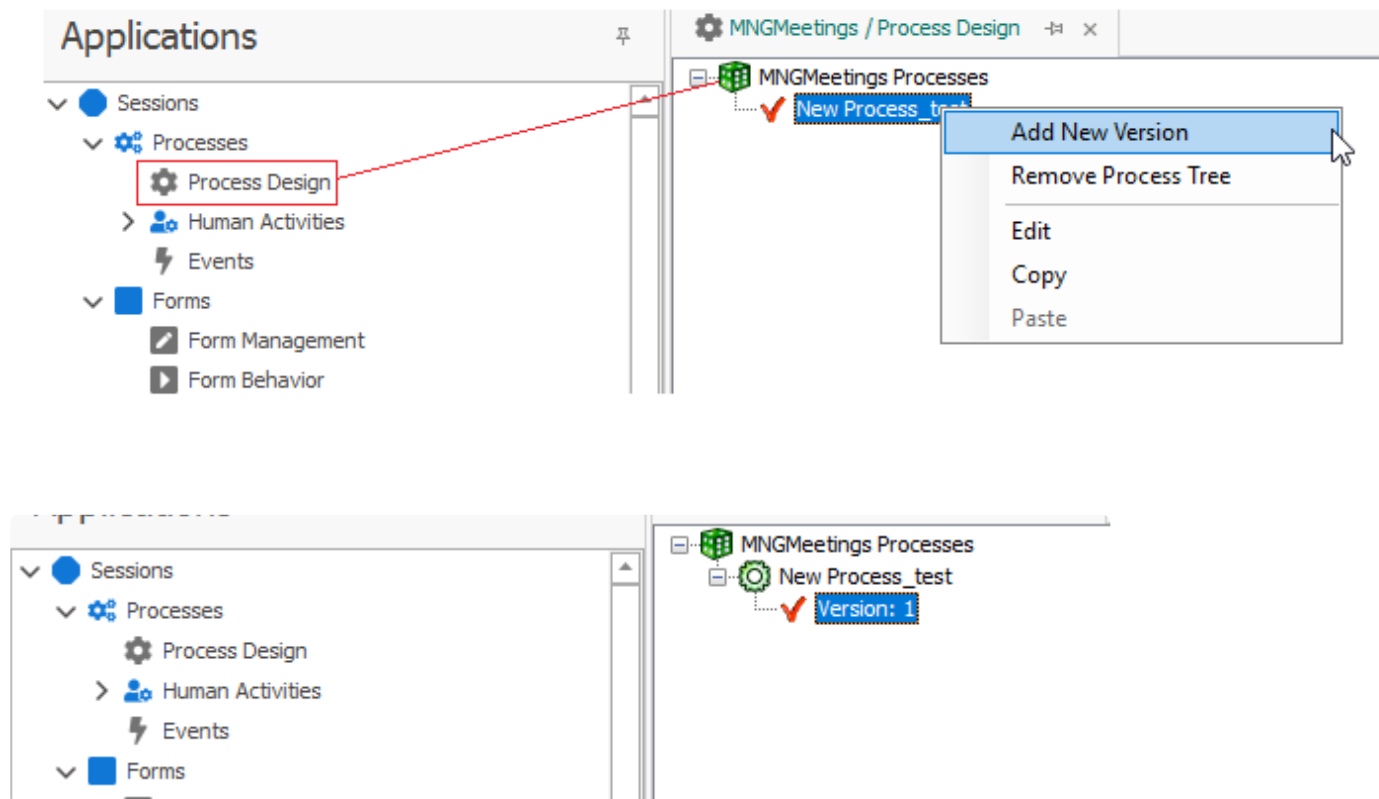
Title: The Title for the Process

Entity: Each process is associated to an entity.

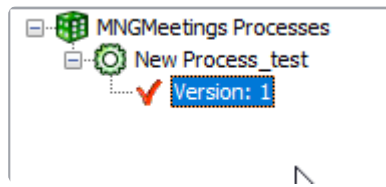
Start Manually: If you do not select this option, by creating an instance of the entity, all the processes defined for that entity are executed, and if this option is selected, the process will only be executed by calling the code. Process callback API (See [Section 12](#))

Specification: Detailed descriptions of process and rules related to the process.

3. Right click on the title of the defined process and then select “Add New Version”(See [6.1.2](#))



4. Double click on the title of the generated version



5.1.1. 5.1.1 Process Design

One of the important steps in automating the processes is identifying the proper processes, subprocesses and designing them.

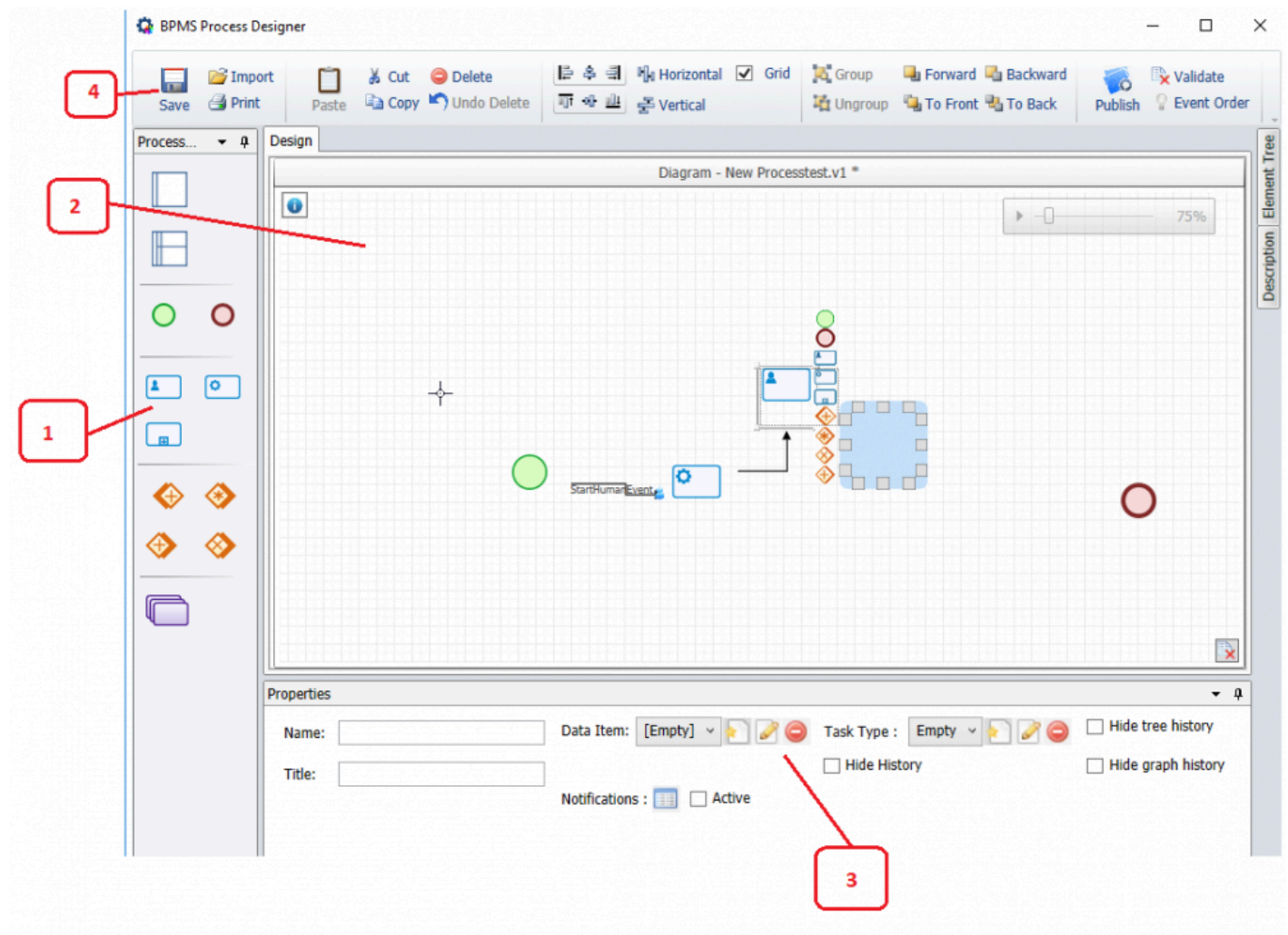
The DBP software allows users to identify and define different processes used by organisations and implements them in the “Process Design” module.

When defining the process, the following elements should be documented:

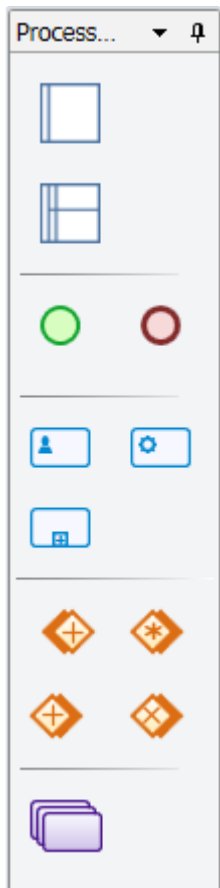
- Input
- Output
- Roles involved in the process
- Rules
- Operations
- Operational sequence and workflow
- Connection to other processes
- Connection with external information systems

After identifying the process, using the tools in the Process Toolbox, you can design the process on the diagram page.

The components of the Process Designer will be explained below:



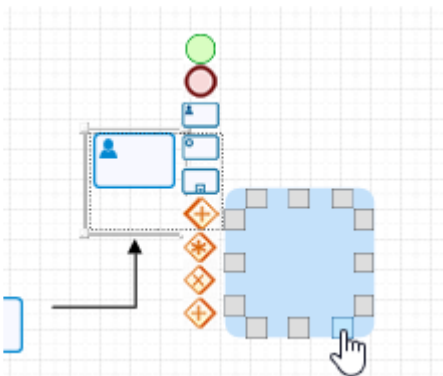
1. **Toolbox:** the toolbox displays the elements/flow objects that can be used in process design

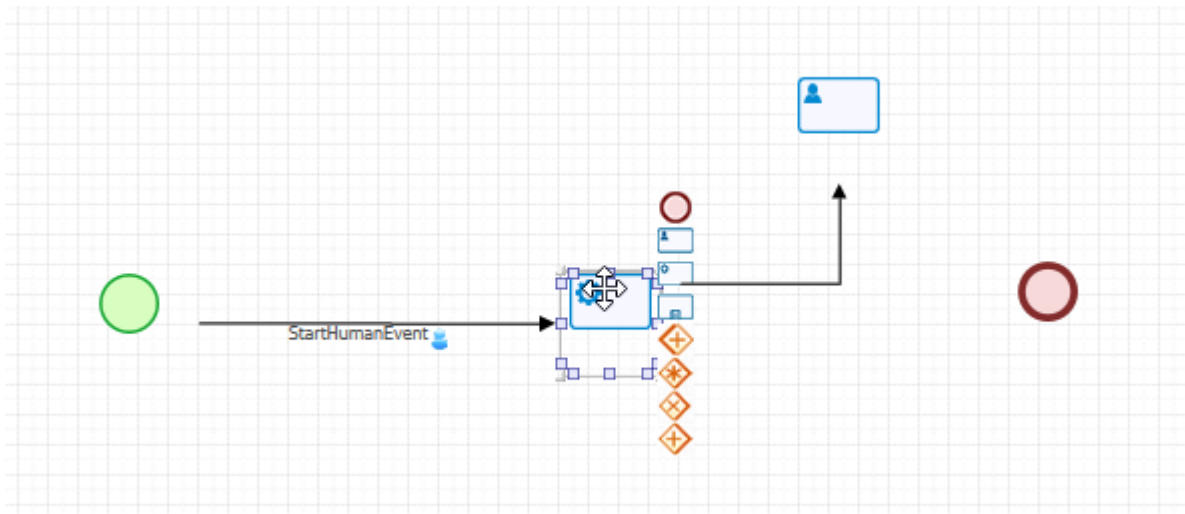


The elements can be inserted into the diagram environment by the following two methods:

- Drag and drop the element (event, gateway, task, swimlanes, pools, groups) to the diagram canvas.
- Select an element on the diagram page, and then click on the element's thumbnail image and select the location. (See [5.1.1.2](#))

2. **Design canvas:** The canvas on which users can map their processes

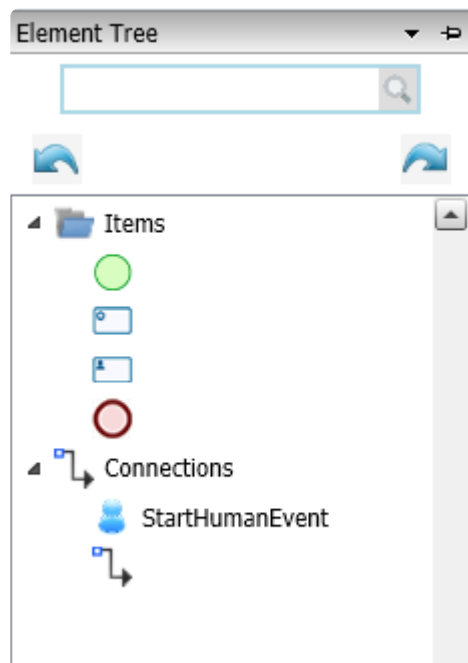




- ✿ Users can zoom in and out of the map by using the slider (see picture below)









- ✿ The element tree displays a tab with the elements currently used in the Process Designer. They are listed as Items (Flow Objects) and Connections (Data Flows).




3. **Properties:** The properties windows allows users to set task/flow object properties. When clicking on a flow object, the properties window for that object will appear.

Properties

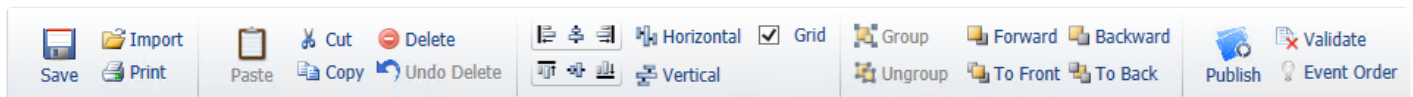
Name: Data Item: [Empty]    Rule: [Empty]   

Title:

Notifications :  ☐ Active

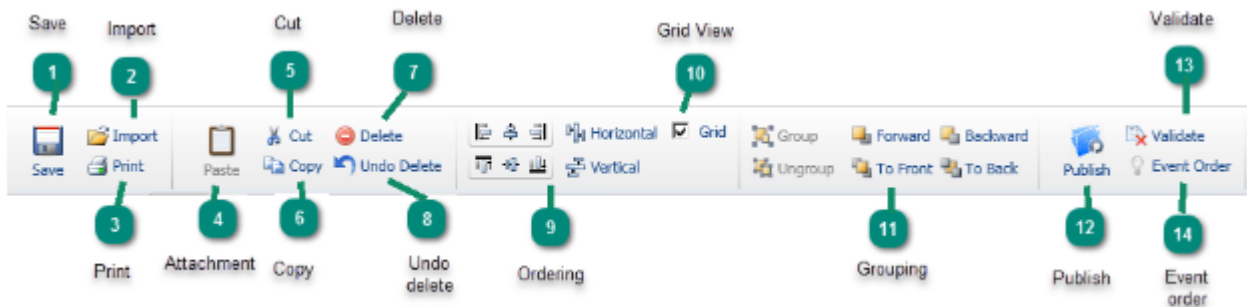
☐ Hide History

4. **Menu:** The Main Menu toolbar contains other features associated with process design. See the [next section](#) for more information.

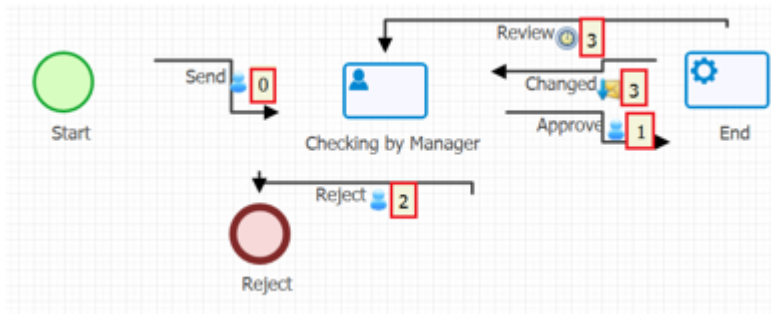


5.1.1.1. 5.1.1.1 Menu

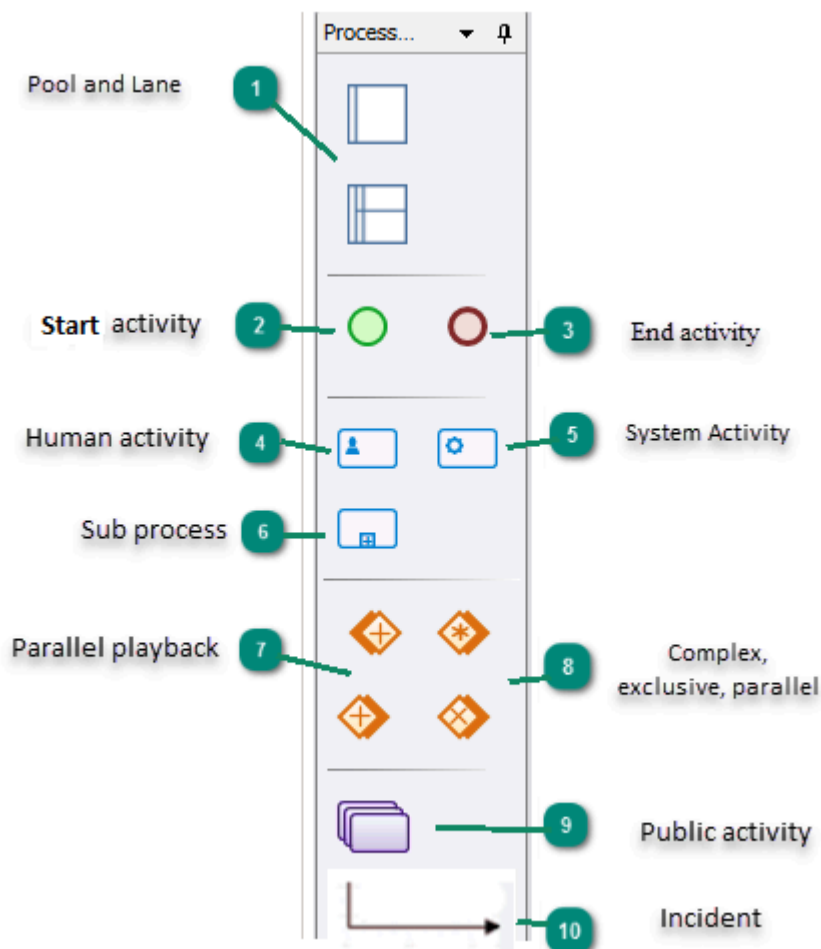
The menu contains different functionalities related to process design.



1. Save: The designed process is saved
2. Import: You can import processes that are designed in XPD format
3. Print: The process is formatted for printing, the user can then save or print the process map
4. Paste: If you copy or cut an activity in the diagram and then select this button, the activity is pasted to the diagram.
5. Cut: If you select an activity in the diagram and then click this button, the activity is removed from the diagram.
6. Copy: If you select an activity in the diagram and then select this button, the activity is copied.
7. Delete: If you select an activity in the diagram and then select this button, the activity will be deleted from the diagram.
8. Undo: Undo the previous action
9. Ordering: You can group activities from the right, left, middle, upper, and lower boundary by selecting the activities and choosing the alignment.
10. Grid View: A grid will be superimposed on the design canvas
11. Grouping: You can change the display priority of an activity (front, back). Changing the priority of multiple activities is also possible.
12. Publish: Publishes the process. A confirmation page will appear asking to confirm the publication.
13. Validate: Checks the validity of the process design. If there is an error in the design process, the errors are displayed to the user. Double clicking the error will redirect the user to the location of the error
14. Order Events: Displays a label on activities that indicates the order of events (see picture below).



5.1.1.2. 5.1.1.2 Process toolbox

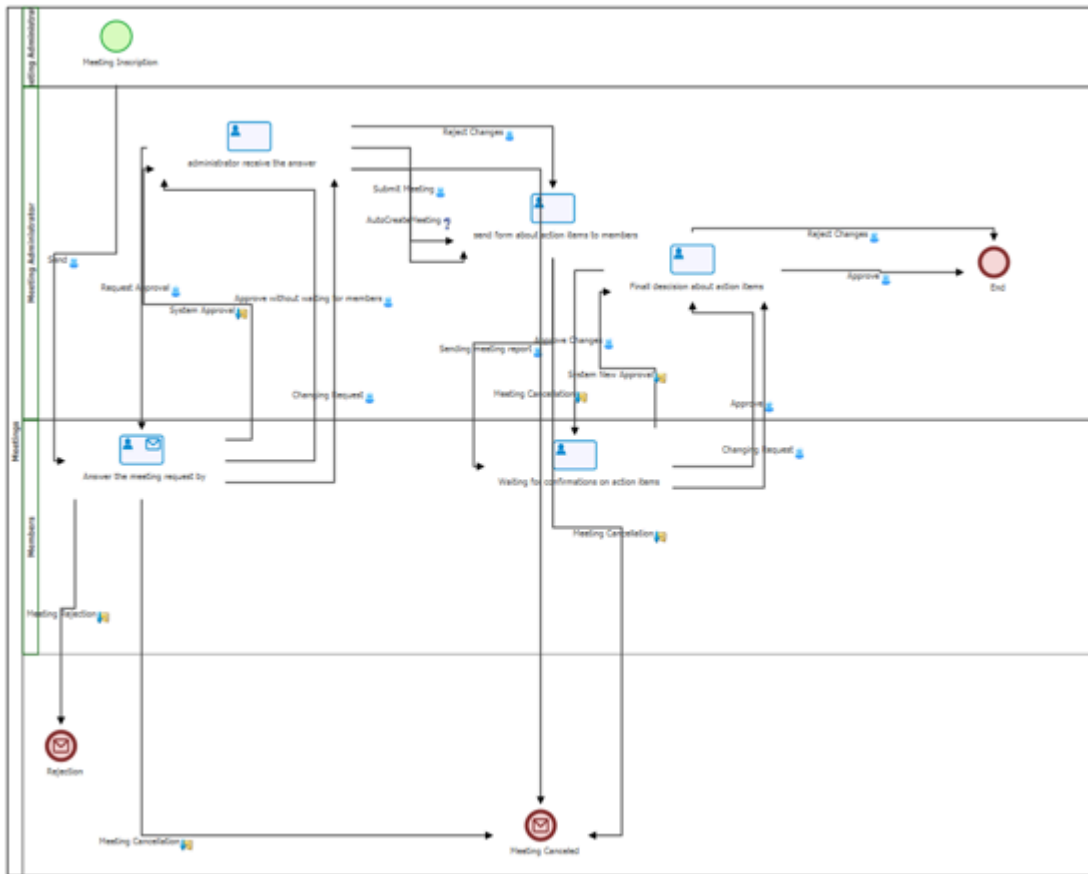


1.Pool and Lane

These two elements are used to categorize and group the activities of the process from a design perspective.

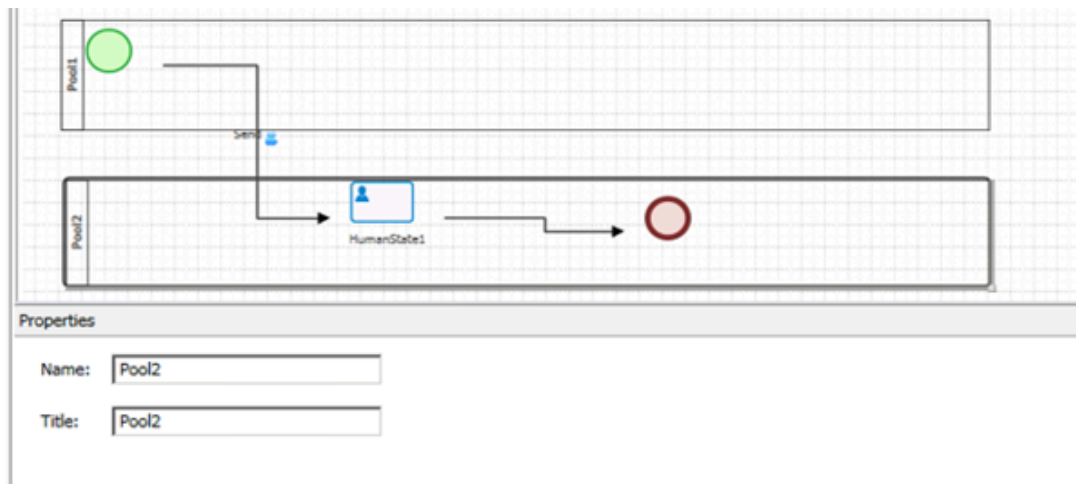
To use these two elements, first drag “Pool” in the Diagram page, and then drag “Lane” into the pool. you can add additional lanes by dragging them into the pool.

NOTE: These two elements must be used together and cannot be used alone.

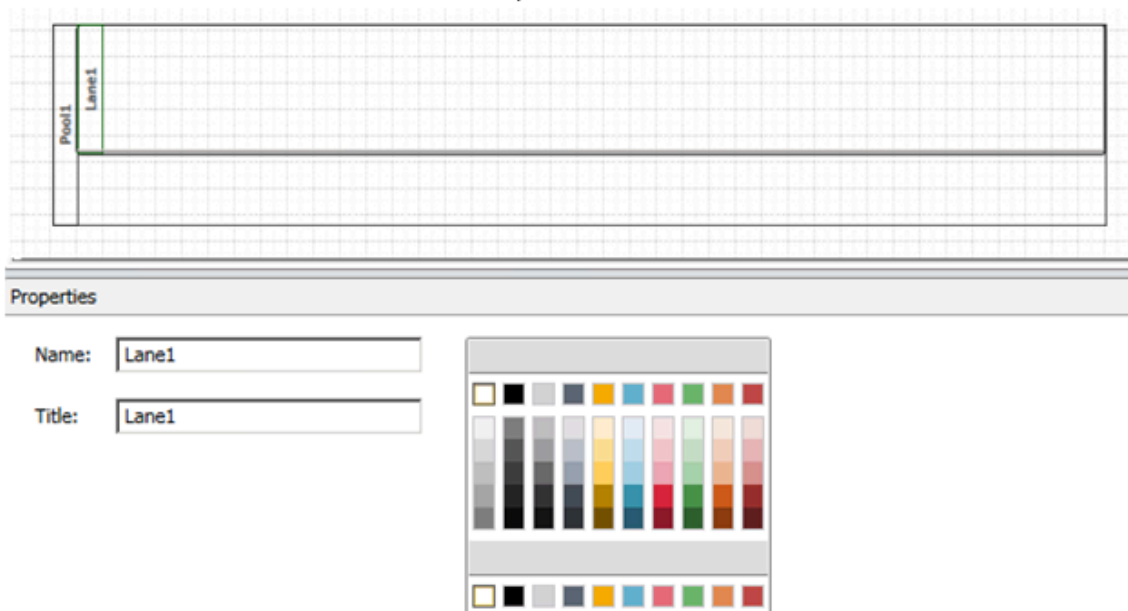


By selecting Lanes and/or Pools on the Diagram page, the associated properties are displayed in the properties box:

Pool service



Lane profile



Name: Each element or activity needs a unit name

Title: The title is the displayed value in the diagram page on the element .

Background color: The “Lane” field is changed to the selected color.

NOTE: The name and title is compulsory for both of these elements, and in case of non-observance, the publication operation will not succeed.

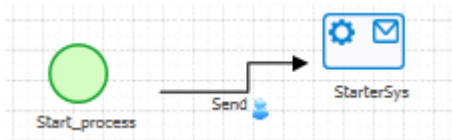
2.Start activity

Each process requires a start.

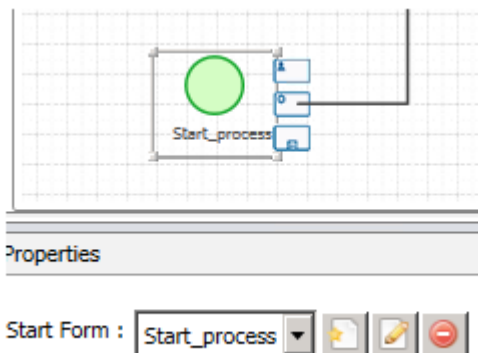
NOTE: The “Starter Form” must assign a start form behavior to determine the responsible process initiator, physical form and location of the form in the menu.

NOTE: You must insert at least one start activity on the diagram page, otherwise publication will fail

NOTE: If there is more than one start activity on the diagram page, it is necessary that the paths belonging to the start activity are connected using a system activity, otherwise publication will fail.



After creating a start activity, by selecting it on the diagram page, the properties are displayed in the properties box to define or select the behavior of the Starter form (See 7.2).



Note: Connecting a start activity to other items will automatically set the definition of an event as “send”.

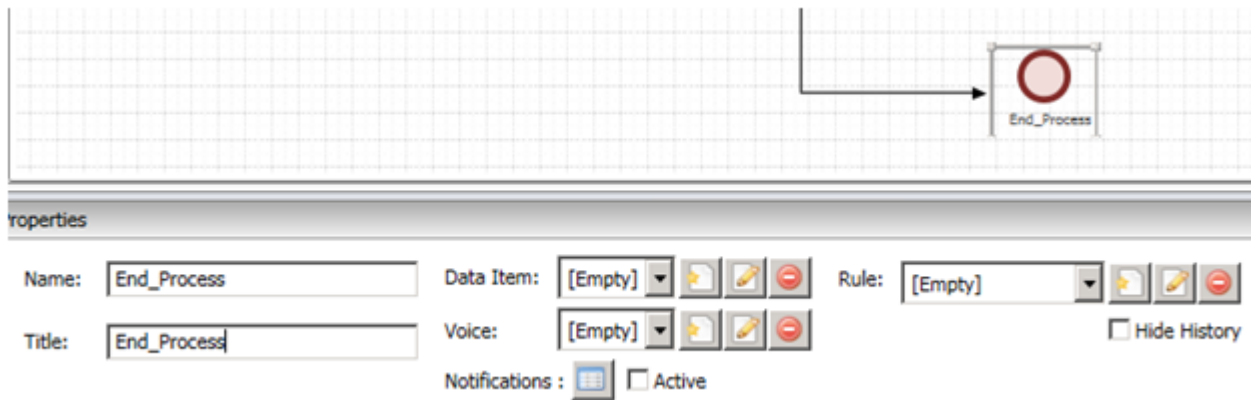
Note: Start activity in the process can only be linked to human activities, processes, systems.

3. End activity

The final stage of the process is to end it using the end activity.

Note: You must insert at least one end activity on the Diagram page, otherwise publication will fail

By selecting the end activity on the diagram page, the properties is displayed in the property box as explained below:



The diagram shows a flowchart on a grid background. A line enters from the left and connects to a red circular activity node labeled 'End_Process'. Below the diagram is a 'properties' panel with the following fields and controls:

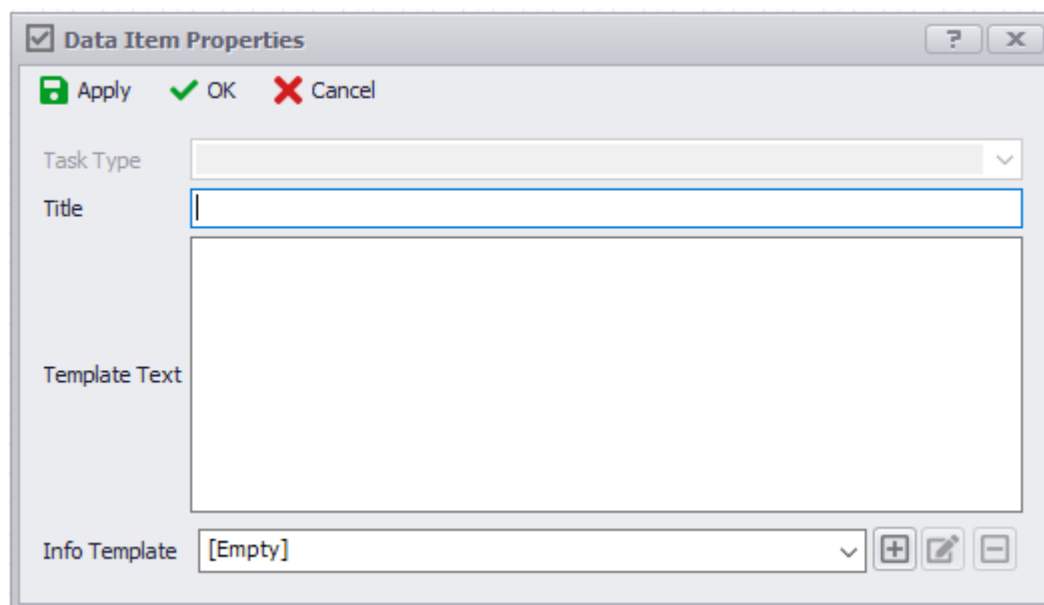
- Name:** End_Process
- Title:** End_Process
- Data Item:** [Empty] (with icons for selection, edit, and delete)
- Rule:** [Empty] (with icons for selection, edit, and delete)
- Voice:** [Empty] (with icons for selection, edit, and delete)
- Notifications:** [Icon] ☐ Active
- ☐ Hide History

Name: Each end activity needs a name.

Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history, will be typed in this box.

Note: The name and title for this activity is mandatory, if not entered the publication will fail

Data Item: (See 10.1) By defining or choosing a text message in this box, in the history and process interception, the text message inside parameter “num” is displayed. Parameter is defined inside the template.



The 'Data Item Properties' dialog box has a title bar with a checkmark icon and the text 'Data Item Properties'. It includes buttons for 'Apply', 'OK', and 'Cancel'. The main area contains the following fields:

- Task Type:** A dropdown menu.
- Title:** A text input field.
- Template Text:** A large text area.
- Info Template:** A dropdown menu showing '[Empty]' with '+' and '-' icons.

Voice : (See 11.4) By defining or choosing an audio message in this field, the audio message is broadcasted on the phone when tracking the process in mobile.

Notifications: By selecting “Active” and then selecting the notification button, the form for the notification list is displayed to define and select the notification. By selecting a notification in this box , the process will go through this step, the selected notification will be executed and the image will appear on the activity in

the diagram page.

Rule: (See 8.1) By defining or choosing a rule, when the process reaches this stage, depending on the conditions the defined rule will be executed.

Hide History: By selecting this option, this stage of the process is not displayed in the process history.

4.Human activity

If you need to add people who are involved in the process during the workflow execution, use “human activity”. (See 6.2.1)

Note: The determination of users/participants involved in the workflow process is identified in the responsible staff or inside the task of human activity. (See 6.1.1)

By selecting the human activity in the Diagram page, the properties are displayed in the property box as explained below:

The screenshot displays the BPMS Designer interface. The top section shows a diagram grid with a human activity element labeled 'HumanState1' placed on a vertical flow line. The element is represented by a blue box with a person icon. Below the diagram grid is the 'Properties' panel, which contains the following fields and controls:

- Name:** A text field containing 'HumanState1'.
- Title:** A text field containing 'HumanState1'.
- Data Item:** A dropdown menu set to '[Empty]', with icons for adding, editing, and deleting.
- Task Type:** A dropdown menu set to '[Empty]', with icons for adding, editing, and deleting.
- Voice:** A dropdown menu set to '[Empty]', with icons for adding, editing, and deleting.
- Notifications:** A checkbox labeled 'Active' next to a notification icon.
- Hide History:** A checkbox.

Name: Each element or activity needs a name.

Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history.

Task Type: Determines Task for Human Event, Form Behaviour, User/Receiver of the form, Dynamic Task Type.

Note: The insertion of the identifier, the title and the type of activity is mandatory, otherwise the publication will fail.

Text message: (See 10.1) By defining or choosing a text message in this box, in the history and process execution history, the text message is displayed instead of the title.

Voice Message:(See 11.4) By defining or choosing an audio message in this box, the voice message is broadcasted on the phone when tracking the process on mobile.

Notifications: By selecting “Active” and then selecting the notification button, the form for the notification list is displayed to define and select the notification. By selecting a notification in this box, the process will go through this step, the selected notification will be executed and the image (See 11.3) will appear on the activity in the diagram page.

Hide History: By selecting this option, this stage of the process is not displayed in the process history.

5. System Activity

If you need system rule enforcement during the workflow, you will use “system activity”. (See 8.)

Note: The type of event that is determined for communication from this activity with other activities can only be system-type.

By choosing a system activity in the Diagram page (See 6.1.1), the properties are displayed in the property box:

⚙️

Name:

Title:

Data Item: [Empty] 👉 ✎ 🚫

Voice: [Empty] 👉 ✎ 🚫

Notifications: 📅 ☐ Active

Rule: [Empty] 👉 ✎ 🚫

☐ Hide History

Name: Each element or activity needs an unique name

Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history.

Note: Name and titled must be defined or else publication will fail

Text message: By defining or choosing a text message in this box, in the history and process execution history, the text message is displayed instead of the title. (See 10.1)

Voice Message: By defining or choosing an audio message in this box, the voice message is broadcast on the phone when tracking the process using the phone. (See 11.4)

Notifications: By selecting “Activate” and then selecting the notification button, the form for the notification

list is displayed to define and select the notification. By selecting a notification in this checkbox, as the process goes through this step, the selected notification will be sent. The image (See 11.3) will appear on the activity in the diagram page.

Rule: The specified rule (See 8.1.) will be executed when the process reaches this stage. To define and edit rules, see 8.1.

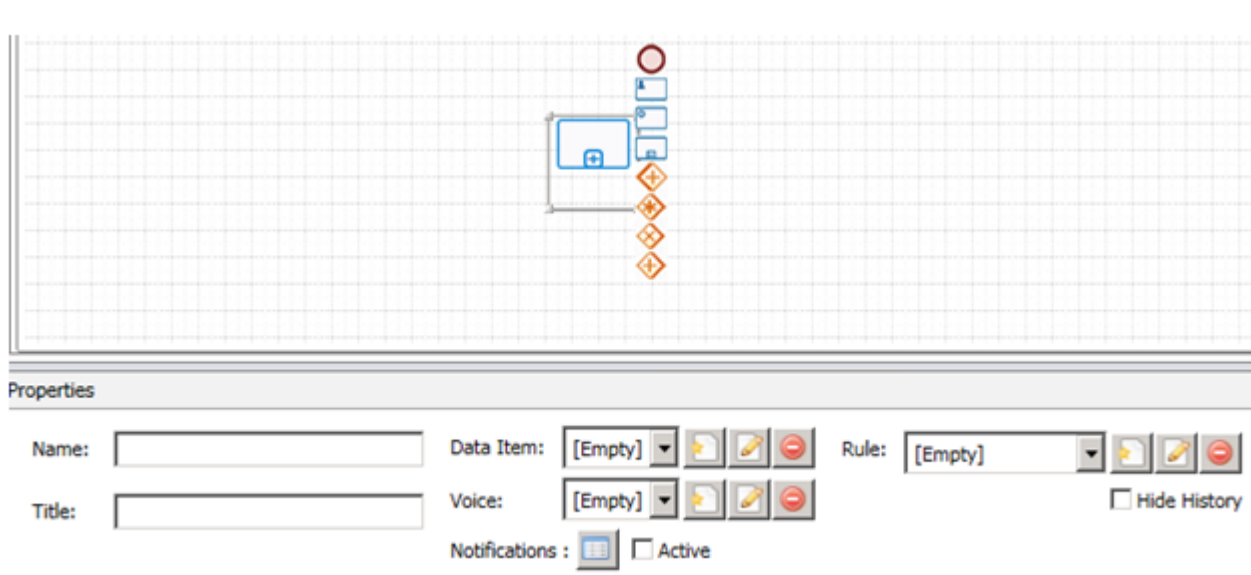
Hide History: By selecting this option, this stage of the process is not displayed in the process history.

6.Sub process

If you need to call another process during the workflow, then the “sub-process” element can be used.

Note: Calling the process requires calling its API in the rule attributed to the sub process. For information on API to process see 12.

By selecting the sub process in the Diagram page, (See 6.1.1) the properties window is displayed



Name: Each element or activity needs an unique

Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history

Note: Defining a name and title is mandatory, otherwise publication will fail

Text message: By defining or choosing a text message in this box, in the history and process execution history, the text message is displayed instead of the title.

Voice Message: By defining or choosing an audio message in this box, the voice message is broadcast on the phone when tracking the process by phone.

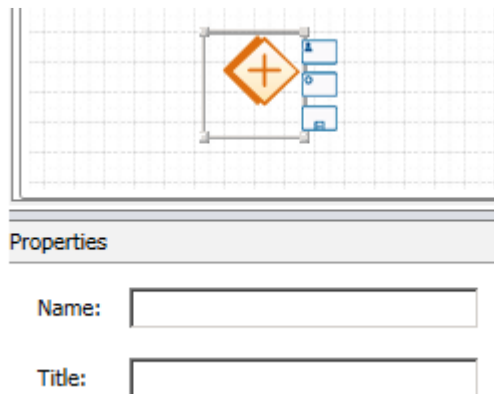
Notifications: By selecting “Activate” and then selecting the notification button, users are able to select a notification. As the process reaches this stage, the selected notification will be sent. The image will appear on the activity in the Diagram page.

Rule: The specified rule (See 8.1.) will be executed when the process reaches this stage. To define and edit rules, see 8.1.

Hide History: By selecting this option, this stage of the process is not displayed in the process history.

7.Parallel playback

If you need to play a task continuously between multiple people during the workflow, then “parallel playback” can be used. **Note:** Parallel playback in the process can only be linked to human activities, sub processes, and system activities. By selecting parallel playback on the diagram page (See 6.1.1), the related specifications are displayed in the viewport as explained below:



Name: Each element or activity needs an unique name

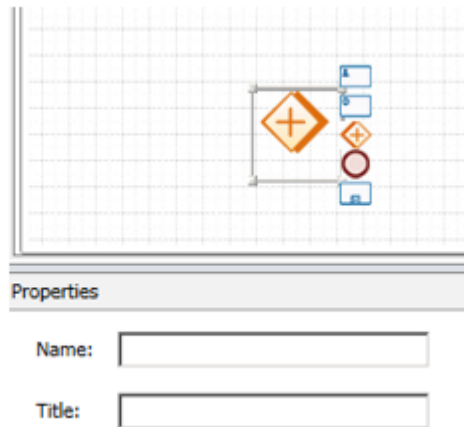
Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history

8.Complex, exclusive, parallel

If you use “parallel playback” during the workflow, you need to regroup the workflow by using complex, parallel or exclusive elements.

Note: The type of event output of these activities can only be automatic.

By selecting the complex event in the Diagram page, (See 6.1.1) the properties window will be accessibles:



Name: Each element or activity needs a unit name in this box to be typed in English.

Title: The title displayed on the element in the diagram page, and the title displayed to the user for this step in the process history

Decision: With the help of the slider bar (), you can define the minimum number of branches needed to be done in order to continue the process.

When the minimum branches reaches the specified number, the status of existing tasks in the other branches will be defined by the following options:

Block: By selecting this option, the tasks will remain in the same state and end-users should complete those tasks.

Cancel: By choosing this option, the existing tasks will be removed from the user's task list.

Note: If you use an XOR Join State, the process will continue by finishing only one of the branches.

Note: If you use a parallel gateway, the process continues when all the branches have been executed.

Note: When you have a fork and have a number of branches exiting from the fork, the number of branches entering the fork element need to be the same.

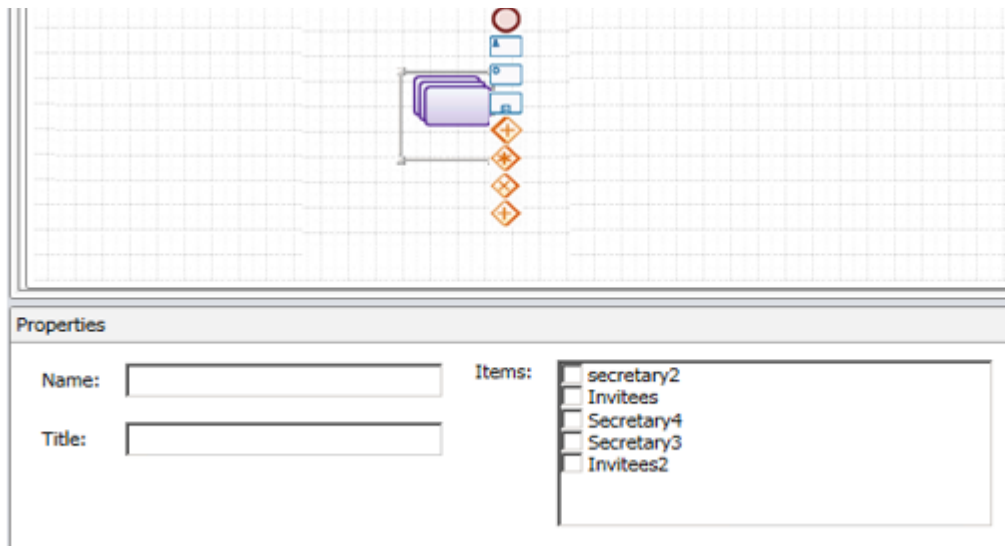
9.Public Activity

When we have the same result after an event in different parts of a process we can use the common state to make the process clearer.

When used in several parts of the process from an event that ultimately results in the same result, "public activity" is used to make the process from an orderly perspective.

In other words, placing a common activity and establishing a link between it and the beginning of the repetitive path of the process, is equal to connecting that event to all of the selected activities in the common activity.

By selecting General Activity on the Diagram page, (See 6.1.1) the properties window will be accessible



Name: Each element or activity needs a unit name in this box to be typed in English.

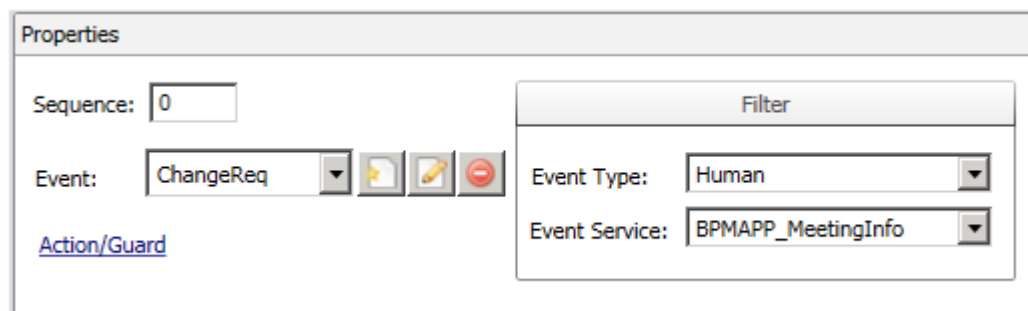
Title: The title displayed in the diagram page on the element.

Activities: This list shows all the activities in the process. By selecting them you are actually connecting the following event to them.

*10.Incident *

The “Incident “ is used to communicate between the elements used in the diagram page.

By selecting the event on the diagram page, (See 6.1.) the properties windows is accessible



Sequence: If there is a multi-event activity, the sequence of the buttons on the form can be set to direct the workflow to a particular incident.

Event Type and Event Service: By selecting the ‘Event Type’ and the ‘Event Service’ (related entity) in ‘filter’ box, the display events are filtered in the ‘Event’ box based on the specified category.

Event: Adding and assigning events to the element. It is also possible to edit and delete events.

Note: By defining an event in this box, (See 6.3) the event type and its event service will be selected by

default in the Filter category box.

Action / Guard (See 8.2 & 8.3): If an action or guard is required at the time of the occurrence of an event, then this link can be assigned to an event, an action, or a guard.

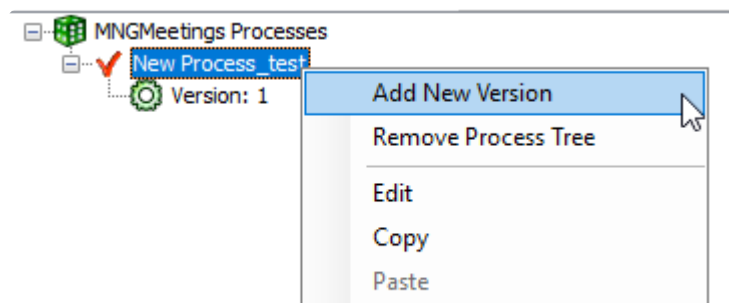
5.1.2. 5.1.2 Change Process

After a while, the policies and processes may change in the organization, and these changes can be applied to the process in two ways:

1. Add New Version

When a new version is created, all ongoing processes instances will continue with the previous version and the processes defined after that will be in the new version.

To create a new version, first open the “Process Design” section of the open application tree, then select the “Right Click” and “Add New Version” option, and finally view the changes and apply the changes to the process.



Note: Each time you select “Add new version” in the process, a copy of the previous process is created.

2. Process Mapping

Another way to change the process is to use the “process mapping” form to change the state of work that has already begun.

Note: If the process is changed and the release button is selected, the “Process Mapper” form will be displayed. (See 6.1.1.1)

The screenshot shows a window titled "Process Mapper" with a tab labeled "State Mapping:". Below the tab is the instruction "Map removed states from the previous published process to new states." There is a table with two columns: "Removed States" and "New States". The "Removed States" column contains the text "End2". The "New States" column contains a dropdown menu with "[Empty]" selected. Below the table is a checkbox labeled "Remove Unused Dependencies" with the text "This will remove the objects that no longer been used since the BPM process has changed." below it. At the bottom right are "Apply" and "Cancel" buttons.

Removed States	New States
End2	[Empty]

☐ **Remove Unused Dependencies**
This will remove the objects that no longer been used since the BPM process has changed.

Apply Cancel

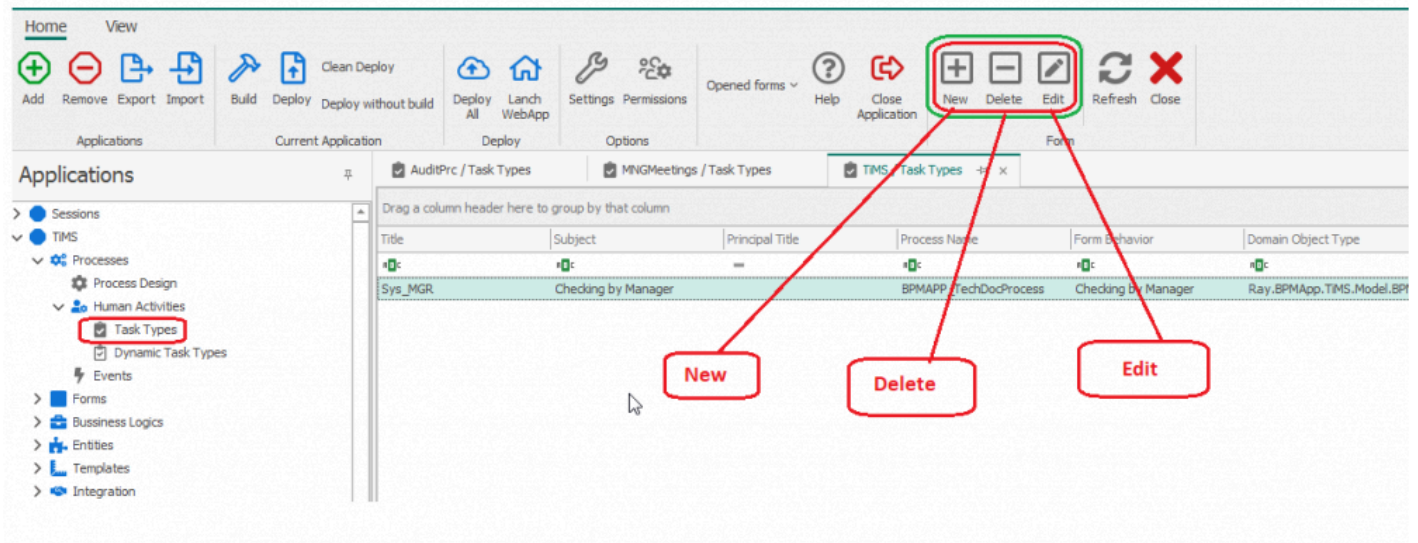
In order to change the status of deleted activities, it is enough to put all activities in the “new status” column to determine what work started during that stage.

Note: By moving the status of the stage, in the process mapper form, the work in that state is transferred to the new state.

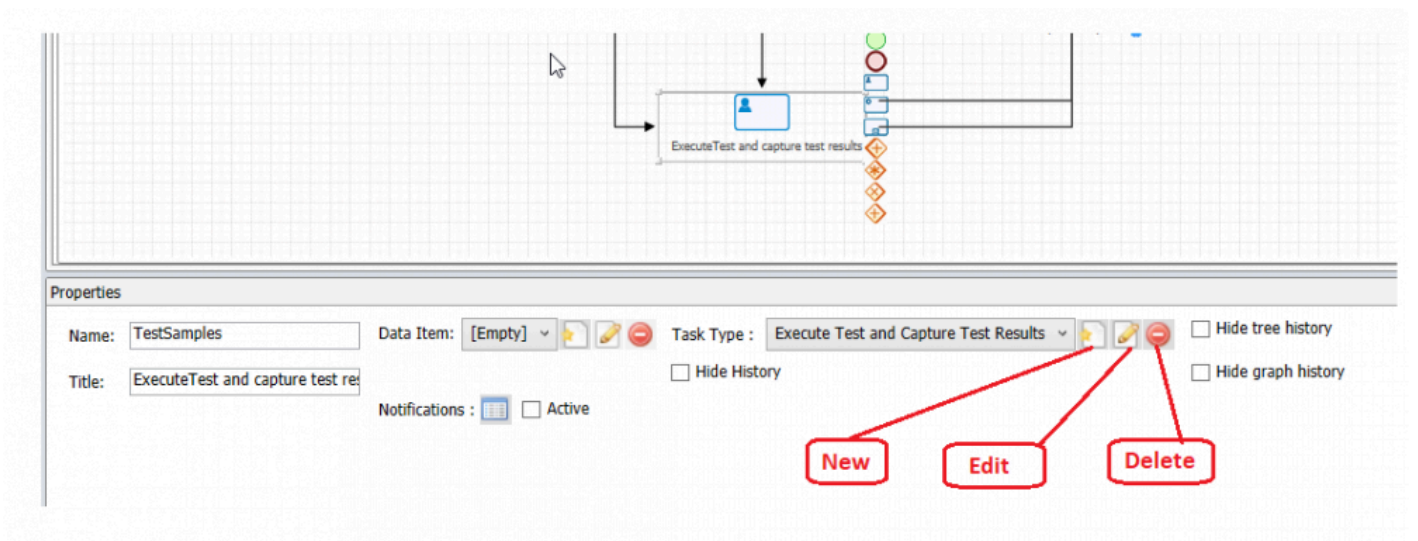
5.2. 5.2 Task

For any Human Activity in the process design (See 6.1) users need to define a task to determine responsibility (User Responsible) and use advanced features such as compelling timeline, adding annotations and reporting. Task Types can be defined, edited and deleted in 2 ways:

1. Select Task Types (Process > Human Activity > Task Types), in the Open Application Tree.



2. Selection of human activity (See 6.1.1.2) in the diagram section of the process and then create, edit or delete the task.



By editing or creating a task, a task form with four tabs is displayed. The details of each tab are described in the following section:

5.2.1. 5.2.1 General Tab

The details of the general tab (See 6.2) are fully described in the form below, which is accessible by editing or creating a task.

Task Type Properties

Apply OK Cancel

General Advanced Analytic Data Reports

1 Name

2 Title

3 Description

4 Timesheet Save to

5 Confidentiality Normal Priority Normal

Receiver

6 Static principal

7 Defined principal

8 Dynamic principal

9 Department Management of static/dynamic principal

Field Name :

All Random Sequential

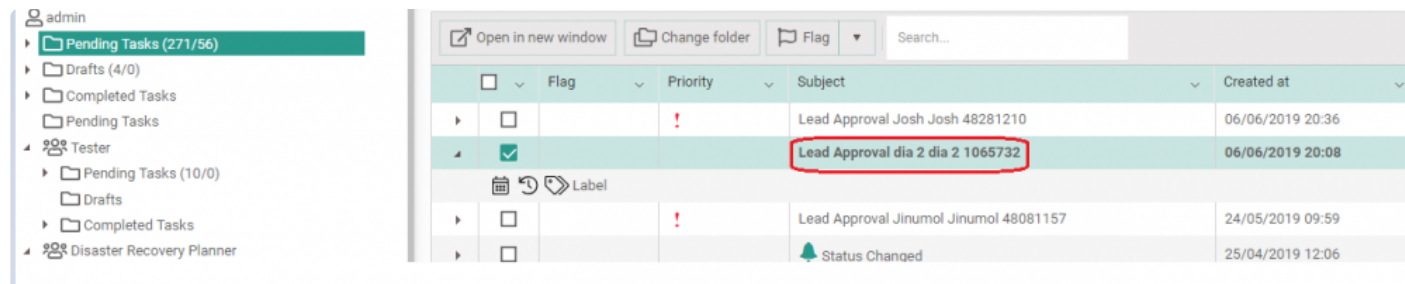
Current Staff Starter Staff Current User Starter User Current Staff Department Management Starter Staff Department Management

1. Name

The name of a unit that is defined for a task. Must be unique.

2. Title

The title in this box is the same as the title displayed everywhere in the application. The title in this box can be changed using the title template (See 6.2.2) in the advanced tab.



The screenshot shows the BPMS interface with a task list. The task list has columns for Flag, Priority, Subject, and Created at. The task 'Lead Approval dia 2 dia 2 1065732' is highlighted with a red box.

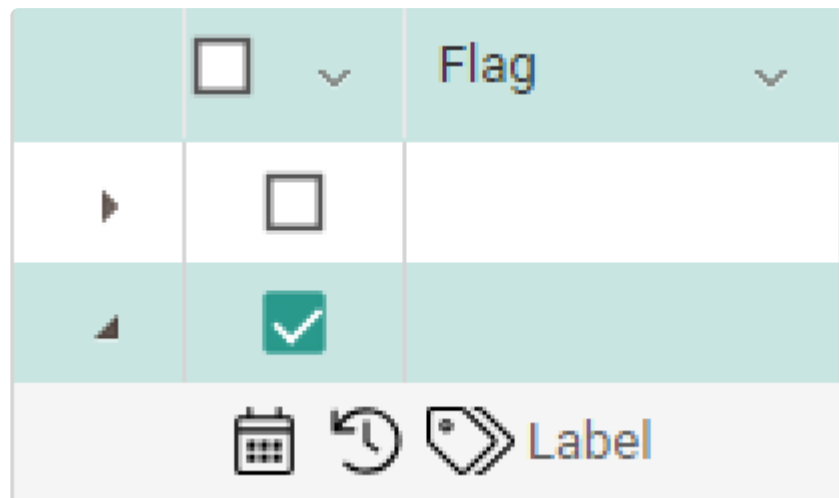
Flag	Priority	Subject	Created at
<input type="checkbox"/>	!	Lead Approval Josh Josh 48281210	06/06/2019 20:36
<input checked="" type="checkbox"/>		Lead Approval dia 2 dia 2 1065732	06/06/2019 20:08
<input type="checkbox"/>	!	Lead Approval Jinumol Jinumol 48081157	24/05/2019 09:59
<input type="checkbox"/>		Status Changed	25/04/2019 12:06

3. Description

The description related to the task is written here.



Note: The description in this box is visible in the Process history form (graph, tree) and in the Task List to the User on the Web.



The screenshot shows the BPMS interface with a task list. The task list has columns for Flag, Priority, Subject, and Created at. The task 'Lead Approval dia 2 dia 2 1065732' is highlighted with a red box.

Flag	Priority	Subject	Created at
<input type="checkbox"/>	!	Lead Approval Josh Josh 48281210	06/06/2019 20:36
<input checked="" type="checkbox"/>		Lead Approval dia 2 dia 2 1065732	06/06/2019 20:08
<input type="checkbox"/>	!	Lead Approval Jinumol Jinumol 48081157	24/05/2019 09:59
<input type="checkbox"/>		Status Changed	25/04/2019 12:06

4. Timesheet

If this option is selected, a timeline will be displayed at the top of the form. You can access the timeline form in two ways:

1. In the task list, select the timesheet button at the top of the form

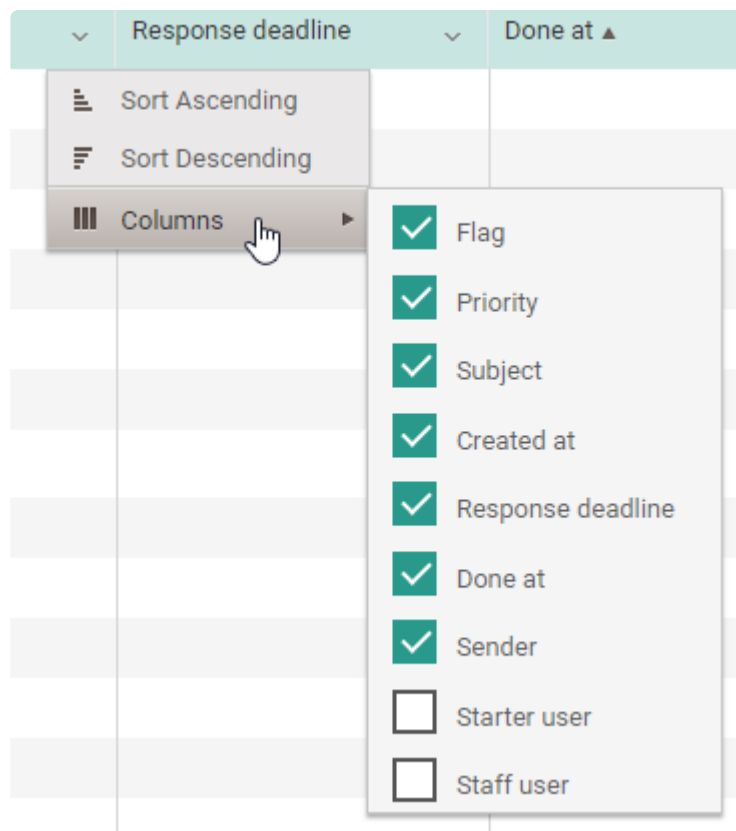
2. Click on the button next to the task cart and then select the timesheet button

5. Priority and Confidentiality

The Priority and Confidentiality level of the tasklist can be set here for task assignees.


Using these two combos, you can set the priority and security level of the work in the Task List of the User.

It is possible to modify the columns display in the task list by selecting which columns to display:



6. Static principal

Static Principal are the recipients which are assigned to a certain stage of a process (Predefined in the API). Stationary receivers or recipients indicate to people (user, staff, group) that they are the ones who are going to perform work at this stage of the process.

To add a receiver, first select the button , then select the responsible type, the type of principal (user, staff, group) in the combobox and select the relevant responsible person from the list of authorities.

Principals

Principals:


Select a Principal type. User

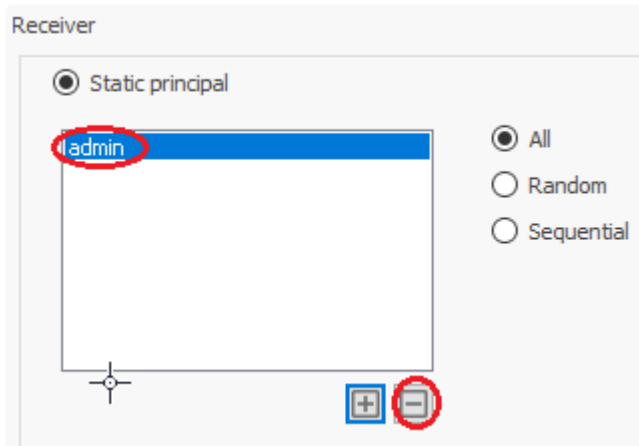
Drag a column header here to group by that column

Code	Title
shantanu	Shantanu Mitra (shantanu)
Adamq	Adam
ChakChoyPink	Chak Choy Pink
fbelghait	Fodil Belghait (fbelghait)
guiadmin	Gui admin2 (guiadmin)
Alex	Alex
MikeZ	Mike Zed (MikeZ)
june	june
Danielh	Daniel Hinojosa (Danielh)
fooboo	foo boo
Tims	Tims
awester	Alain Wester (awester)
acharles	Antoine Charles (acharles)
PeterBrooks	Peter Brooks
david	David Lander (david)
Frank	Frank Mohler
Michael	Michael
AdamCheong	Adam Cheong
Mat	Mat
Andrea	Andrea

Record 1 of 106

Cancel Select

To remove the receiver, first select the appropriate user from the fixed list of recipients, and then click the button .



If you want to add multiple recipients to the Static Principal list, you can choose one of the following options:

- All: By selecting this option, the task is sent to the selected recipients.
- Random: By choosing this option, the task is sent randomly to one of the recipients.
- Sequential: By selecting this option, each time the task is sent, the task is sent to the selected authorities sequentially.

7. Defined principal

By choosing the “Defined” option and then selecting a responsible person, the work will be automatically sent to the responsible authority by the system.



Note: Detection of the position of the user and the selection of the manager is based on the organization module.

- Current Staff: The task is sent to the current staff.
- Starter Staff: The task is sent to the Starter staff.
- Current User: The task is sent to the Current user.
- Starter User: The task is sent to the “Starter user”.
- Current Staff Department Management: The task is sent to the “current manager’s side”. // The task is sent to the members of Management Department.
- Starter Staff Department Manager: By choosing this option, the job will be sent to the “Starter staff manager” side.

8. Dynamic principal

Allows for the user-defined attribute to be selected using the button next to the Field Name box. Users will

be able to select who to send the task to.



Note: The name or responsible person for that task must be selected before submitting the specified form in the selected field.

9. Department Management of static/dynamic principal

The Manager of the receiving unit will be also included in the task list.

5.2.2. 5.2.2 Advanced Tab

The following are the features of advanced tab:

The screenshot shows the 'Task Type Properties' dialog box with the 'Advanced' tab selected. The dialog includes buttons for 'Apply', 'OK', and 'Cancel'. The 'Advanced' tab contains the following fields and controls:

- Process:** A dropdown menu currently showing '[Empty]'.
- Entity Type:** A dropdown menu.
- Dynamic Task Type:** A dropdown menu with a red box around it and a callout '3' pointing to it.
- Assignable:** A checkbox with a callout '4' pointing to it.
- Formless Events:** A checkbox with a callout '5' pointing to it.
- Hide Save Button:** A checkbox with a callout '6' pointing to it.
- Hide Tracking:** A checkbox with a callout '7' pointing to it.
- Application Name:** A dropdown menu.
- Subject Info Template:** A dropdown menu with a red box around it and a callout '8' pointing to it.
- Form Title:** A dropdown menu with a red box around it and a callout '9' pointing to it.

1. Process

The process associated with the task type, which can be selected in the process box. This field is mandatory

✿ **Note:** If you create a task using the Process Designer (See 6.1), this field will be automatically filled in with the current process.

2. Entity type

The related entity to the task, which can be selected in the object type box. This is a mandatory field.

✿ **Note:** When creating a task using process design (See 6.1), this field is automatically filled in with the current process entity.

3. Dynamic task type

By defining a dynamic task type in this box, you can use an information script, such as the task assignee, title, description, priority, tag, bookmark, etc., based on the process information.

To define a dynamic task using code, first click on the “Edit” button and then the “code” option.

In the form of a script, first type the required condition to execute the code, and then enter the API in the content to change the dynamic task information values.

More information about script form ...(See 12.1)

```

1
2
3 //bpmAppService, domainObject, Ray.BPMApp.AuditPrc.Model.BPMAPP_AUD_AuditPlanDt1, eventName
4 if(System.Diagnostics.Debugger.IsAttached)
5     System.Diagnostics.Debugger.Break();
6
7
8     taskIns.PrincipalId = string.Empty;
9     taskIns.PrincipalIds = new List<string>();
10    taskIns.PrincipalIds.Add(domainObject.Starter);
11    taskIns.Subject = string.Empty;
12    taskIns.Description = string.Empty;
13    taskIns.Priority = null;
14    taskIns.ResponseDuration = 0;
15    taskIns.AlarmDate = null;
16    taskIns.Flag = 0;
17    taskIns.Note = string.Empty;
18    taskIns.Tag = string.Empty;
19    taskIns.Resource = string.Empty;
20    taskIns.ParentTaskId = null;
21    taskIns.PredictedOperativeTime = null;
22    taskIns.PredictedTime = null;
23    taskIns.PredictedCostPerHour = null;
24    taskIns.PredictedOperativeCostPerHour = null;
25

```

To define a dynamic task using the Designer, first click on the ‘Edit’ button and then the “Design” option. In the design form, first, enter the required condition in the “Conditions” section and set the required Actions (Call method and Set Property) and validate it to check the output. For more information ...(See 12.2)

DTI_Sys_ScheduleAudit

File Validate

Conditions

☒ Active

(	AUD_AuditPlanDtl	..	equals	AUD_AuditPlanDtl	..	)	AND	✗
(	taskIns	..	not equals		..	)	OR	✗
(	bpmAppService	..	equals		..	)		✗

Actions

Call Method Set Property

taskIns.PrincipalId	..	=		..	✗
taskIns.Subject	..	=		..	✗
taskIns.Description	..	=		..	✗
taskIns.Priority	..	=		..	✗
taskIns.ResponseDuration	..	=		..	✗

Errors Output

4. Assignable

By selecting this option, the assignee can forward the task to someone else.



Note: The forward option is only activated for the defined task.

5. Formless events

If you need to change the status of the task in the task list without opening the form associated with it, select this option. In addition, the option “Formless Event” in the event you want to select should also be selected.

6. Hide save button

By choosing this option in the task definition, the defined tasks will not have the “save” button at the top of the form.

7. Hide tracking

By choosing this option in the task definition, the defined tasks of this type are not displayed.

8. Subject Info template

By choosing a template in the task definition, a text describing the task could be mentioned here. It could be either dynamic or static text. The task will be shown in the task list. More information about Template Management (See 10.1)

9. Form Title

One of the necessary fields when creating the task is to specify the behavior of the associated form that can be selected using this box. More information ... (See 7.2)

5.2.3. 5.2.3 Analytic Data Tab

Determining the response deadline and the time and cost of doing a task in the “analytical data” tab is a function that can be used to prepare reports for analyzing existing organization activities using the Report Generator Reporting Tool (ARPG). The details of the “analytical data” tab are fully described in the image below, which is accessible by editing or creating a task (See 6.2).

Task Type Properties

Apply OK Cancel

General Advanced **Analytic Data** Reports

1 Response Duration 0 Minutes.

2 ☐ Has Analytic Data

Predicted Operative Time

Predicted Time

Predicted Cost Per Hour

3 Predicted Operative Cost Per Hour

1. Response Duration

Response Duration 0 Minutes.

The time it takes to respond to the task.

2. Analytical Data

☐ Has Analytic Data

Predicted Operative Time

Predicted Time

Predicted Operative Time: The anticipated time to complete a task. i.e, the time interval between the

creation of the task and its completion.

Predicted Time: The actual time spent on the task.

3. Predicted costs

Predicted Cost Per Hour	<input type="text"/>
Predicted Operative Cost Per Hour	<input type="text"/>

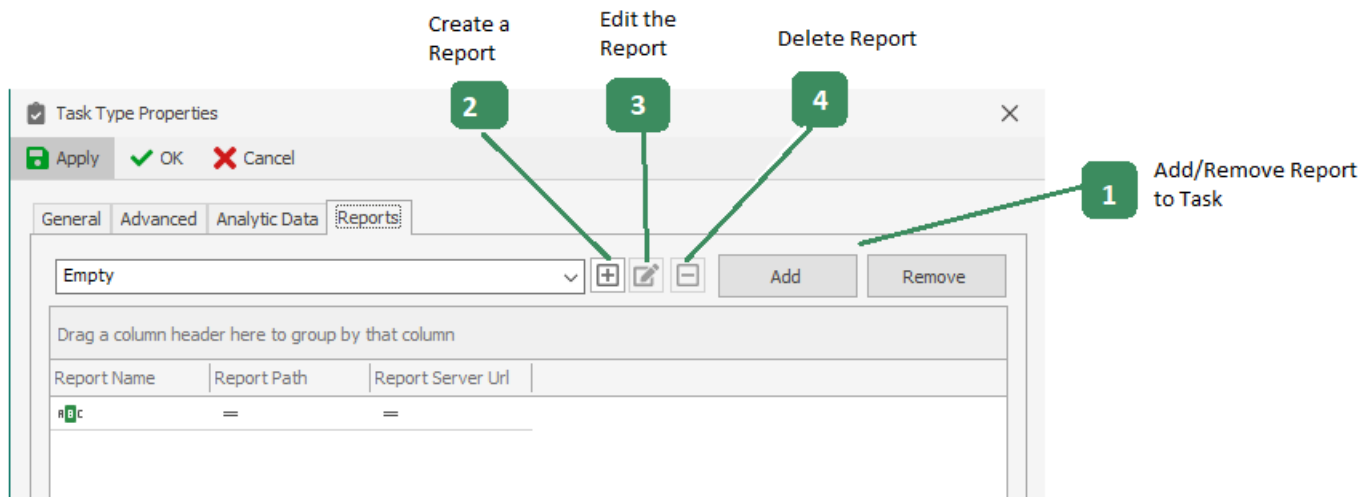
Predicted Cost Per Hour: Cost of real-life forecasting for each hour. Cost per hour of work remaining in the cart imposed on the organization.

Predicted Operative Cost Per Hour: The cost of forecasting the stopping of work for each hour. Cost per hour of useful activity on work imposed on the organization.

5.2.4. 5.2.4 Report tab

! Note: ARPG is not completed yet. In future versions when ARPG will be effectively implemented, this section will become active.

The ARPG connection settings and the export model must be setup beforehand.



1. Add/Remove Report to task

By selecting the “Add” button, the selected report will be added to the Task List in the Report box and will be deleted by selecting the “Remove” button.

2. Create report

By selecting this button, the Report Definition form is displayed. More about Report Definition (See 11.6.1)

3. Edit the report

By selecting this button, the selected report will be opened and in the editing mode.

4. Delete the report

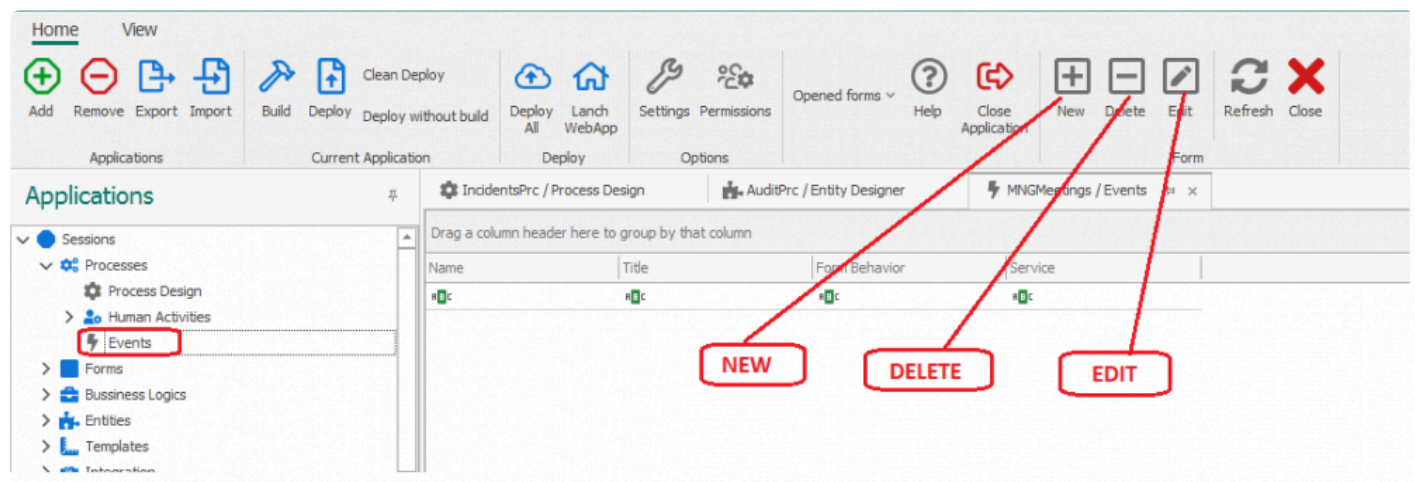
By selecting this button, the selected report will be deleted.

5.3. 5.3 Event

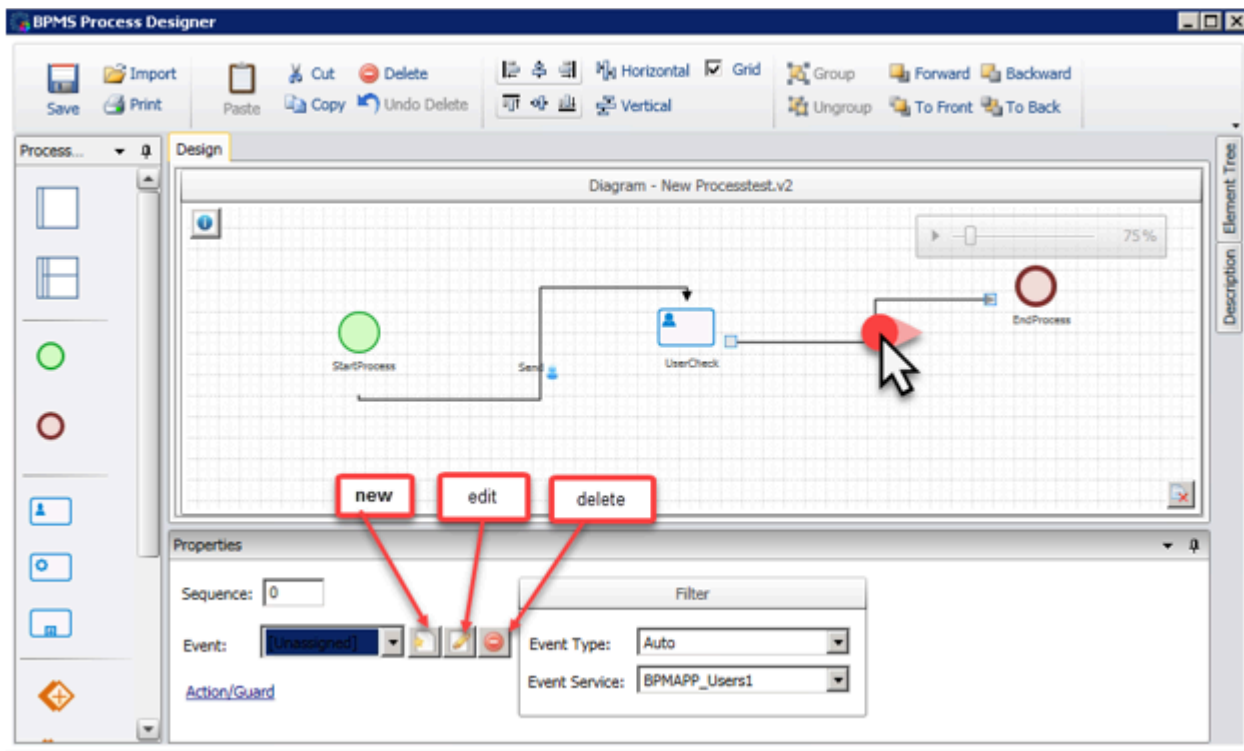
An event is a type of action that occurs during process execution (independent of the process).

Applying changes to an event such as create ,edit and delete is possible in two ways:

1. Select the “Event” subkey from the “Process” set, in the Open Application tree



2. Select the transition/connector (See 6.1.1.2) (←) between the two activities in the Process Diagram section (See 6.1), and then edit, create and delete events in the event dialog.



It is possible to define the event types within the processes. See following sections for more details.

5.3.1. 5.3.1 Systematic and automated event.

An event called by the system is called a “system event”.

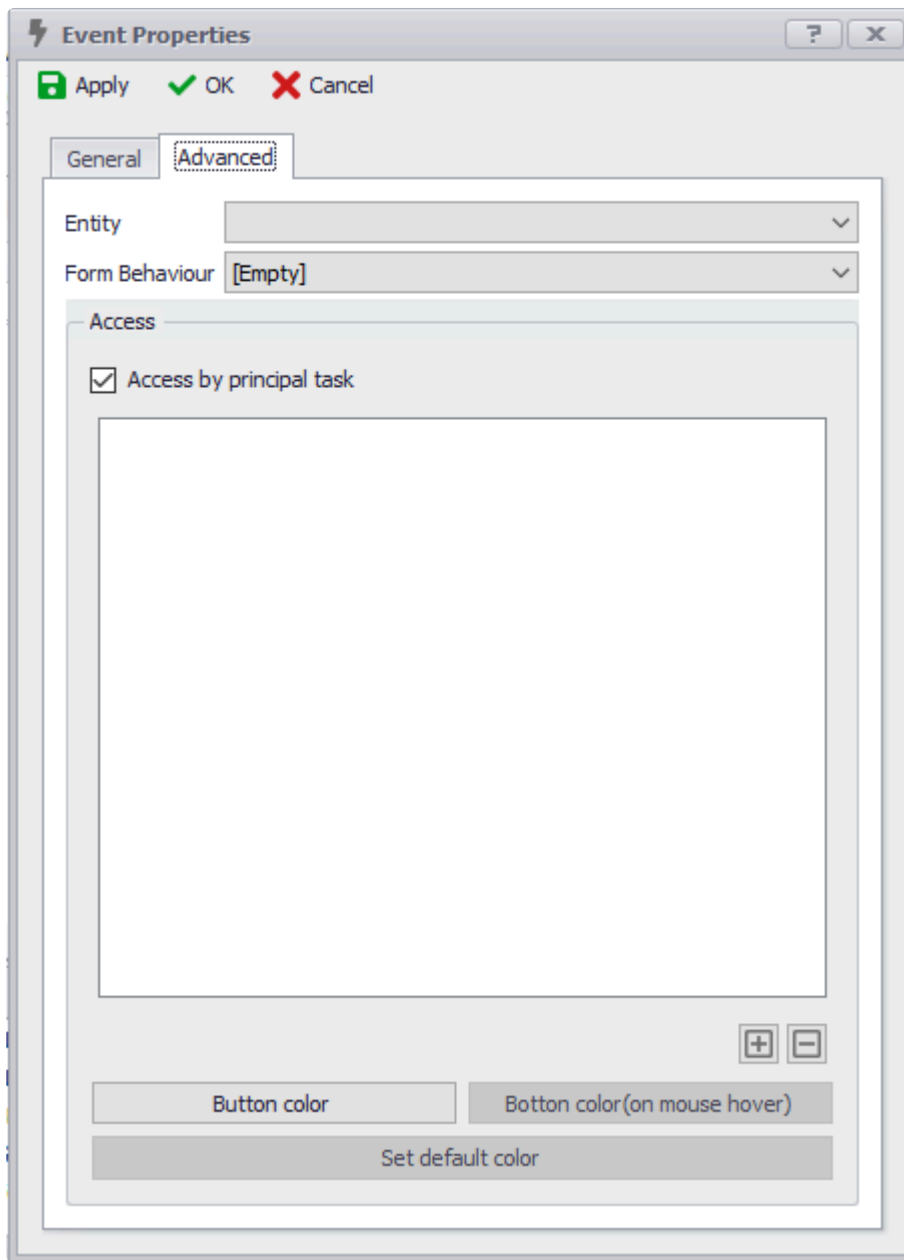
✿ **Note:** As long as there is no system event in the scripting environment (action after form, rule, etc.), the process remains in the same state. For more information about event invocation API, see section 12.

An automated event is referred to as an event that automatically brings the process to the next step.

To define a system or automated event, first select the New button (See 6.3), then specify the event type, the event name and title.

The screenshot shows the 'Event Properties' dialog box with the 'General' tab selected. At the top, there are buttons for 'Apply' (green), 'OK' (green checkmark), and 'Cancel' (red X). Below the tabs, the 'Event Type' is set to 'Human' in a dropdown menu. There are text input fields for 'Name' and 'Title'. Below these is an 'Event Icon' field with a small icon box and '+' and '-' buttons. At the bottom, there are two checkboxes: 'Can run background' and 'Has TimeSheet'. A 'Scheduling' section is collapsed, showing 'In' and 'Run automatically(without API)' checkboxes, and 'Add/Edit' and 'Delete' buttons.

In the advanced tab, select the “group of events” or entity.



The image shows a software dialog box titled "Event Properties". At the top, there are three buttons: "Apply" (with a floppy disk icon), "OK" (with a green checkmark icon), and "Cancel" (with a red X icon). Below these are two tabs: "General" and "Advanced", with "Advanced" being the active tab. The "Advanced" tab contains the following elements:

- An "Entity" dropdown menu.
- A "Form Behaviour" dropdown menu showing "[Empty]".
- An "Access" section with a checked checkbox labeled "Access by principal task".
- A large empty rectangular area below the checkbox.
- At the bottom right of the large area are two small square buttons with "+" and "-" signs.
- Below the large area are three buttons: "Button color", "Botton color(on mouse hover)" (note the typo), and "Set default color".



Note: By choosing the "System" or "Auto" event type in the event definition form, other features in the form are disabled and will not be editable.

5.3.2. 5.3.2 Human event

An event with the initiating source being a human being and is triggered by a clickable button in the form is called “human event”. since it requires manual input.

By clicking on the new button (See 6.3), the event form will be displayed, which includes general and advanced tabs:

General tab

The screenshot shows the 'Event Properties' dialog box with the 'General' tab selected. The dialog has a title bar with a lightning bolt icon, a question mark, and a close button. Below the title bar are buttons for 'Apply', 'OK', and 'Cancel'. The 'General' tab contains the following fields and options:

- Event Type:** A dropdown menu set to 'Human' (callout 1).
- Name:** A text field containing 'Event1' (callout 2).
- Title:** A text field containing 'Event1' (callout 3).
- Event Icon:** A button with a plus sign and a minus sign (callout 4).
- Can run background:** A checked checkbox (callout 5).
- Has TimeSheet:** A checked checkbox (callout 6).

Below these fields is a 'Scheduling' section with two unchecked checkboxes: 'In Process' and 'Run automatically(without API)'. At the bottom of the 'Scheduling' section are 'Add/Edit' and 'Delete' buttons.

1. Event type

The type of the event can be selected .

2. Name

The unique name of the event

* Note: An error message will be displayed if the name is not unique

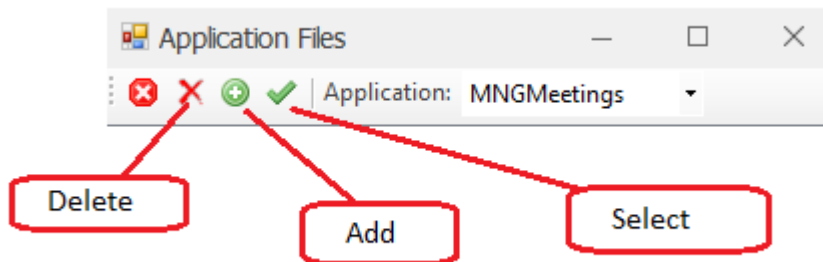
3. Title


The title entered in this box is the title displayed on the form.

4.Event Icon

If an icon is uploaded in this section, the icon will be displayed in the background of the button in the form.

By clicking on the “+” button, a form appears which allows users to add and delete pictures, as well as selecting them from a directory.

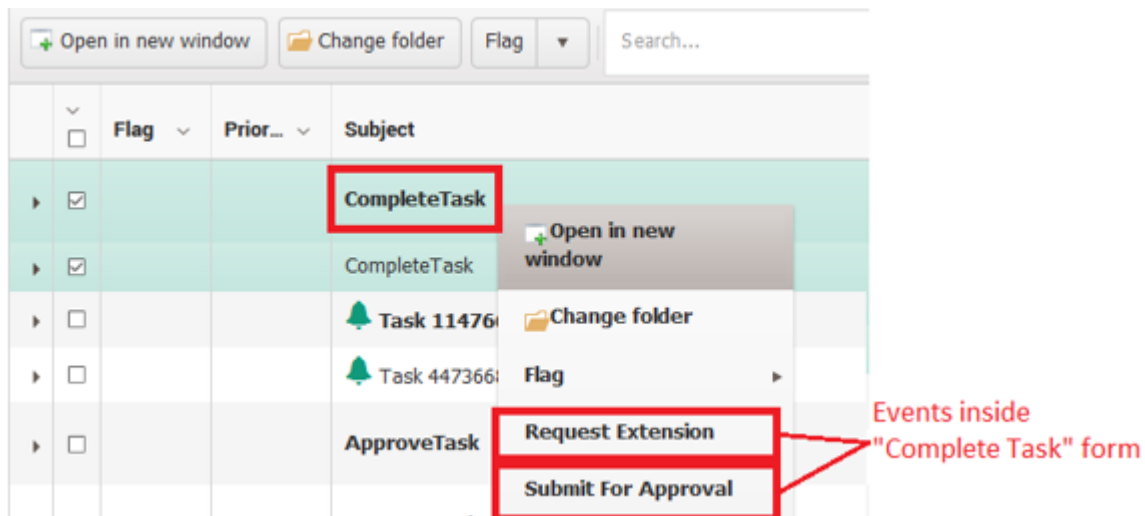


Selecting the  button will delete the selected icon for the event.

5. Run background

If this option is selected, the event title defined in the right-click task in the map will be visible and can be executed without the need to view the form.

* Note: In order to display the event on the right-hand side of the task, in addition to selecting this option, the “Formless Events” (See 6.2.2) option should also be selected in the task



6. Has Timesheet

If this option is selected, when the event is executed, a timestamp of the work will be recorded.

Advanced Tab

Event Properties

Apply OK Cancel

General Advanced

Entity

Form Behaviour [Empty]

Access

☒ Access by principal task


+ -

Button color Botton color(on mouse hover)

Set default color

Entity/Behaviour: The event must be related to an entity. Form behaviours can be specified.

Access: The users who have been added will see the display event when viewing the child's form (Those who have the “save and new” and “save and return” buttons)

 : By selecting this button, the list of users, positions and groups in the system can be selected and added.



: This button will remove the selected person/user/group from the list.

5.3.3. 5.3.3 Scheduled event

An event called by the system at certain times or over a period of time is called a “scheduled event”.

✿ **Note:** To use scheduled events, installation of the scheduling service and running the BPMS Scheduler service in the system services section is required. To learn more about how to install the scheduler service, see 3.1.7.

To define the scheduled event, first select the new button (See 6.3), then specify the event type, name and title.

The screenshot shows the 'Event Properties' dialog box with the 'General' tab selected. The 'Event Type' dropdown is set to 'Timed'. Below it are empty text boxes for 'Name' and 'Title'. The 'Event Icon' field has a plus button and a minus button. There are two checkboxes: 'Can run background' and 'Has TimeSheet', both of which are unchecked. A 'Scheduling' section is expanded, showing 'In Process' as unchecked and 'Run automatically(without API)' as checked. At the bottom of the dialog are 'Add/Edit' and 'Delete' buttons.

By selecting the event type in the event definition form, the “Scheduling” box is enabled to define the timing.

Note: If you select the “In Process” option, the defined scheduling event will be used and run automatically (without API) during the process. If you do not select the “In Process” option, the scheduled event occurs outside the process and only occurs by selecting the option “Deploy TimedEvent” by right-clicking on the event sub-section.

Note: If an operation is required with each scheduled event, define its code in the event action (See 8.2.3). Learn more about Scheduled Event APIs ... (See 12)

By selecting the “Add / Edit” button in the “Schedule” box, the scheduling form will appear to allow the user

to define the Scheduler Trigger.

5.3.3.1. 5.3.3.1 Scheduling

By selecting the “Add / Edit” button in the “Schedule” box, the schedule trigger form is displayed.

Scheduler Trigger

Start Time

☒ Run Time

☐ After Run Time

0 Second

☐ Start Time

[Empty Value] 3:44:06 PM

End Time

☒ Null

☐ End Time

[Empty Value] 3:44:06 PM

Simple

☒ Simple

Repeat Count: 0 Forever

Repeat Interval: 1 Hour

☐ According to work calander

Ok

1. Start time

In this field, the start time of the scheduler is set.

- Run Time: The start time of the scheduler when deploying scheduling events is independent of the process (if the occurrence is independent of the process).
- After Run Time: The event is triggered after the specified amount of time
- Start Time: A specific start time can be specified for the event.

2. End time

In this field, the timing is set to end.

- Null: By choosing this option, the expiration time of the scheduler will be undefined.
- End time: By choosing this option, the end time of scheduler will be set to whatever is defined in this field

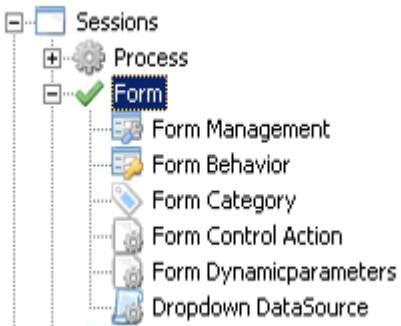
3. Simple Scheduling

If you need a simple scheduler, use the simple option to determine the number and spacing of repetitions.

- Repeat Count: The number of times that the scheduler is run can be specified in this box. If you select "Forever," the scheduler will be repeated forever.
- Repeat interval: The time interval between scheduling repetitions


6. 6. Forms

The Form Module is composed of the following sections:



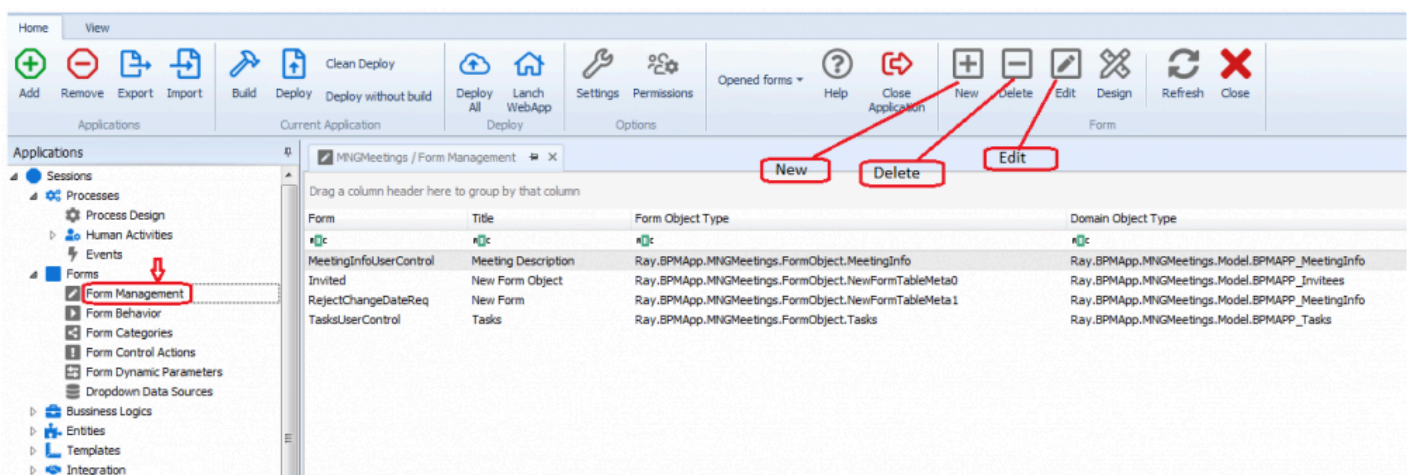
6.1. 6.1 Form Designer

The “Form Designer” allows users to design and select the layout and the controls of the web application. The controls refers the different physical elements of the web app, such as textboxes, radio buttons, etc

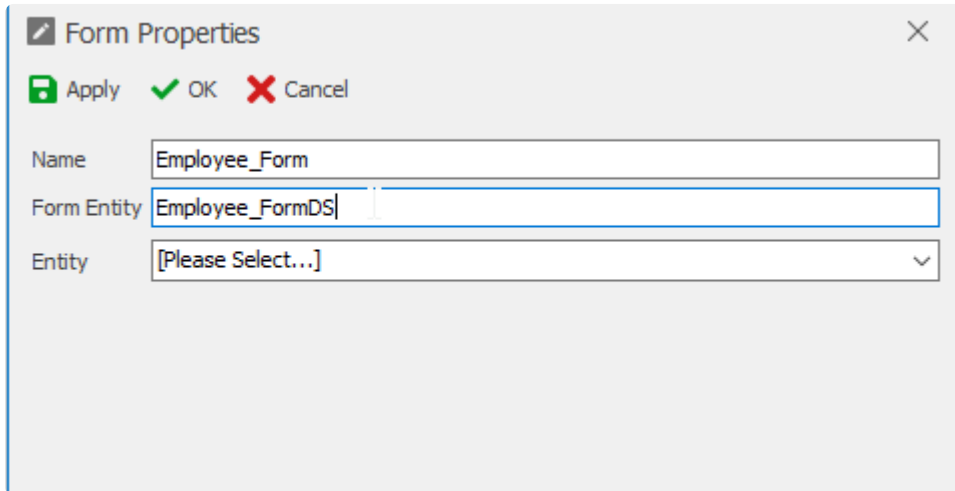
 **Note:** In the “Form Designer”, in addition to designing the layout of the controls, we can define the relationship between a control with an attribute and define the behavior of the control at a particular stage of a process.

To access the form designer using the Forms Management, the follow these steps:

1. Select the “Form Management” under the Form module



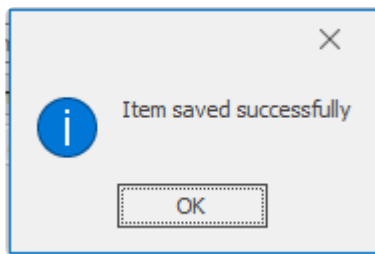
2. Choosing “New” or “Edit” option will popup the “Form Edit” window to enter the form profile.

A screenshot of the 'Form Properties' dialog box. It has a title bar with a pencil icon and a close button. Below the title bar are three buttons: 'Apply' (with a floppy disk icon), 'OK' (with a green checkmark icon), and 'Cancel' (with a red X icon). The dialog contains three fields: 'Name' with the text 'Employee_Form', 'Form Entity' with the text 'Employee_FormDS', and 'Entity' with a dropdown menu showing '[Please Select...]'.

Name: The name of the form. To rename a created Form, the user should click the “Edit” option in Form Management.

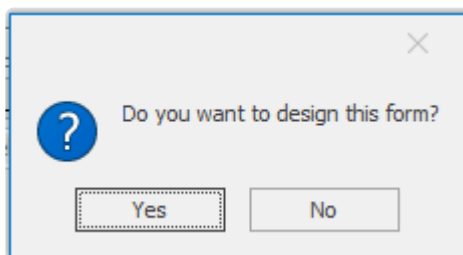
Entity: If the user needs to store form information in a database, an entity associated with the form must be selected in this list.

3. To save and exit, choose the “Save & Exit” option.



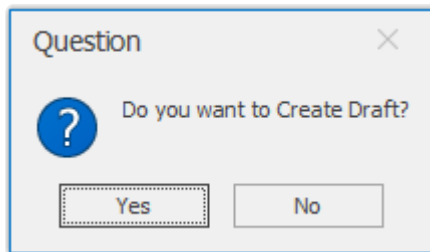
A confirmation message will appear when the user saves an item.

4. You will be asked if you want to design this form



Selecting “no” will bring the user back to the form management page


5. If “yes” is selected, a new pop-up window will ask if the user wants to create a draft.

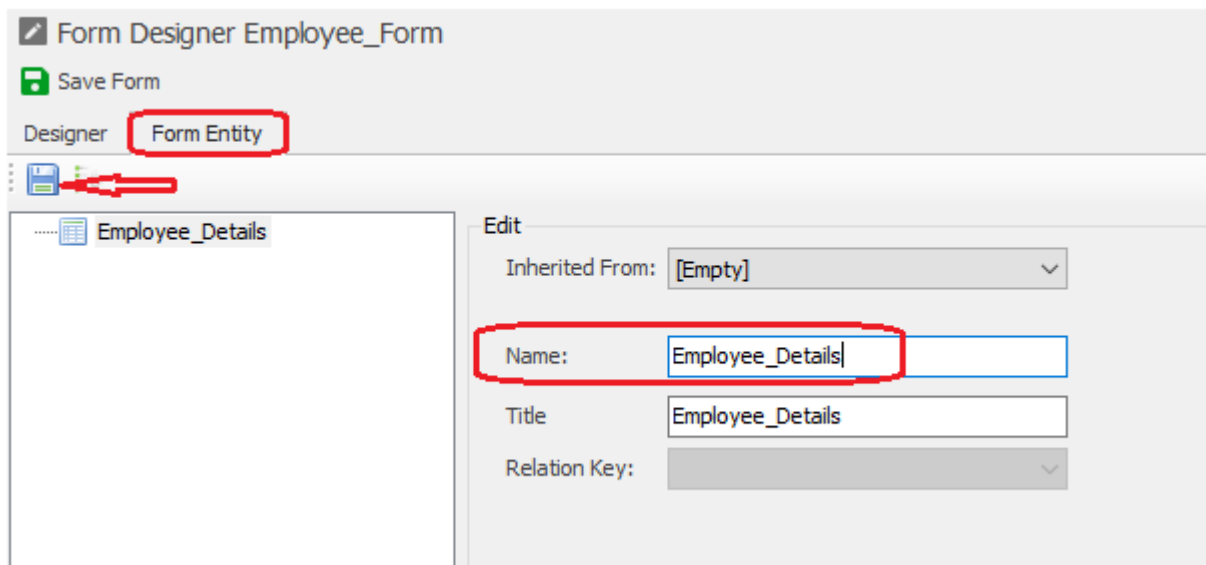


If user chooses “Yes”, the new Form opens in design mode, with all the attributes of the related entity associated to an appropriate control

If user chooses “No”, the new Form opens in design mode, without any attributes by default.

To rename the newly created form, the user should enter the Form Designer (double click on the form name that was created) in Form Management.

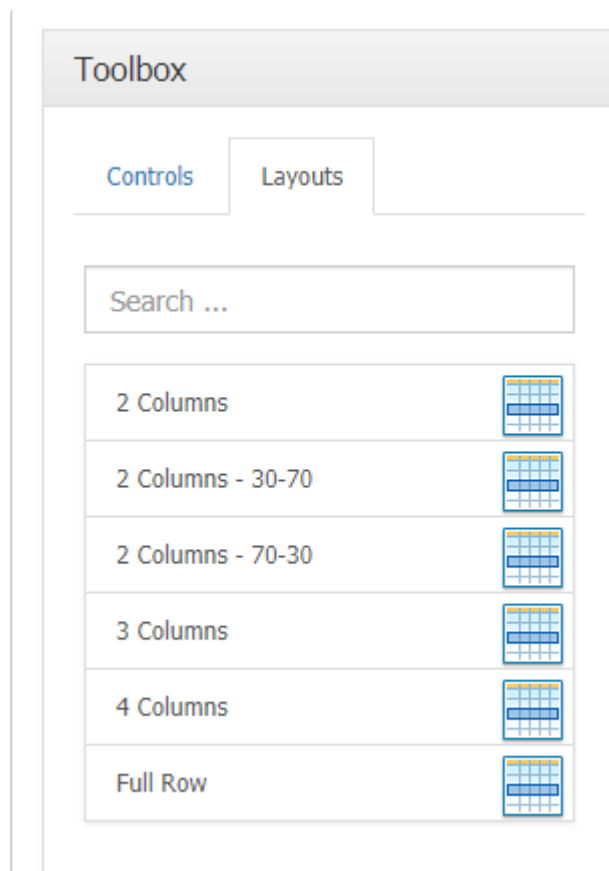
In the Form Designer, change the name and press “Save”  button.



6.1.1. 6.1.1 Layout Tab

The Layout Tab allows users to design the layout of the web application by drag and dropping columns onto the design canvas

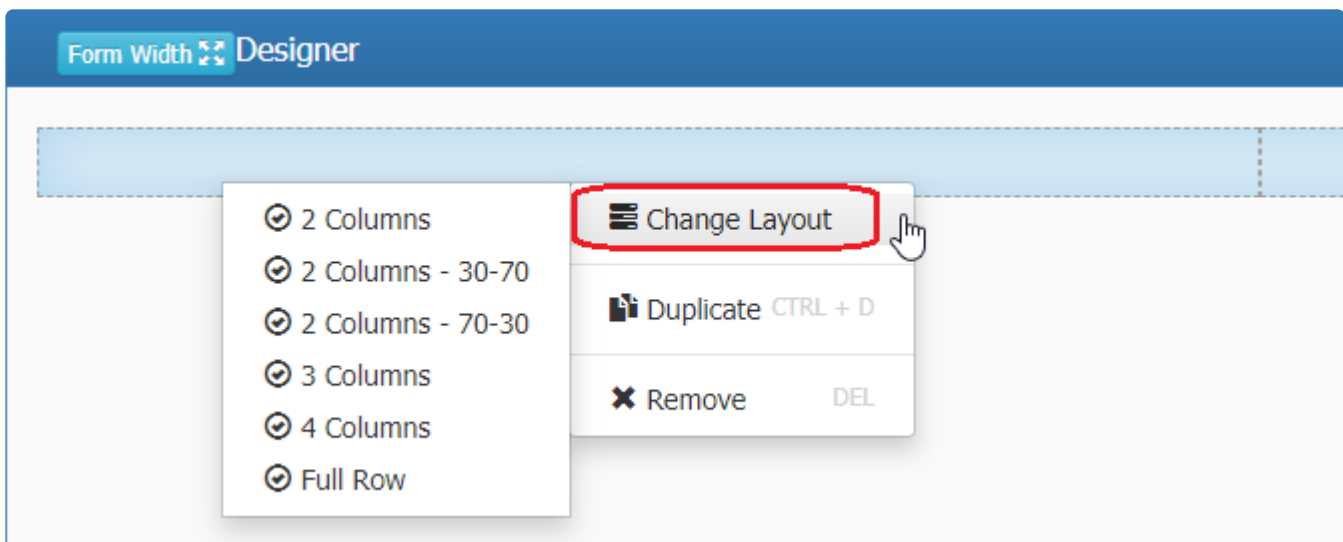
✿ **Note:** The columns included in the form are only used in the design environment and are used to categorize and control the layout of the columns in the form.



To insert a column, first select the layout in the list by holding down the left mouse button, and then drop it in the form design letterhead at the desired location (the area will be marked yellow). Dropping a column in the “Add row to page” will add a row to the page with the appropriate amount of columns.



To change the layout, right-click on the column and select “Change Layout”.



6.1.1.1. 6.1.1.1 Column Properties

By clicking the column layout in the form, its associated properties are displayed in the properties window.

Control Behavior	
Control Behavior Form	0- Change URL for EPC
Control Behavior State	Enable
Misc	
BorderColor	Black
IsBorder	False
PhysicalColumns	(Collection)
Name	
ServerId	Row1

Control Behavior

Current form behaviors are displayed in this section.

* Tip: For each behavior, you can change the display mode of the layout content at that stage (behavior). For information on Form and Status of Form Behaviors, see 7.2.

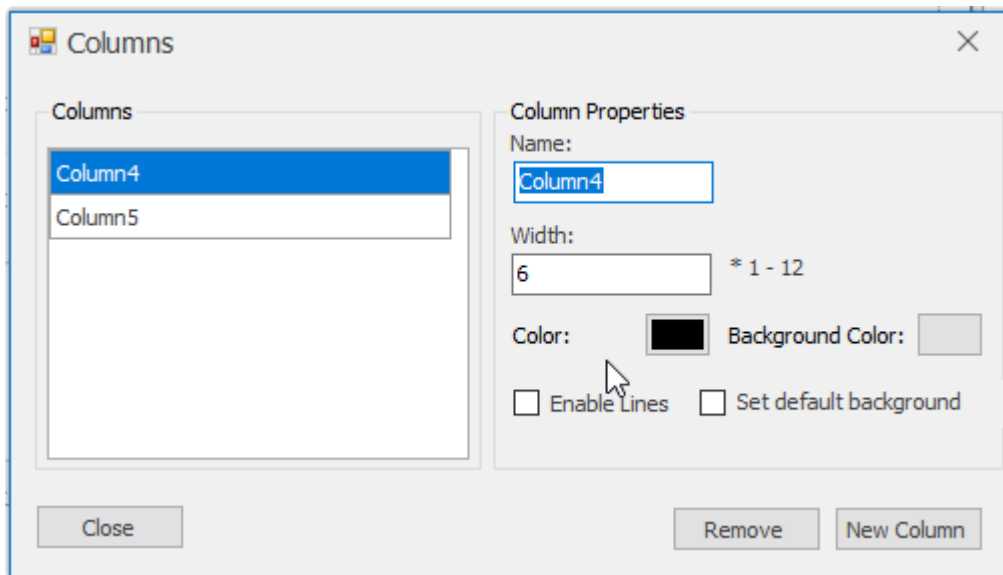
- Control Behavior Form: The form associated to the behavior
- Control Behavior State: whether the behaviour is enabled, disabled or hidden.

Behavior States

- Enable: If this option is selected, the layout content will be enabled on the web.
- Disable (unchangeable): If this option is selected, the layout content is disabled on the web and cannot be changed.
- Invisible (hidden): If this option is selected, the layout content will be invisible on the web.

Misc

Properties like color, column and border



1. Border Color: Users can set the border color of the row
2. Columns: Clicking on this section and selecting the button will display the “Edit Column” form.
3. New column: By clicking this button, a new column will be created with the default name.
4. Remove: By selecting the column in the list of columns and then clicking this button, the column will be deleted.
5. Name: The unit name for each column can be changed in this box.
6. Width: In this box, the width of the selected column in the list is determined.

✿ Note: The total width of the columns in the list should not exceed 12.

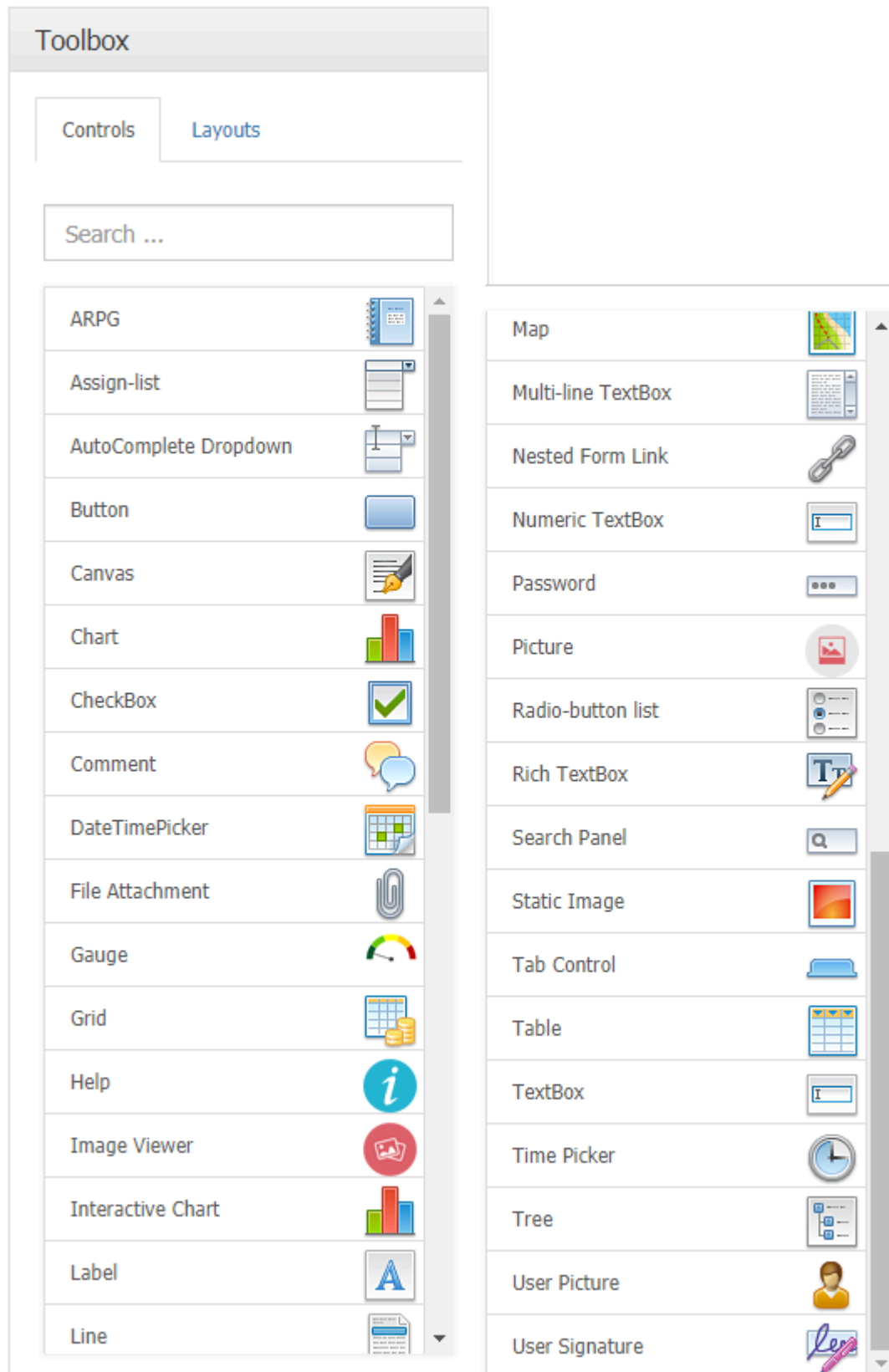
Name

The data name of the column used in the code

1. Server Id – the name used to call the column in the code

6.1.2. 6.1.2 Controls Tab

The list of controls used in the form design along with the linked description are listed below:



6.1.2.1. 6.1.2.1 General Control Properties

When clicking on a control, the property window of that control will be displayed on the right side.

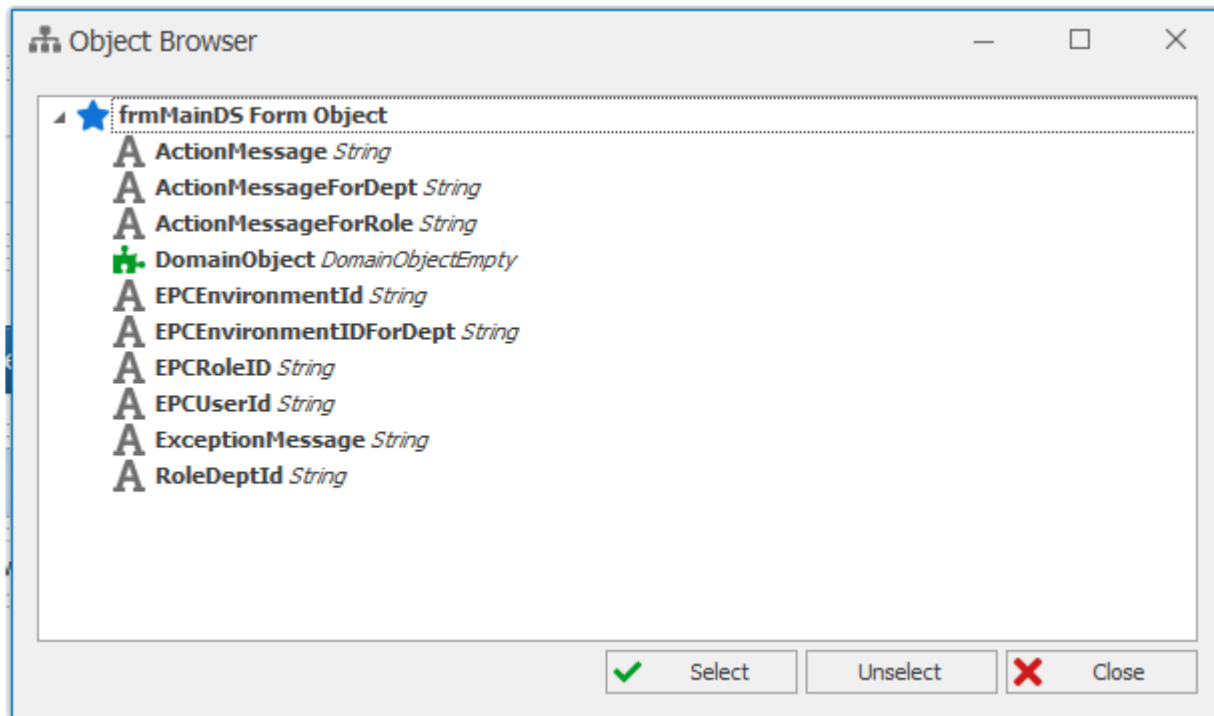
RayLabel	
Binding	
1. Data Member	ActionMessage
2. Control Binding	...
Control Behavior	
Control Behavior Form	0- Synchronization with EPC
Control Behavior State	Enable
Initial Value	
Display	
BackColor	0, 236, 233, 217
Font	Tahoma, 9pt
Name	Tahoma
Size	9
Unit	Point
Bold	False
GdiCharSet	1
GdiVerticalFont	False
Italic	False
Strikeout	False
Underline	False
ForeColor	0, 0, 0, 1
HasHeight	False
Tooltip	
Misc	
Align	Left
Direction	Ltr
Name	
Caption	RayLabel
ServerId	RayLabel

Binding

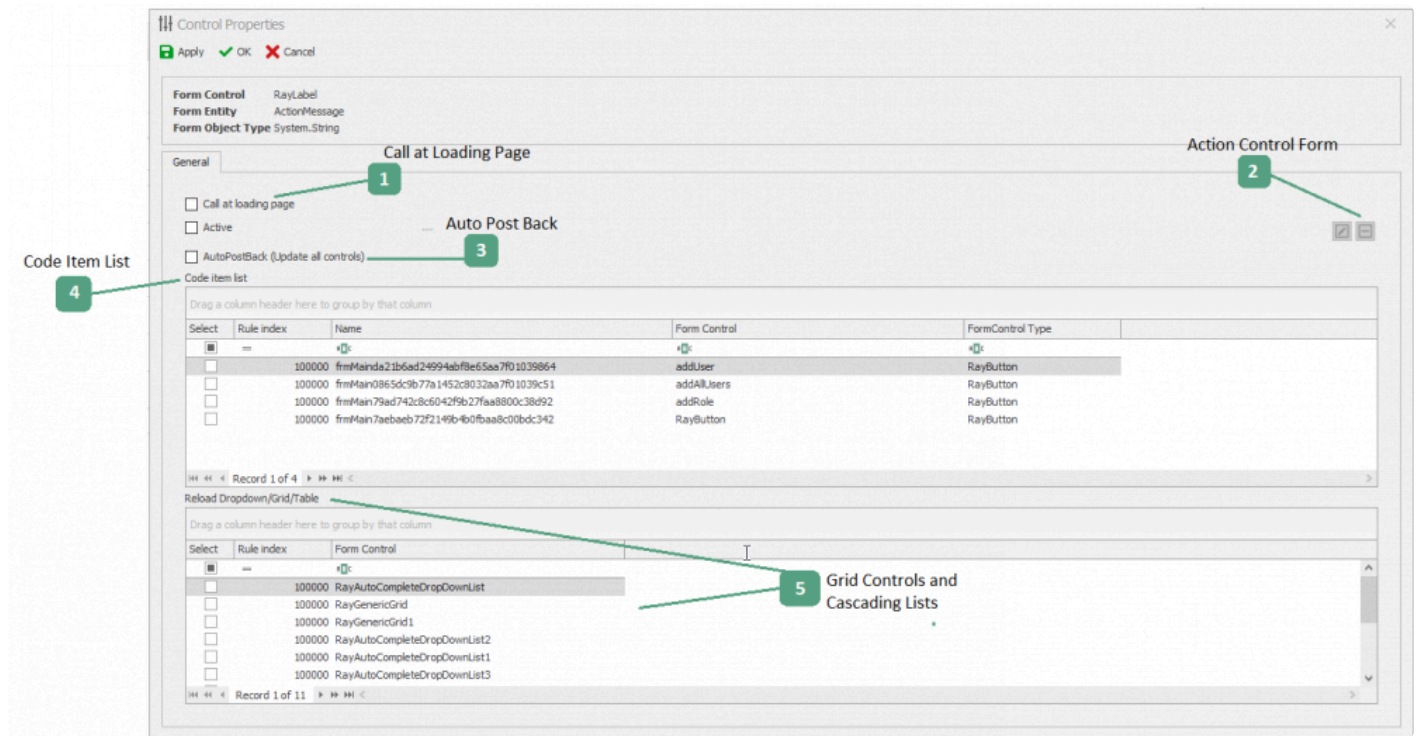
Attributes and binding properties of the control

DataMember: The attribute that is linked with the control. Click on the “...” button to link the control to an attribute

- The object browser window will appear. To select an attribute, select it and click “Select”. To unselect a chosen attribute, select and click “Unselect”



Control Binding:



1. Call at loading page

By choosing this option and then defining the action, each time the form is opened on the web, the Action form control is executed if “Active” checkbox is switched on.

2. Action control form

It is possible to define and edit the action using a designer, or by writing code. You can define or add an action by clicking the “+” button or delete the action by clicking the “-” button.

3. AutoPostBack

By choosing this option, with each change in the control (creating, editing, typing, selecting, etc.), all the selected controls are updated in the form.

4. Code Item List

Each time the form is updated on the Web, the actions selected on this list are executed in the order specified.



Note: All actions defined in the current form are shown in this list.

5. Grid controls and dropdown lists

Each time the form is updated on the web, the selected controls in the list are called in again.

6.1.2.2. 6.1.2.2 Attachment Control

The attachment control can be used to attach different file types (Pdf, RaR, JPG, Gif, ...) to the form.

RayFileAttachment	
Binding	
1. Data Member	
2. Control Binding	
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Close DRP
Control Behavior State	Enable
Display	
Edit Mode File Extensions	
File Extensions	
Max File Count	1
Max File Size	2
TabIndex	2
Tooltip	
Name	
Caption	RayFileAttachment
ServerId	RayFileAttachment

Creating an Attachment Control

You can set up a “File Attachment” control by dragging the “File Attachment” control from the toolbox onto the design canvas.

RayFileAttachment

+

File

6.1.2.2.1. 6.1.2.2.1 Step 1: Define Attribute

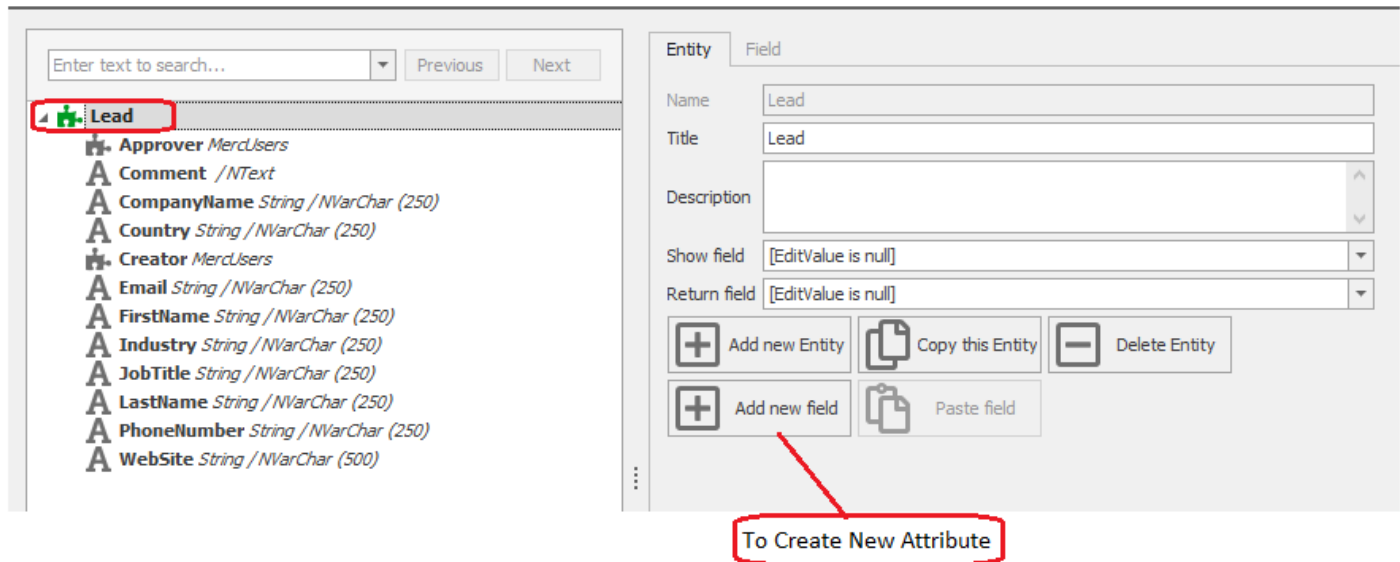
The first step in setting up the “File Attachment” control is to create a string attribute (Nvarchar, varchar, ...) to store the data in the entity associated with the form containing the control. Refer to section 9 for information about entities.

Note: The defined attribute capacity is related to the number of attached files, and the lowest value for which it can be determined. The default location for storing the attached form of the form is in the Dms folder in the installation path of the application, which can be changed during the installation of the application.

Note: The default location for storing the attached form of the form is in the Dms folder in the installation path of the application, which can be changed during the installation of the application.

The screenshot displays the BPMS Designer interface. On the left, a tree view shows the 'Lead' entity with a list of attributes. The 'Attach String / VarChar (0)' attribute is highlighted with a red box. On the right, the 'Field' tab is active, showing the configuration for the 'Attach' field. The 'Name' and 'Title' fields are both set to 'Attach'. The 'Description' field is empty. The 'Data field' radio button is selected. The 'Data Type' dropdown menu is set to 'VarChar' and is highlighted with a red box. The 'Size' field is empty, and the 'Precision' field is also empty. Below the 'Data field' section, there is a 'Show as a column in the task list' section with three radio buttons: 'Hide' (selected), 'Hidden by default', and 'Show by default'. At the bottom, there is a 'Read Only' checkbox and three buttons: 'Add new field', 'Copy field', and 'Delete field'.

By clicking on the entity name and choosing the “Add New Filed (See 9.3)” option, the attribute will be created and the type of attribute can be changed in the edit box



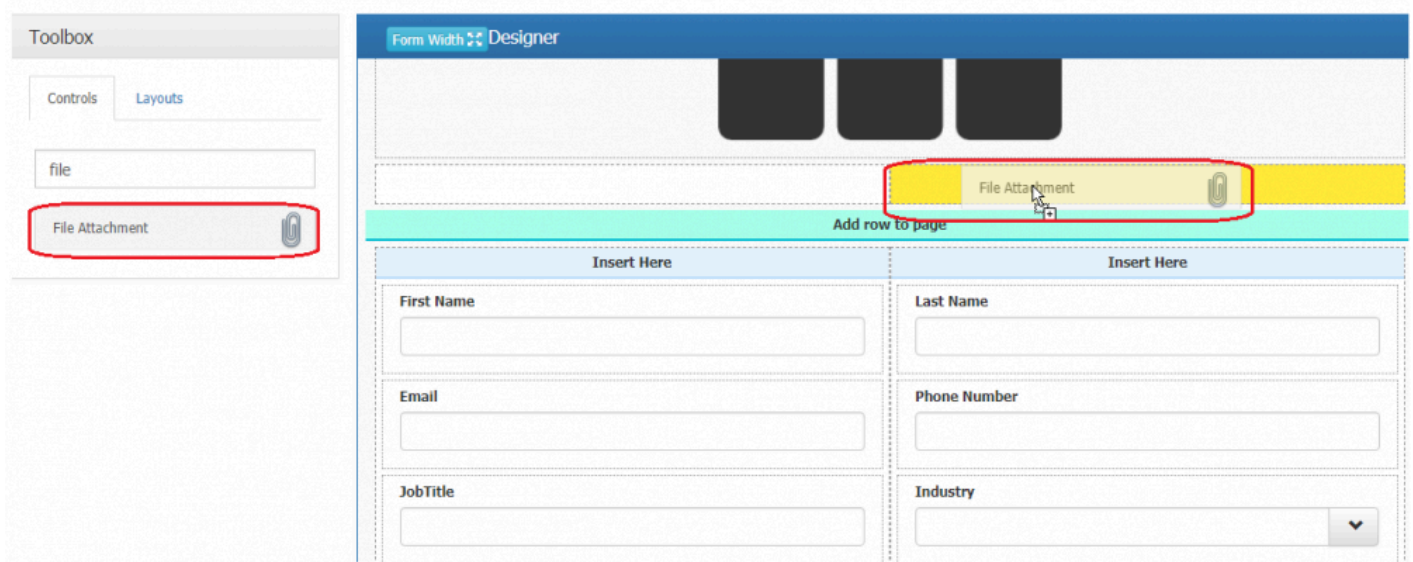
6.1.2.2.2. 6.1.2.2.2 Step 2: Connect the Control to the Attribute


The second step in setting up the “Attachment Control” is the control connection with the “attribute defined in step one” in the design of the responsive form, the description of which is described below.

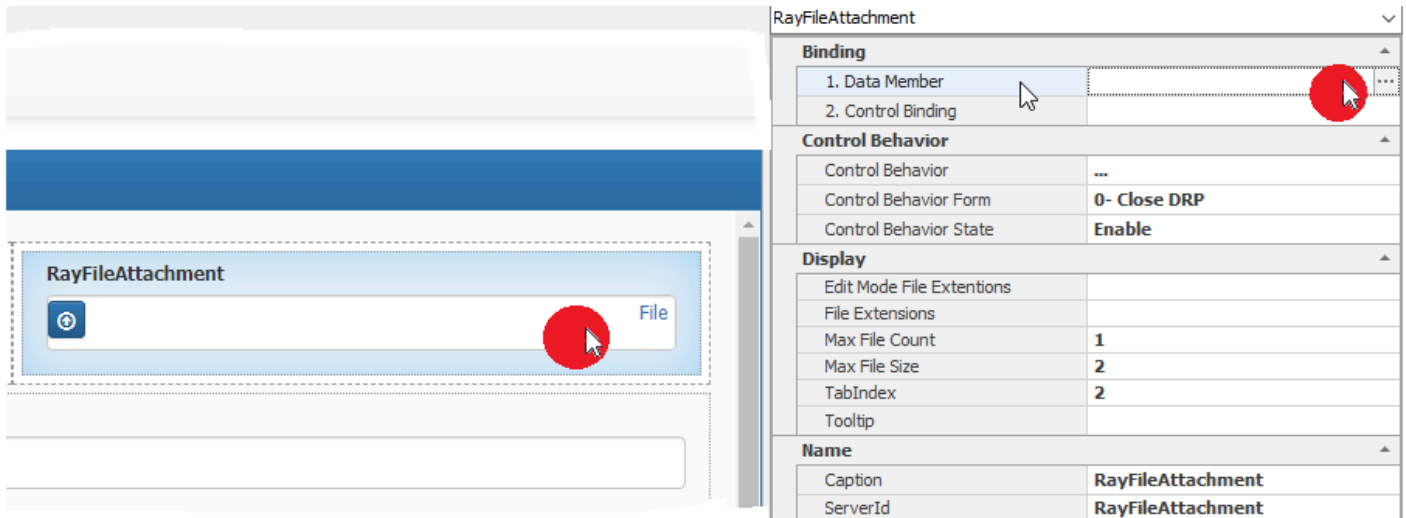
1. By holding the left mouse button on the control of the attachment in the control list, and then dropping the mouse in the row or cell, the control is inserted in the yellow column.



Note: When adding controls in the form, the “Add Row” option is displayed. When dropped into this section, the control will occupy the entire row as a single column.



2. To bind an attribute to the control, first click on the control, then click on the “DataMember” section and click the  button to select the attribute.




RayFileAttachment


Binding	
1. Data Member	
2. Control Binding	

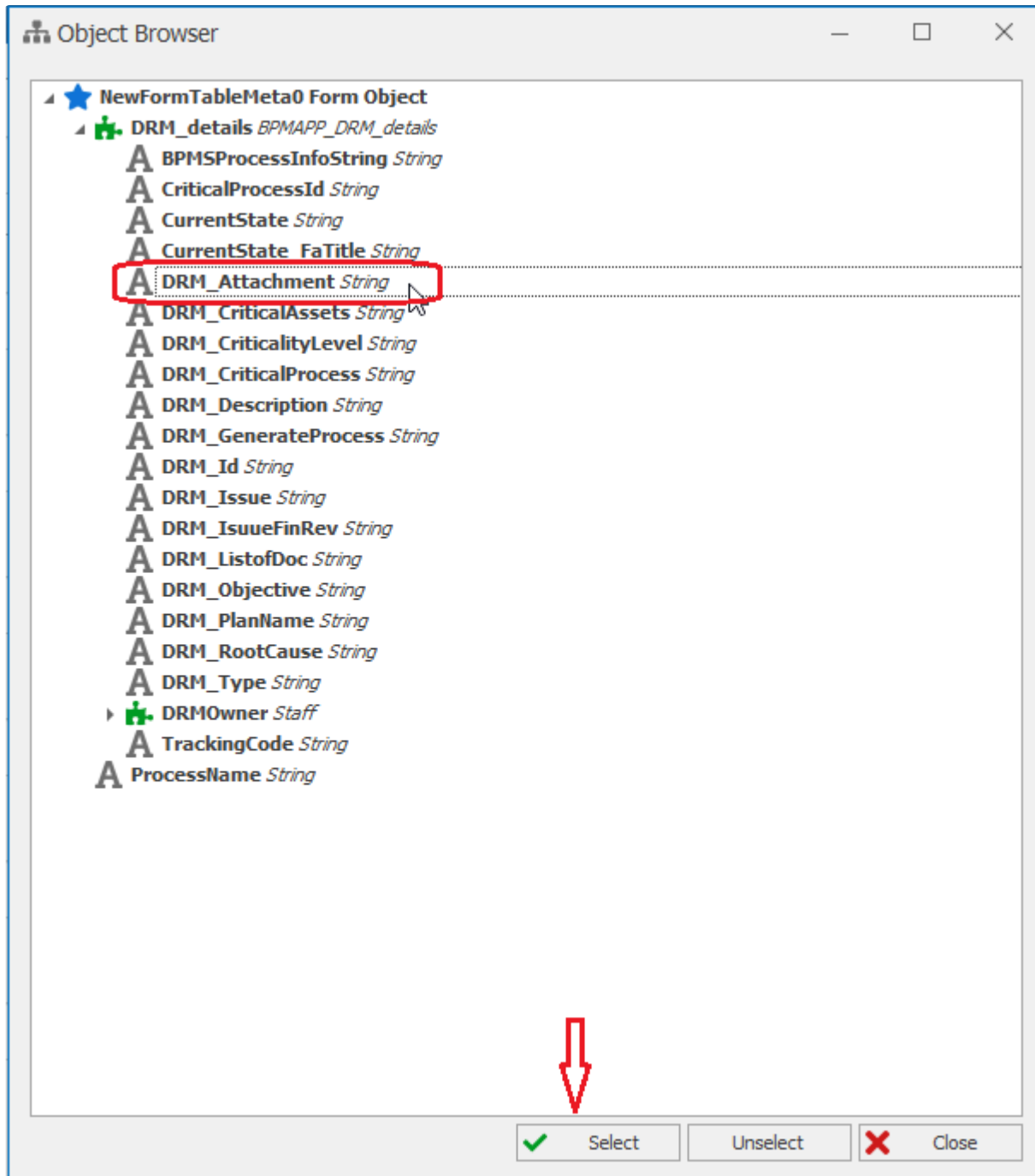
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Close DRP
Control Behavior State	Enable

Display	
Edit Mode File Extensions	
File Extensions	
Max File Count	1
Max File Size	2
TabIndex	2
Tooltip	

Name	
Caption	RayFileAttachment
ServerId	RayFileAttachment

3. By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.

 **Note:** The attribute defined in step 1 (See 7.1.2.2.1) is displayed under the entity name.



6.1.2.2.3. 6.1.2.2.3 Step 3: Control Specifications

The third step in setting up the “Attachment Control” is to specify the associated control attributes in the “Control Profile” box, which is displayed in the left pane of the form design by selecting control in the form sheet.

The screenshot shows the configuration window for the **RayFileAttachment** control. The window is divided into several sections: **Binding**, **Control Behavior**, **Display**, and **Name**. Numbered callouts (1-9) point to specific fields:

- 1 Behaviour**: Points to the **Control Behavior** section.
- 2 Others**: Points to the **Control Behavior Form** field, which is set to **0- Close DRP**.
- 3 Relationship with the entity**: Points to the **DomainObject.Attach** field in the **Control Binding** section.
- 4 Display Details**: Points to the **Control Behavior State** field, which is set to **Enable**.
- 5 Title**: Points to the **Caption** field in the **Name** section, which is set to **RayFileAttachment**.
- 6 Control Name**: Points to the **ServerId** field in the **Name** section, which is set to **RayFileAttachment**.
- 7 Max File Sixe**: Points to the **Max File Size** field in the **Display** section, which is set to **2**.
- 8 Max No. of Files**: Points to the **Max File Count** field in the **Display** section, which is set to **1**.
- 9 File Type**: Points to the **Edit Mode File Exentions** field in the **Display** section.

RayFileAttachment	
Binding	
1. Data Member	DomainObject.Attach
2. Control Binding	...
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Close DRP
Control Behavior State	Enable
Display	
Edit Mode File Exentions	
File Extensions	
Max File Count	1
Max File Size	2
TabIndex	2
Tooltip	
Name	
Caption	RayFileAttachment
ServerId	RayFileAttachment

1. Behavior

Form behaviours are defined independently from the form design. See 7.2. Current defined form behaviors are displayed in the “form” section.

✿ Note: You can change the behaviour of the form depending on the stage at which the process is at.

- Enable: If this option is selected, the control will be enabled on the web.
- Disable: If this option is selected, the control on the web is disabled and cannot be changed by the user.
- Invisible: If this option is selected, the control will be hidden from the user.

2. Other

Determining access to attachment functions (uploading, downloading, deleting files) and validating controls is possible using this section. Clicking on this section and clicking the “...” button will display a window which includes two tabs: “File Attachment” and “Validation”.

File Attachment Tab

The screenshot shows a dialog box titled "Behaviour of Close DRP form". At the top, there are three buttons: "Apply" (with a floppy disk icon), "OK" (with a green checkmark icon), and "Cancel" (with a red X icon). Below these buttons, the text "Control Name : RayFileAttachment" is displayed. The dialog has two tabs: "File Attachment" (which is selected) and "Validation". Under the "File Attachment" tab, there are four checkboxes arranged in a 2x2 grid: "Enable Upload" (checked), "Enable Download" (checked), "Enable Delete" (checked), and "Enable scan" (checked). To the right of these checkboxes is a section titled "Attach Files To Process" which contains a large empty rectangular box. Below this box are two small buttons: a red minus button and a green plus button.

- Enable Upload feature: By selecting this option, the file can be uploaded
- Enable Download feature: By selecting this option, users can download files

- Enable Delete: By selecting this option, files can be deleted
- Enable Scan: By selecting this option, the file can be scanned at the selected stage.

Validator Tab


The screenshot shows a dialog box titled "Behaviour of Close DRP form". At the top, there are three buttons: "Apply" (with a green disk icon), "OK" (with a green checkmark icon), and "Cancel" (with a red X icon). Below these buttons, the text "Control Name : RayFileAttachment" is displayed. The dialog has two tabs: "File Attachment" and "Validation", with the "Validation" tab currently selected. Under the "Validation" tab, there are two unchecked checkboxes: "Has Required Field Validator" and "Has Range Validator". Below these checkboxes is a sub-section titled "Required Field Validator". Inside this sub-section, there is a label "Error message" and a large text input field containing the placeholder text "Enter value".

- Has Required Field Validator: By selecting this validation option, the message box will be enabled for the user to enter an error message to be displayed. If this control is empty when the form is submitted, the error message will be shown to the user

3. Relationship with the entity

Clicking on this section and choosing the button allows the user to link an attribute to the entity.(See 7.1.2.2.2)

4. Display details

Clicking on this section and choosing the button  allows the user to set the display details of the form (See 7.1.2.1)

5. Title

The header of the control. When the control is added, a default name is given

6. Control name

The name of the control used in the coding environment.



Note: If the control is automatically generated by the design of the form, it is automatically named. The name entered in this box is used in the coding environment, so the insertion of a valid name facilitates access to control in the coding environment

7. Maximum file size

The maximum size of files that can be attached to the webpage is specified in this box. If the file size is exceeded an error message will be shown. (See 7.1.2.2.4)

8. Maximum file count

The number of files that can be attached to the web on the form is specified in this box. If the file size is exceeded an error message will be shown.

9. File type

The type of files that can be attached to the web on the form will be specified (See 7.1.2.2.4). For multiple file types, you must separate file types with a comma “,”

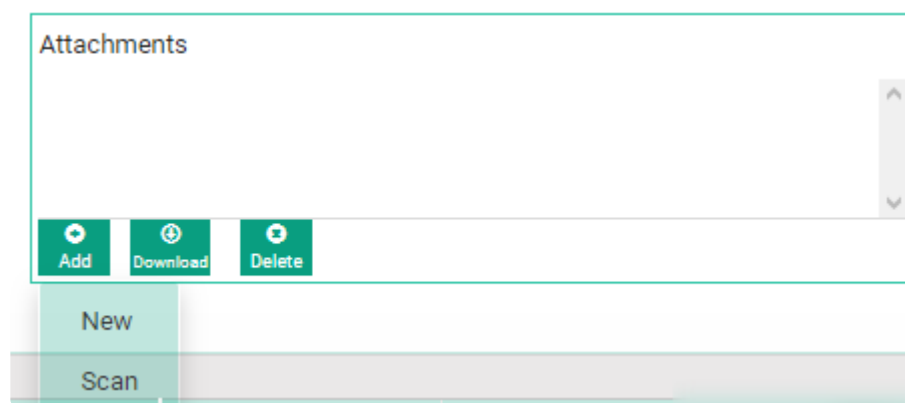


Note: If you do not specify a file type, it is possible to add all file types.

6.1.2.2.4. 6.1.2.2.4 Web Display

The image below shows an example of an attachment control in both single-file and multi-file modes on the web page.

✿ **Note:** It is possible to upload, download, scan and delete files in the attachment control, depending on the selected settings.



1. Click on “New” to upload a file and bring up the explorer window for file selection. For single file attachment controls, the explorer window will appear immediately.



For multi-file attachment controls, the user will see a menu with 3 options



Select File	Upload File	Cancel Upload
Airbus Request Document Change Workflow (2).docx	269.89 KB	Upload Cancel
InstructionsforUserDropdown.docx	239.78 KB	Upload Cancel
Interfacing Default ISO.docx	36.59 KB	Upload Cancel
RDC Test Report_v0.2.doc	290.82 KB	Upload Cancel

- **Select File Button:** The explorer window will be opened for the user to choose a file
- **Upload File button:** By clicking this button next to each file, that particular file will be uploaded. If you select the “Upload File” button at the top of the form, all the files selected will be uploaded
- **Cancel Upload button:** By selecting this button next to each file, the selected file will be cleared from the form. If you select the Cancel Upload button at the top of the form, all selected files will be deleted.

2. Download file

To download the file, select the file in the attachment element and then select this option. The file is downloaded via the browser and stored to the user-specified path.

3. Delete

To delete an attachment, select the file in the Control and then select this option.



Note: The delete button in the control of the single file attachment control is visible after the file has been uploaded

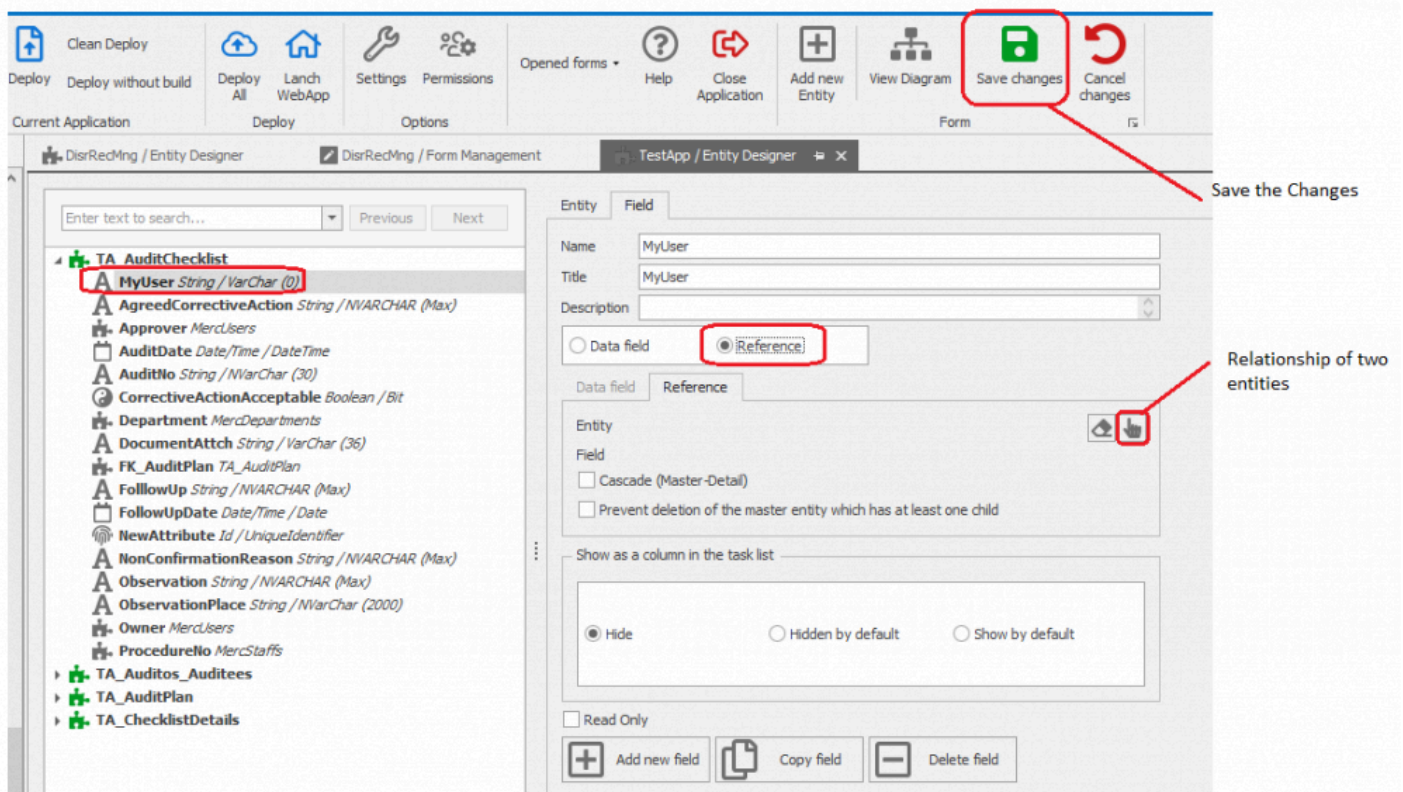
6.1.2.3. 6.1.2.3 Signature control and User Image

If there is a need to display a signature or a user's image in the form, the signature and image control is used.

Follow the steps in the following sections to setup the "User Signature and Image Control"

6.1.2.3.1. 6.1.2.3.1 Step 1: Define Attributes

The first step in setting up the “signature and user image control” is to create an attribute the “Entity Designer” (See section 9).



1. Attribute definition

The first step is to create an attribute of the UniqueIdentifier type in an entity that is linked to the form of the signature control and user image.

To create an attribute, click on the name of the entity, then select the “Add New Field” option.

Enter text to search... Previous Next

Employees

Entity Field

Name Employees

Title Employees

Description

Show field [EditValue is null]

Return field [EditValue is null]

+ Add new Entity Copy this Entity - Delete Entity

+ Add new field Paste field

Entity Field

Name Attr1

Title Attr1

Description

☒ Data field ☐ Reference

Data field Reference

Data Type UniqueIdentifier

Size Precision

Show as a column in the task list

☒ Hide ☐ Hidden by default ☐ Show by default

☐ Read Only

+ Add new field Copy field - Delete field

2. Relationship between two entities

Entity Field

Name Attr1

Title Attr1

Description

☐ Data field ☒ Reference


Data field Reference


Entity

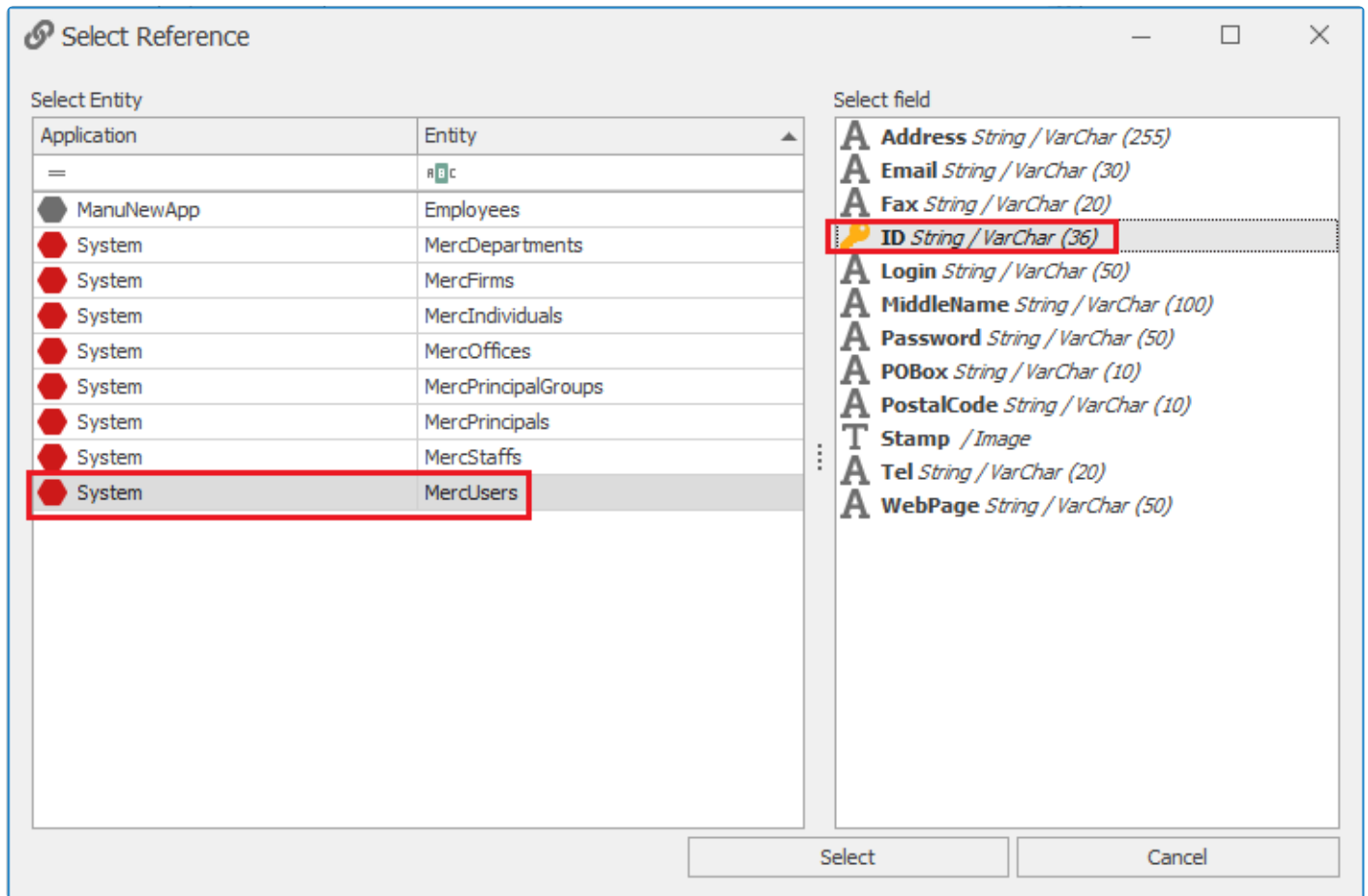
Field

☐ Cascade (Master-Detail)

☐ Prevent deletion of the master entity which has at least one child

After defining the attribute, you need to set up communication through Foreign Key between the entities clicking on  button and then in the “System entities type” box.

To create a link, first select the button  in the Related Model window and then select the users from the list of created entities. This will connect the user image and signature in the form to the user in the system



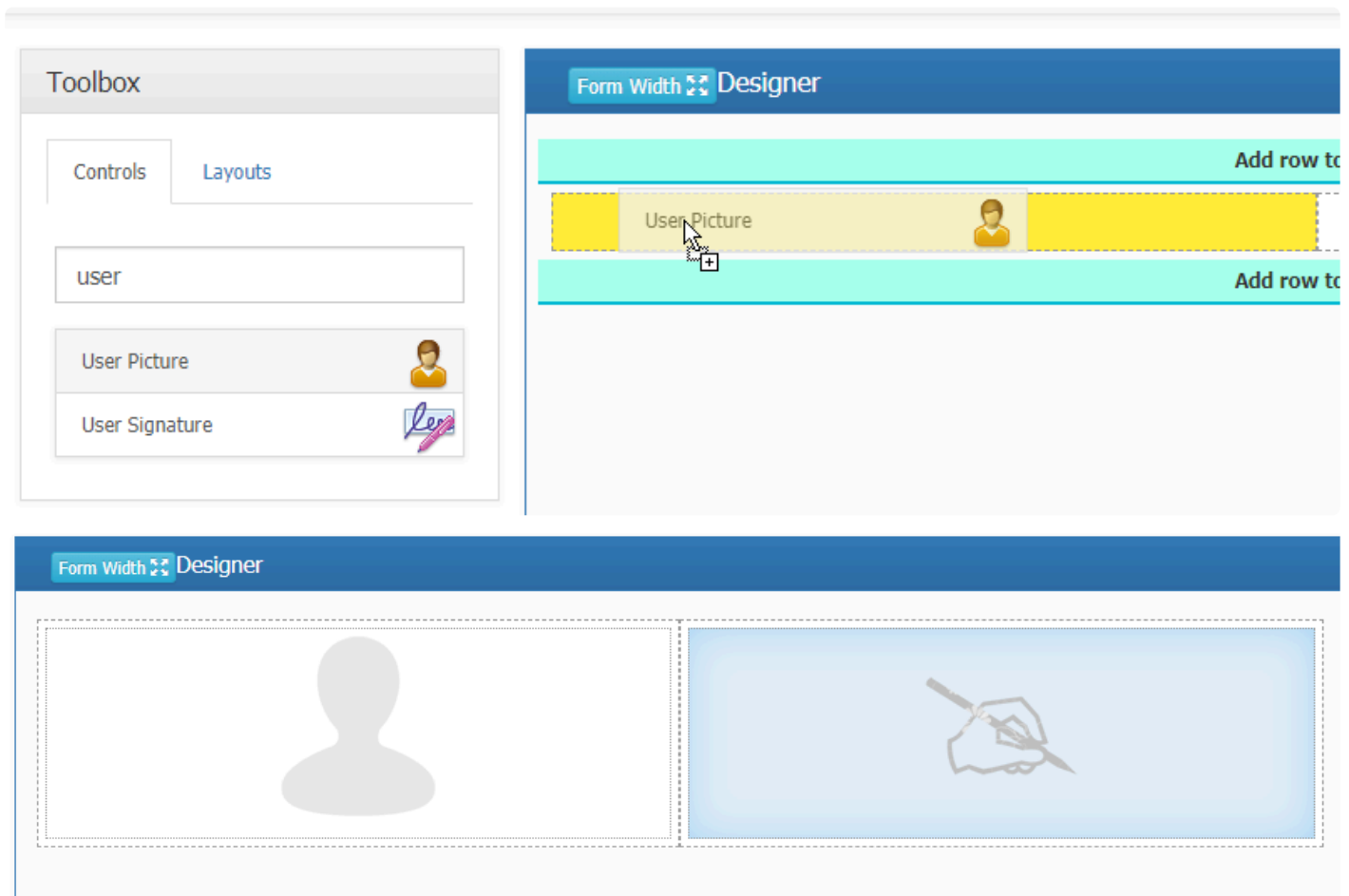
3. After completing the steps above, select the Save button to save the changes.


6.1.2.3.2. 6.1.2.3.2 Step 2: Connect the Control to the Attribute

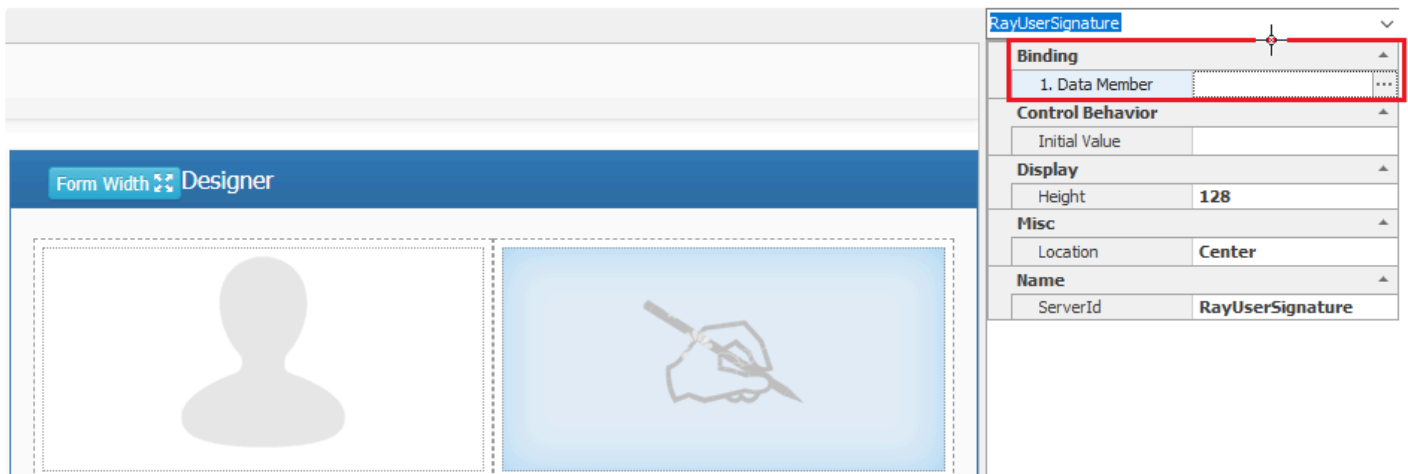
The second step in setting up the “signature and user image control” (See 7.1.2.3.1) is setting up the control relationship with the “attribute defined in step one” (See 7.1.2.3.1) in the Form Designer (See 7.1).


Drag and drop the signature or user image control in the control list. The control will be inserted in the cell marked yellow.

* When adding controls in the form, the “Add Row” option is displayed. If a control is added to a new row, the control will occupy the entire row as 1 column

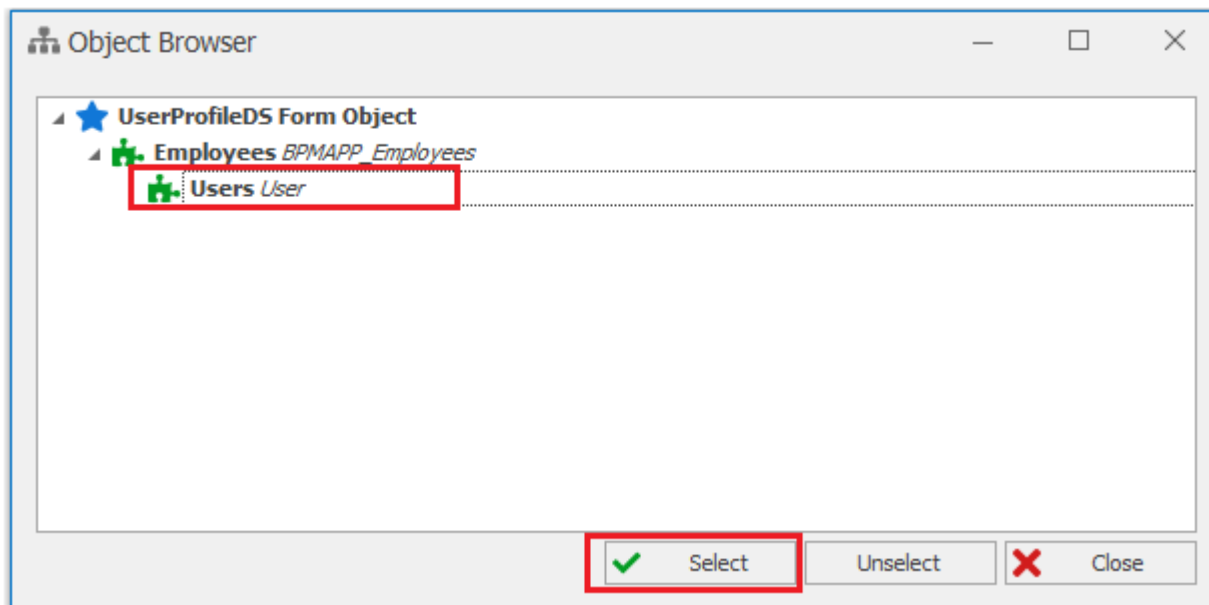


To link the attributes, click on the “DataMember” section in the control’s properties window and click the button  to select the attribute.



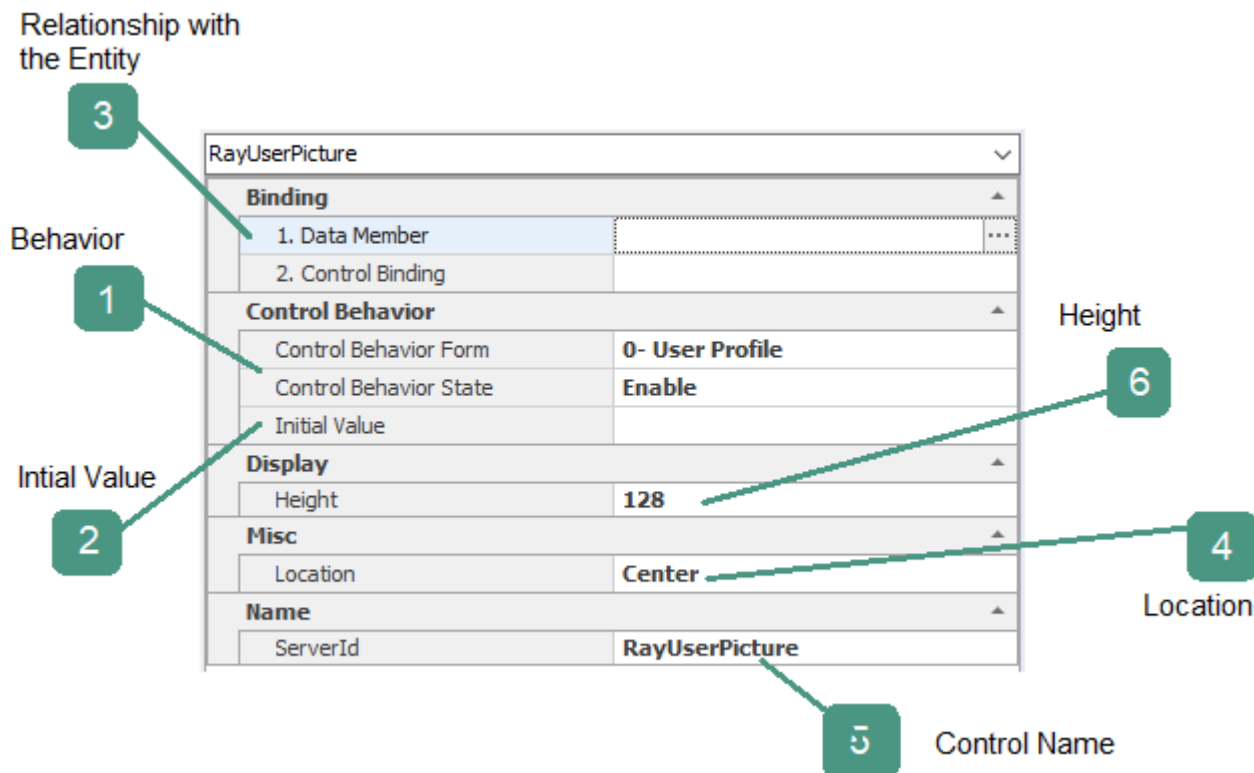
By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.

✿ The attribute defined in step 1 is displayed under the entity name.



6.1.2.3.3. 6.1.2.3.3 Step 3: Control Specifications

The third step in setting up the “signature and user image control” is to specify the associated control attribute in the “control profile” box, which is displayed in the left pane of the form design by selecting control in the form sheet.



1.Behaviour

Current form behaviors are displayed in the “form” section.

✿ You can change the behaviour of a control depending on which stage the process is at).

Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and cannot be changed by the user.

Invisible: If this option is selected, the controls will be invisible to the users on the web.

2.Initial value

The initial value must be selected for the signature and user image

- ✿ User Definition In addition to this box, coding is also possible. User call API ..(See 12).
—The picture of the current user could be set by default. In addition user picture could be set through API call with coding

- ✿ The signature and image of the user is predetermined in the Basic Information Management System (Admin.exe).

3. Relationship with the entity

Clicking on this section and choosing the button , will display the object browser to select an attribute. For more about the object browser see 7.1.2.3.2.

4. Location

The location of the image display in the control (Left, Center, Right)

5. Control name

The name of the control used in the coding environment

- ✿ Note: If the control is automatically generated by the design of the form, it is automatically named.

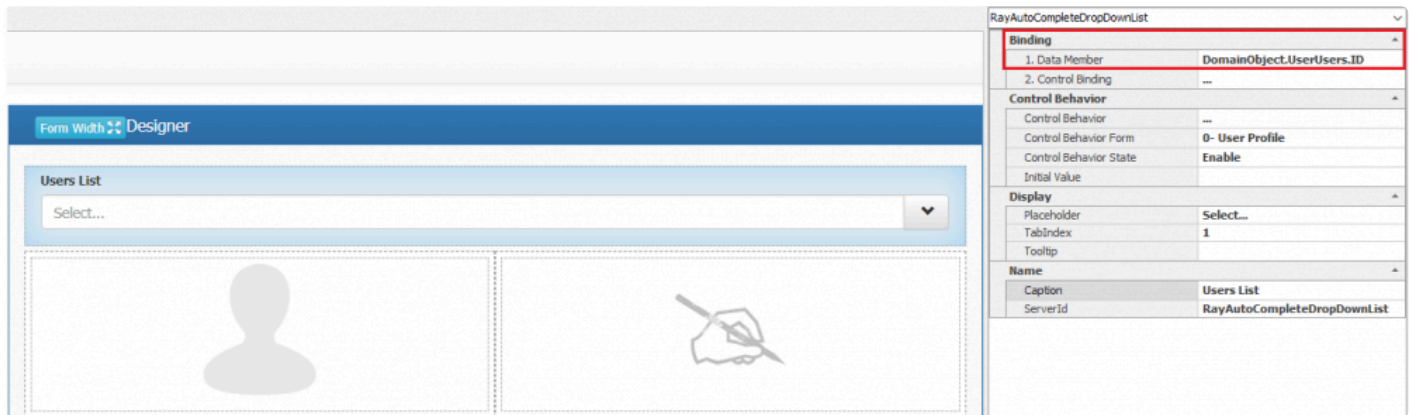
- ✿ Note: The name entered in this box is used in the coding environment (See 12.1), so the insertion of a valid name facilitates access to control in the coding environment

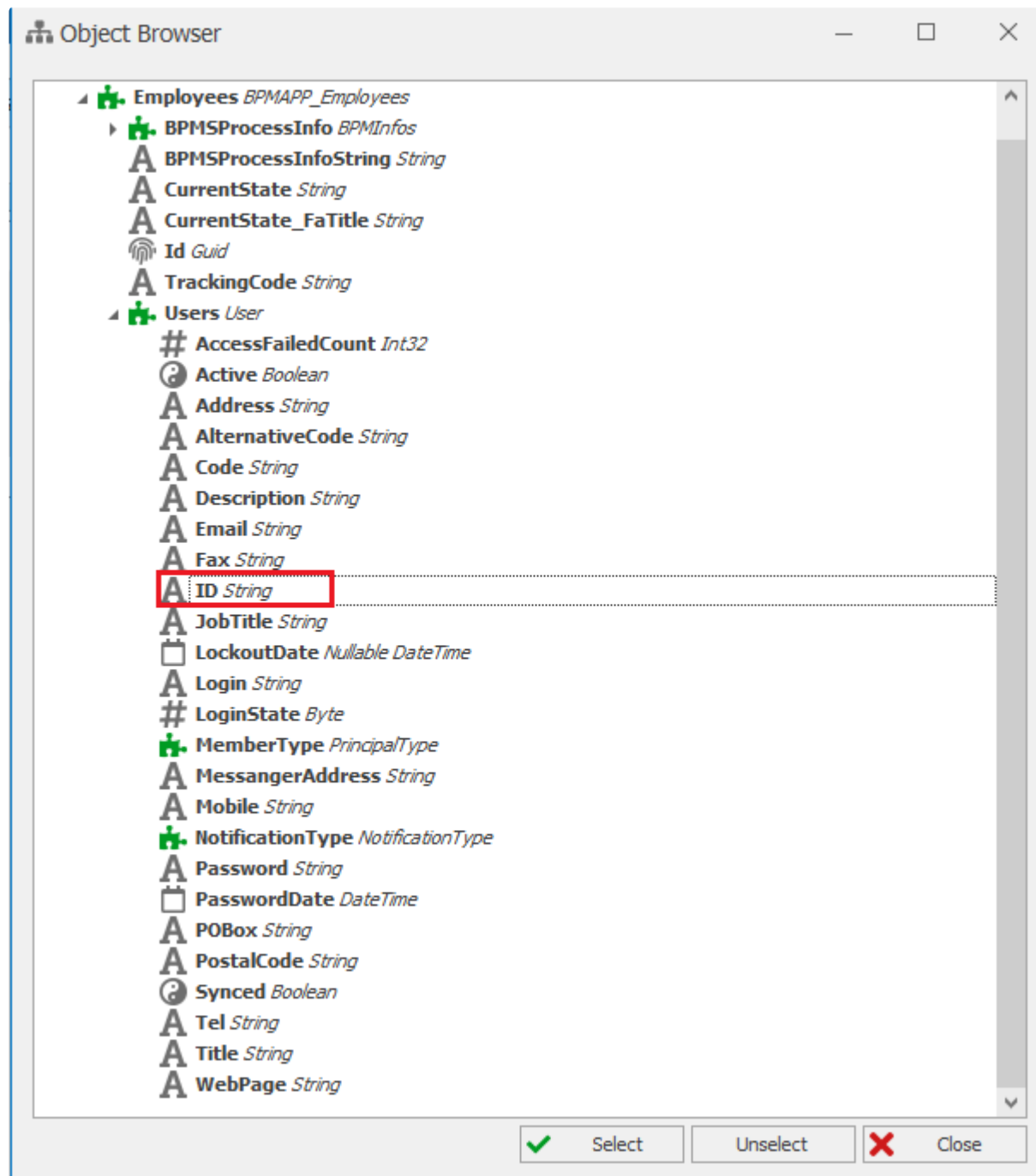
6. Height

The height of the user's signature frame or image can be specified.

To add the control for select users, the user should add GridView attributes to the Form (see 7.1.2.19, Grid control).

After adding attributes, connect the new Grid View to the list of Users (see 7.1.2.19, Grid control).





Select Data

The image shows two screenshots from a BPMS Designer. The top screenshot displays the properties of a **RayAutoCompleteDropDownList** control. The **Binding** section shows two items: '1. Data Member' with value **DomainObject.UserUsers.ID** and '2. Control Binding' with value **DisplayMember:Login, Value...**. The **Control Behavior** section shows 'Control Behavior' as '...', 'Control Behavior Form' as '0- User Profile', 'Control Behavior State' as 'Enable', and 'Initial Value' as empty. The **Display** section shows 'Placeholder' as 'Select...', 'TabIndex' as '1', and 'Tooltip' as empty. The **Name** section shows 'Caption' as 'Users List' and 'ServerId' as 'RayAutoCompleteDropDownList'.

The bottom screenshot shows the **Control Properties** window for the same control. The **Form Control** is 'RayAutoCompleteDropDownList', the **Form Entity** is 'DomainObject.UserUsers.ID', and the **Form Object Type** is 'System.String'. The **General** tab is selected, showing 'DropDown' as the control type. The 'Empty' dropdown is set to 'Empty' with a '+' button. The 'Async Loading' checkbox is unchecked. The 'Max Results' is set to '20', 'Delay (mSec)' is '600', 'Min Characters' is '0', and 'Search Type' is set to a dropdown.

The **Query Editor** dialog is also shown, titled 'QS_UserProfileRayAutoCompleteDropDownList'. It has 'Apply', 'OK', and 'Cancel' buttons. The 'Static' checkbox is unchecked. The 'Title' is 'QS_UserProfileRayAutoCompleteDropDownList'. The 'Dynamic' tab is selected. The 'Connection' is 'BPMS'. The 'DataBase Table' section shows 'Select Table' as 'MercUsers' and the SQL query as 'SELECT * FROM ray.MercUsers'. The 'SQL' checkbox is checked. The 'FROM User' text is visible. The 'Execute' button is present. The 'Select these if your control is ComboBox' section shows 'Value Member' as 'ID' and 'Display Member' as 'Login'.

Web display:

RayAutoCompleteDropDownList

danesh

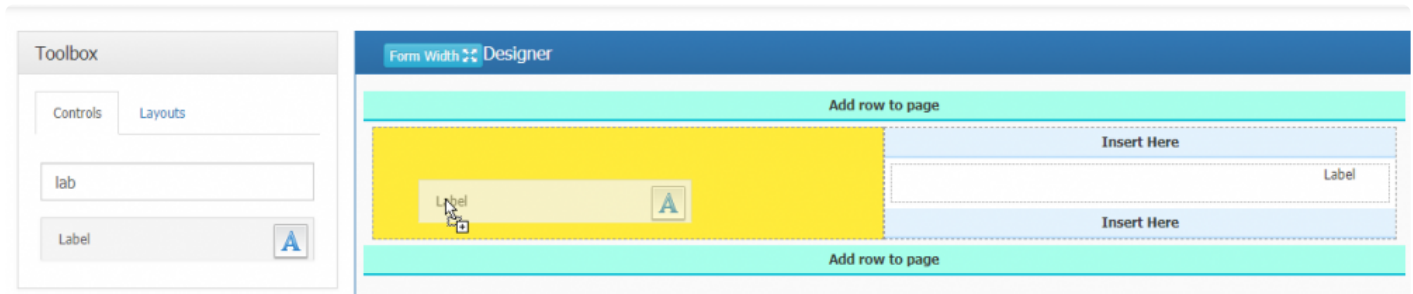


Submit form

6.1.2.4. 6.1.2.4 Label Control

Users can insert text in the form by using the label control

The first step is to set up the “label” control. Insert the control in the design (See 7.1) canvas by dragging and dropping the control.



The next step in setting up the “label” control is to specify other control properties in the properties panel of the label control to the right of the design canvas

The screenshot shows the configuration dialog for the **RayLabel** control. The dialog is divided into several sections, each with a tab icon. The sections and their properties are as follows:

- Binding** (Tab 1):
 - 1. Data Member: (Empty)
 - 2. Control Binding: (Empty)
- Control Behavior** (Tab 2):
 - Control Behavior Form: **0- Label**
 - Control Behavior State: **Enable**
 - Initial Value: (Empty)
- Display** (Tab 3):
 - BackColor: **0, 236, 233, 217**
 - Font: **Tahoma, 9pt**
 - ForeColor: **0, 0, 0, 1**
 - HasHeight: **False**
 - Tooltip: (Empty)
- Misc** (Tab 4):
 - Align: **Right**
 - Direction: **Rtl**
- Name** (Tab 5):
 - Caption: **Label**
 - ServerId: **RayLabel**

Numbered callouts point to specific elements:

- 1**: Behavior (points to the Control Behavior section)
- 2**: Initial Value (points to the Initial Value property)
- 3**: Align (points to the Align property in the Misc section)
- 4**: Relationship with Entity (points to the Data Member property in the Binding section)
- 5**: View Details (points to the Control Binding property in the Binding section)
- 6**: Title (points to the Caption property in the Name section)
- 7**: Control name (points to the ServerId property in the Name section)
- 8**: Background Color (points to the BackColor property in the Display section)
- 9**: Font Color (points to the ForeColor property in the Display section)
- 10**: Font (points to the Font property in the Display section)

1 Behavior

Control Behavior	
Control Behavior Form	0- Label
Control Behavior State	Enable

The Elements of the behavior of the control is shown in this (See 7.2) section.

✿ The behavior of the control can be different depending on the stage of the Process.


Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and cannot be changed by the user.

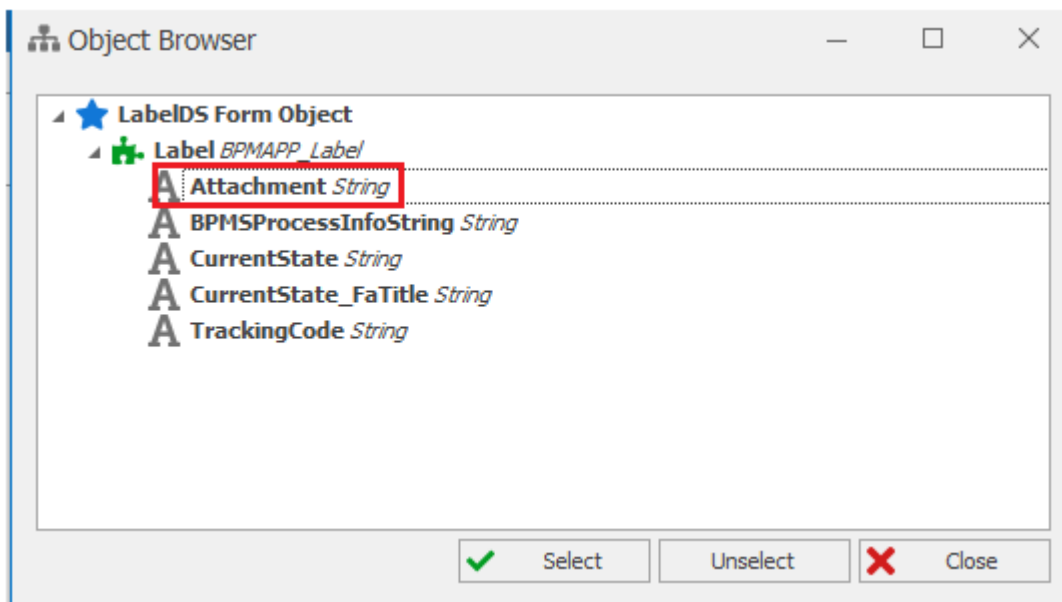
Invisible: If this option is selected, the control will be invisible to the user on the web.

2 Initial Value

Initial Value	
---------------	--

The label control can have an initial value or pre-defined text that can be selected by clicking the button  and using the services predefined in the “object selector” form (such as dates, System attributes).

✿ Determining the Initial value is also possible by using code. See Section 12 for using API to set Initial value.



Organization Chart Service: The organizational chart sub key In the “ Object selector” form, the tables are linked to the organizational chart and can be expanded by selecting the + button next to them.

Date and Time: Insert the current date or day of the Week.

3 Align

Misc	
Align	Right

Text Alignment (left-aligned, right-aligned) is set in this box

4 Relationship with the Entity

Binding	
1. Data Member	

Clicking on the button  in the Data member box will display the object Browser to link attributes


✿ If it is necessary to display information in an action based control, the control needs to be linked to the attribute so that it can define the action in detail. Otherwise, the text entered in the “Title” box will be displayed in the form and there is no need to communicate with the entity.

RayLabel	
Binding	
1. Data Member	DomainObject.Attachment
2. Control Binding	...
Control Behavior	
Control Behavior Form	0- Label
Control Behavior State	Enable
Initial Value	
Display	
BackColor	0, 236, 233, 217

Note: The attribute associated with the label control according to the displayed text can be associated with any type of data type defined in the entity

5 View Details

2. Control Binding	...
--------------------	-----

Clicking on the button  in the Physical Form Binding Details box will display a form for controlling the data of the selected control. For more information(See 7.1.2.1)

6 Title

Name	
Caption	Label

Controls are automatically given a caption. The user can change the caption of the label

7 Control Name

ServerId	RayLabel
----------	----------

The Name of the control used in the coding environment

✿ If the control is generated automatically by the designer, it is automatically named

✿ The name entered in this box is used in the coding environment(See 12.1), so the insertion of a valid name facilitates access to control in the coding environment.

8 Background Color

Display	
BackColor	0, 236, 233, 217

The control background color can be changed using this box

9 Font Color

ForeColor	0, 0, 0, 1
-----------	------------

The color of the label font can be changed using this box

10 Font

Font	Tahoma, 9pt
------	-------------

The font type and size of the label can be changes using this box.

6.1.2.5. 6.1.2.5 Nested Form Link control

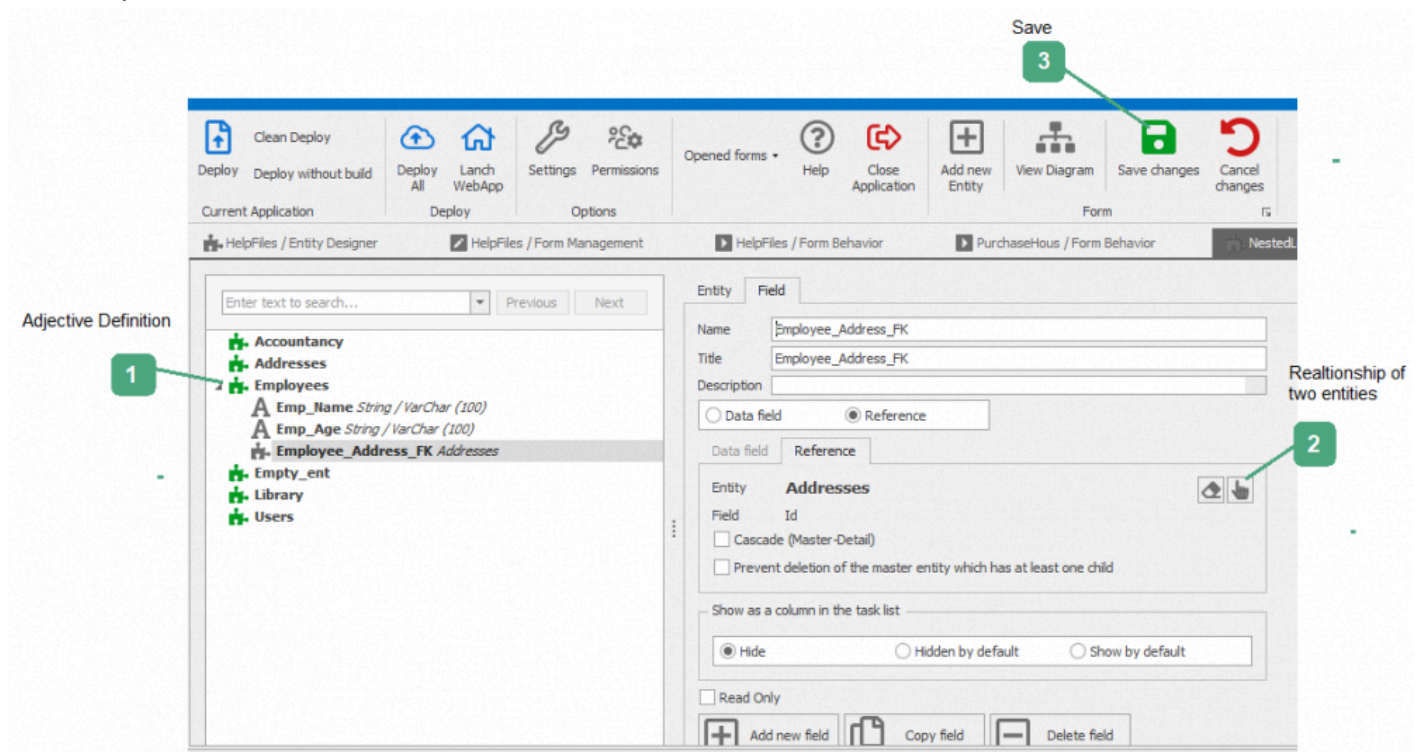
A control that provides access to edit and creates another form in the original form is called “Nested Form Link” control.

Follow the steps in the following sections to setup the “link” control:

6.1.2.5.1. 6.1.2.5.1 Step 1: Define Adjectives

The first step in setting up the “Nested Form Link” control is the foreign key definition in the entity associated with the form containing the link control.

The components are described below:



1. Attribute Definition:

The first step is to create an attribute of type UniqueIdentifier in an entity that is related to the original form.

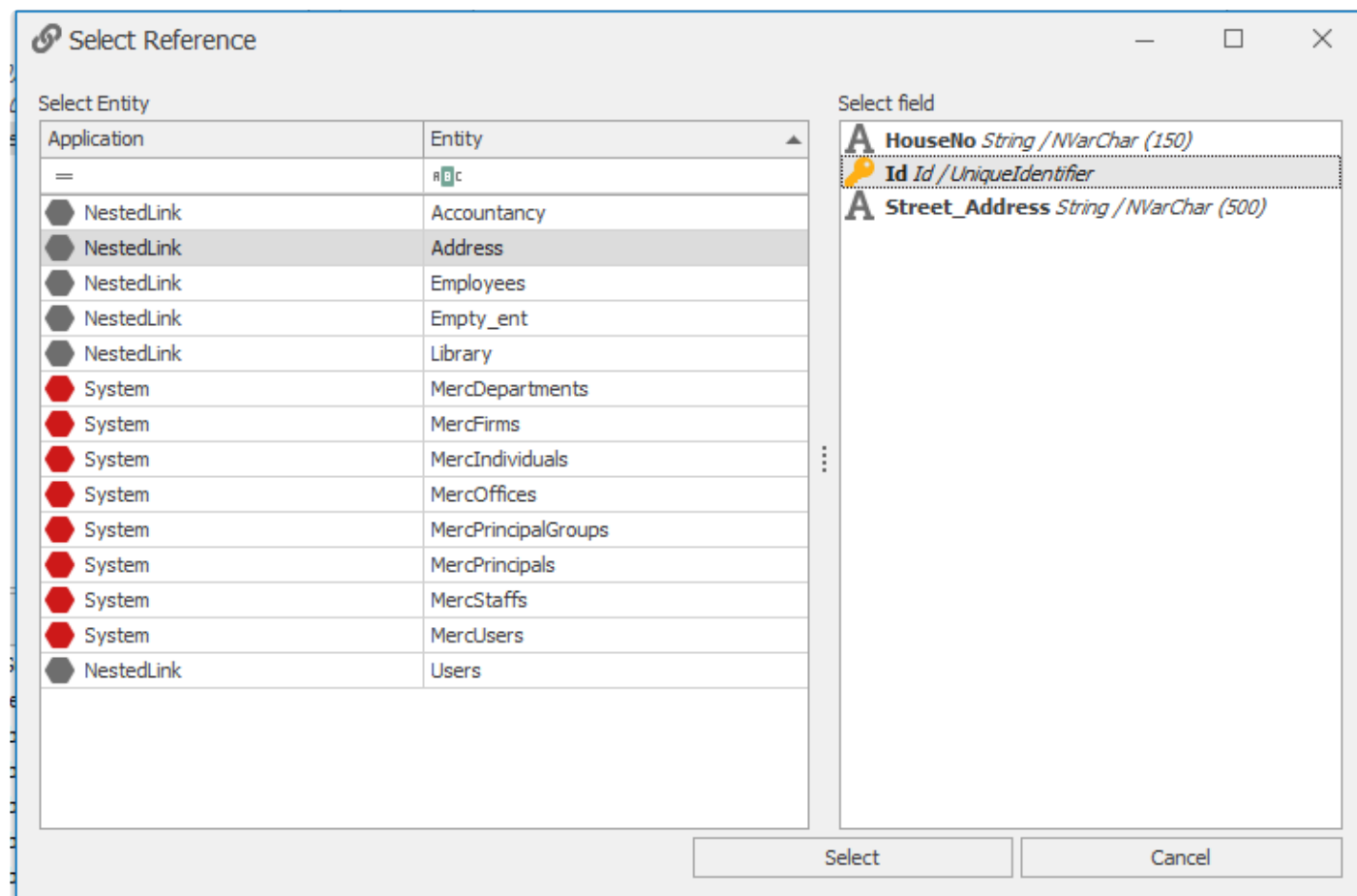
To create an attribute, right-click on the name of the entity, then select the “New Attribute” option.


The screenshot shows the BPMS Designer interface. On the left, a tree view lists system entities: Accountancy, Addresses, Employees (highlighted), Emp_Name String / VarChar (100), Emp_Age String / VarChar (100), Employee_Address_FK Addresses, Empty_ent, Library, and Users. On the right, the 'Employees' entity configuration pane is open. It has tabs for 'Entity' and 'Field'. The 'Entity' tab is active, showing fields for Name (Employees), Title (Employees), Description, Show field ([EditValue is null]), and Return field ([EditValue is null]). Below these fields are buttons: '+ Add new Entity', 'Copy this Entity', '- Delete Entity', '+ Add new field' (highlighted), and 'Paste field'.

2. Relationship of two entities:

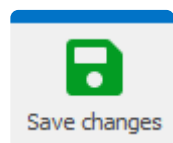
The screenshot shows the 'Reference' configuration pane for the 'Addresses' entity. At the top, there are radio buttons for 'Data field' and 'Reference' (selected). Below, the 'Entity' is 'Addresses' and the 'Field' is 'Id'. A checkbox labeled 'Cascade (Master-Detail)' is checked and highlighted. Below it is an unchecked checkbox labeled 'Prevent deletion of the master entity which has at least one child'. On the right side of the pane, there are two icons: a house icon and a hand icon (highlighted).

After defining the attribute, you must select the second entity (the entity associated with the current form) in the “System entities type” box.



To create a link, select the button  first and then select the second waveform from the list in the communication form.

3. Save:



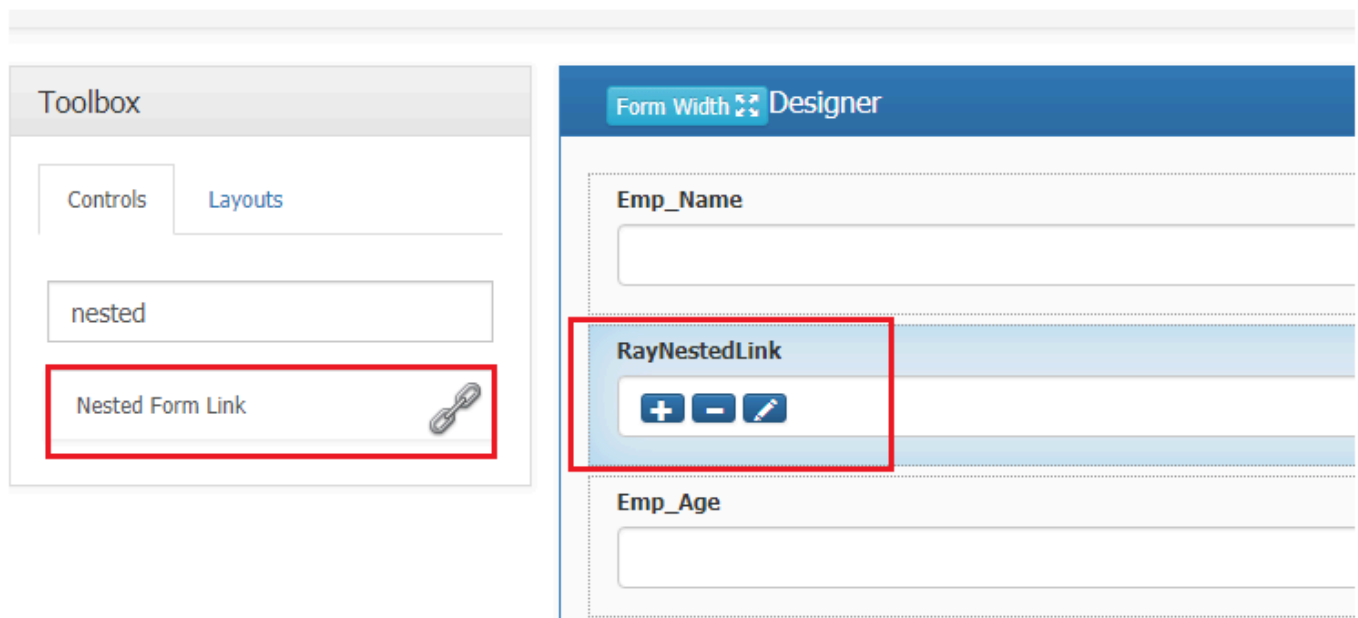
After completing the steps above, select the Save button to save the changes.


6.1.2.5.2. 6.1.2.5.2 Step 2: Connect the control to the attribute

The second step in setting up the nested form link control is to link the control with the attribute defined in step one (See 7.1.2.6.1) in the Entity Design(See 7.1).

Drag and drop the Nested Form Link control onto the design canvas

- ✳ When adding controls in the form, the “Add Row” option is displayed. If a control is added in the row, it will occupy the entire row as 1 column.

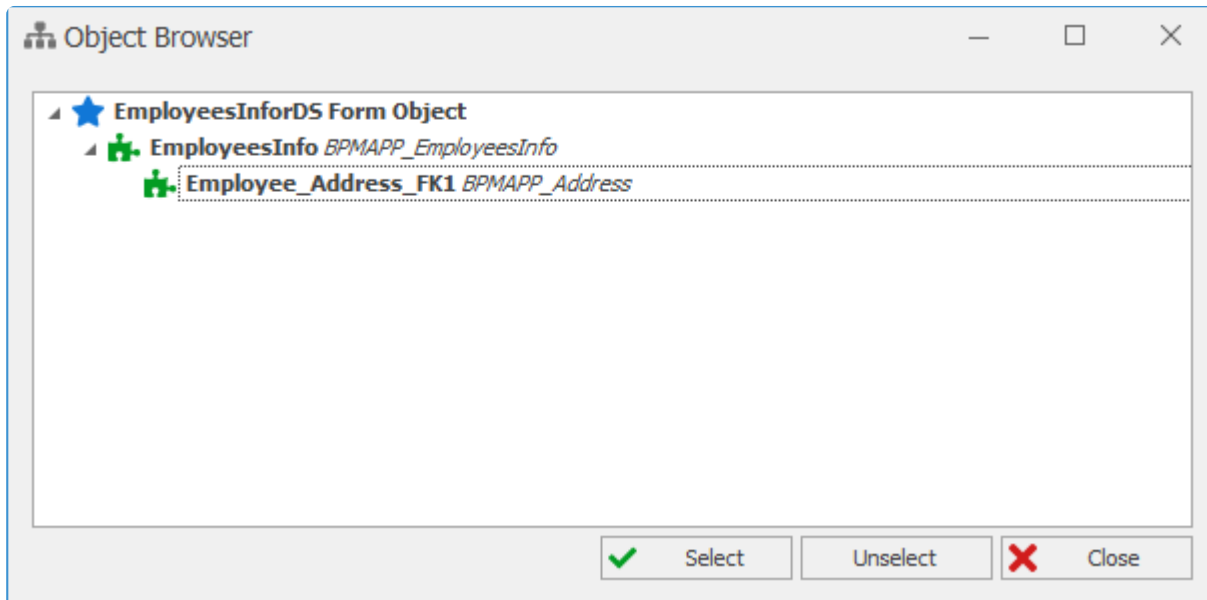


To link the attributes, click on the “DataMember” in the properties panel and click the button  to select the attribute.




By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.

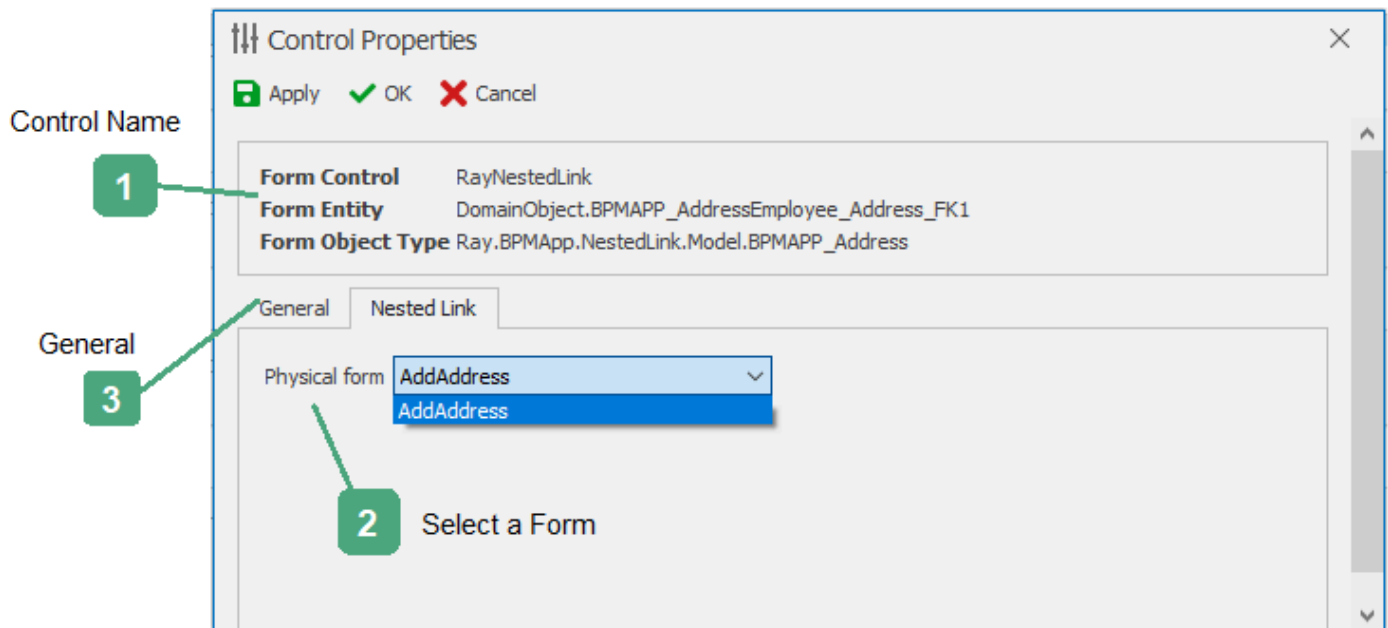
✿ The attribute defined in step 1 (See 7.1.2.6.1) is displayed under the entity name.



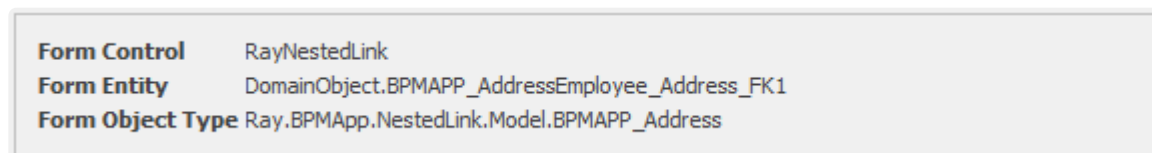
6.1.2.5.3. 6.1.2.5.3 Step 3: Display Features

Step Three In setting up the Nested Form Link control is setting up the display options under “PhysicalForm Binding”.

Select control in the form-> Click on ControlBinding -> Select the button 

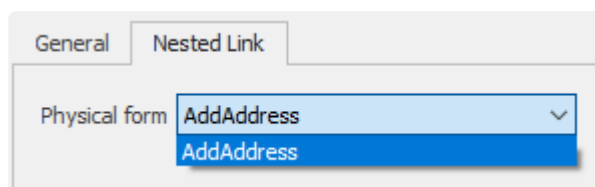


1. Control name:



The control name and associated attribute in this box is displayed to the user.

2. Select a Form:



In this box the physical entity list (See 7.1.2.6.1) of the associated entity can be selected.

* The selected form in this box is the form displayed by selecting the “+” button on the form (See 7.1.2.6.5).

3. General:

The screenshot shows the 'Control Properties' dialog box with the 'General' tab selected. The 'Form Control' is 'RayNestedLink', the 'Form Entity' is 'DomainObject.BPMAPP_AddressEmployee_Address_FK1', and the 'Form Object Type' is 'Ray.BPMApp.NestedLink.Model.BPMAPP_Address'. The 'Physical form' dropdown is open, showing 'AddAddress' as the selected option. The 'General' tab is highlighted with a red box.

Property	Value
Form Control	RayNestedLink
Form Entity	DomainObject.BPMAPP_AddressEmployee_Address_FK1
Form Object Type	Ray.BPMApp.NestedLink.Model.BPMAPP_Address

Physical form: AddAddress

By choosing this tab, features such as control action definition and etc. are available. To know more about general tab refer to section 7.1.2.1)

6.1.2.5.4. 6.1.2.5.4 Step 4: Control Behaviour Specifications

The next step is to define the Form Control Behavior for the Nested Form Link

The screenshot shows the configuration for a 'NestedLink' control. It is divided into several sections: 'Binding', 'Control Behavior', 'Display', and 'Name'. Numbered callouts point to specific fields: 1 points to the 'Control Behavior' section header, 2 points to the 'Other' tab, 3 points to the 'Relationship with the Entity' dropdown, 4 points to the 'Control Binding' field, and 5 points to the 'Caption' field in the 'Name' section.

Relationship with the Entity	
NestedLink	
Binding	
1. Data Member	DomainObject.BPMAPP_Addres...
2. Control Binding	...
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Employee Information
Control Behavior State	Enable
Display	
TabIndex	2
Tooltip	
Name	
Caption	NestedLink
ServerId	NestedLink

1.Behavior:

Control Behavior Form	0- Employee Information
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.



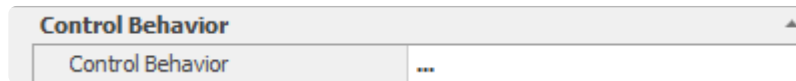
The behaviour of the control can be different depending on which stage the process is at

Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and the user will not be able to interact with it.

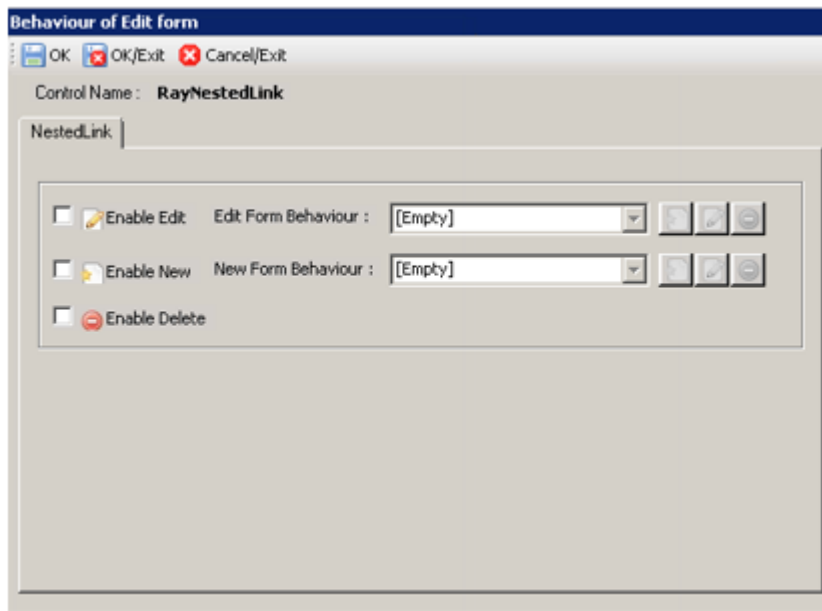
+Invisible:+If this option is selected, the controls will be invisible to users on the web

2.Others:



Determining access to nested form functions (adding, editing, deleting the form) and validating the control is set using this menu.

Clicking on this section and selecting the button  will display the Behavior of Edit Form.

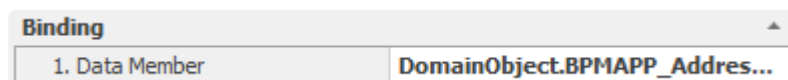


Enable Edit: By selecting this option and specifying its behavior, the ability to edit the form (See 7.1.2.10.5) is enabled

Enable New: By choosing this option and specifying its behavior, the ability to add a form (See 7.1.2.10.5) is enabled

Enable Delete: By selecting this option and specifying the behavior, the ability to delete the form (See 7.1.2.10.5) is enabled

3.Relationship with the Entity:



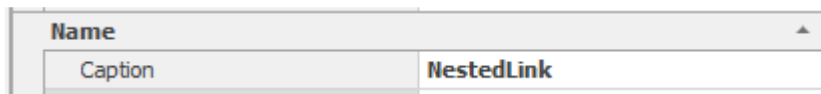
Users can link attributes to the control by clicking on the button. For more about the object browser, see 7.1.2.6.2

4.Display Details:



Clicking on this section and selecting the button will display the display details of the linked attribute. For more information, see 7.1.2.6.3

5.Title:



The control is given a default name. The name of the control can be edited by clicking on this box.

✿ If the control is automatically generated, it is automatically named.

✿ The name entered in this box is used in the coding environment, so the insertion of a valid name facilitates access to control in the coding environment.

6.1.2.5.5. 6.1.2.5.5 Web display

The following image is an example of a nested form link on the web application



* The ability to add, edit, delete the form in the link control (See 7.1.2.6.4) set in the properties of the control.

1.New:



Clicking this option will open the modal form to enter the information and create the form (See 7.1.2.6.3)

2.Edit:



Clicking this will open the previously created form so the user can edit the information

* This button is activated when the form is created.

3.Delete:



If you have the appropriate access, the form will be deleted by selecting this option.



This button is activated when the form is created.

6.1.2.6. 6.1.2.7 Date Control

Displaying and inserting a date into a form is possible using the “Date” control.

Step 1: Define Attributes:

The first step in setting up the date control is to create a date or (DateTime, DateTime2) attribute to store the recursive data in the entity associated with the form (See 7.1) containing the control.

By right clicking on the entity name and clicking the “new attribute” option (See 9.3), the attribute can be defined.

The screenshot shows the BPMS Designer interface. On the left, a tree view lists entities: Accountancy, Address, EmployeesInfo (selected), Empty_ent, Library, and UsersInfo. The 'EmployeesInfo' entity is expanded, showing attributes: JoiningDate (DateTime / DateTime), Emp_Age (String / VarChar (100)), Emp_Name (String / VarChar (100)), and Employee_Address_FK1 (Address). On the right, the 'Entity' tab is active, showing details for 'EmployeesInfo'. The 'Add new field' button is highlighted with a red box.

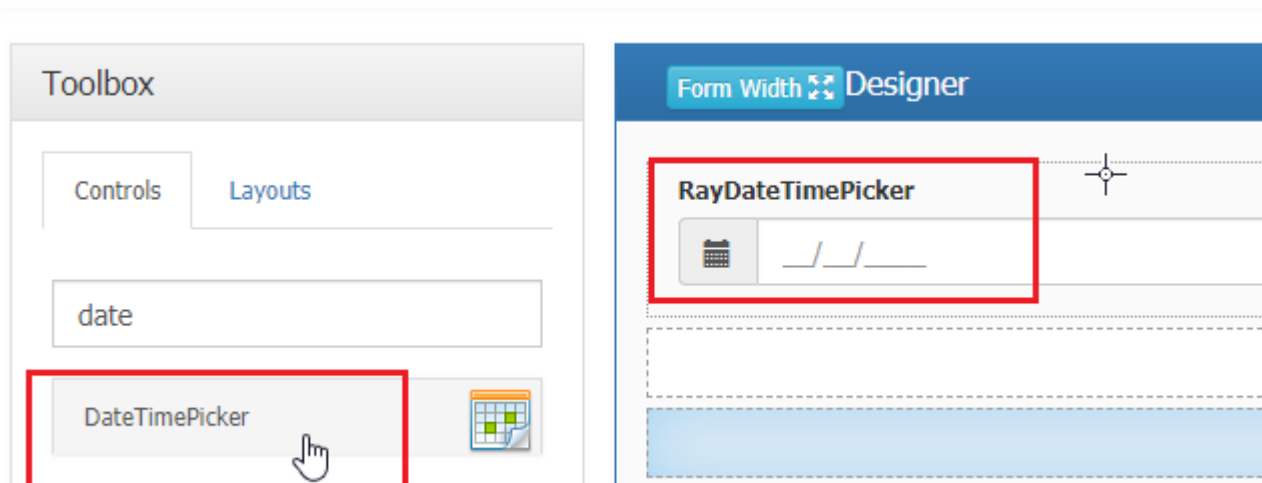
The screenshot shows the BPMS Designer interface. On the left, the 'JoiningDate' attribute is selected under the 'EmployeesInfo' entity. On the right, the 'Field' tab is active, showing details for 'JoiningDate'. The 'Data field' radio button is selected. The 'Data Type' dropdown is set to 'DateTime' and is highlighted with a red box. The 'Show as a column in the task list' section has 'Hide' selected. The 'Read Only' checkbox is unchecked.


6.1.2.6.1. 6.1.2.7.2 Step 2: Connect the control to the attribute

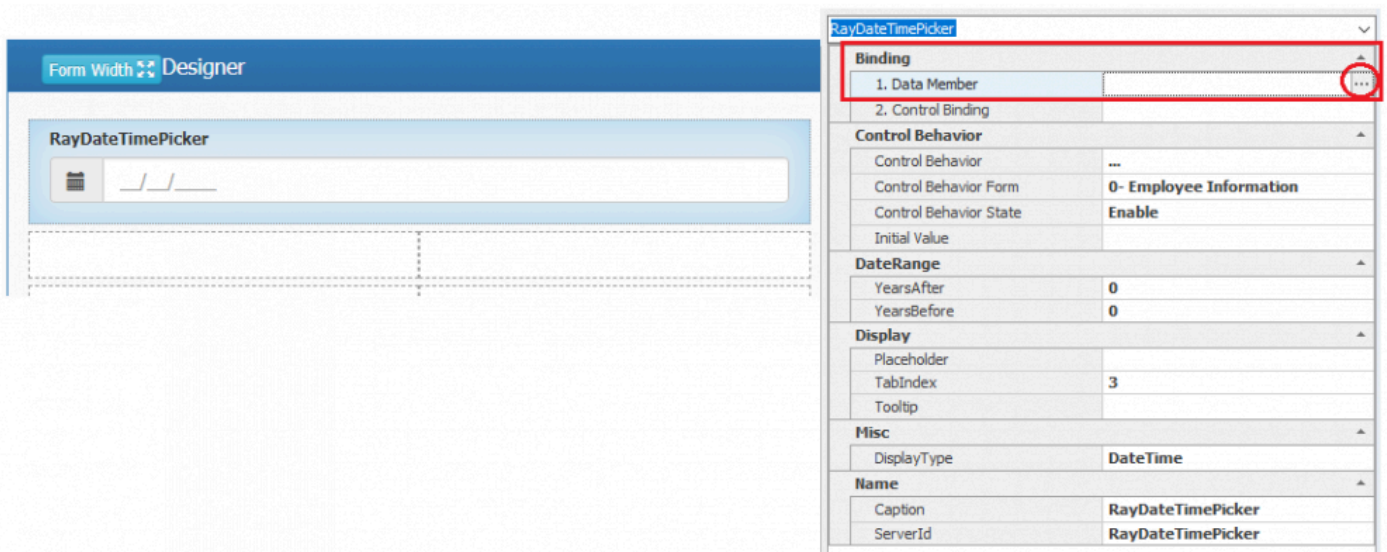
The second step in setting up the date control is to link the attribute defined in step one” (See 7.1.2.7.1) to the control.


Drag and drop the control onto the design canvas

- * When adding controls in the form, the “Add Row” option is displayed. If a control is dropped here, the control will occupy the entire row as 1 column

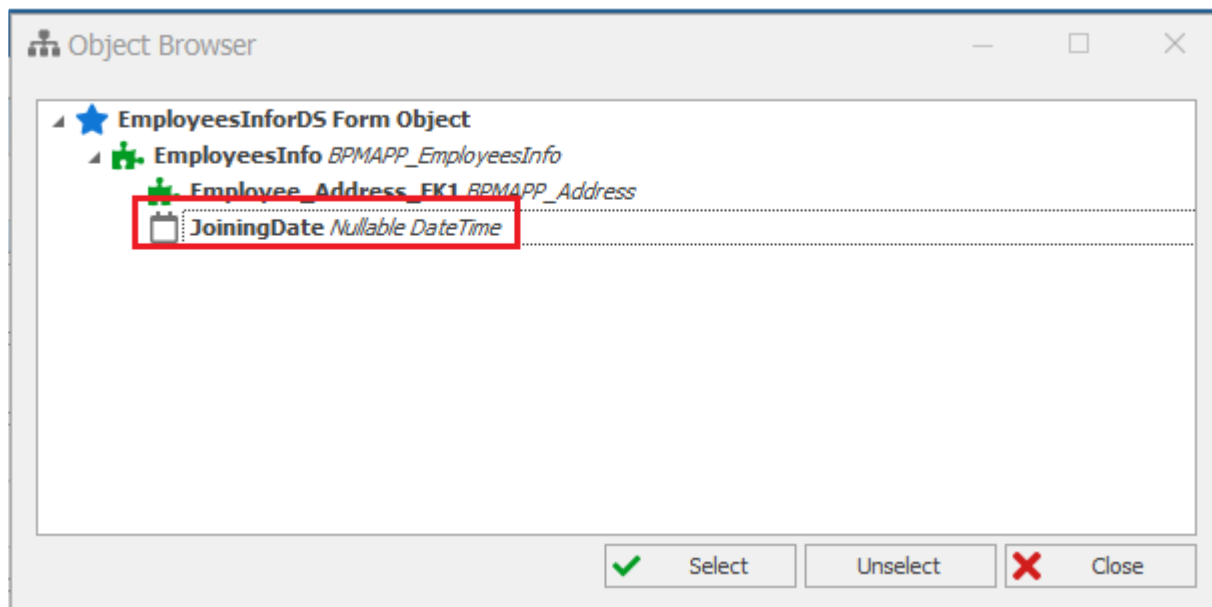


To edit the attributes, click on the “DataMember” section in the properties panel and click the button  to select the attribute.



By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.

✿ The attribute defined in step 1 is displayed under the entity name.



6.1.2.6.2. 6.1.2.7.3 Step 3: Control Behaviour

The third step in setting up the “Date” control is to specify the associated behaviour to the control

Relationship with the Entity

5

Other

2

Control Behavior

1

Initial Value

3

Show the no. of years before or later

4

Title

7

Control Name

8

Display Details

6

Arrange

9

Type

10

RayDateTimePicker	
Binding	
1. Data Member	DomainObject.JoiningDate
2. Control Binding	...
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Employee Information
Control Behavior State	Enable
Initial Value	
DateRange	
YearsAfter	0
YearsBefore	0
Display	
Placeholder	
TabIndex	3
Tooltip	
Misc	
DisplayType	DateTime
Name	
Caption	RayDateTimePicker
ServerId	RayDateTimePicker

1.Control Behavior:

Control Behavior Form	0- Employee Information
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.

✿ For each behavior you can change the display of control at that stage (behavior).


Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and cannot be changed by the user.

Invisible: If this option is selected, the controls will be invisible to the users on the web.

2.Other:






Setting a required value as well as the value range is possible by clicking on this section and selecting the button . The “Behavior of Edit Form” will then be displayed, which includes the “Validation” tab.

A screenshot of a dialog box titled 'Behaviour of Employee Information form'. At the top, there are three buttons: 'Apply' (with a green square icon), 'OK' (with a green checkmark icon), and 'Cancel' (with a red X icon). Below these buttons, the text 'Control Name : RayDateTimePicker' is displayed. The 'Validation' tab is selected and highlighted with a dashed border. Inside the 'Validation' tab, there are two checkboxes: 'Has Required Field Validator' and 'Has Range Validator'. Below these checkboxes, there are two tabs: 'Required Field Validator' and 'Range Validator'. The 'Required Field Validator' tab is active, showing an 'Error message' section with a text input field containing the text 'Enter value'.

By selecting the “Has Required Field Validator” option, the message box will be enabled to allow the user to insert and type the error message that will be displayed.

 By checking this option, if a value is not entered in the control when submitting the form, the defined error message will be displayed.

Behaviour of Employee Information form

 Apply  OK  Cancel

Control Name : **RayDateTimePicker**

Validation

☐ Has Required Field Validator

☐ Has Range Validator

Required Field Validator Range Validator

Error message

Minimum value

Maximum value

Users can also set a range validation by the checking the “Has Range Validator” checkbox The message box will enabled for users to enter an error message, as well as specifying minimum and maximum values

3.Initial Value: The initial value can also be set to the current date

Initial Value

BPMAppService.Helper.DateTim

Current date

4.Date Range:

DateRange	
YearsAfter	0
YearsBefore	0

By viewing the calendar control on the web, the calendars for the next and previous years are visible, and the number of years is adjustable.

5.Relationship with the Entity:



Clicking on this section and choosing the button  will display the object browser to select an attribute. More about the object browser (See 7.1.2.7.2)

6.Display Details:



Clicking on this section and selecting the button  allows users to set display data of the linked attribute (See 7.1.2.1).

Control Properties

Apply
OK
Cancel

Form Control RayDateTimePicker
Form Entity DomainObject.JoiningDate
Form Object Type System.DateTime

General

☐ Call at loading page
☐ Active
☐ AutoPostBack (Update all controls)

Code item list

Select	Rule index	Name	Form Control
<input type="checkbox"/>	=	ABC	ABC

Record 0 of 0

Reload Dropdown/Grid/Table

Select	Rule index	Form Control
<input type="checkbox"/>	=	ABC

Record 0 of 0

7.Title:

Name

Caption RayDateTimePicker

Controls are automatically given a default caption name, but can be changed by clicking in the box

8.Control Name:

ServerId RayDateTimePicker

The name of the control can be edited by clicking on the box.

* If the control is generated by the designer of the form, it is automatically named.

* The name entered in this box is used in the coding environment (See 12.1), so the insertion of the valid name facilitates access to control in the coding environment.

9.Arrange:

TabIndex	3
----------	---

The TabIndex control on the web is determined using this box.

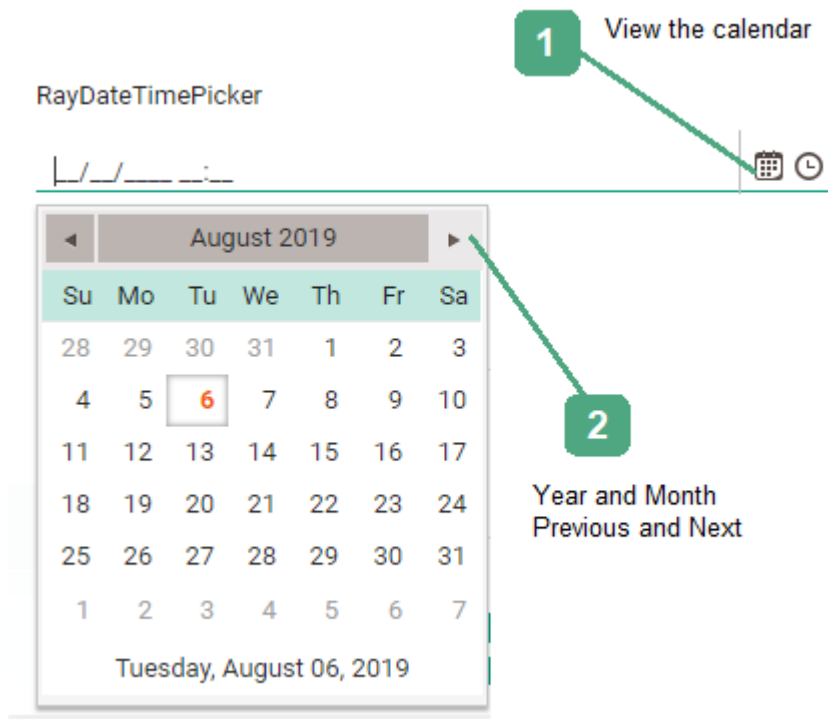
10.Type:

In the Type section the type of the date can be chosen.

Misc	
DisplayType	DateTime
	Date
	Time

6.1.2.6.3. 6.1.2.7.4 Web display

The image below is an example of a date control on a web application that describes how it works:

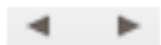


1. View the Calendar:



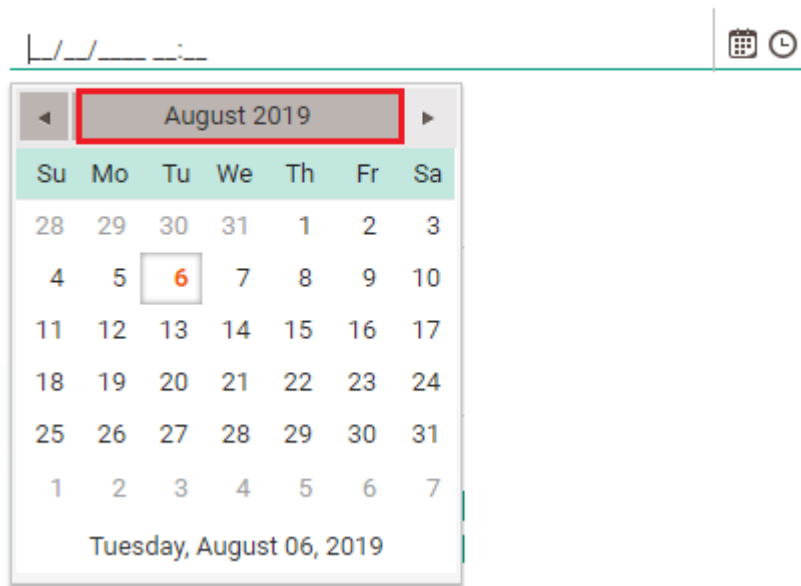
Depending on the type of selected calendar (See 7.1.2.7.3), by selecting this button, the calendar form opens to select the date.

2. Year and Month Previous and Next:



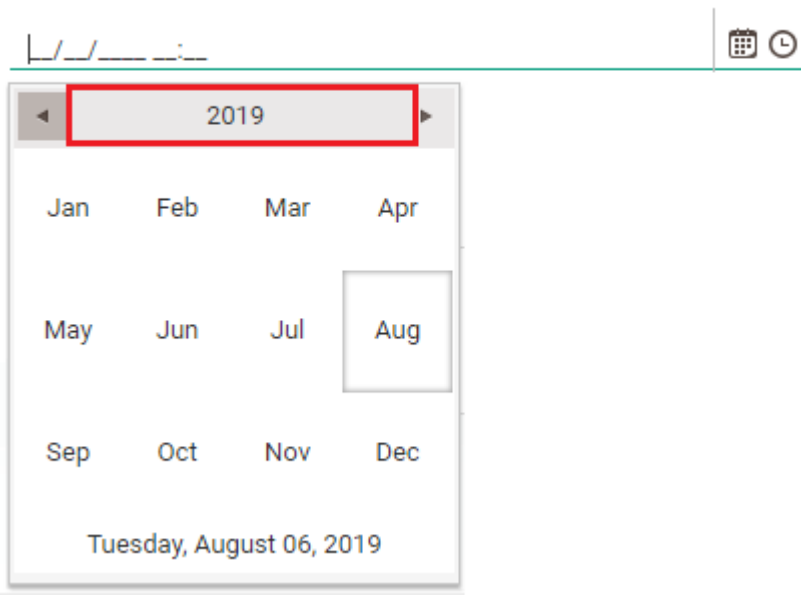
By selecting these buttons you can see the calendar year before and after, and the calendar of the month before and next.

RayDateTimePicker



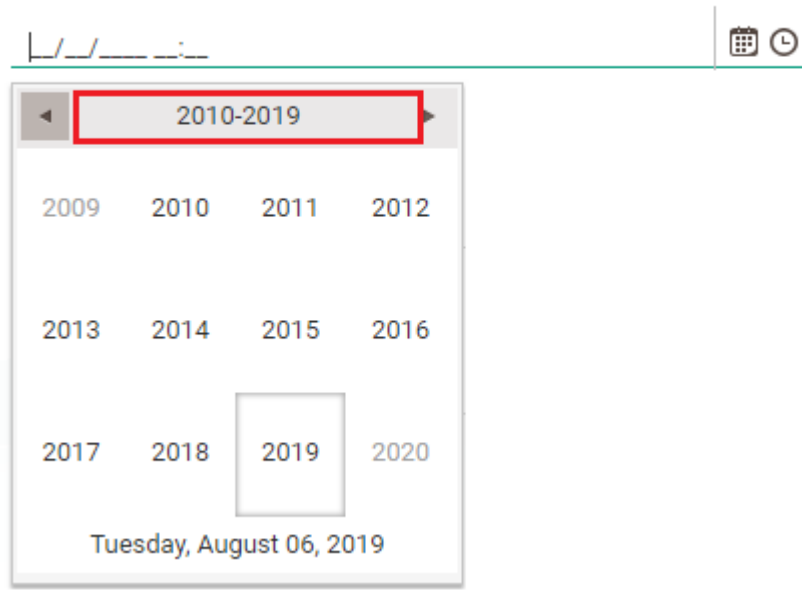
If user clicks on Month, then all months in the Year are displayed

RayDateTimePicker



If user clicks onto the year, the set of 10 current years are displayed

RayDateTimePicker

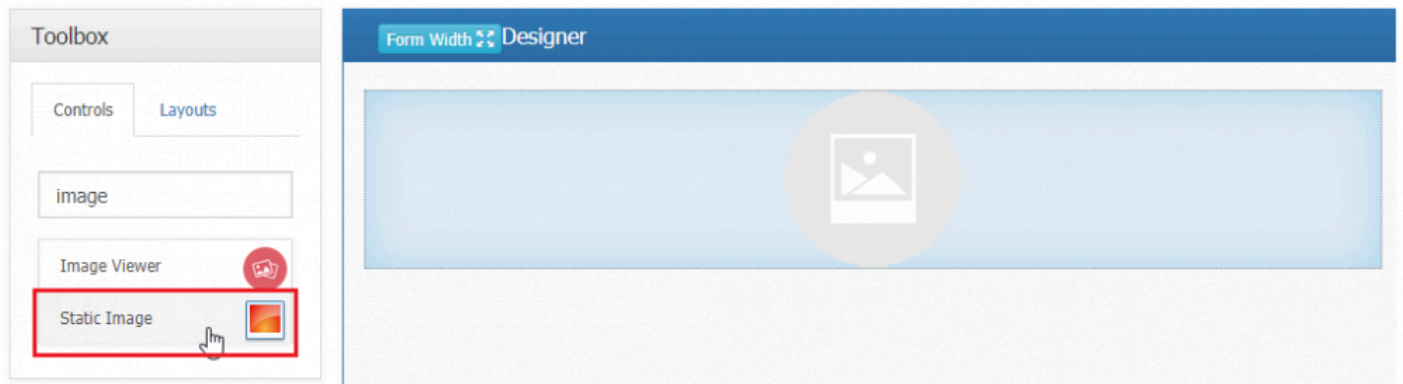


The next click shows the set of decades in the century.

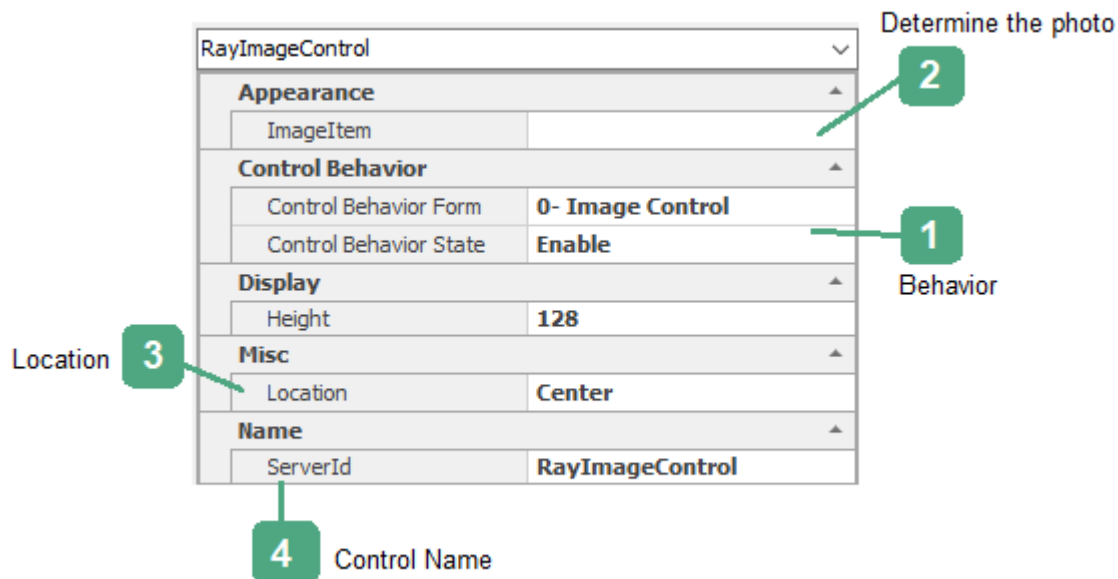
6.1.2.7. 6.1.2.8 Image control

Images can be inserted using the image control

The first step is to set up the “image” control is to insert control in the Form Design. Select the “Static Image” control and drag and drop it into the design canvas



The next step is to specify the desired image and other control properties in the properties panel which is displayed to the right



1. Behavior:

Control Behavior	
Control Behavior Form	0- Image Control
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.

✿ The behaviour of the control may be different depending on the stage of the process.


Enable: If this option is selected, the control will be enabled on the web.

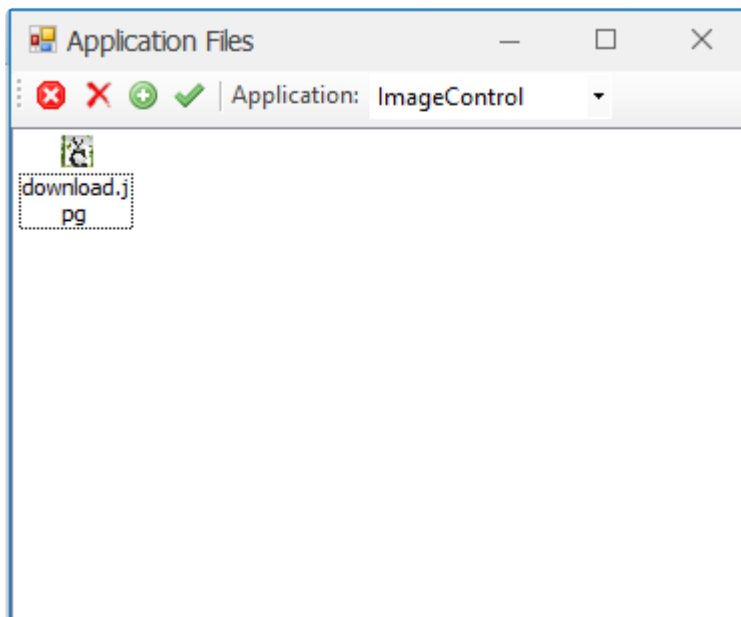
Disable: If this option is selected, the control on the web is disabled and cannot be changed by users.

Invisible: If this option is selected, the controls will be invisible to users on the web.


2. Determine the Photo:


Appearance	
ImageItem	

Select the image that will be displayed by clicking the button  in the Image box



By choosing the button , the selected image is added to the control.

By choosing the button , you can add a different image to the list.

By selecting the button , the selected image is removed from the list of images

By choosing the button , you can leave this form.

3. Location:

Misc ▲	
Location	Center

The position of the image display in the control

4. Control Name:

Name ▲	
ServerId	RayImageControl

The name of the control can be edited by clicking on this box.



The name entered in this box is used in the coding environment (See 12.1), so the insertion of a valid name facilitates access to control in the coding environment.

6.1.2.8. 6.1.2.9 Image viewer

Displaying the image(s) dynamically and using other existing information is possible with the “Image Viewer” control.

Follow the steps in the following sections to setup the Image Viewer

6.1.2.8.1. 6.1.2.9.1 Step 1: Define Attributes

The first step in setting up the “Image Viewer” control is to create an attribute of the type image to store the recursive data in the entity associated with the form containing the control (See 7.1).

The first screenshot shows the 'Entity' tab in the BPMS Designer. On the left, a tree view shows the 'ImageControl' entity with three attributes: 'Employee_Name' (String / VarChar (500)), 'Employee_Photo' (Image), and 'Employee_Age' (Numeric / Int). The 'ImageControl' entity name is highlighted with a red box. On the right, the 'Field' tab is active, showing the 'ImageControl' field configuration. The 'Add new field' button is highlighted with a red box.

The second screenshot shows the 'Field' tab configuration for the 'Employee_Photo' field. The 'Name' is 'Employee_Photo' and the 'Title' is 'Employee_Photo'. The 'Data field' radio button is selected. The 'Data Type' is set to 'Image', which is highlighted with a red box. The 'Size' and 'Precision' fields are empty.

By right clicking on the entity name and choosing the “new attribute” (See 9.3), the attribute and its data type can be defined


6.1.2.8.2. 6.1.2.9.2 Step 2: Connect the control to the attribute

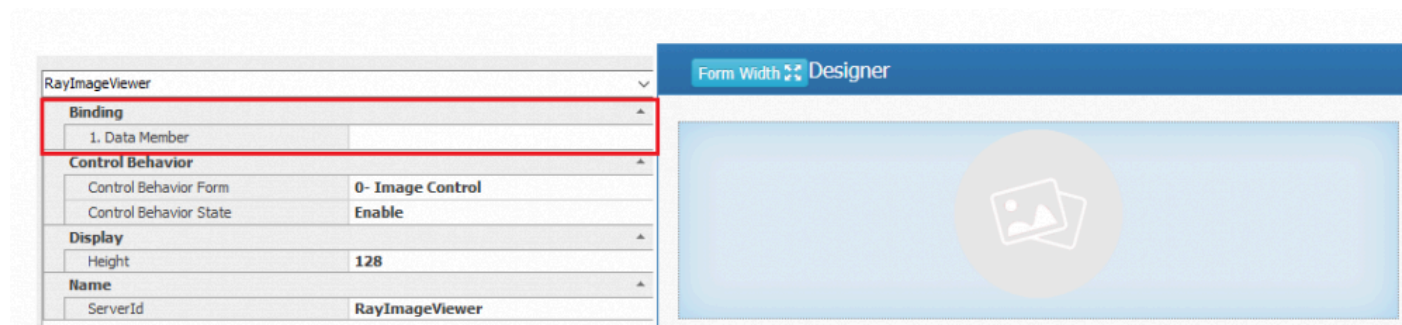
Step Two In setting up the “dynamic image control” is linking the control with the attribute defined in step one.


Drag and drop the “image viewer” control on the design canvas

- ✿ When adding controls in the form, the “Add Row” option is displayed. Dropping a control here will make it occupy the entire row as 1 column.

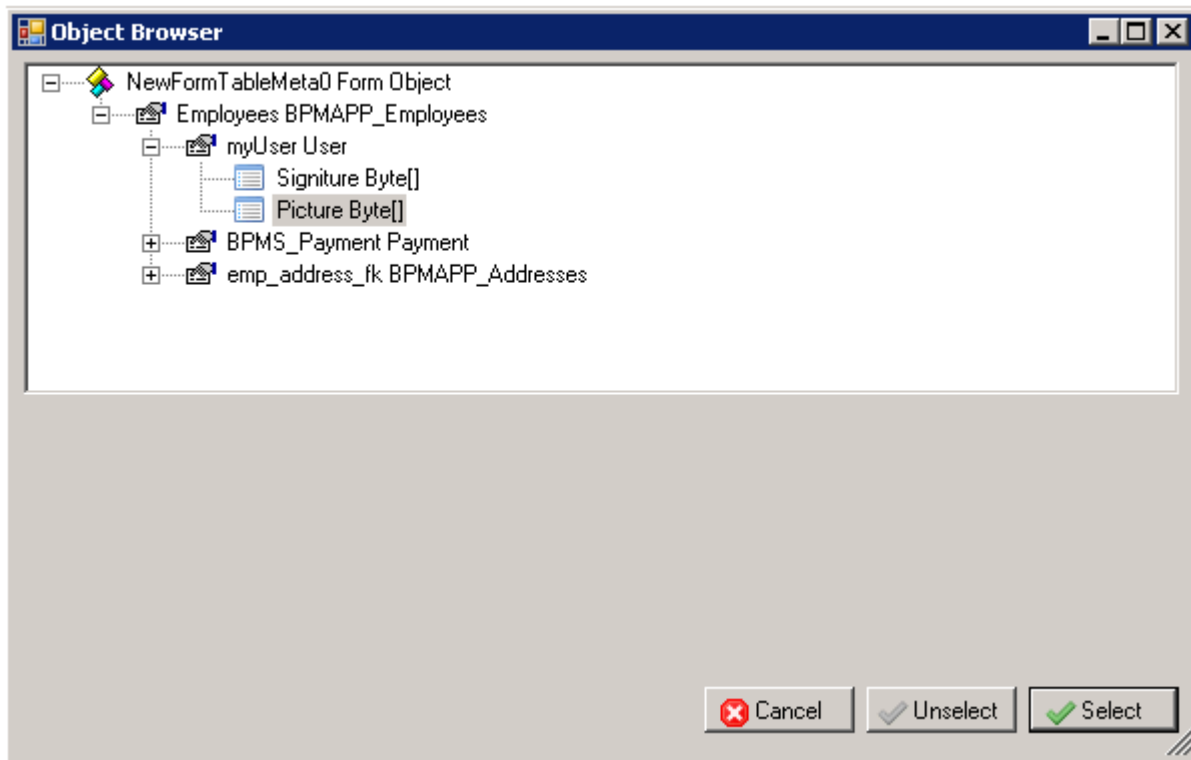


To link the attribute to the control, click on the “DataMember” section in the properties panel and click the button  to select the attribute.



By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.

✿ The attribute defined in step 1 (See 7.1.2.9.1) is displayed under the entity name.



6.1.2.8.3. 6.1.2.9.3 Step 3: Control Behaviour

In setting up the Dynamic Image Control, the behaviour of the control must be specified

The screenshot shows the 'Control Behavior' configuration window for a 'RayImageViewer' control. The window is divided into several sections: 'Binding', 'Control Behavior', 'Display', 'Misc', and 'Name'. Callouts 1 through 4 point to specific elements: 1 points to the 'Control Behavior Form' dropdown (set to '0- Image Control'), 2 points to the '1. Data Member' field, 3 points to the 'Location' dropdown (set to 'Center'), and 4 points to the 'ServerId' field (set to 'RayImageViewer').

Binding	
1. Data Member	
Control Behavior	
Control Behavior Form	0- Image Control
Control Behavior State	Enable
Display	
Height	128
Misc	
Location	Center
Name	
ServerId	RayImageViewer

1. Behavior:

Control Behavior	
Control Behavior Form	0- Image Control
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.

* The behaviour for the control can be different depending on the stage at which the process is at).

Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and cannot be changed by the user.

Invisible: If this option is selected, the controls will be invisible on users the web.

2. Relationship with Entity:

Binding	
1. Data Member	

Clicking on this section and choosing the button will display the contact form associated with the selected control entity. More contact form ...)(See 7.1.2.9.2)

3.Location:

Misc	
Location	Center

The position of the image display can be changed in this box.

4. Control name:

Name	
ServerId	RayImageViewer

The name of the control can be edited in this box.

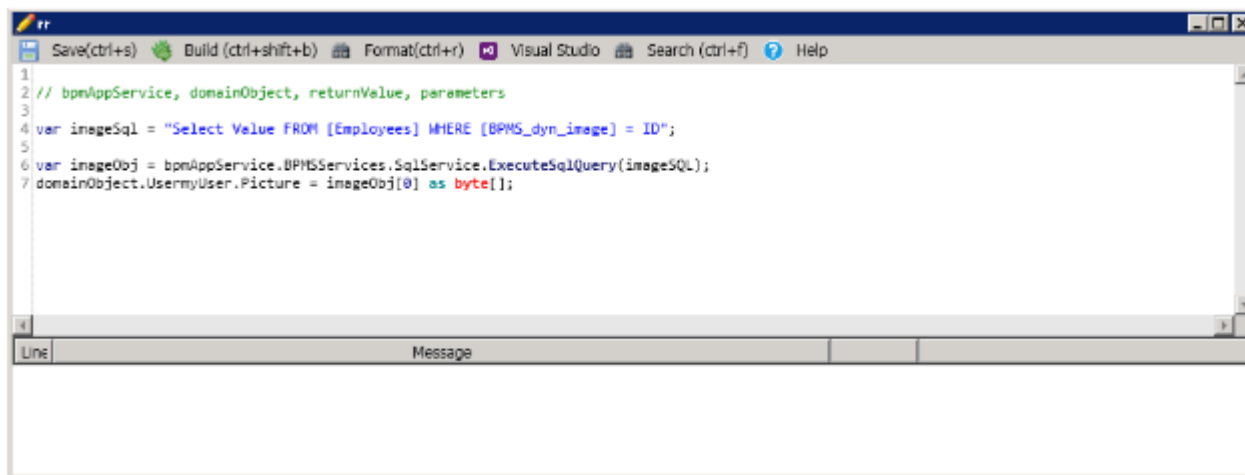
✿ If the control is generated by the designer of the form, it is automatically named.

✿ The name entered in this box is used in the coding environment (See 12.1), so the insertion of a valid name facilitates access to control in the coding environment.

6.1.2.8.4. 6.1.2.9.4 Step 4: Definition of Action

The action for the form containing the control to call the image of the entity is defined during the setup of the “Dynamic Image Control”.

To define the image call code, first define an action (See 8.2) and then edit it in the code environment and insert and save the image call code as shown below:



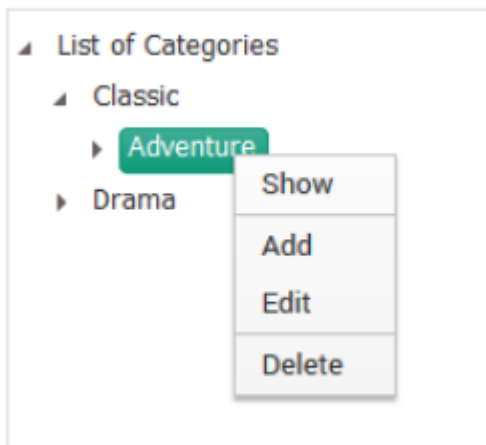
```
1 // bpmAppService, domainObject, returnValue, parameters
2
3
4 var imageSql = "Select Value FROM [Employees] WHERE [BPMS_dyn_image] = ID";
5
6 var imageObj = bpmAppService.BPMSServices.SqlService.ExecuteSqlQuery(imageSQL);
7 domainObject.UsermyUser.Picture = imageObj[0] as byte[];
```

Finally, assign it to the Form Behavior (See 7.2.2) in order to perform the action.

6.1.2.9. 6.1.2.10 Tree control

If we need to display information in a hierarchical structure in the form, we can see the Tree Control.

Web Example of the Tree Control:



✿ By choosing new options -> editing -> displaying the tree on the web, a form that can have an independent process is displayed.

The Tree Control form can be based on an entity (DomainObject) (See 7.1) or on object(Object)

Form	Title	Form Object Type	Domain Object Type
ImageForm	ImageFormDS	Ray.BPMApp.ImageControl.FormObject.ImageFormDS	Ray.BPMApp.ImageControl.Model.BPMAPP_ImageControl
form1	DS	Ray.BPMApp.ImageControl.FormObject.DS	object

Based on Entity (points to the first row)

Based on Object (points to the second row)

Tree types

The management system for work processes involves the ability to define and implement tree types that are described below.

Parent-child: A tree is said to contain the nodes for which the tree is stored and the node's storage (the child's form) is dependent on each time the parent form begins and the process in circulation. To save and submit a parent form.

Parent-child: Tree is called every time when the Parent form starts. Parent form contains nodes for which the tree is stored and the node's storage (the child's form). Child form is dependent on saving and submitting of the parent form.

Base Information Tree: A tree that is associated with each node in the process for each time the main form is started or circulated in the process, and the node's storage is done directly by storing or sending the modal form independently and dependency on the main form is not saved.

Base Information Tree: This form of Tree starts every time when the original form is launched. This form is saved to the entity independently on the original form.

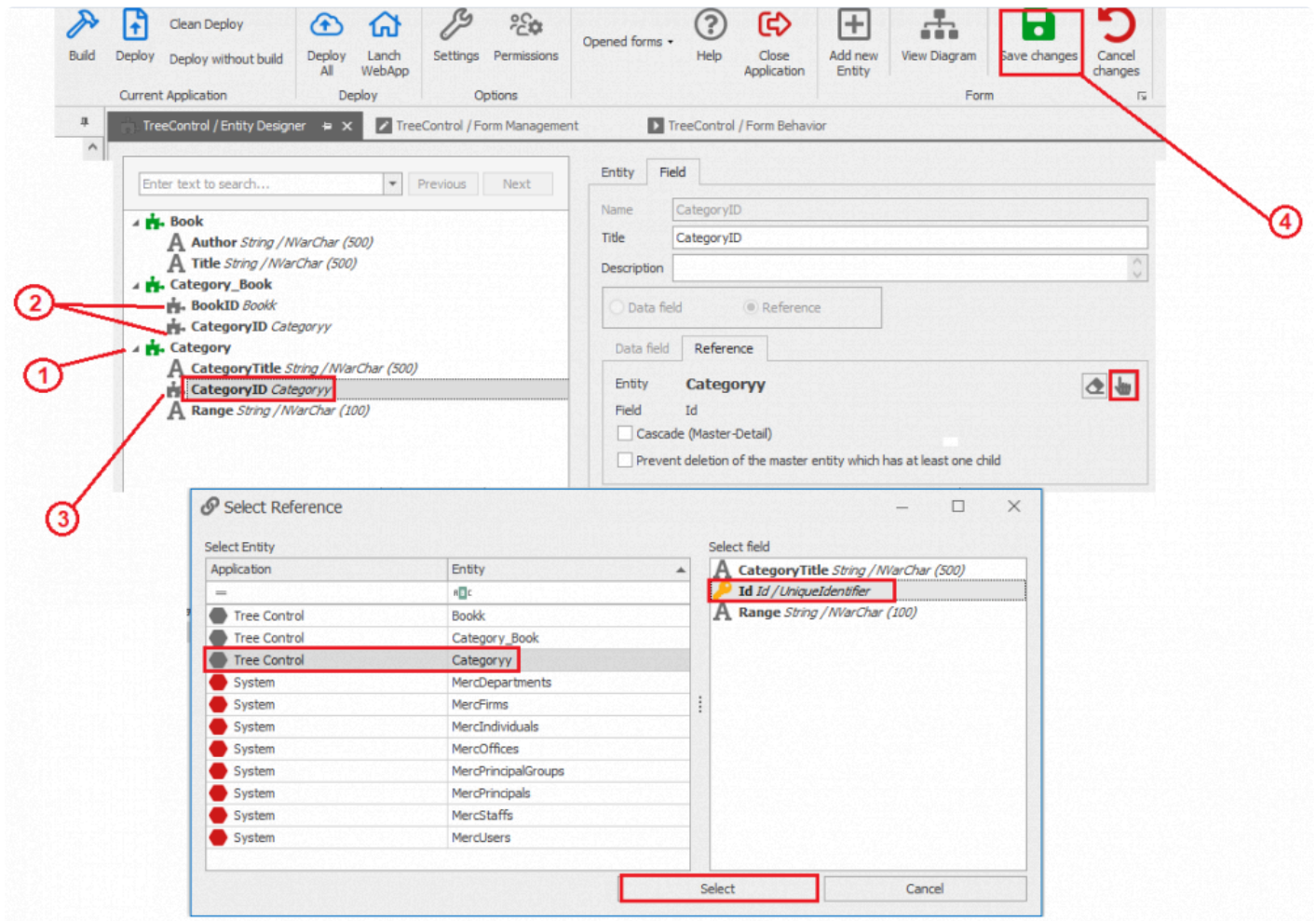
Launch control

Steps for controlling the parent-child tree control:

- Step 1: Connect the Tables (See 7.1.2.10.1)
- Step 2: Set up tree control.(See 7.1.2.10.2)
- Step 3: Connect the control to the attribute (See 7.1.2.10.3)
- Step 4: Display Features (See 7.1.2.10.4)
- Step 5: Control Specifications (See 7.1.2.10.5)
- Step 6: Show the tree on the web (See 7.1.2.10.6)

6.1.2.9.1. 6.1.2.10.1 Step 1: Set up Tree Control

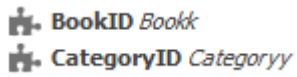
The First Step in Setting up the tree control is defining of the key of a child entity (Categories), Connected to itself (the same entity) as Parent entity.



1. Determine the Entity containing the Tree

It refers to an entity attributed to the tree control Form.

2. Assign list Keys




These two keys connect two entities with Assign list and with Tree.

3. Tree Entity Key



This key is related to the same entity. It is required for the Tree form control.

It created the object of the same type with the relation: Child-Parent

 Checkbox “Cascade(Master details should be Unchecked)”

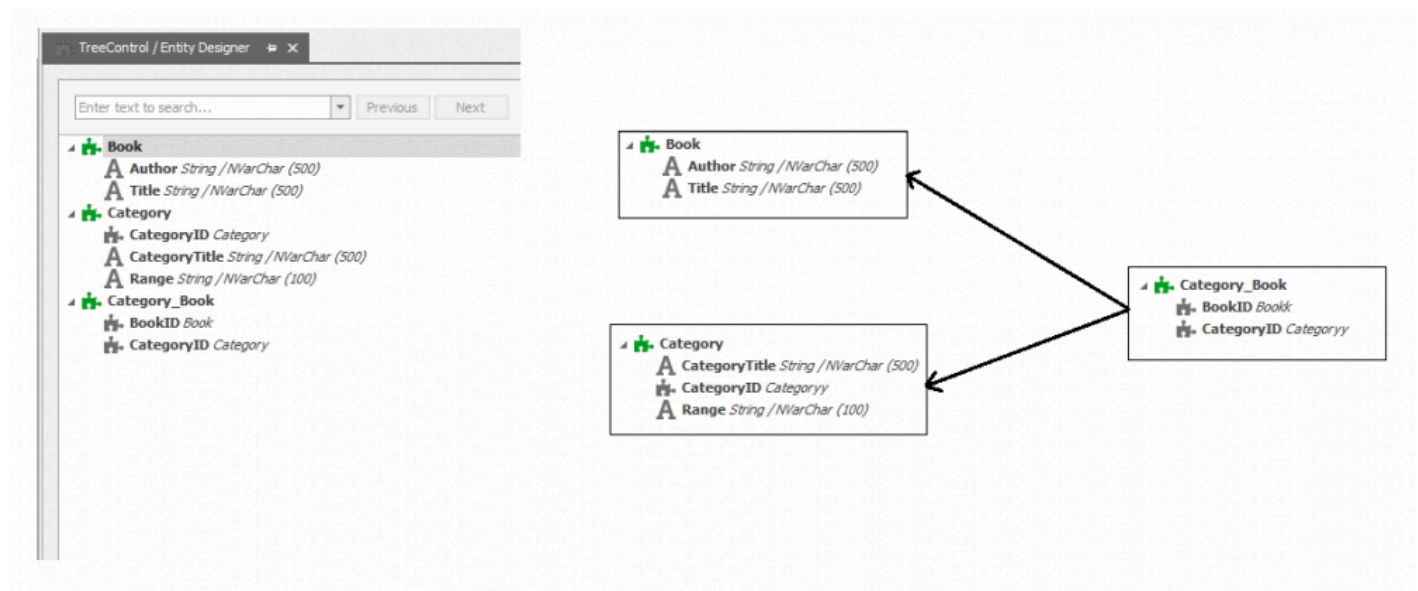
4. Save an Entity

After completing the steps above, Select the save button to save the changes.

6.1.2.9.2. 6.1.2.10.2 Step 2: Connect the Tables

The Second step is to set up tree control for the “Parent-Child tree” and defining an attribute to establish a relationship between the parent’s entity and the child’s entity in the “Entity Design” (See 9.3).

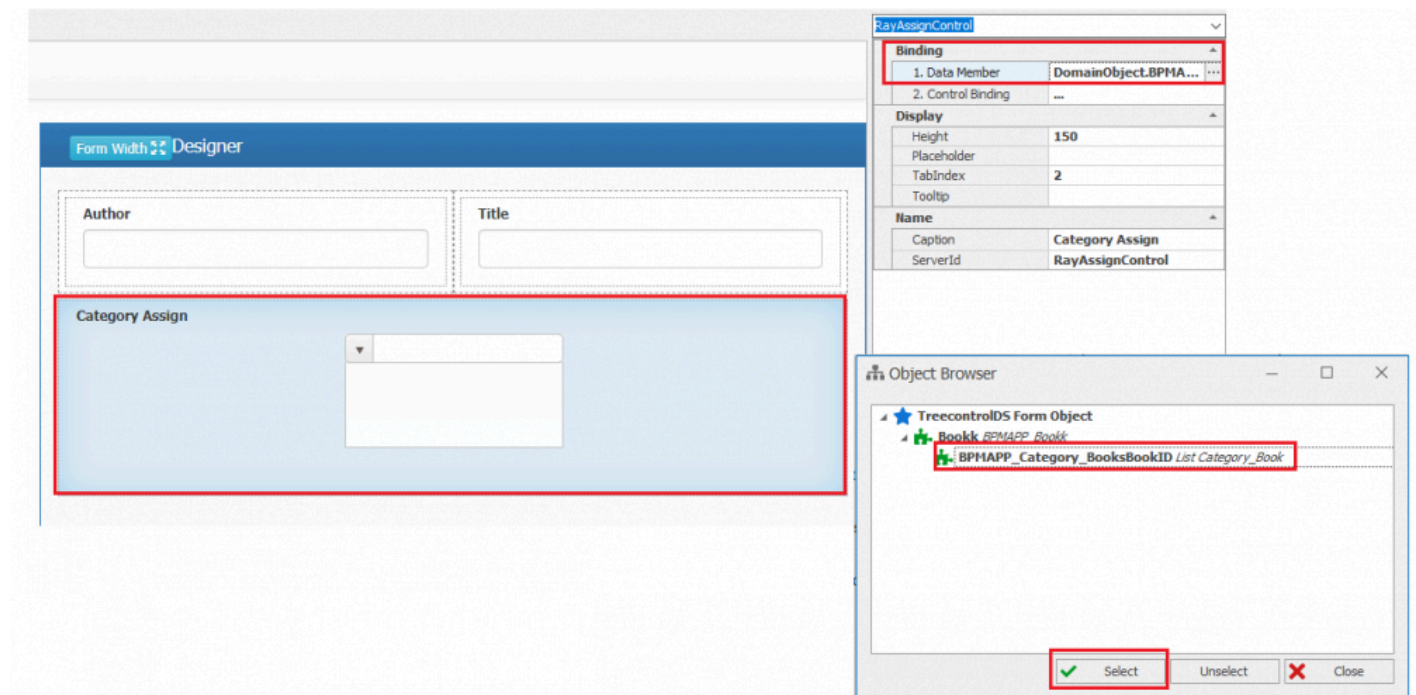
For the “Basic information tree” type, the definition of the attribute in relation to an entity that is to be displayed in the grid is a Form Design (See 7.1.2.10.1.1.)



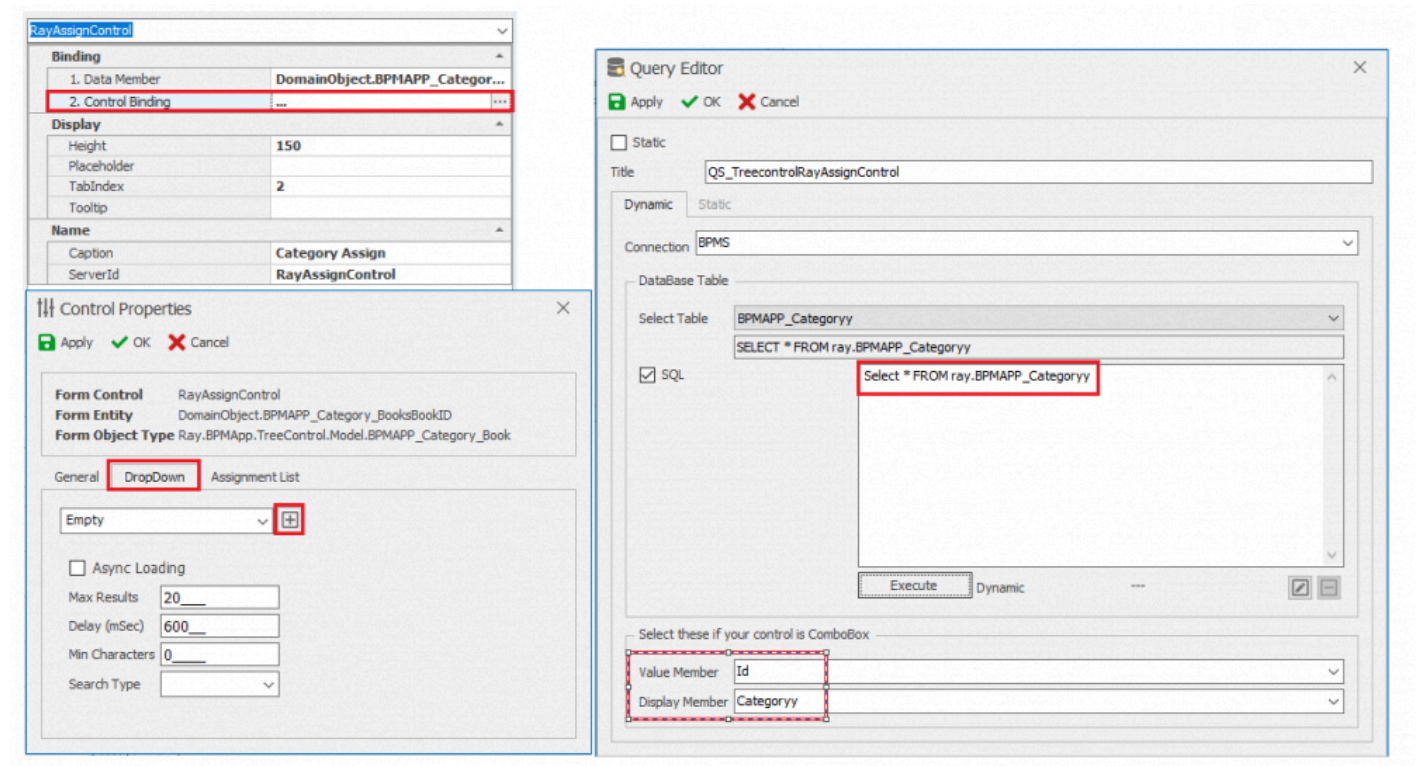
Set Assign list relationship for two Entities:

The next step is setting up the assign list. To get more Information about setting up the Assign List (See 7.1.2.21).

Assign list form control is use in Add Book Form.



Drop-Down of Assign list is set like:



Assignment list is connected to the entity "Categories", containing the Tree.

Control Properties

Apply OK Cancel

Form Control RayAssignControl
Form Entity DomainObject.BPMAPP_Category_BooksBookID
Form Object Type Ray.BPMApp.TreeControl.Model.BPMAPP_Category_Book

General DropDown **Assignment List**

Relation Property: BPMAPP_CategoryyyCategoryID

- BPMAPP_BookkBookID
- BPMAPP_CategoryyyCategoryID**
- BPMSPProcessInfoString
- CurrentState
- CurrentState_FaTitle
- Id
- TrackingCode

After defining the assignment list the form behavior with Tree Form control should be defined in “others” form control features of the Assign List.

To be displayed as pop-up window.

RayAssignControl

Binding

1. Data Member DomainObject.BPMAPP_Categor...
2. Control Binding ---

Control Behavior

Control Behavior ...

Control Behavior Form 0- Books List

Control Behavior State Enable

Display

Height 150

Placeholder

TabIndex 2

Tooltip

Name

Caption Category Assign

ServerId RayAssignControl

Behaviour of Books List form

Apply OK Cancel

Control Name : RayAssignControl

Selector Validation

Browse Form Behaviour

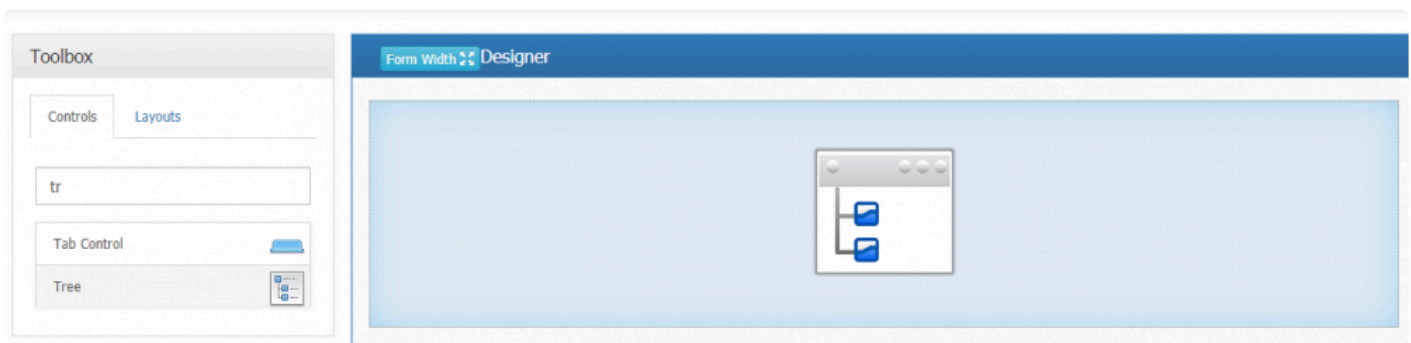
- Books List
- [Empty]
- Books List**


6.1.2.9.3. 6.1.2.10.3 Step 3: Connect the control to the attribute


The third step is to create a “tree” control in the main form, the control relationship with the “attribute defined in step one “ in the Form Design (See 7.1.2.10.2). See the description below.

Hold down the left mouse button on the tree control in the control list, and then drop the mouse in the row or cell (marked by yellow area)

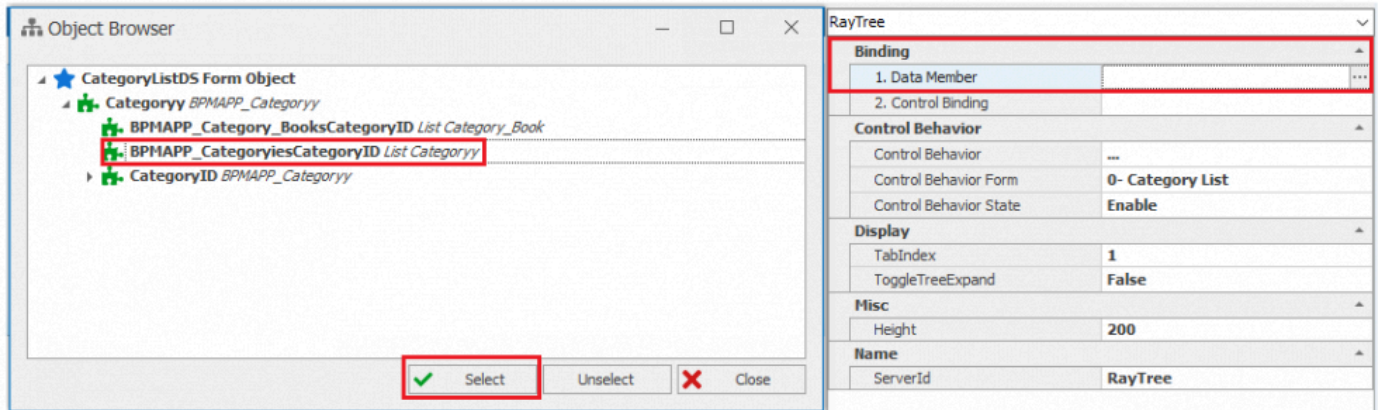
✿ When adding controls in the form, the “Add Row” option is displayed, which is added by dropping the mouse over the control in a new row and in the same place.



To control the tree with the attribute, first click the mouse control, then click on the “Data Member” section and click the button  to select the associated attribute.

By selecting the button , the “object selector” that contains the attributes defined in the entity is displayed.


✿ The attribute defined in step 2 (See 7.1.2.10.2) is displayed as a list.

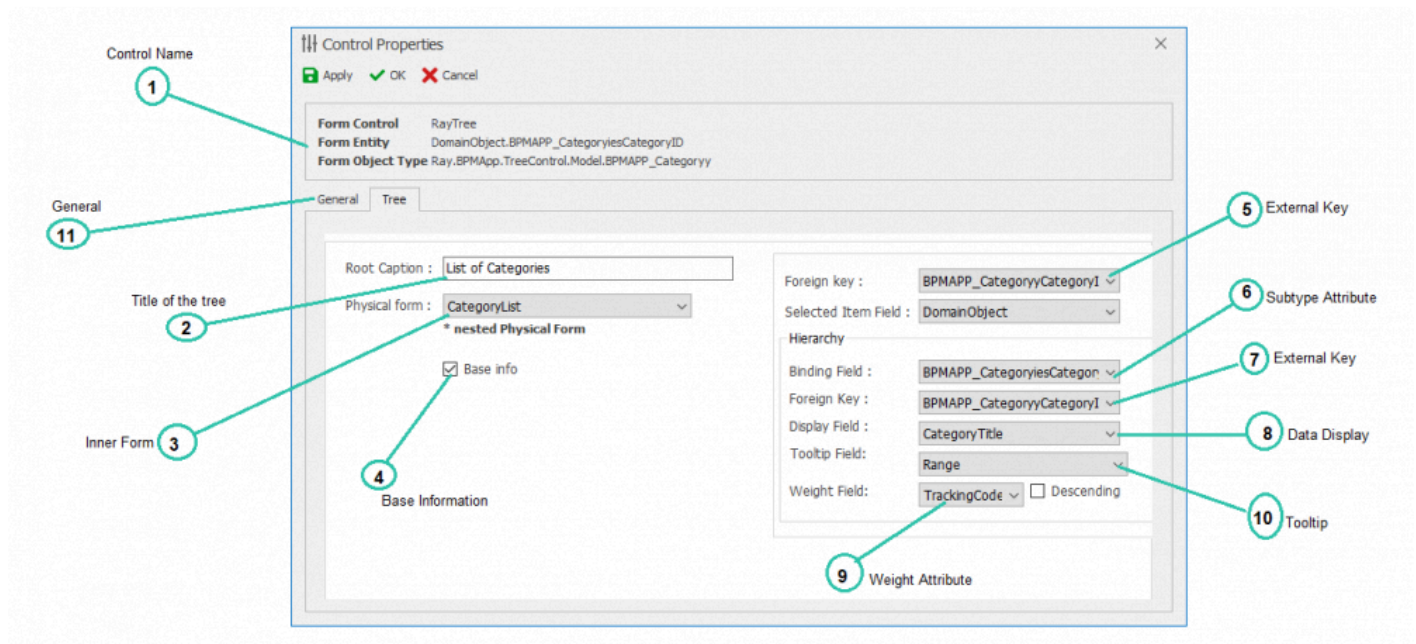


6.1.2.9.4. 6.1.2.10.4 Step 4: Display Features

The Fourth step is to set up the tree control in the main form, specifying the tree's specification (tree type, external key, internal form, attribute, etc.) in the form of “data-control connection”.

Access to the “Physical Form Binding”Form is possible from the following path

Select control in the form-> Click on the Control Binding-> Select the button 



1. Control Name:

Form Control	RayTree
Form Entity	DomainObject.BPMAPP_CategoriesCategoryID
Form Object Type	Ray.BPMApp.TreeControl.Model.BPMAPP_Categoryy

The control name and attribute associated with it can be displayed to the user in this box

2. Title of the tree:

Root Caption :

The Tree control title on the web is in this box.

3. Physical Form:

Physical form : 
* nested Physical Form

User can select the physical form that is displayed for viewing, editing and creating a node in tree control by this box.

4. Basic Information:


☒ Base info

If this option is selected, the tree type will be a base information tree.

Base Information Tree: A tree that is associated with each node in the process for each time the main form is started or circulated in the process, and the node's storage is done directly by storing or sending the modal form independently and dependency on the main form is not saved.


Parent-child: A tree is said to contain the nodes for which the tree is stored and the node's storage (the child's form) is dependent on each time the parent form (parent form) begins and the process in circulation. To save and submit a parent form.

5.Foreign Key:

Foreign key : 

In this box, you must select the key defined in the step 2, which is linked to the entity containing the control(See 7.1.2.10.2).

6.Binding Field:

Binding Field : 

In this box, you must select the key defined in the step 2, which is linked to the entity containing the data (See 7.1.2.10.2).

7. Foreign Key:

Foreign Key : BPMAPP_CategoryyCategoryI ▾

In this box, you must select the key defined in the step 2, which is linked to the entity containing the data (See 7.1.2.10.2).

8. Data Display:

Display Field : CategoryTitle ▾

User can select the names of nodes in tree control on the web with this box.

9. Weight Field:

Weight Field: TrackingCode ▾ ☐ Descending

The list of nodes in tree control are sorted by descending or ascending order based on the selected attribute.

Note: By removing the “descending” tick, the list of tree nodes is arranged ascending.

10. Tool tip:

Tooltip Field: Range ▾

The selected attribute in this box is the title displayed on the Tool tip when hovering the mouse on each node.

11. General:

General

By choosing this tab, features such as control action definition are available. More about general tab... (See 7.1.2.1)

6.1.2.9.5. 6.1.2.10.5 Step 5: Control Specifications

The fifth step in setting up the tree control is to specify the associated control attributes in the “Control Profile” box, which is displayed in the form to the left of the form design by selecting control in the form sheet.

The screenshot shows the 'RayTree' control profile configuration window. It is divided into several sections: Binding, Control Behavior, Display, Misc, and Name. Callouts point to specific fields: 1 points to 'Control Behavior Form' (0- Category Isit), 2 points to 'Control Behavior State' (Enable), 3 points to 'Data Member' (DomainObject.BPMAPP_Categor...), 4 points to the 'Control Behavior' section header, and 5 points to the 'ServerId' field (RayTree).

RayTree	
Binding	
1. Data Member	DomainObject.BPMAPP_Categor...
2. Control Binding	...
Control Behavior	
Control Behavior	...
Control Behavior Form	0- Category Isit
Control Behavior State	Enable
Display	
TabIndex	1
ToggleTreeExpand	False
Misc	
Height	200
Name	
ServerId	RayTree

1. Behavior:

Control Behavior Form	0- Category Isit
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.



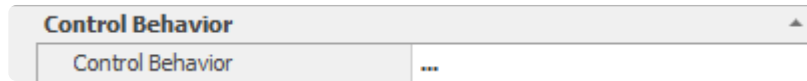
For each behavior you can change the display of control at that stage (behavior).

Enable: If this option is selected, the control will be enabled on the web.


Disable: If this option is selected, the control on the web is disabled and cannot be changed.

Invisible: If this option is selected, the controls will be invisible on the web.

2.Other:



Determining access to tree facilities (adding, editing, deleting in a tree) and validating controls are possible using this section.

Clicking on this section and selecting the button  the “Behavior of Edit Form” will be displayed, which includes two “tree behavior” and “validation” tabs.
























Tree Behavior tab:

Behaviour of Category list form

Apply OK Cancel

Control Name : **RayTree**

Tree Behaviour Validation

<input checked="" type="checkbox"/>  Enable Edit	Edit Form	Edit Category	  
<input checked="" type="checkbox"/>  Enable New	New Form	AddCategory	  
<input checked="" type="checkbox"/>  Enable View	View Form	View Category	  
<input checked="" type="checkbox"/>  Enable Delete	Delete Form	[Empty]	  
<input type="checkbox"/> Inline New	Inline New Form	[Empty]	  
<input type="checkbox"/> Inline Edit	Inline Edit Form	[Empty]	  
<input checked="" type="checkbox"/>  Enable Select (only in selector forms)			

Enable Edit: By selecting this option and specifying its behavior, at that stage, the node’s edit functionality (See 7.1.2.10.6) is activated for the responsible person .

Enable New: By choosing this option and specifying its behavior, at that stage, the possibility of creating a node for the responsible person is activated.

Enable View: By selecting this option and specifying the behavior, at that stage, the node's ability to display the node is activated for the responsible person .

Enable Delete: By selecting this option and specifying the behavior, at that stage, the node deletion action can be activated for the responsible person.

Enable Select: (See 7.1.2.20.5): If you select this option, you can double-click the tree node to add an equivalent display value to the "Searchable Drop down List" and "Assignment List" controls.

Validator Tab:

The screenshot shows a dialog box titled "Behaviour of Category list form". At the top, there are three buttons: "Apply" (with a floppy disk icon), "OK" (with a green checkmark icon), and "Cancel" (with a red X icon). Below these buttons, it says "Control Name : RayTree". There are two tabs: "Tree Behaviour" and "Validation". The "Validation" tab is selected. Inside the "Validation" tab, there are two checkboxes: "Has Required Field Validator" and "Has Range Validator". Below these checkboxes, there is a sub-tab labeled "Required Field Validator". Under this sub-tab, there is a label "Error message" and a text input field containing the text "Enter value".

Validation or, in other words, checking that the tree is not empty when submitting a form, is available in this tab and is activated by selecting the option "Has Required Field Validator."


By selecting the validation option, the message box will be displayed to insert and type the message.



By choosing this option, if the value is not entered for control when submitting the form, the line color of the control box is red in color and displayed in the form of the message.

3. Relationship with the Entity:

Binding	
1. Data Member	DomainObject.BPMAPP_Categor...

Clicking on this section and choosing the button  the contact form will be displayed with the selected control entity. More ... (See 7.1.2.10.3)

4. Physical Form Details:

2. Control Binding	...
--------------------	-----

5. Control Name:

Name	
ServerId	RayTree

With the click on this part, the English name of the control can be edited.

✿ If the control is made automatically by the design of the form, it is automatically named.

✿ The name entered in this box is used in the coding environment (See 12.1), so the insertion of the valid name facilitates access to control in the coding environment.

6.1.2.9.6. 6.1.2.10.6 Step 6: Web Display

Parent categories : “Classic” have inside child categories: “War”, “Romantic”, etc... (Tree form control).

Example:

Category Isit

▲ List of Categories

▲ Classic

▶ Adventure

▶ Drama

Show

Add

Edit

Delete

Right click on the category to see the Properties

Submit form

AddCategory

Category name

Humor

Save and Return

Tree control inside assign list allows to manage Tree elements (Add, Remove, Create New, Edit) and add Parent and child elements, what is not available in regular assign list.

Books List

Author

Title

Category Assign

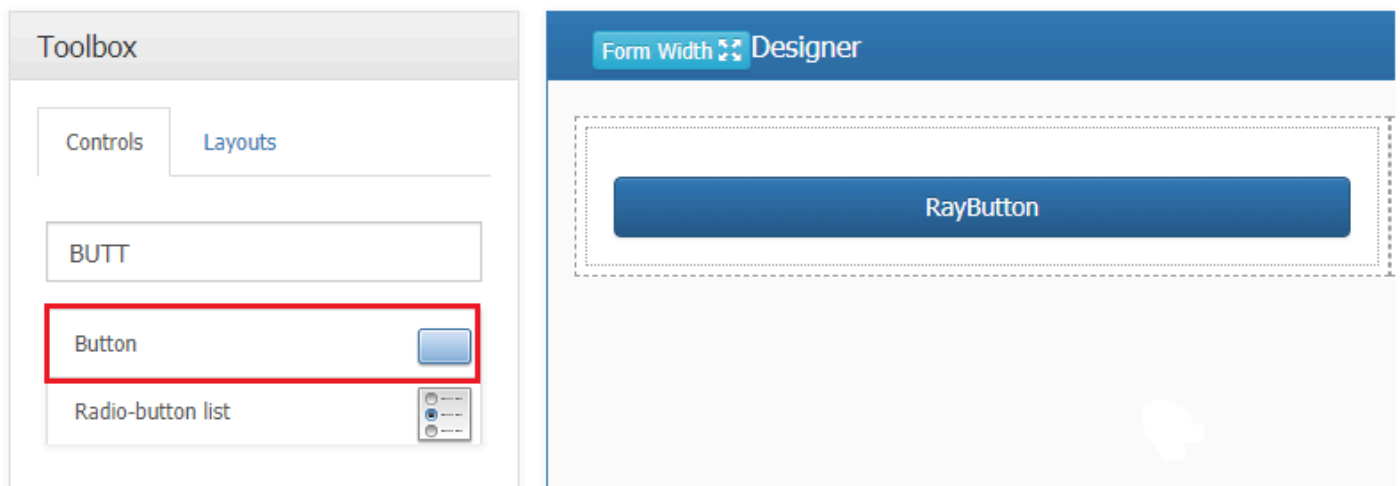
		
	Classic	X
	Drama	X

Submit form

6.1.2.10. 6.1.2.11 Button Control

Buttons can perform operations such as storing form information, sending form information, or executing some code.

To insert the button control, drag and drop the control onto the design canvas



The next step in setting up the “Button” control is to set the button action and other control properties in the properties window.

View Details

3

Size

6

Title

4

5 Control Name

1 Behavior

2 Button Mode

RayButton	
Binding	
2. Control Binding	...
Control Behavior	
Control Behavior Form	0- Label
Control Behavior State	Enable
Display	
Button Color	Primary
IsBlock	True
Size	Meduim
TabIndex	1
Misc	
DefaultAction	Default
Name	
Caption	RayButton
ServerId	RayButton

1. Behavior:

Control Behavior	
Control Behavior Form	0- Label
Control Behavior State	Enable

Current form behaviors (See 7.2) are displayed in the “form” section.

* The behaviour of the control can be different depending on the state of the process.

Enable: If this option is selected, the control will be enabled on the web.

Disable: If this option is selected, the control on the web is disabled and cannot be changed by users.

Invisible: If this option is selected, the controls will be invisible to users on the web.

2. Button Mode:


Misc	
DefaultAction	Default
Name	Default
Caption	Submit
ServerId	Save

The button type can be set using the dropdown

- **Default:** If you select this option, the code that runs in the defined form control action is executed when the button is pressed(See 7.4).
- **Submit:** If you select this option, the form information will be sent to the next step by clicking the button in the initial form. Note: The expected operation of this button is only active in the initial stage and will be deactivated in the next steps.
- **Save:** If you select this option, the form information is stored in the same form as the current one when the button is clicked. In the initial stage, only if the “draft (See 7.2.1)” of the expected operation is activated, this button will be activated, and with the storage operation at that stage, a copy of the work will be transmitted to the “Drafts”.

3. Display Details:

Binding	
2. Control Binding	...

Clicking on this section and clicking the button  will display the menu to edit the display details of the linked attribute. For more information about data control form (See 7.1.2.1)

4. Title:

Name	
Caption	RayButton

Controls inserted in the form are automatically captioned. The caption can be changed in this box.\

5. Control Name:

ServerId	RayButton
----------	-----------

The name of this control used in the coding environment

* If the control is generated by the design of the form, it is automatically named.

* The name entered in this box is used in the coding environment (See 12.1), so the insertion of a valid name facilitates access to control in the coding environment.

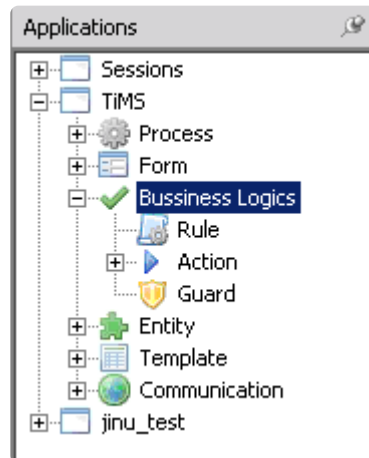
6. Size:

Size	Meduim
------	--------

You can change the size of the control using this box

7. 7. Business Logics

One of the Digital Business Platform modules is the Business Logics module, which consists of Rules, Actions and Guards.

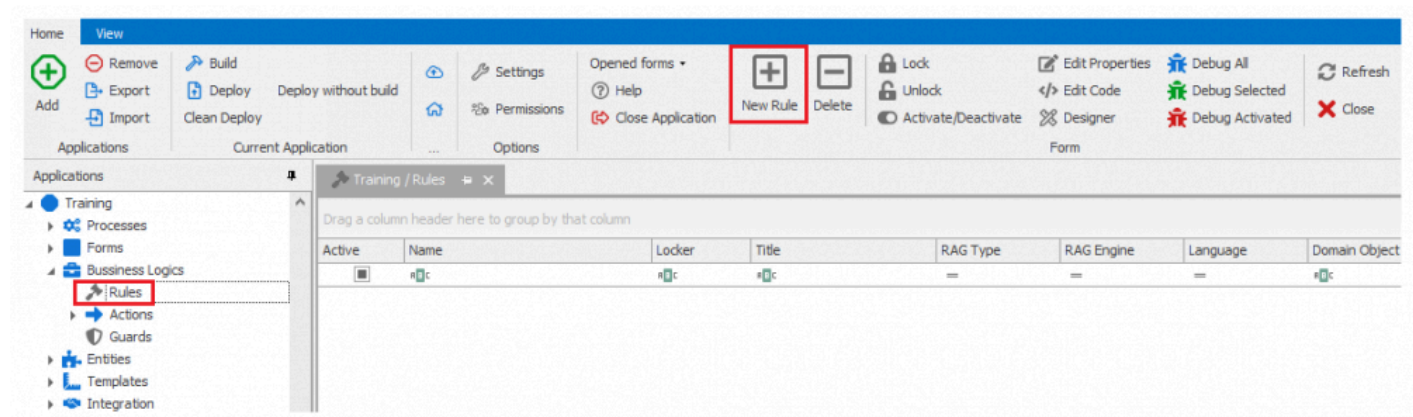


7.1. 7.1 Rule

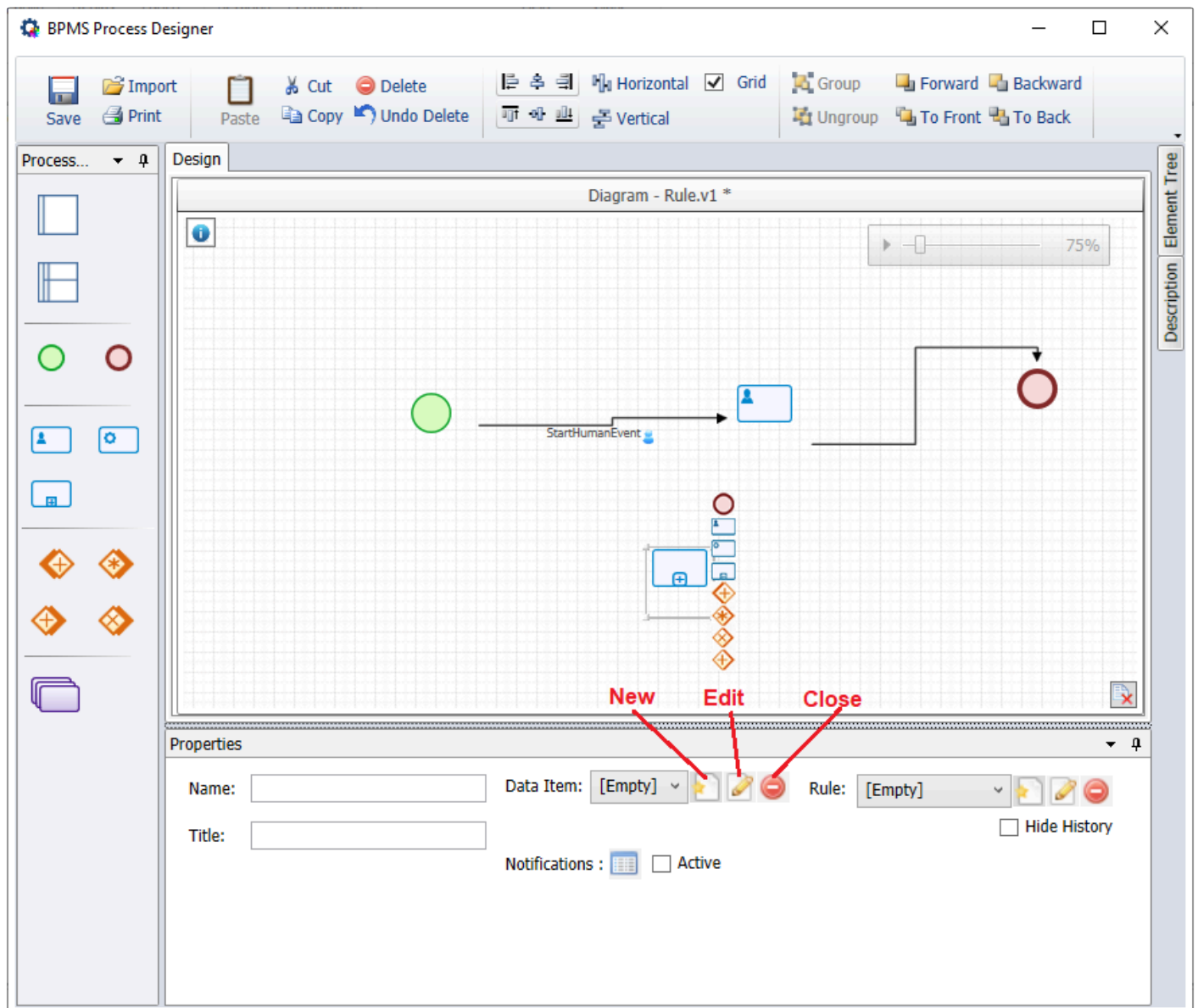
A rule takes certain inputs, processes it, and eventually produces the desired output. Rules can be defined and run on a process or subprocess that is being executed in real-time

A rule can be defined, edited or defined in 2 ways:

1. Select “Rule” under the “Business Logics” set in the Application tree



2. Select the sub-process in the “Process Design” section, and then click New, Edit or Delete in the properties panel of the sub-process



7.1.1. 7.1.1 Define a Rule

The screenshot shows a dialog box titled "Rule Properties: new" with a close button (X) and a help button (?). Below the title bar are four buttons: "Delete" (with a trash icon), "Apply" (with a floppy disk icon), "OK" (with a green checkmark icon), and "Cancel" (with a red X icon). The dialog is divided into two main sections. The left section, labeled "Type", contains a "Name" field (highlighted by callout 1), a "Title" field (highlighted by callout 2), a checked "Active" checkbox, a "Language" dropdown menu (highlighted by callout 3) currently showing "CSharp", and an "Entity" dropdown menu (highlighted by callout 4) currently showing "[Please Select...]". The right section, labeled "Rule", is currently empty.

1. Name

The name of the rule can be given in this field.



While choosing name, Naming Rules should be followed, or else it will display an error.

2. Title

The title of the rule can be given in this field (The title will be displayed in other parts of the application).

3. Language

The coding language can be selected in this box.

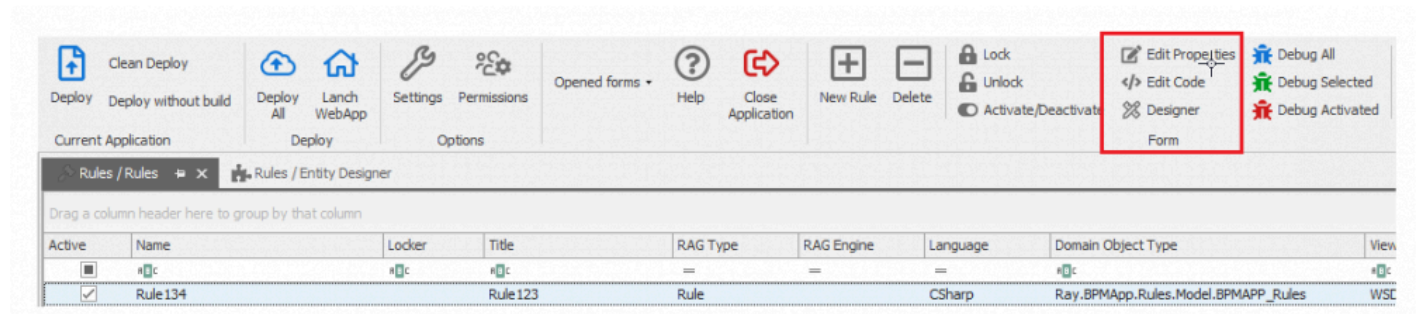
4. Entity

It is mandatory to specify the associated entity with that particular rule.

After specifying the rule, it is added to the list of rules.

7.1.2. 7.1.2 Edit a Rule

To edit a rule, select it from the list and click on Edit.



Three options will be shown: Properties, Code and Designer.

Properties: The properties of the rule can be edited

Code: The script environment will be opened and you can insert code and queries .

Designer: Opens the design form

7.2. 7.2 Action

An action is a particular task that should be accomplished before or after the form is loaded or submitted.

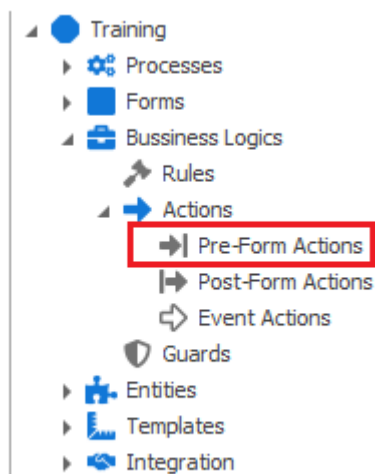
7.2.1. 7.2.1 Pre Form Action

An action that takes place before the loading or execution of a form is called Pre-Form Action.

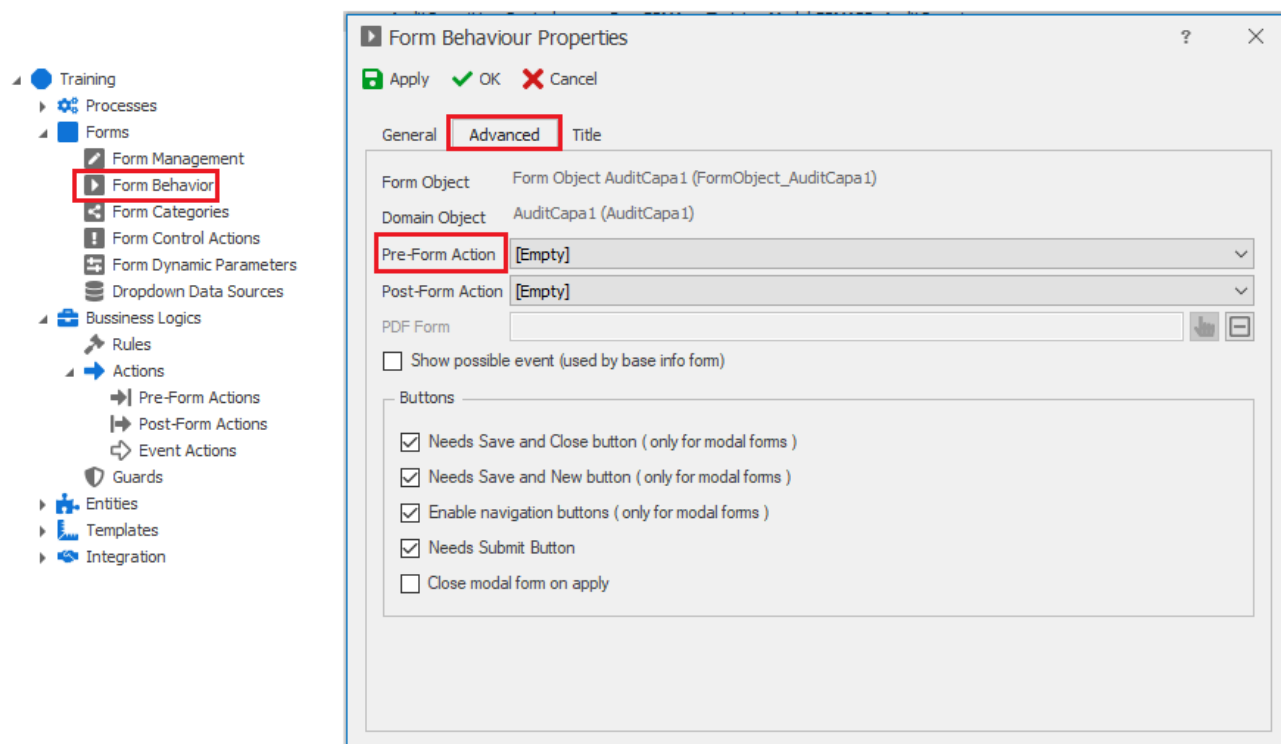
Defining Pre Form Action

Pre Form Actions can be defined in two ways:

1. Select “Pre-Form Action” under the “Business Logics” set in the Open Application tree

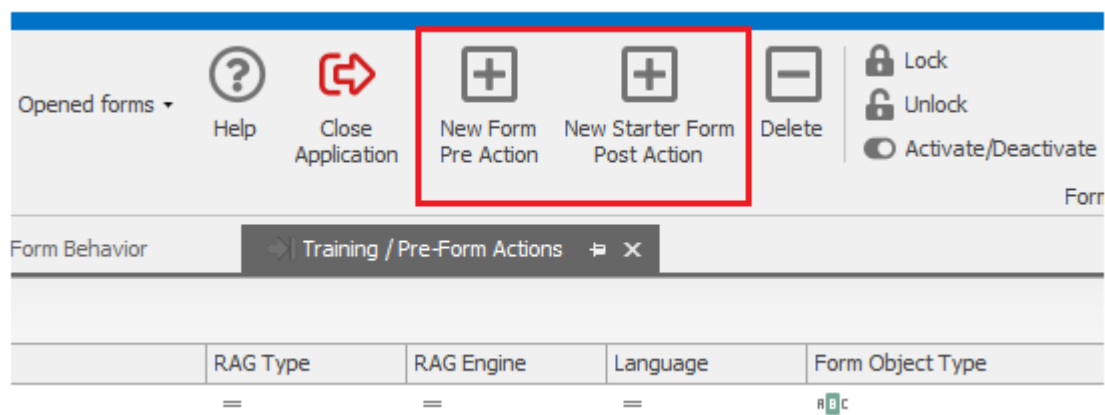


To execute the action, first modify the behavior in the “Form Behavior”, then select the defined action in the Advanced tab in the “Pre-Form Action” box.



* If the behavior of the selected form is “Starter”, then you can only select/assign PreStarter Form Actions.

By Clicking the New Button ,there will be two sub menus:



Selecting Pre FormAction will display a window with the Name, Title and Language fields.

Pre-Form Action Properties: new

Type: **PreFormAction**

Name:

Title:

☒ Active

Language:

Form Entity Type:

Selecting PreStarter FormAction will display a form with Name, Title and Language fields.

Pre-Form (Starter) Action Properties: new

Type: **PreStarterFormAction**

Name:

Title:

☒ Active

Language:

Form Entity Type:



If the form behaviour is set to “Starter”, then only the “PreStarter Form Action” will be displayed in the Pre-Form Action drop down list in the form behaviour.

Example of Pre Form Action :

If we have an attribute named ‘date’, and if we want that field to be automatically filled with current date, you can define a rule as given below:

domainObject.Date = bpmAppService.HelperServices.DateTimeService.CurrentDate;

This action will be carried out before the form is loaded.

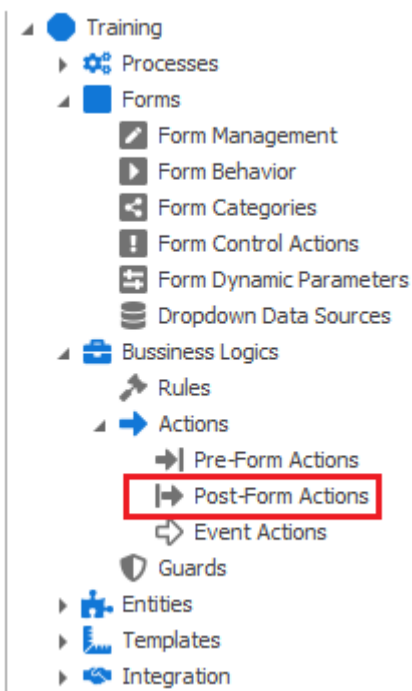
7.2.2. 7.2.2 Post Form Action

An action that takes place after the submission of a form is called Post Form Action.

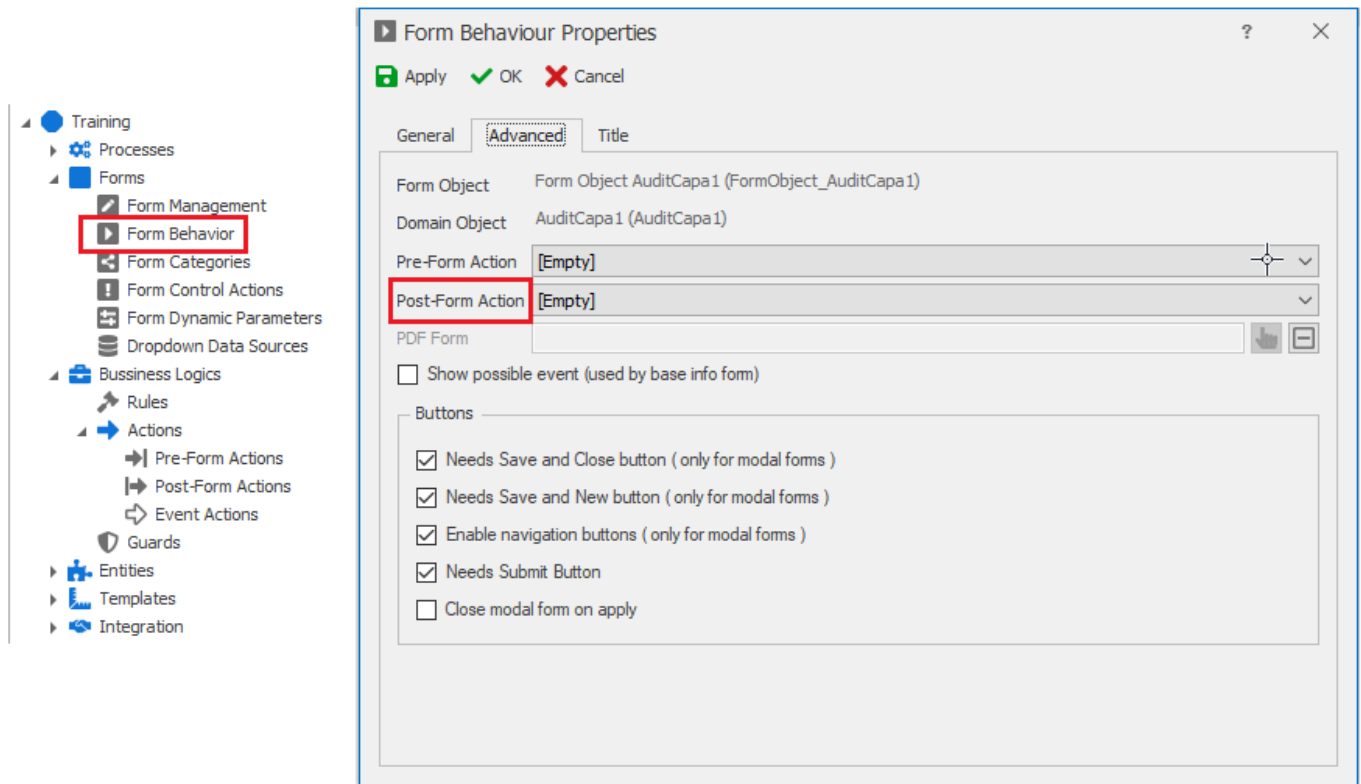
Defining Post Form Action

Post Form Action can be defined in two ways:

1. Select “Post Form Action” under the “Business Logic” set in the open application tree

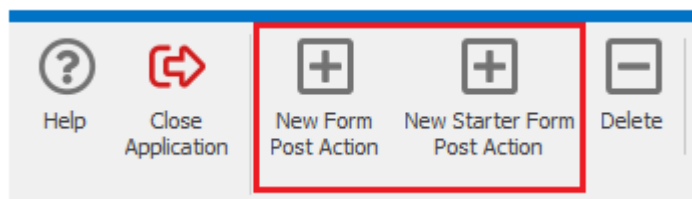


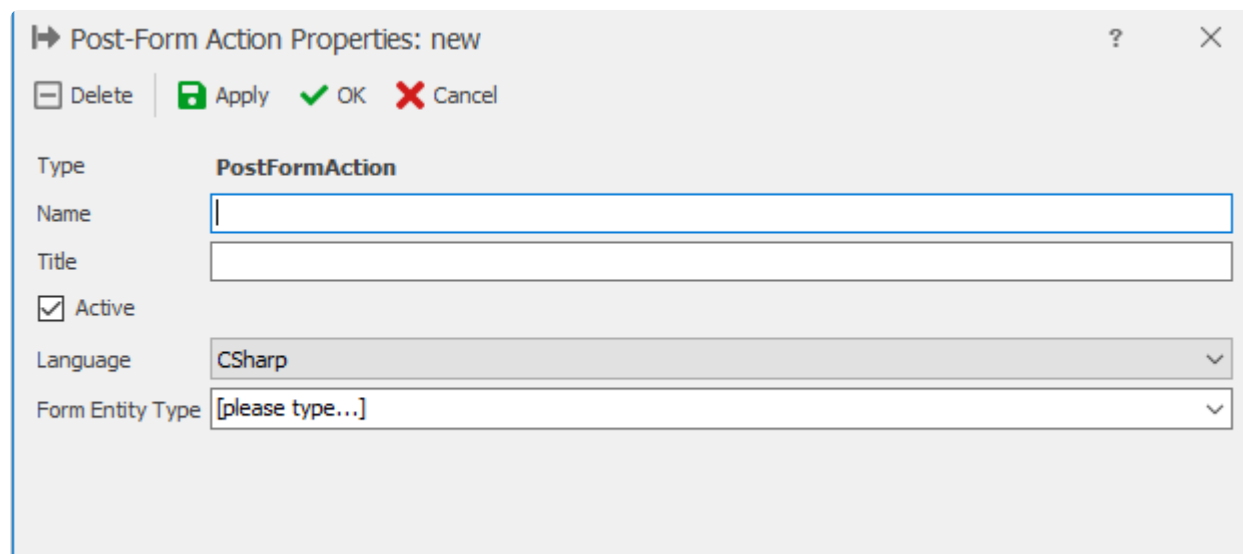
To execute the action, first modify the behavior in the “Form Behaviour”, then select the defined action in the Advanced tab in the “Post-Form Action” box.



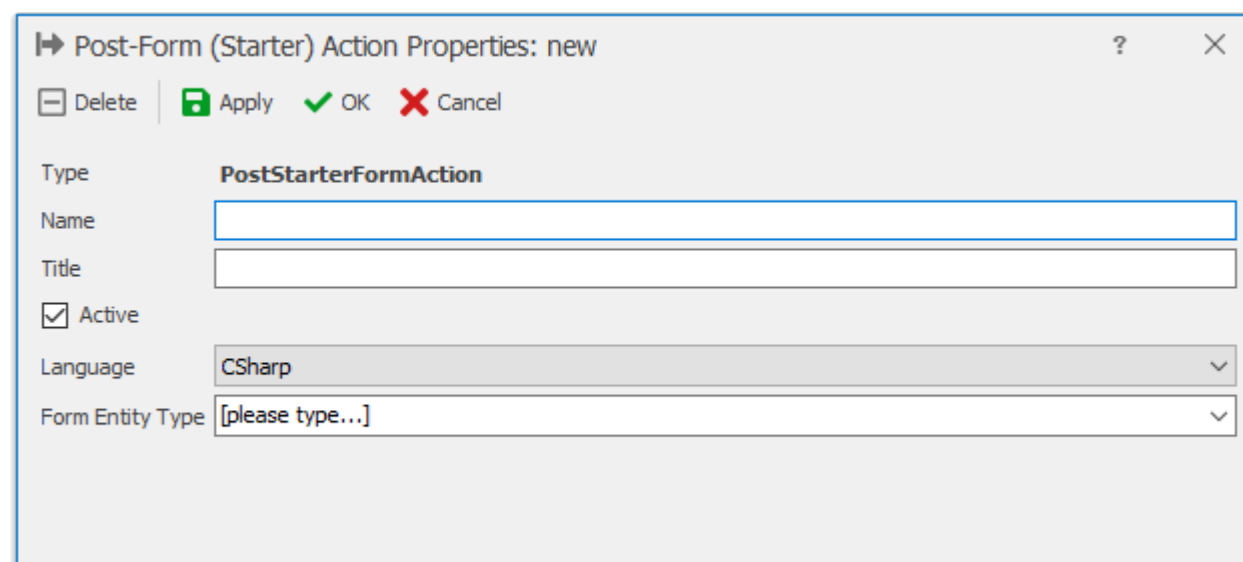
✿ If the behavior of the selected form is “Starter”, then you can only select/assign PostStarter Form Actions.

By Clicking the New Button ,there will be two sub menus:





The dialog box titled "Post-Form Action Properties: new" contains a toolbar with "Delete", "Apply", "OK", and "Cancel" buttons. The "Type" is set to "PostFormAction". The "Name" field is empty. The "Title" field is empty. The "Active" checkbox is checked. The "Language" dropdown is set to "CSharp". The "Form Entity Type" dropdown is set to "[please type...]".



The dialog box titled "Post-Form (Starter) Action Properties: new" contains a toolbar with "Delete", "Apply", "OK", and "Cancel" buttons. The "Type" is set to "PostStarterFormAction". The "Name" field is empty. The "Title" field is empty. The "Active" checkbox is checked. The "Language" dropdown is set to "CSharp". The "Form Entity Type" dropdown is set to "[please type...]".

Based on the action which is to be carried out, the action can be selected and/or defined similar to Post Form Actions.

Example of Post Form Action

If we have a mandatory field named 'Name of Employee' we can write a Post Form action so that whenever a user tries to submit the form without filling in the 'Name of Employee' field, an error message will be displayed.

The rule should be written as follows:

If(domainObject.NameOfEmployee ==null)

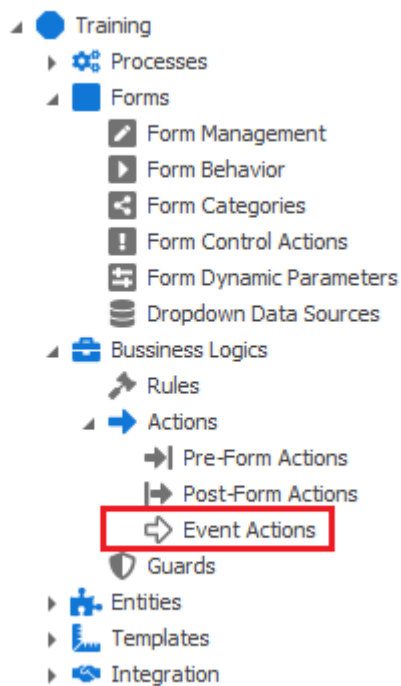
```
{ actionResult.Result = Rayvarz.BPMS.RuleModel.Result.Error; actionResult.Message = “Please  
select the Name of Employee”;
```

7.2.3. 7.2.3 Event Action

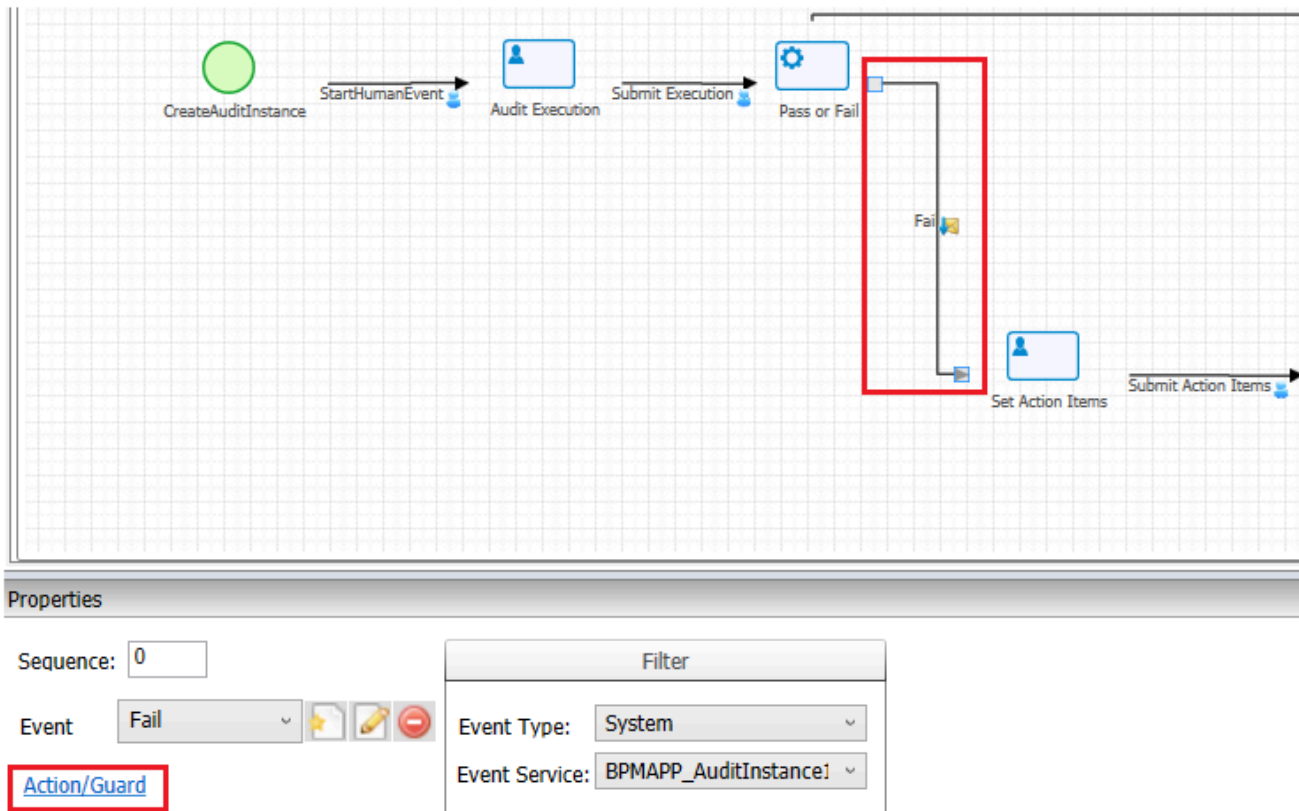
An event action is an action that takes place simultaneously with the event.

Event actions can be selected in two ways:

1. Select the “Event Action” under the “Business Logics” set in the Open Application Tree

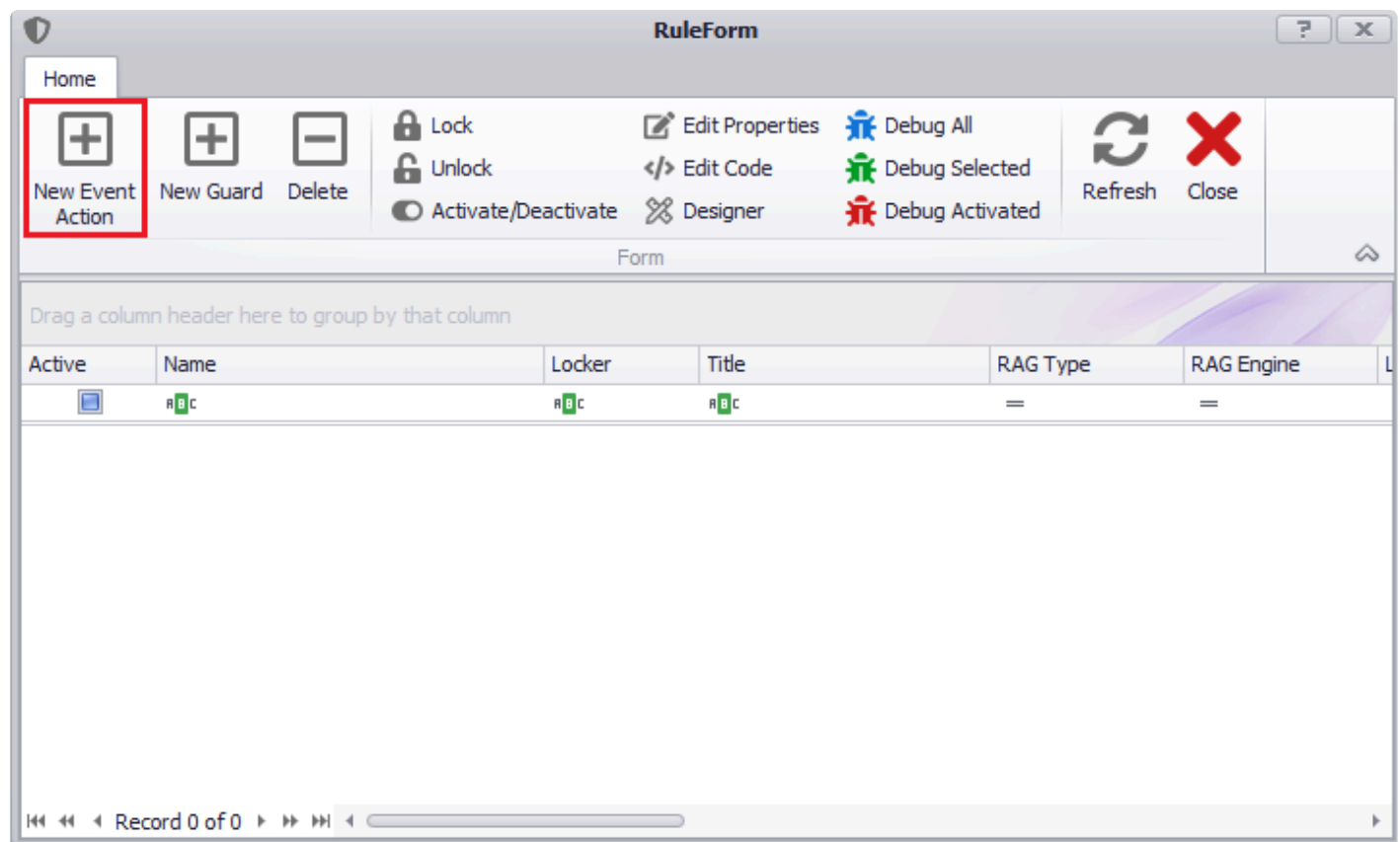


2. Select the event in the Process Diagram section, then edit, create or delete the event using the Action / Guard link.



Defining Event Action:

Select the new button to define a new event action



Then a window will be displayed to allow the user to define the event action:

Action Properties: new ? X

Type: **Action**

Name:

Title:




☒ Active

Language: **CSharp** ▼


Entity: **[Please Select...]** ▼

Scope

Drag a column header here to group by that column

Title	Access Name Summary	Access Name
 MIS_FccCrdt	 object	 object
MIS_FccCash	object	object
MIS_Sale_TrnsfrToRequest	object	object
MIS_PmRepairEnd	object	object
MIS_CashDeliver	object	object
MIS_DeleteOrder	object	object
StarthumanEvent	object	object
MIS_CashIssue	object	object

Record 1 of 32

Event name: 

Process: **[Empty]** ▼

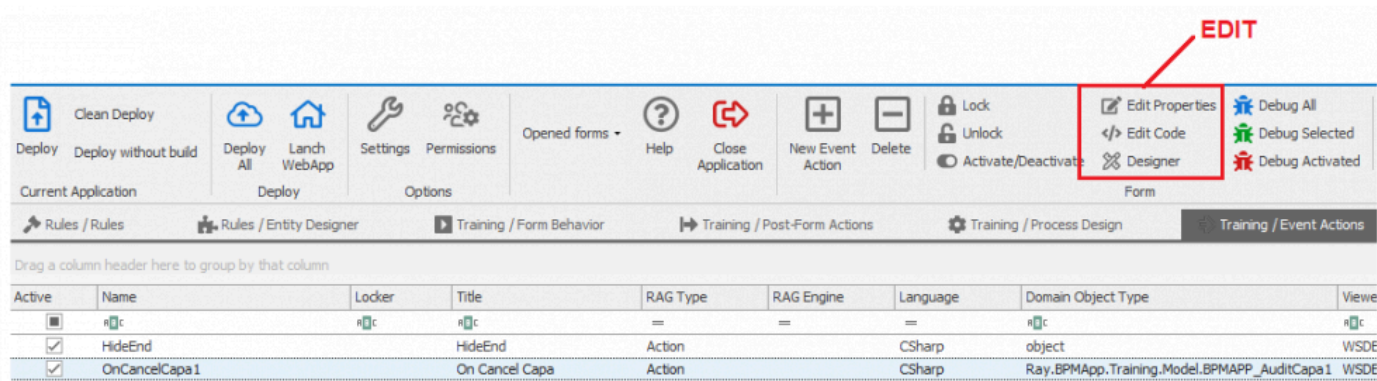
Process Version: ▼

State Name: ▼

For more information, see [7.4 General features of Action and Guard](#)

Editing Event Actions

After defining an Event Action, you can Save it and then the action will be added to the Action List. You can edit an action by selecting it and then clicking on the Edit button on the toolbar.



Three options will be shown in the edit menu: Properties, Code and Designer.

Properties: The properties of the action can be edited

Code: The script module will be opened and you can insert the codes and queries .

Design: The designer form is displayed.

For more information, see [7.4 General Features of Edit](#)

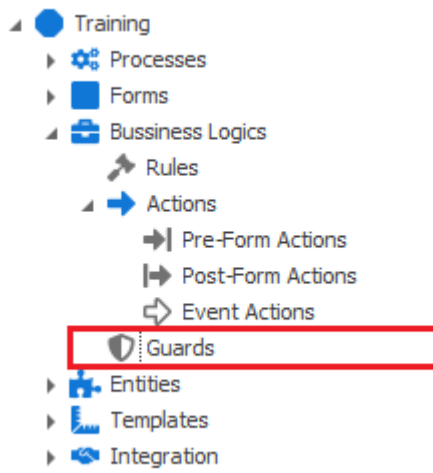
7.3. 7.3 Guard

Guard is similar to Event Action, i.e, it runs simultaneously with the execution of an event. In addition, a guard can prevent the occurrence of the event.

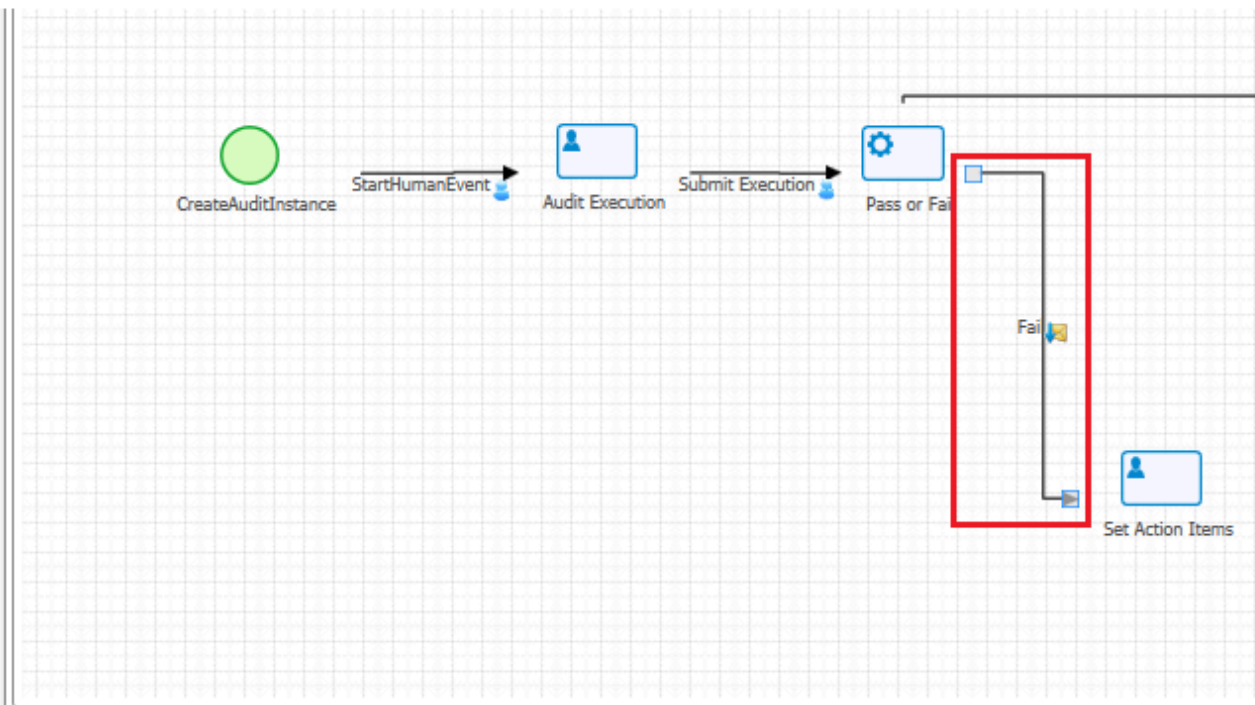
7.3.1. 7.3.1 Defining Guard

A guard can be defined in two ways:

1. Select “Guard” under the “Business Logics” set in the Open Application tree



2. Select an event (flow) in the Process Designer, then edit, create or delete the Guard using the Action / Guard link at the bottom of the properties panel. The window to define or edit a guard will be displayed.



Properties

Sequence: 0

Event Fail

[Action/Guard](#)

Filter

Event Type: System

Event Service: BPMAPP_AuditInstance1

RuleForm


Home

New Event Action **New Guard** Delete

Lock Unlock Activate/Deactivate Edit Properties Edit Code Designer Debug All Debug Selected Debug Activated Refresh Close

Form

Drag a column header here to group by that column

Active	Name	Locker	Title	RAG Type	RAG Engine
	RAG	RAG	RAG	=	=

Record 0 of 0

Guard Properties: new

Delete

Apply

OK

Cancel

Type

Guard

Name

Title

Active

☒

Language

CSharp

Entity

[Please Select...]

Scope

Drag a column header here to group by that column

Title	Access Name Summary	Access Name
MIS_FccCrdt	object	object
MIS_FccCash	object	object
MIS_Sale_TrnsfrToRequest	object	object
MIS_PmRepairEnd	object	object
MIS_CashDeliver	object	object
MIS_DeleteOrder	object	object
StartHumanEvent	object	object
MIS_CashIssue	object	object

Record 1 of 32

Event name

Process

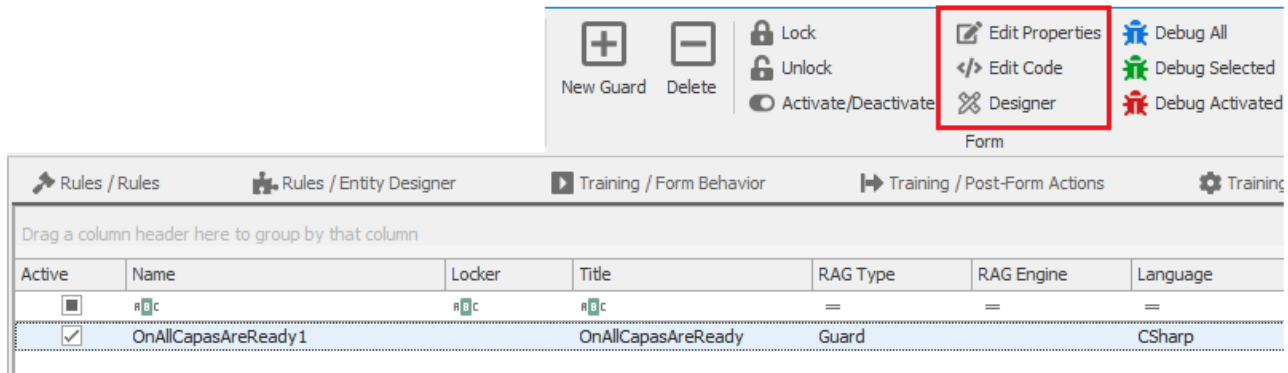
[Empty]

Process Version

State Name

7.3.2. 7.3.2 Editing a Guard

After defining a Guard, you can Save it and then the Guard will be added to the List To edit a guard, select it and click on edit in the toolbar.



Three options will be shown in the Edit menu i.e ,Properties,Code and Designer.

Properties: The properties of the guard can be edited

Code: The script form will be opened and you can insert the code and queries .

Designer: The designer form opens.

7.4. 7.4 General Features of Actions and Guards

Clicking the new button in Event Action/Guard will display a form as shown below:

* For Event Action, the Type will be action and for Guard the Type will be Guard

The screenshot shows the 'Action Properties: new' dialog box. It includes a toolbar with 'Delete', 'Apply', 'OK', and 'Cancel' buttons. The 'Type' is set to 'Action'. The 'Name' and 'Title' fields are empty. The 'Active' checkbox is checked. The 'Language' is set to 'CSharp' and the 'Entity' is '[Please Select...]'. The 'Scope' section contains a table with columns 'Title', 'Access Name Summary', and 'Access Name'. Below the table is an 'Event name' field, a 'Process' dropdown set to '[Empty]', a 'Process Version' dropdown, and a 'State Name' dropdown. Numbered callouts 1 through 8 point to the following elements:

- 1: Type dropdown
- 2: Name text box
- 3: Title text box
- 4: Active checkbox
- 5: Language dropdown
- 6: Entity dropdown
- 7: Scope table
- 8: Event name text box

Title	Access Name Summary	Access Name
MIS_FccCrdt	object	object
MIS_FccCash	object	object
MIS_Sale_TrnsfrToRequest	object	object
MIS_PmRepairEnd	object	object
MIS_CashDeliver	object	object
MIS_DeleteOrder	object	object
StarthumanEvent	object	object
MIS_CashIssue	object	object

Record 1 of 32

Event name: [Empty]

Process: [Empty]

Process Version: [Empty]

State Name: [Empty]

1. Name:

The unique identifier for the action or guard.

Note: You will not be able to save if the name does not follow c# naming conventions

2. Title:

The displayed title of the action or guard.

3. Language:

The coding language can be selected in this box.

4. Entity:

When creating an Action/Guard it is mandatory to select the entity associated with it.

5. Scope:

If an EventName is selected in this box, the Action/Guard is executed at the same time as the event occurs.

To remove an "EventName ," Click the  button and remove the event from the list.

6. Process:

By selecting a process, the Action/Guard will run only in that process



Leaving this blank will trigger the Action/Guard in all processes associated with that entity

7. Process Version:

By choosing a process version, the Action/Guard will be triggered only for that particular Process. By default, we use Process Version 1 and it will execute actions in all versions of the selected process. If we select process 'Version -1' (minus one) indicates that a particular Action/Guard will be called on all processes

Action Properties: new

Type: **Action**

Name:

Title:

☒ Active

Language: **CSharp**

Entity: **[Please Select...]**

Scope

Drag a column header here to group by that column

Title	Access Name Summary	Access Name
MIS_FccCrdt	object	object
MIS_FccCash	object	object
MIS_Sale_TrnsfrToRequest	object	object
MIS_PmRepairEnd	object	object
MIS_CashDeliver	object	object
MIS_DeleteOrder	object	object
StartHumanEvent	object	object
MIS_CashIssue	object	object

Record 1 of 32

Event name:

Process: **Audit (Audit)**

Process Version: -1

State Name:

8. State Name:

By selecting a state, the Action/Guard will be executed only when that particular state occurs.



Leaving state blank assigns the Action/Guard is in all the states of the selected process.

Event	Process	State	Description
-------	---------	-------	-------------

Select one Event/ Guard	Any(-1)	Any	The selected Event/Guard will be called by all processes and States
Select one Event/ Guard	Select one process	Any	The selected Event/Guard will be called only by one process but in all states
Select one Event/ Guard	Select one process	Select one state	The Event/Guard selected will be called for the particular process in one state
Select one Event/ Guard	Select one process	Any	All Event/Guard will be called in that particular process.

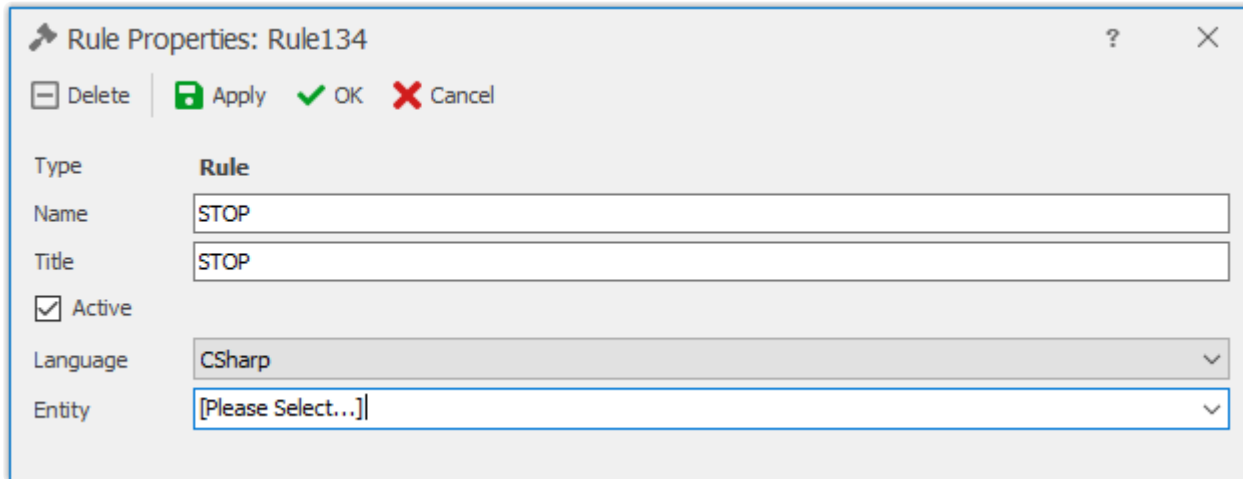
7.5. 7.5 General Features of Edit

The screenshot displays the BPMS Designer interface. At the top, a toolbar contains several icons: a plus sign for 'New Event Action', a minus sign for 'Delete', a lock for 'Lock', an unlocked lock for 'Unlock', a circle with a slash for 'Activate/Deactivate', and a red box highlighting three options: 'Edit Properties' (pencil icon), 'Edit Code' (code icon), and 'Designer' (wrench icon). Below the toolbar is a navigation bar with tabs: 'Rules / Rules', 'Rules / Entity Designer', 'Training / Form Behavior', 'Training / Post-Form Actions', and 'Training'. The 'Rules / Rules' tab is active, showing a table with the following data:

Active	Name	Locker	Title	RAG Type	RAG Engine	Language
<input type="checkbox"/>	abc	abc	abc	=	=	=
<input checked="" type="checkbox"/>	HideEnd		HideEnd	Action		CSharp
<input checked="" type="checkbox"/>	OnCancelCapa1		On Cancel Capa	Action		CSharp

7.5.1. 7.5.1 Properties

The properties window for the selected rule will appear for editing.



Rule Properties: Rule134 ? X

Delete Apply OK Cancel

Type **Rule**

Name STOP

Title STOP

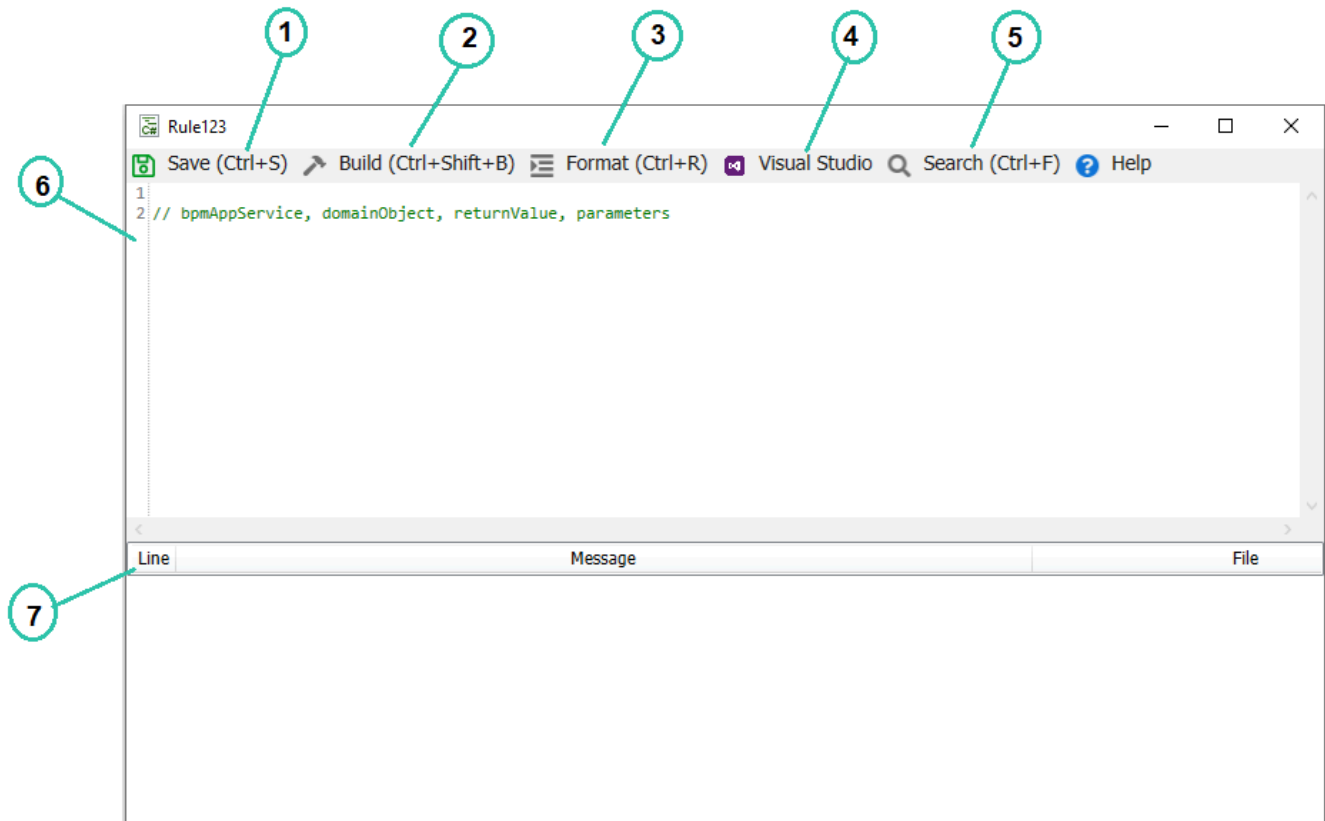
☒ Active

Language CSharp

Entity [Please Select...]

7.5.2. 7.5.2 Code

The script for the selected Rule/Action/Guard can be written in this window.



1. Save:

The typed script is saved.

2. Build:

The code will be compiled, checked for errors and run. The result(s) will be displayed in Message window.

3. Format:

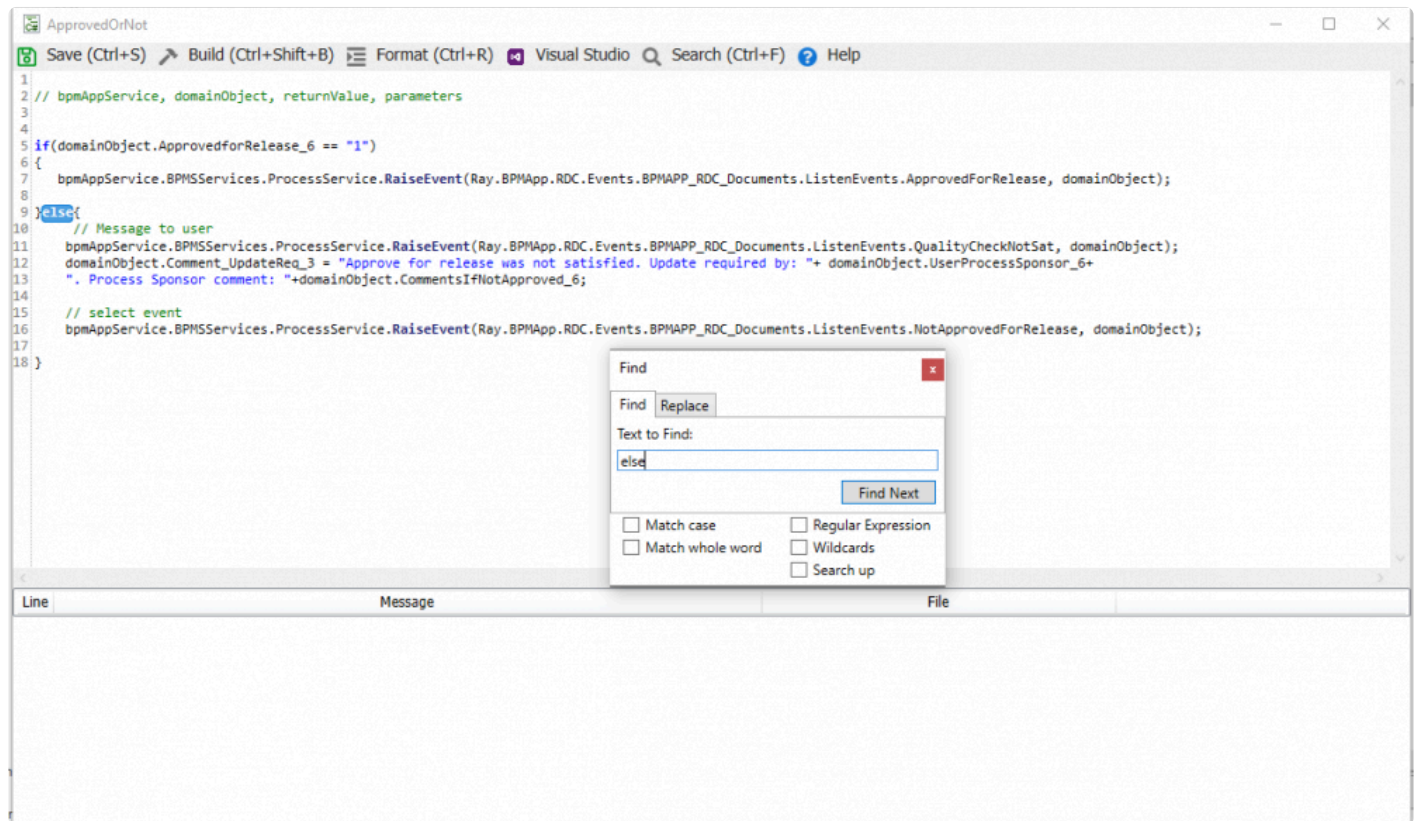
Auto-structures and formats the code.

4. Visual Studio:

Visual Studio will open. Users can enter their code within VS.

5. Search:

The search form is displayed. Users can find occurrences of the search term and replace them



6. Coding Environment:

The area where the code is written.



Depending on the type of business logic (Rule, Pre-form Action, Post-form Action, Action, Guard, etc.) you can have access to different API/features in your code.

7. Message display Environment:

Once the code is compiled, the errors or messages for review are displayed in the Messages section. After checking the code using the build button, errors or messages for review are displayed in this box.

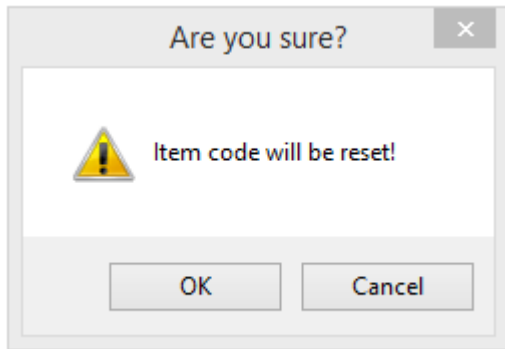
7.5.3. 7.5.3 Designer

By selecting this option, the designer form is opened to insert commands and conditions By default, Designer is opened .

The screenshot shows the 'Rule123' designer window. It has a menu bar with 'File' and 'Validate'. Below the menu is a 'Conditions' section with an 'Active' checkbox. The conditions area contains a single condition: a dropdown menu followed by an equals sign and another dropdown menu. Below the conditions is an 'Actions' section with two buttons: 'Call Method' and 'Set Property'. The 'Call Method' button is selected, and the action area shows 'returnValue' followed by an equals sign and a dropdown menu. At the bottom of the window are two tabs: 'Errors' and 'Output', with 'Output' being the active tab. The main area of the window is a large, empty text box for editing the rule logic.

Once the Rule/Action/Event is designed, and the code has been Saved and Executed,you cannot make changes in the Designer.

If you try to open Designer, the following message will be shown:



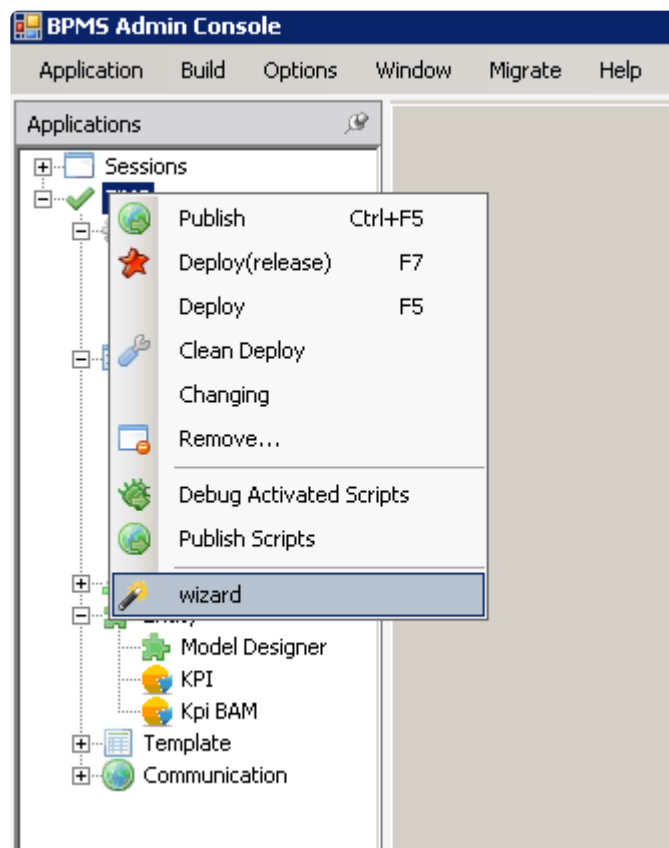
If you choose OK, then you will need to define the action/guard/rule again.

8. 8. Entity

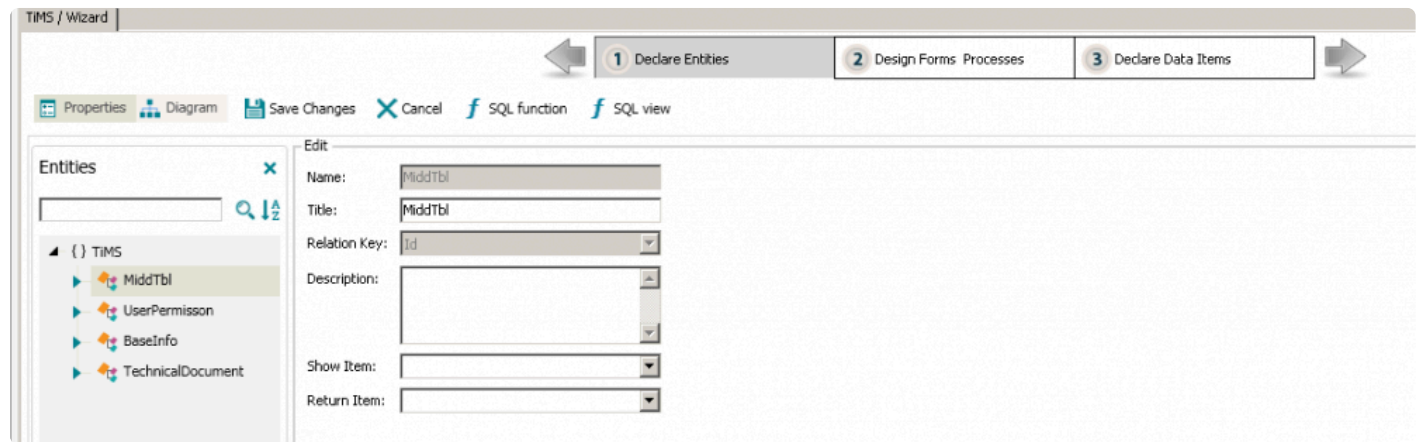
Entity is one of the required modules for process, form design, and data storage purposes. It generates the required data structure (including tables, relations, etc.) inside the database to store all of the forms and process data.

There are two methods available to access entity design:

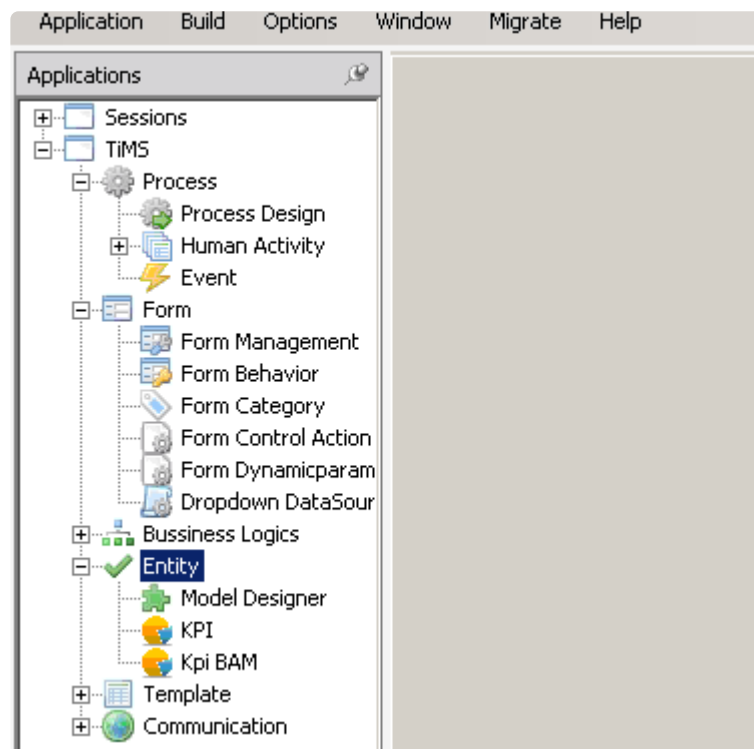
1.Right-click on the application's title and select wizard.



The first step in the wizard is to declare entities.

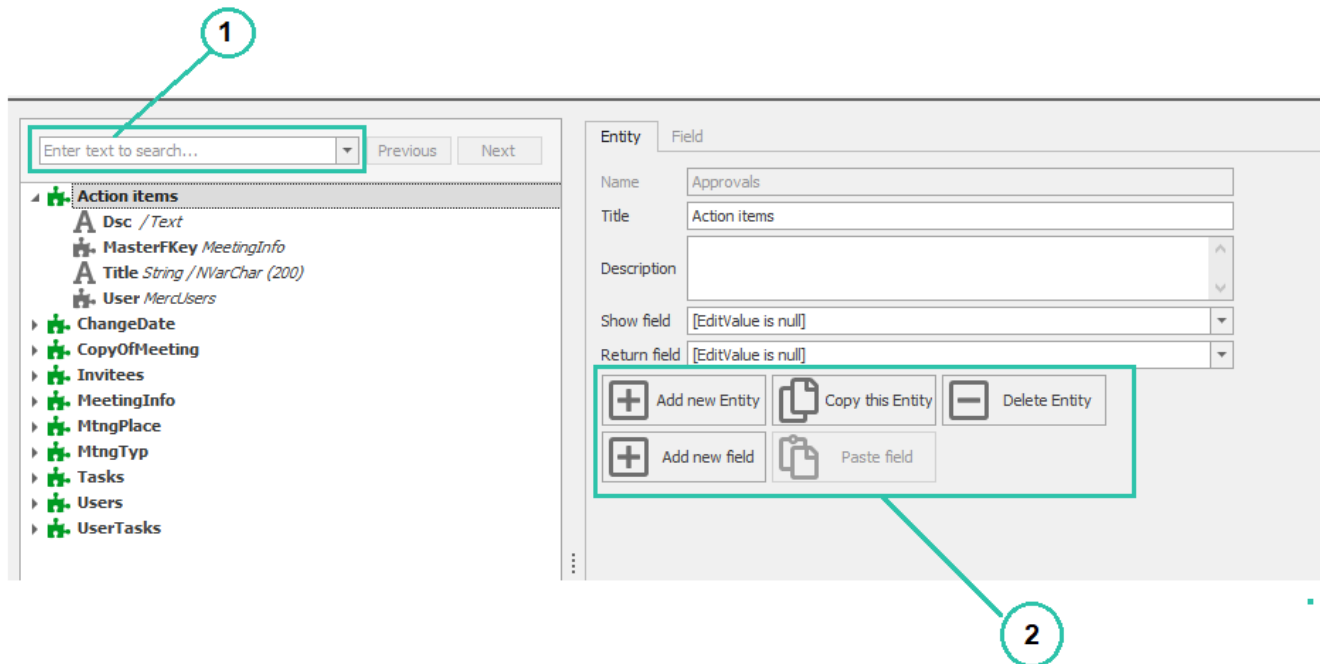


2. Select the “Entity Designer” item from the Open Application Tree:



8.1. 8.1 Entities Box

After opening “Entity Designer” you can see the list of entities and attributes in “Entities” box. By Selecting each item in the tree and clicking on appropriate buttons to the right (Add New Entity, Copy, Delete etc..) we can create and edit the details of each entity or attribute.



1. Search:

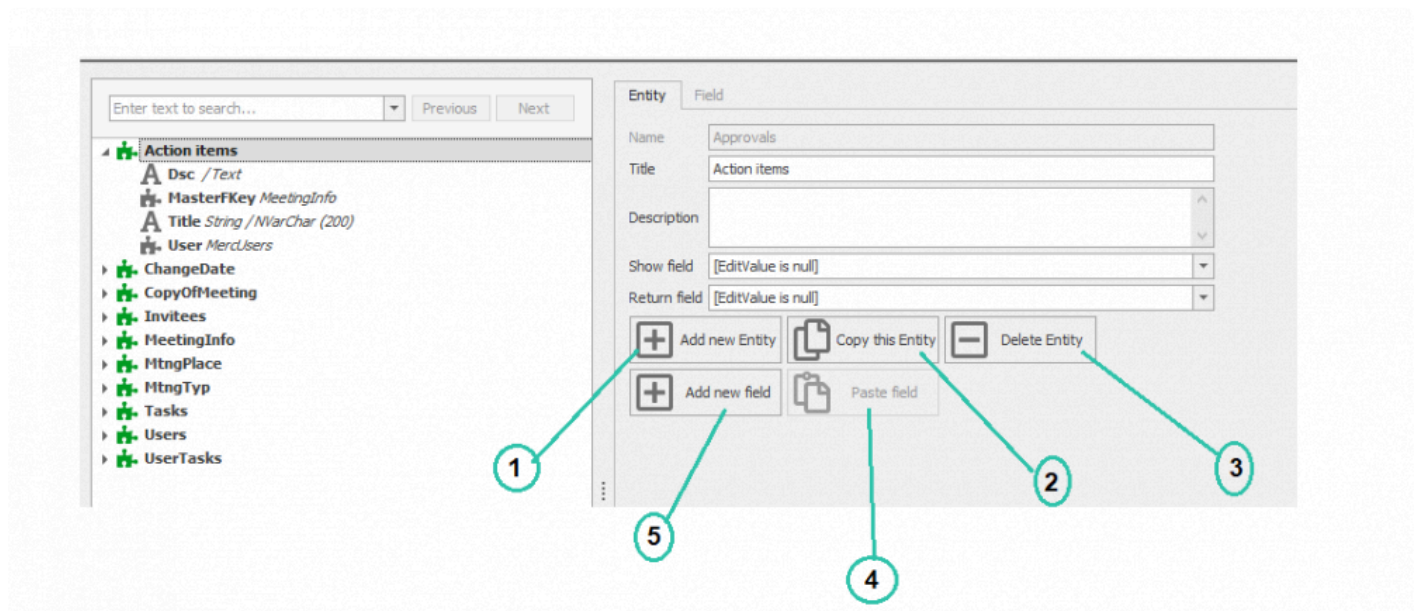
▼
Previous
Next

Using the search box, you can search the list of entities and their attributes. All the titles containing the search value will be highlighted in Yellow

By clicking on Next, the next matched title will be selected and By clicking on Previous, the previously matched title will be selected.

2. Entity Menu options:

By Selecting an Entity from the list, you will have access to the following features:



1. Add New Entity: You can add a new entity to your BPM application by selecting this option. See 9.4 Entity Form for more information

2. Copy Entity: You can copy an Entity by selecting the entity in the list and clicking on Copy this Entity Button

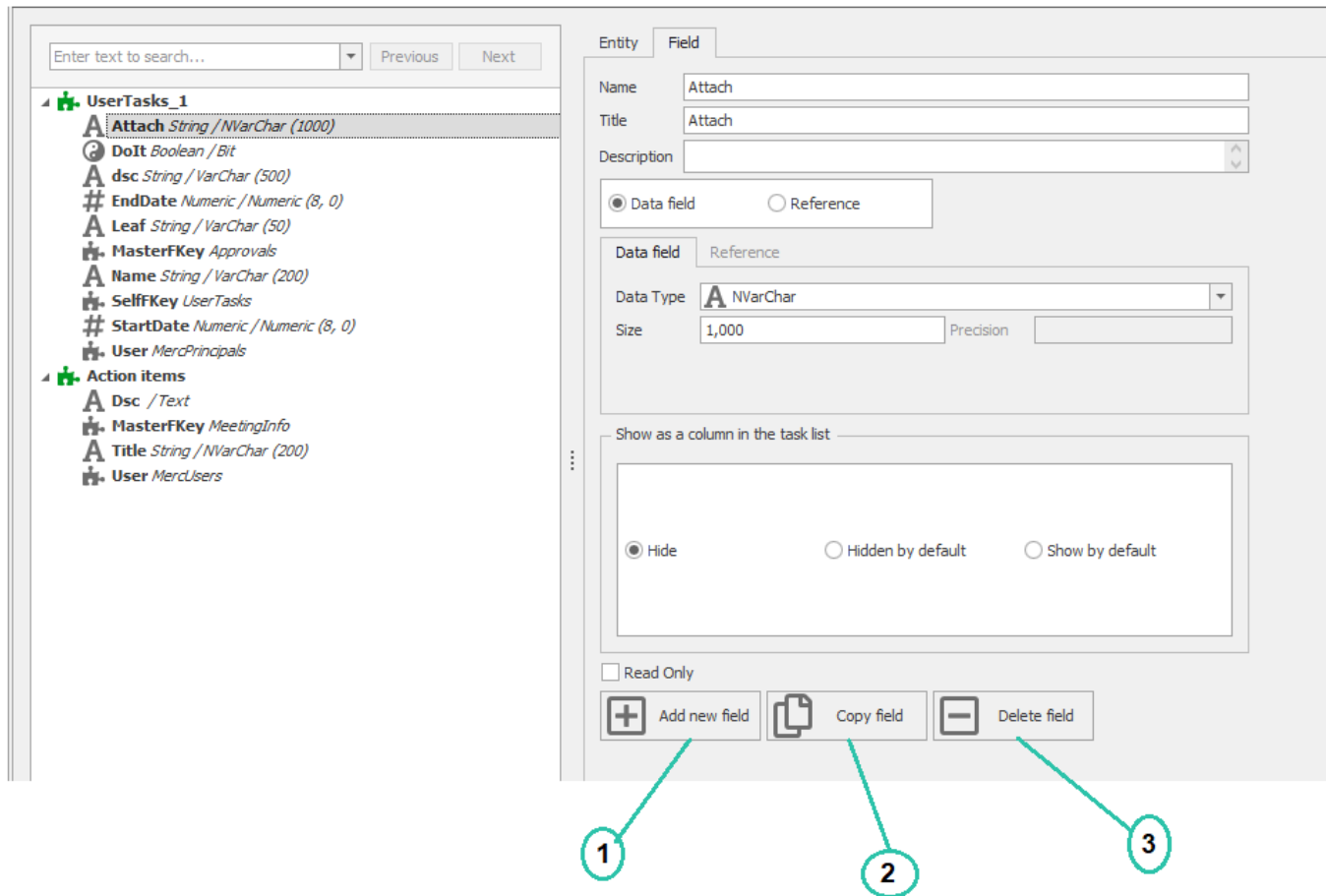
3. Paste Entity: By selecting this option, you can paste the existing copied entity. duplicate entity names are not allowed, you will need to change the entity title after pasting it.

4. Delete Entity: By Selecting this option, You can delete the existing entity.

5. Add New Field: By Selecting this option, you can create a new attribute in the Entity selected

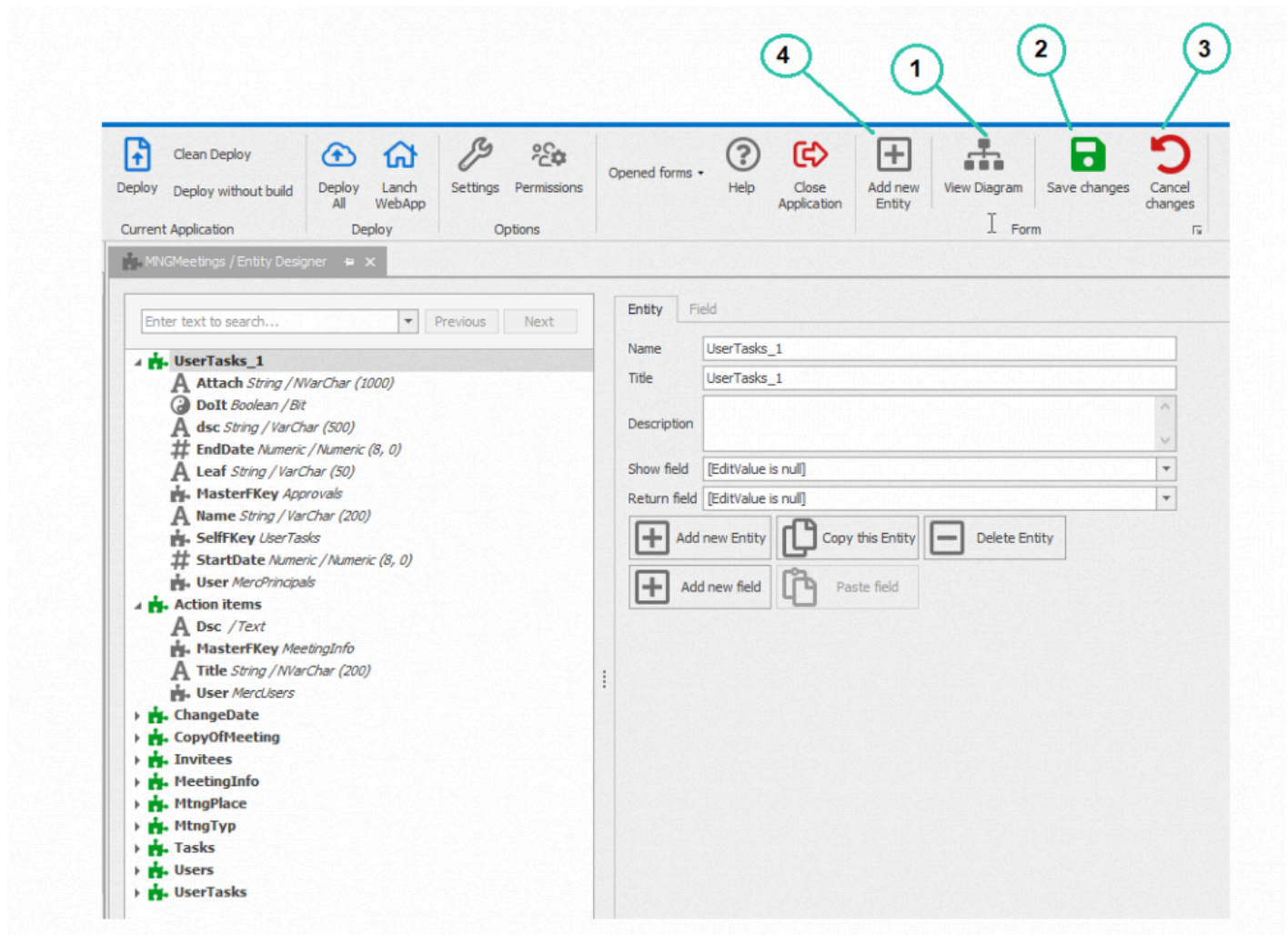
3. Attribute Menu Options:

By clicking on the name of any attribute you will have access to the following options:



- 1. Add New Field:** By Selecting this option, User can create a New Attribute by providing Name, Title and Data Type
- 2. Copy Field:** The selected attribute is copied and can be pasted in the application
- 3. Delete Field:** The Attribute will be deleted after its associations and dependencies have been verified.

8.2. 8.2 General Options

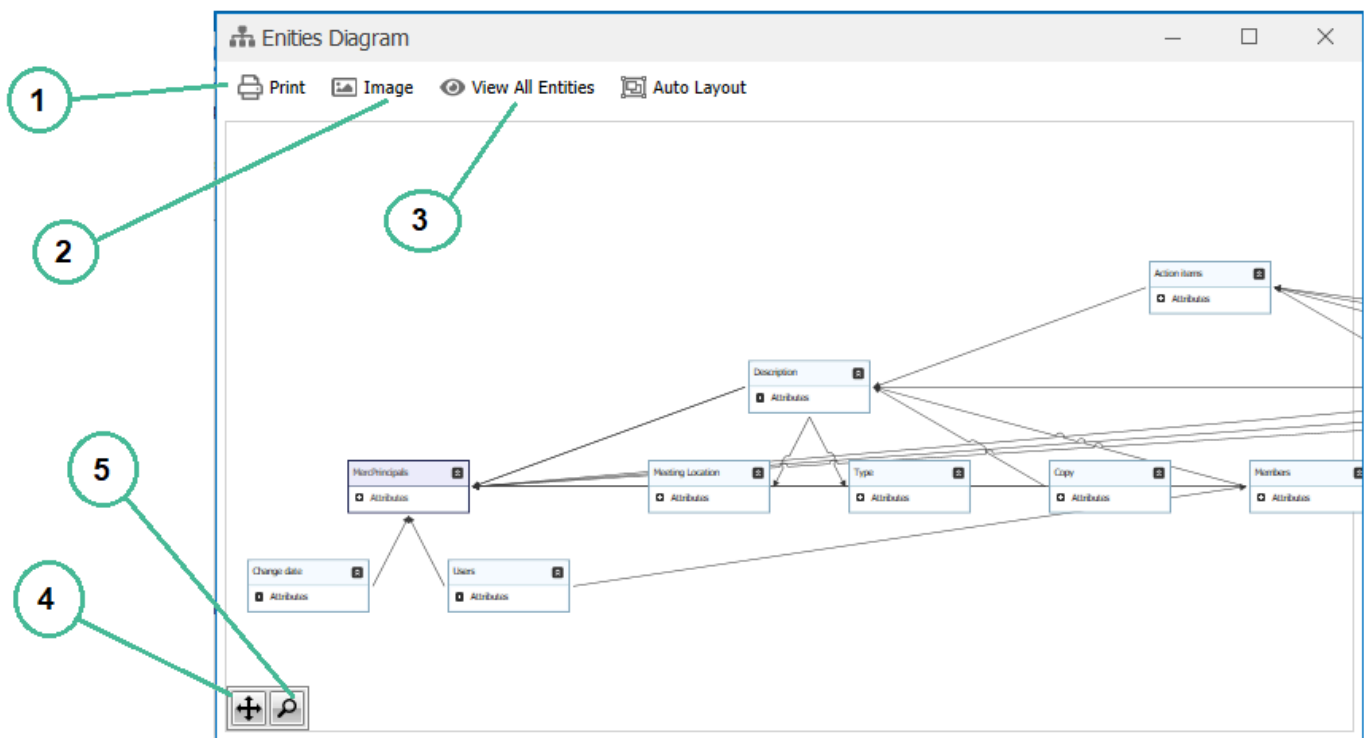


1. Diagram

You can switch between the Form View and Diagram View. The diagram page shows an overall view of the entities and their relationships.



In the properties view, some of the options which are present in the diagram view are hidden.



1. Print

An image of the diagram will be generated for printing.

2. Image

Save the diagram as image on your computer

3. View all entities

All defined entities and their relationships are displayed in the diagram.

4. Auto Fit

After zooming in the Diagram clicking on Auto-fit will get back to the original size

5. Enlarging

Zoom in or out of the diagram

2. Save Changes

All of the new and modified items will be validated and then saved.

3. Cancel

All of changes made to the entities, attributes and etc. will be discarded.

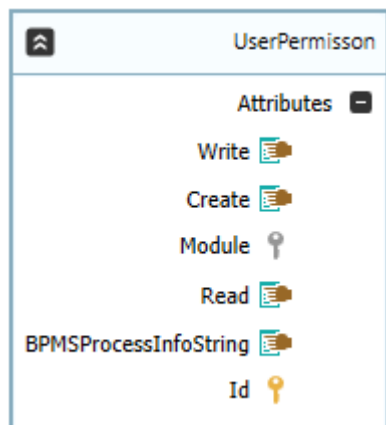
4. Add New Entity

User can create New Entities

8.3. 8.3 Diagram



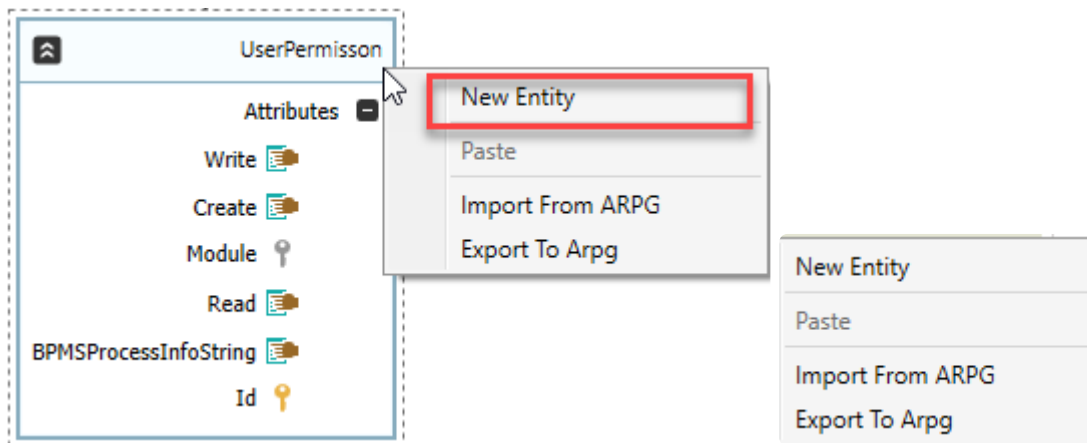
1. Entity representation as a diagram



Access to features such as entity definition, attribute definition etc., is available from this box and is accessible by right clicking on existing components (such as the entity name or attributes).

2. Right Click on Entity

With the right click on the name of the entity or in any blank space in the canvas, we have access to the following features:



New entity: You can add a new entity to your BPM application by selecting this option. See Entity Form for more info

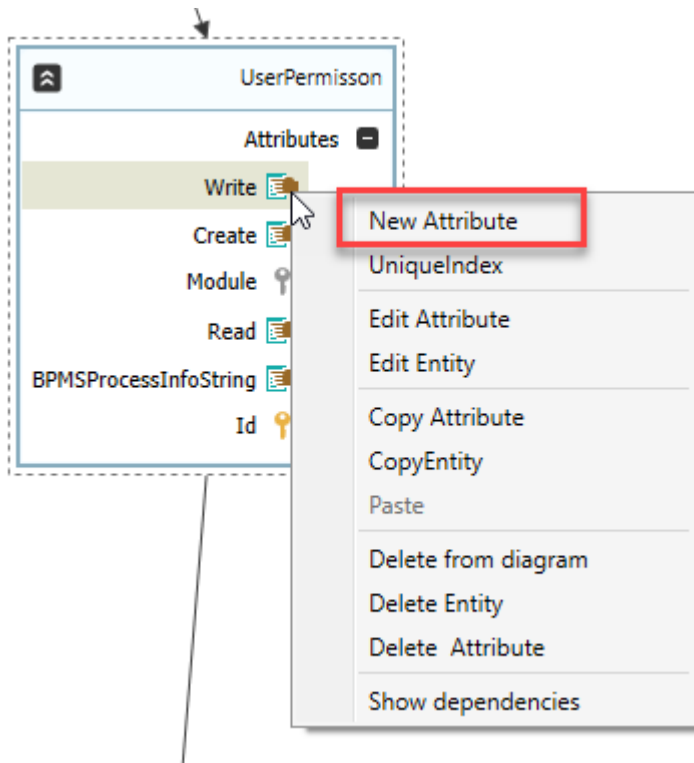
Paste: Paste the existing copied entity. Duplicate names are not allowed; you will need to change the entity title after pasting it.

Import From ARPG: A predefined data structure (including entities, attributes, relations, etc.) will be transferred from ARPG to your BPM Application.

Export To ARPG: All of the data structure of the existing BPM Application (including entities, attributes, relations, etc.) will be transferred to ARPG.

3. Right click on attribute

When right clicking on the attribute, you will have access to the following features:



New Attribute: The new attribute window will open. See attribute form section

Unique Index: You can choose indexes for your entity. See Index Options

Edit Attribute: Edit the properties of that attribute.

See attribute form section

Edit Entity: Edit the properties of the entity. See Entity Form Section

Copy Attribute: The selected attribute is copied and can be pasted in the application.

Copy Entity: The selected entity including all of its attributes are copied and can be pasted later in the application. See Paste Entity

Paste: The copied attribute is added to the selected entity.

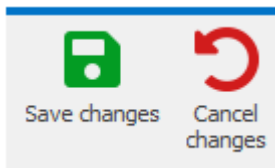
Remove from Diagram: The selected entity will be removed from the Diagram page.

Delete Entity: The entity and all its components are deleted after verifying its associations and dependencies.

Delete Attribute: The selected attribute is deleted.

Show dependencies: The related entities will be displayed on the diagram page.

8.4. 8.4 Entity Form



Name: Each entity needs an unique name that follows C# naming conventions

Title: The title is the display value for each element .

Description: Text description of the Entity or Attribute.

Cancel: Cancel changes.

Save: Save changes.

8.5. 8.5 Attribute Form

An attribute is a specification that defines the property of an entity. Color, for example, is an attribute of your hair.

- Attributes will be stored as table fields in database.
- You can bind each attribute to a form control.

The screenshot shows the 'Field' tab in the BPMS Designer. It contains the following elements:

- 1**: Points to the 'Name' field, which contains 'NewAttribute'.
- 2**: Points to the 'Title' field, which contains 'NewAttribute'.
- 3**: Points to the 'Data field' radio button, which is selected.
- 4**: Points to the 'Description' field, which is empty.
- 5**: Points to the 'Data Type' dropdown menu, which is set to 'UniqueIdentifier'.
- 6**: Points to the 'Read Only' checkbox, which is unchecked.

Other visible elements include the 'Entity' tab, the 'Reference' radio button, the 'Data field' and 'Reference' sub-tabs, the 'Size' and 'Precision' fields, the 'Show as a column in the task list' section with 'Hide', 'Hidden by default', and 'Show by default' options, and the 'Add new field', 'Copy field', and 'Delete field' buttons at the bottom.

The screenshot shows the 'Field' tab in the BPMS Designer. The 'Name' and 'Title' fields are both set to 'NewAttribute'. The 'Data field' radio button is selected and circled in red. Below it, the 'Reference' radio button is also circled in red. A red box highlights the 'Reference' option in the dropdown menu. A green circle with the number '7' and an arrow points to the 'Reference' option in the dropdown menu.

1. Name

“Name” is the unique identifier of the attribute. This name is used as the field name inside database table.

✿ It is mandatory to follow the C# naming rules while writing “Name”, or else an error message will be displayed when attempting to save.

2. Title

Each attribute has a title which is visible on the other parts of the system including the ARPG system.

3. Data Type

Each attributes has a type which can be selected from the dropdown list. This type is used to define SQL Field type in the database.

Binding attributes to form controls is also based on their type.

Size: For some of the types, you have to input the size of the attribute.

Precision: If you select data of a type of decimal point, you must enter the precision with the “Precision” box.

In the table below, the list of controls is displayed along with the type of attributes that can be selected for it.

Control	Attribute Type
File Attachment	NVarChar At least 100 capacity (according to the number of attachable files)
User Signature	Varchar 36 In the case of communication with the MercUsers entity
Nested from Link	UniquelIdentifier In the case of communication with a second entity

Date Time Picker	DateTime
User Picture	Varchar 36 In the case of communication with the MercUsers entity
Tree	UniquelIdentifier In the case of communication with a second entity
Time Picker	DateTime
Checkbox	Bit
Numeric TextBox	Float,decimal,numeric,tinyInt,smallInt, Int,bigInt
Textbox	char,nchar,varchar,nvarchar,text,netext
Grid	UniquelIdentifier.It can be used to bind different fields together.The type of attribute may or may not be same for each field in the list.
Dropdown List	The type of attribute in this case depends on the return value of the dropdown list
Search Panel	The type of attribute in this case depends on the return value of the searchable dropdown list
Radio-button list	char,nchar,varchar,nvarchar,text
Gantt Chart	UniquelIdentifier In the case of communication with a second entity
Multi-line TextBox/ Rich TextBox	char,nchar,varchar,nvarchar,text,netext
Comments	UniquelIdentifier In the case of communication with a second entity

4. Description

The description related to the attribute

5. Show as a column in the task list

For this attribute, the display of the column headings under the mappings associated with that entity is customizable, so how to display them using these options can be determined.

Hide: By selecting this option, the attribute is not displayed in the list of columns.

Hidden by Default: By selecting this option, the display or not display of the attribute is selected as the column on the web, and can be deleted and right-clicked as the following columns in the taskbar.


Show by Default: By selecting this option, the attribute is displayed in the list of columns.

6. Read Only:

By enabling this option, BPMS won't update or set any data for the attribute. It is useful when the value of that field is already defined in database. The user does not have a role in setting its value.

For example a trigger or an external tool .

7. Reference:

A related model describes how entities are related to each other. If you want to establish a relationship between entities, you can use  this button to view the other entities and can select the relationship between the entities.



If you select the option “System entities”, the previously created entities are displayed in the list for selection.

Cascade:

By choosing this option between two entities, when an entity changes the related entity also changes.

If you choose this option, when you delete a parent, all associated child entities will also be deleted. To better understand the concept of cascading, consider the example given below:

Assume that there are two entities: customer and order, each customer can have several orders, that is, between the customer and the order, the relationship is from 1 to n, and this relationship is established using the connected entity, but if “Cascade” is selected then by removing one of the customers, all orders associated to that customer will also be deleted; an order without a customer is meaningless.

Prevent related entity: By choosing this option, removing the associated entity is prevented. For example, consider two entities, say, student and course. Each student can take several courses. So if a student is deleted, it doesn't mean that the course should be deleted. Here, by choosing “Prevent related Entity”, it will throw an error.

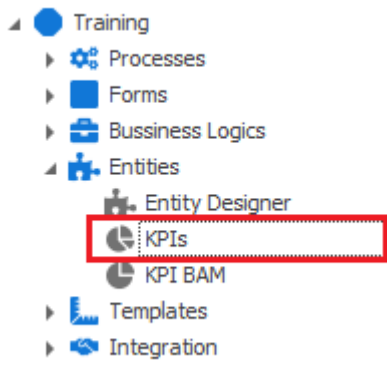
8.6. 8.6 Key Point Indicators (KPI)

The controls such as map, chart, graphs can be connected to a datasource using KPI's.

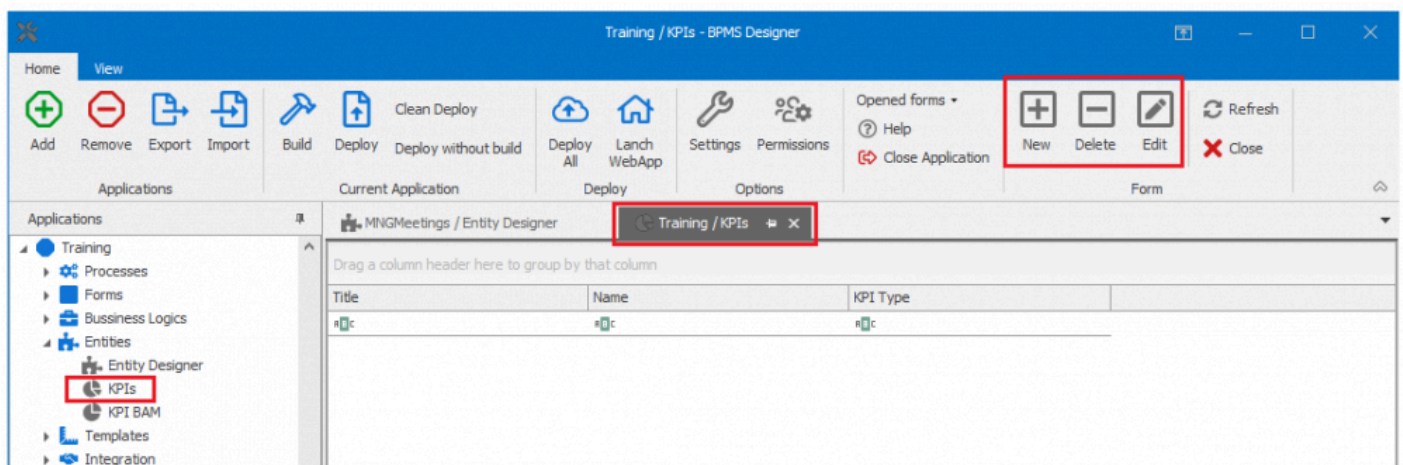
✿ The type of Data source could be ARPG, Database or Web service

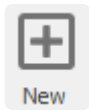
Applying changes to “KPI” such as New, Edit and Delete is possible in two ways:

1. Select KPI from the entity module in the Open Application Tree.



2. Choose any management controls (Map, Interactive chart) in the form designer and then click in Edit Chart. Now the Chart Editor form will be opened and you can create a Datasource as shown below:





If you click **New** button, the KPI form will be opened where you can give the KPI name, Title and the type of the data source from which the data should be taken.

BPMS supports 3 types of Datasource which will be discussed in the following sections

The screenshot shows the 'KPI Properties' dialog box with the 'Naming' tab active. It contains three input fields: 'KPI Name', 'KPI Title', and 'Datasource Type'. The 'Datasource Type' dropdown menu is open, displaying three options: 'Connect to DB', 'Manual', and 'Connect to Webservice'. At the bottom left are '<< Back' and 'Next >>' buttons, and at the bottom right are 'Save &' and 'Cancel' buttons.

Data index There is a possibility to call data from a variety of data sources that is described in the following links to define and call source data types