WorkflowGen

WorkflowGen 6.6.0 Administration Module Reference Guide

Updated February 3, 2017

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Overview

This guide describes all the screens of the WorkflowGen **Administration Module** and provides a complete list of related operating rules. It also describes the workflow built-in applications and how to use them. It is an important resource that will assist you in understanding how the software behaves under various situations.

The guide also includes a list of possible errors along with their explanations.

Administration Module overview

The WorkflowGen **Administration Module** is a web application whose main functions are:

- Managing directories, groups, and users
- Defining processes and global information
- Defining security relating to users and processes

Since these operations are highly sensitive, access to and management of the **Administration Module** should be considered carefully.

Administration Module access

The **Administration Module** can be accessed through the following URL: http://**yourwebsite**/wfgen/admin/default.aspx.

Note: "default.aspx" is optional if pre-configured as the default document of the WorkflowGen website. As well, **yourwebsite** can be a DNS or an IP address; however, a DNS address is recommended to ensure a smooth transition in the event that the site is moved to different servers, or if using a web farm configuration.

Authentication

Depending on the authentication method chosen by the WorkflowGen administrators, you may have to enter a username and a password when you want to log in to WorkflowGen. These login credentials can also correspond to the ones used when you open a Windows session.

Language selection

You can choose a language from the home page of the **Administration Module**. If the list is not displayed, the application has been configured to use a specific language. The country beside the language allows the system to use the correct regional settings in the application (mainly in displaying dates or numeric values).

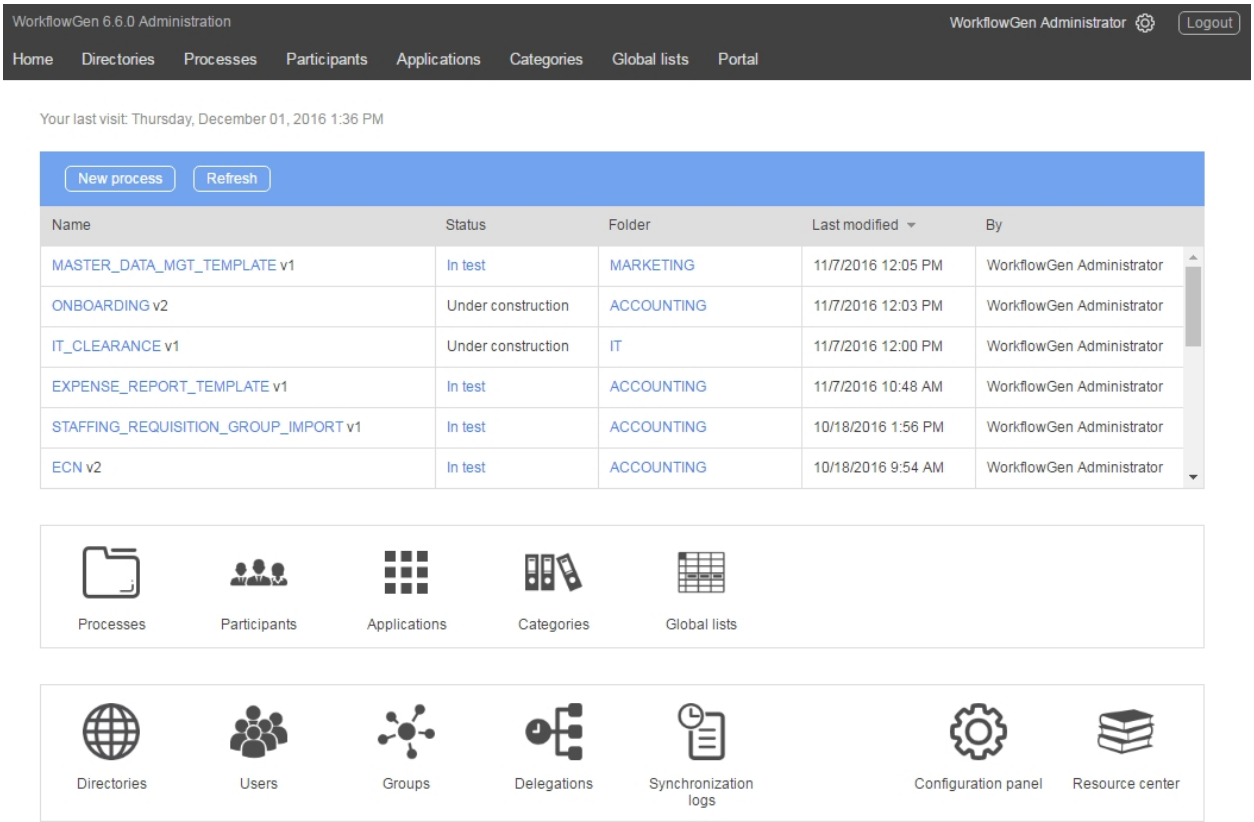
For example, **English (United Kingdom)** corresponds to an English GUI with the regional settings of the United Kingdom (date format: dd/mm/yyyy), while **English (United States)** corresponds to an English GUI with the regional settings of the United States (date format: m/d/yyyy).

Currently, you can choose from the following languages:

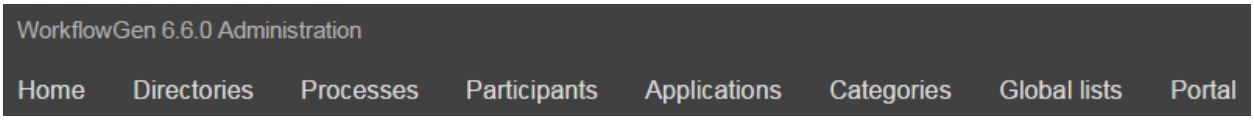
- English (Australia)
- English (Canada)
- English (United Kingdom)
- English (United States)

- Français (Canada)
- Français (France)
- Français (Suisse)
- Deutsch (Deutschland)
- Deutsch (Schweiz)
- Italiano (Italia)
- Português (Portugal)
- Español (España)

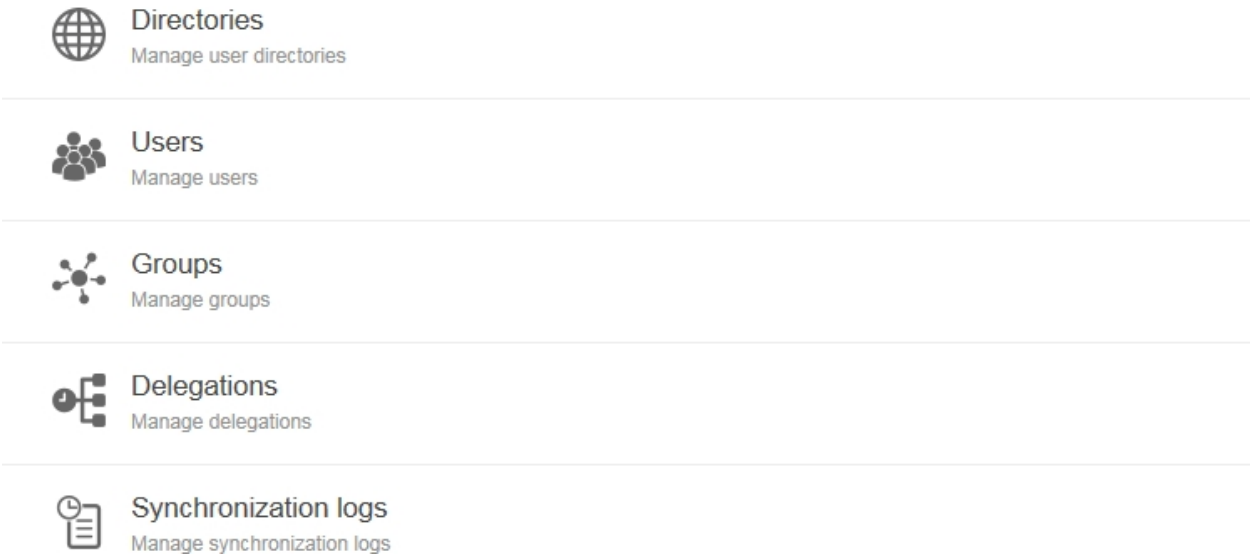
Administration Module structure



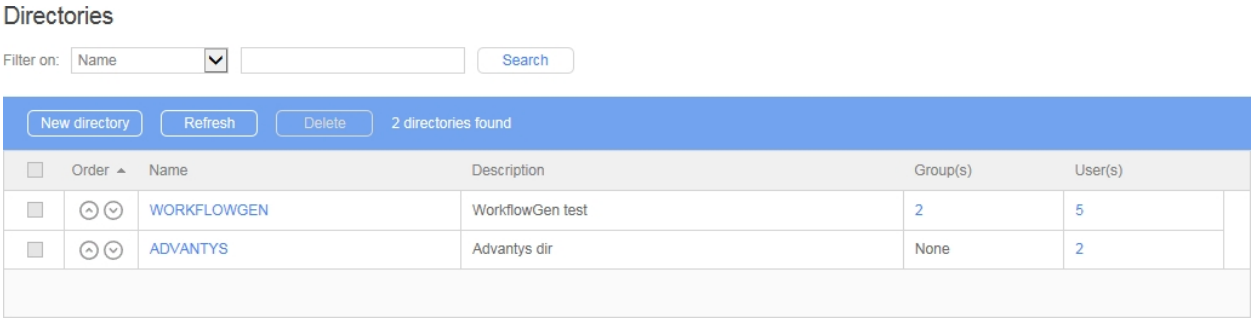
Banner menu



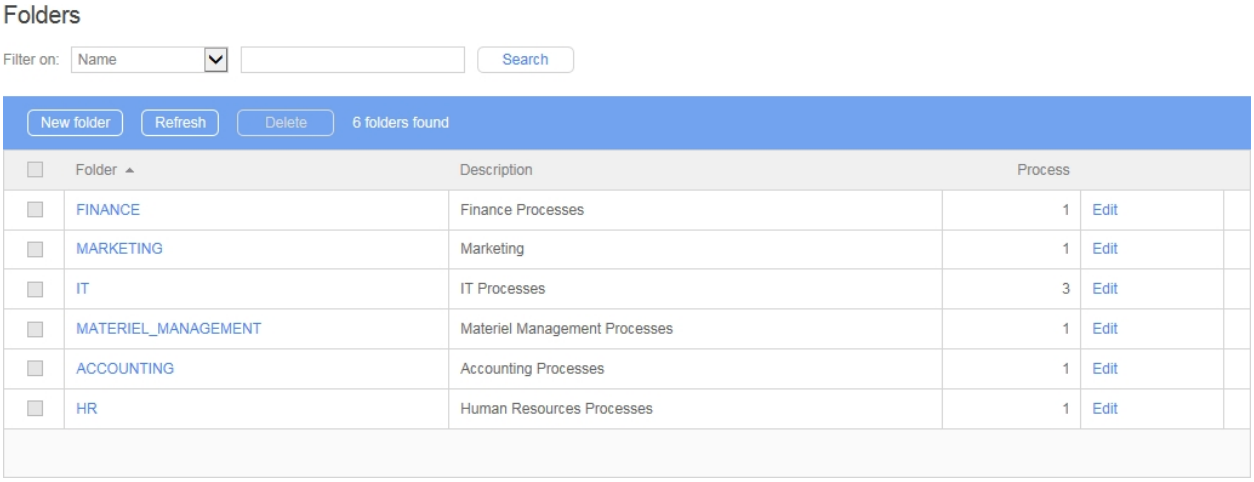
Click **Directories** in the banner menu to access the **Directories** screen.



Click **Directories** to open the Directories list.



Click **Processes** in the banner menu to open the Process folders list.



Click **Participants** in the banner menu to open the Participants list.

Participants

Filter on: Name Search

New participant Refresh Delete 1 participant found

Name	Description	Utilization	Users
DEFAULT_PROCESSMANAGER	Default process manager	6	3

Click **Applications** in the banner menu to open the Applications list.

Applications

Filter on: Name Search Active only:

New application Refresh Delete 16 applications found

Order	Name	Description	Active	Utilization
	EFORMASPX	WebForms management	Yes	41
	EFORMPDF	PDF forms management	Yes	0
	XMLTODATABASE	Export data from a XML to a database	Yes	0
	PDFTODATABASE	Export data from a PDF form to a data...	Yes	0
	GETUSERSFROMDIR	Get the users from a directory	Yes	0
	DOCUPLOAD	Document upload	Yes	0
	DOCAPPROVAL	Document approval	Yes	0
	XMLTRANS	Xml Transformation	Yes	0
	FDFTOXML	Fdf Transformation	Yes	0
	RAISEEXCEPTION	Raise Exception	Yes	0
	UPDATEPROCESSDATA	Update process data	Yes	0
	COMPLETEACTION	Complete action	Yes	0
	CANCELREQUEST	Cancel request	Yes	0
	GETPROCESSDATA	Get process data	Yes	0
	GETFORMDATA	Get form data	Yes	0
	STARTPROCESS	Start process	Yes	0

Click **Categories** in the banner menu to open the Categories list.

Categories

Filter on: Name Search

New category Refresh Delete 7 categories found

Name	Description	Utilization
ACCOUNTING	Accounting	1
CORPORATE_SERVICES	Corporate Services	0
FINANCE	Finance	1
HR	Human Resources	1
IT	IT	3
MARKETING	Marketing	1
PHYSICAL_PLANT	Physical Plant	1

Click **Global Lists** in the banner menu to open the Global Lists list.

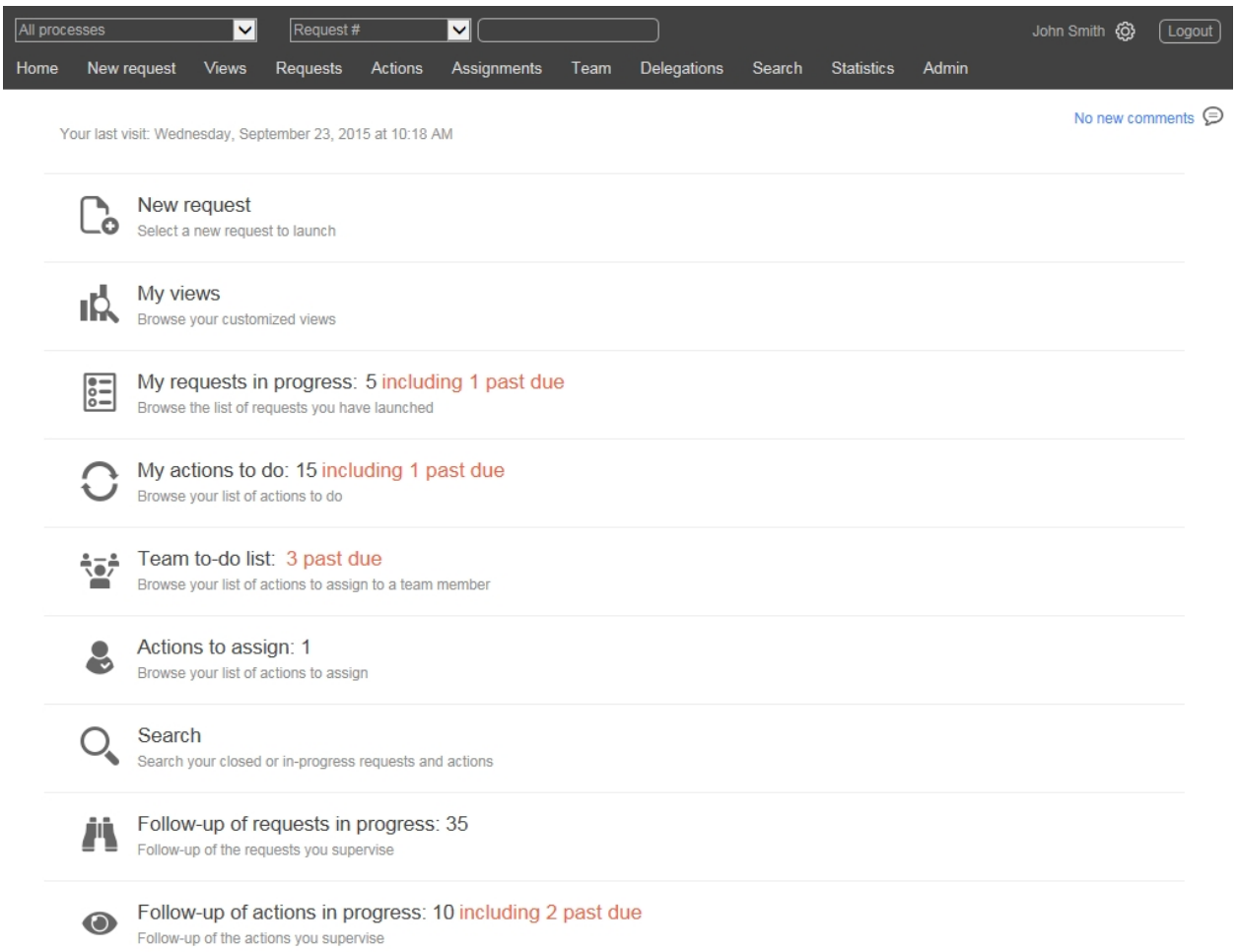
Global Lists

Search : Name

New list Refresh Import Export Duplicate Delete 3 lists found

Name	Manager	Content	Last update	By
List 1	None	2 items	3/30/2015 10:09 AM	John Smith
List 2	None	Define	3/30/2015 10:08 AM	John Smith
List 3	None	255 items	3/30/2015 10:08 AM	John Smith

Click **Portal** in the banner menu to access the **User Portal**.



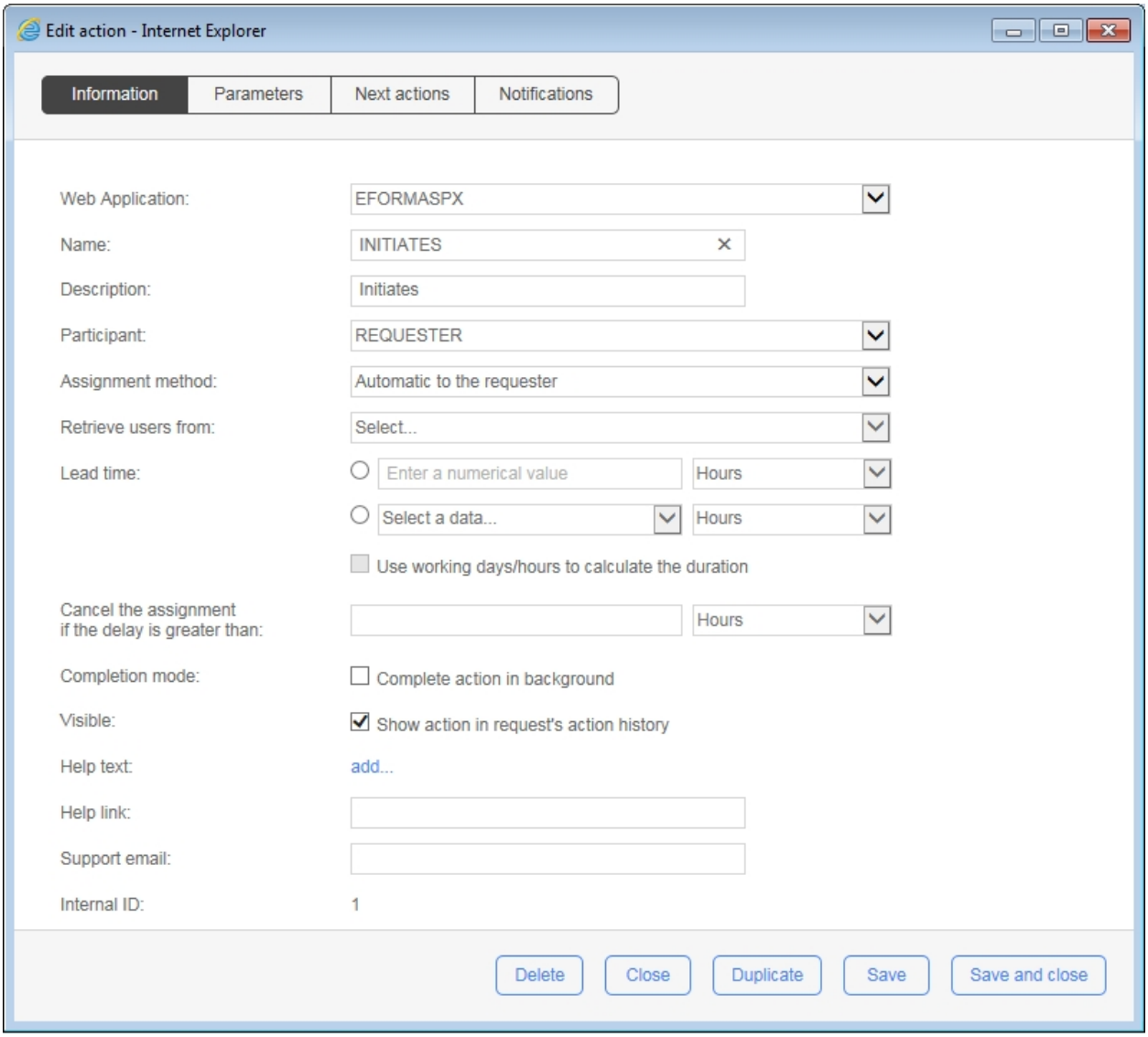
Process workflow

On the **Administration Module** home page, click an entry in the process list to access the **Process workflow**, which includes the following tabs:

- Information
- Participants
- Data
- Form
- Workflow (in **Graphical** or **List** view)

Double-click an action in **Graphical** view or click an entry in **List** view to open the **Edit action** form, which includes the following tabs:

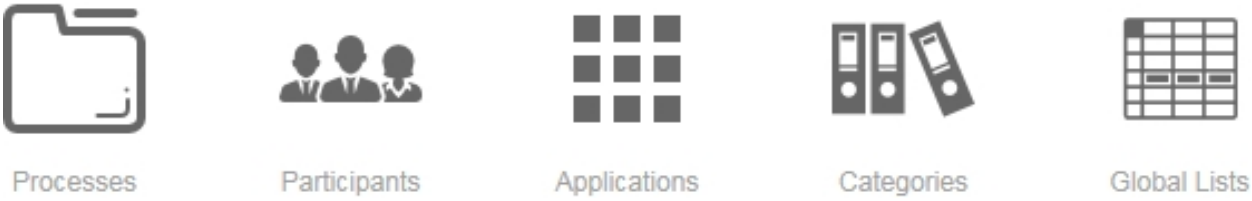
- Information
- Parameters
- Next actions
- Notifications



The **Process workflow** screen also includes the following links:

- Full screen
- Report
- Test

Process management



In the process management section on the **Administration Module** home page, click:

- **Processes** to access the Process folder list and subsequently, the Process list and Process form.
- **Participants** to access the Participants list and subsequently, the Participants form.
- **Applications** to access the Applications list and subsequently, the Application form.
- **Categories** to access the Categories list and subsequently, the Category form.
- **Global Lists** to access Global Lists (see **Global Lists** on page 87).

User management

In the user management section on the **Administration Module** home page, click:

- **Directories** to access the Directories list and subsequently, the Directory form (see **Directories** on page 41).
- **Users** to access the Users list and subsequently, the User form (see **Users** on page 43).
- **Groups** to access the Groups list and subsequently the Group form (see **Groups** on page 51).
- **Delegations** to access the Delegations list and subsequently the Delegation form (see **Delegations** on page 54).
- **Synchronization logs** to access the Synchronizations logs list and subsequently the View log (see **Directory synchronization** on page 58).

See **User management** on page 41 for information on how to use these features.

Configuration panel

Configuration panel

The **Configuration panel** includes the following tabs:

- General
- Portal
- Administration
- Directory synchronization
- Remote Approval
- Diagnostic
- Product information

See **Configuration panel** on page 24 for information on these settings.

Resource center

Resource center

Click **Resource center** to access the **WorkflowGen Resource center** website.

Nomenclature

Most of the information that is kept in the WorkflowGen database is identified through a combination internal ID name.

For technical reasons and legibility, these names must contain only characters: alphanumeric combinations, hyphen (" **-** "), and underscore (" **_** ") characters (no spaces).

Administrators can limit the characters to the ANSI table or allow the use of the entire range of alphanumeric characters, including double-byte characters (Unicode).

On the **Administration** tab of the **Configuration panel**, select the **Name encoding restriction** checkbox. In most cases, the name must not be longer than 30 characters.

Security

Access to the **Administration Module** is limited to users with an administrator profile and users that are participants designated as process managers. However, during the software installation, access control may be deactivated temporarily.

Once authentication is activated, the following restrictions apply:

- Administrators have no access restrictions except for the **Configuration panel**, which requires specific access rights (see the WorkflowGen Technical Reference Guide for more information).
- Process managers have access to the process definition and the statistics of their folders; however, they have no control over directories, groups, user management, delegations, global participants, or application management.
- Process supervisors can access the statistics of their processes from the **User Portal**, but cannot log in to the **Administration Module**.

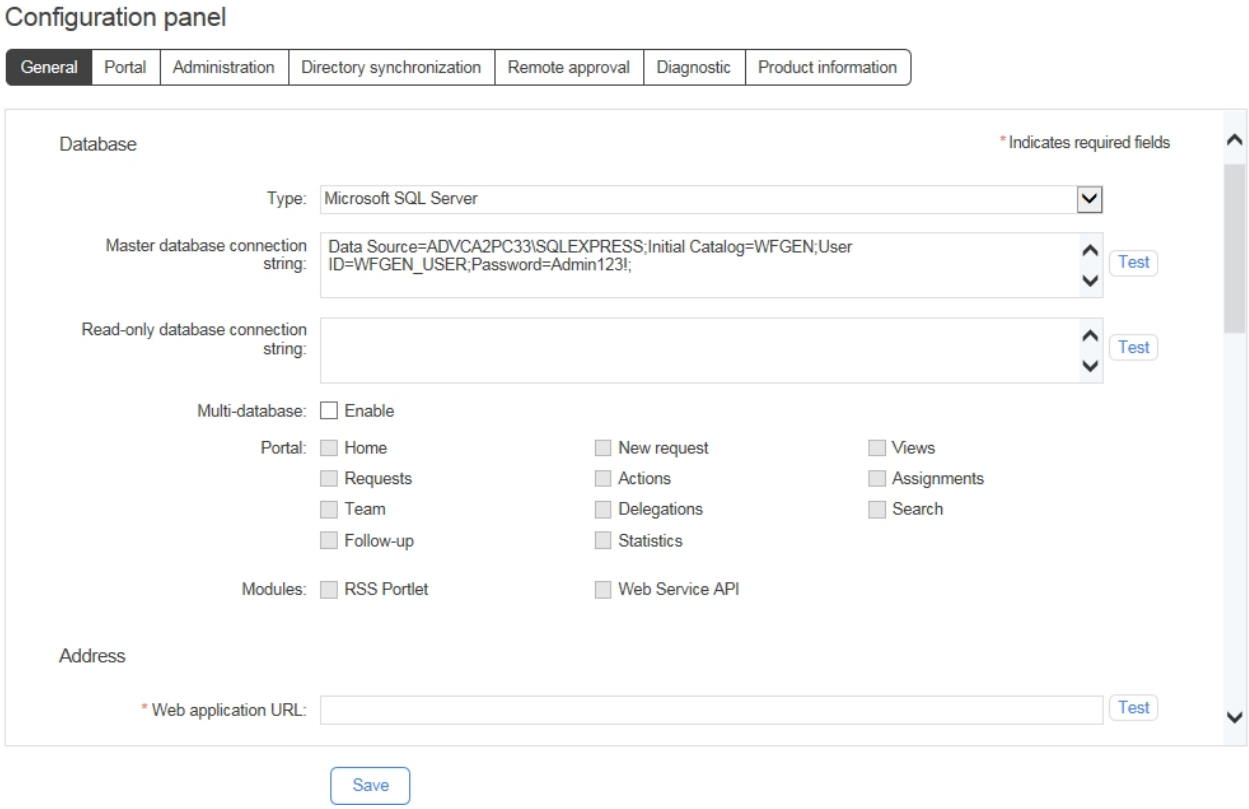
Deleting and archiving

To maintain the integrity of completed requests, information cannot be deleted if it relates to the process definition or to global data. Similarly, information used in "real (active) requests" made by users cannot be deleted.

Configuration panel

Overview

The **Configuration panel** is used to configure the main settings for the WorkflowGen application.



This panel can be accessed from the home page of the **Administration Module** or from the URL "http://[servername]/wfgen/admin/Config.aspx".

Access to the **Configuration panel** can be set in the WorkflowGen configuration file "web.config" found in the **\wfgen** directory of your site. To add administrators, add their user names (separated by commas) to the ApplicationConfigAllowedUsersLogin parameter. (The users must first have administrator profiles.)

The **Configuration panel** is divided into the following tabs:

- **General:** General WorkflowGen settings (e.g. database connection string)
- **Portal:** User Portal settings (e.g. behavior, banner settings, etc.)
- **Administration:** Administration Module settings (e.g. language settings)
- **Directory synchronization:** Directory synchronization settings (e.g. logs, schedules)
- **Remote Approval:** Remote Approval settings (e.g. log file trace level, mail server)

- **Diagnostic:** File size usage and request-related errors
- **Product information:** Product installation information page

General

Database

Type

This is the type of database that WorkflowGen is using, either Microsoft SQL Server or Oracle.

If you are using Oracle database, you can choose either **Oracle (.NET Framework Data Provider for Oracle)** or **Oracle (Oracle Data Provider for .NET)** as the database connection provider.

Notes

- Oracle Data Provider for .NET is a feature preview, and is not recommended for existing WorkflowGen installations in production.
- The Oracle Data Access Components (ODAC) must be installed if ODP.NET is used as the database connection provider.

Master database connection string

The database scaling feature allows for the addition of database servers to dramatically improve server performance and response times. The additional read-only or "Slave" database server may be used as a dedicated read-only server (SELECT SQL queries). The read-only database server is replicated from the existing "Master".

To test if the master database connection string entered is valid, click the **Test** button.

SQL server example:

> "Data Source=DB_SERVER_1;Initial Catalog=WFGEN;User ID=WFGEN_USER;Password=admin123!;"

Read-only database connection string

The read-only or "Slave" database connection string. To test if the connection string entered is valid, click the **Test** button.

SQL server example:

> "Data Source=DB_SERVER_2;Initial Catalog=WFGEN;User ID=WFGEN_USER;Password=admin123!;"

Multi-database

Select the **Enable** checkbox to activate the database scaling feature.

Portal

If the multi-database option is enabled, the checkboxes of the different Portal components will be activated. If checked, the different components will use the read-only database. Otherwise, if left unchecked, it will use the "Master" database.

Modules

If the multi-database option is enabled, the different Portal modules will be activated. If checked, the different modules will use the Read-only database. Otherwise, if left unchecked, it will use the "Master" database.

Address

Web application URL (required)

The base URL of the web application. You can specify the protocol to use (HTTP or HTTPS), the IP or DNS name of the web server, and/or the TCP port of the website. To test if value entered is valid, click the **Test** button.

URL example: http://www.mycompany.com/

SMTP

SMTP server

You can choose between two delivery methods:

- Choose **Server** to use your SMTP server to send email notifications.
  - **URI:** The address of the SMTP server.
  - **Connection timeout (seconds):** The time in seconds allowed before server connection timeout. Default: 3
- Choose **Pickup directory** to save email notifications in a pickup folder, and specify the path of the pickup folder. This option requires that you set up an SMTP gateway or external SMTP service to retrieve and send email notifications.

To test the SMTP configuration, click the **Test** button and provide sender and recipient email addresses. An email will be sent to the address you specified.

Instant messaging

See the **SENDMESSAGE workflow application** section for information on how to configure instant messaging in WorkflowGen.

Provider

The SMS provider (Twilio).

API URL

The Twlio API URL.

Account SID

The Twilio account security identifier.

Auth token

The Twilio authorization token.

Sender phone number

The telephone number of the instant message sender to display.

Logs

Enables instant messaging logs.

Authentication

Mode

Select the authentication mode used to log in to WorkflowGen:

- **Windows** manages authentication and user passwords in Windows.
- **WorkflowGen** manages authentication and user passwords in WorkflowGen.
- **Custom** manages authentication and user passwords using your own custom .NET HTTP module.
- **Forms** manages authentication and user passwords using forms-based authentication.

Mapped system account username

The username of the Windows account on the WorkflowGen server.

Mapped system account password

The password of the Windows account on the WorkflowGen server.

Password management mode

- **Version 5** uses the same password management mode as earlier versions of WorkflowGen.
- **One-way Hashing (SHA256)** stores hashed account passwords in the WorkflowGen database, which provides enhanced security.

Maximum login attempts

Sets the maximum number of user login attempts before the account is locked. Enter 0 for unlimited attempts.

Minimum password length

Sets the minimum length of user passwords.

Remove domain name prefix from the username (required)

You can specify a domain to remove from the username of the users when they log in to WorkflowGen. If this value is set to **All**, any domain name will be removed from the value.

Security

Web apps secure mode

Enables data encryption in the communication between WorkflowGen and the web form. This feature has been available since version 5.6.1 for the built-in form designer, as well as any web forms using the libraries **Workflowgen.My** and **WorkflowFileUpload** versions 2.3.3 and above.

To use this security feature, all web forms created with Visual Studio must be upgraded to use **WorkflowGen.My** and **WorkflowFileUpload** versions 2.3.3 or above before enabling this option.

Working days and hours

New user default time zone

Sets what time zone is selected by default on the user's home page on the Portal module. This is used when creating a new user account, whether manually or by directory synchronization. Since it is used only for account creation, it will not override the current user's selected time zone.

Weekdays off (optional)

Specifies which weekdays are normally off. This is used by WorkflowGen to calculate process and action deadlines. Example: Selecting "Saturday, Sunday" will exclude these days from deadline calculations.

Working hours begin (required)

Specifies at which hour the workday begins (based on the current server time zone). This value is used by WorkflowGen to calculate the process and action deadlines. It will be converted to GMT for calculations. Example: "8" specifies that deadlines are to start being calculated at 8:00 a.m. every day.

Working hours end (required)

Specifies at which hour the workday ends (based on the current server time zone). This value is used by WorkflowGen to calculate the process and action deadlines. It will be converted to GMT for calculations. Example: "19" specifies that deadlines are to stop being calculated at 7:00 p.m. every day.

Working hours time zone

Specifies the time zone in which working hours begin and end.

Days off country (required)

Selects the country to be used to calculate the legal public holidays. This value is used by WorkflowGen to calculate the process and action deadlines. This option is based on the current "DaysOff.en-US.resx" and "DaysOff.fr-FR.resx" in **\wfgen\App_GlobalResources**. These files can be updated and new ones can be created based on their regional settings. Example: United States (English)

Special days off (d/m separated by comma (,)) (optional)

This value allows you to specify your custom days off. Example: "2/1, 11/1" specifies January 2nd and January 11th as holidays.

Skin

Defines the look and feel of the UI, including colour, margins, etc. The administrator can use the default skin or manually edit the CSS files to create a different look.

Portal

Display

Application name (required)

Customizes the "WorkflowGen" word that is displayed in the **User Portal**. Example: "Acme Flow"

Application language

Defines the Portal language. Selecting **User preference** allows the user to choose their language, but you can impose one by selecting it in the list, in which case the language selection option will be hidden in the Portal **User settings** panel.

Display code names

Uncheck this to display process and action descriptions instead of code names.

Number of records per page displayed in lists (required)

Number of records displayed in different lists of the **User Portal**. Default: 10

Number of pages displayed in lists (required)

Number of pages displayed in different lists of the **User Portal**. Default: 10

Maximum number of records displayed in lists (required)

Limits the number of records displayed in a search or statistics (data) result list. Default: 1000

Maximum number of users in a list before filtering by name (required)

You can specify the maximum limit before a filter appears in user lists. Default: 100

Display new request in the home page

Display mode of the **New request** link on the **User Portal** home page. You can choose between:

- Display requests
- Display requests grouped by category

- Display categories and hide processes

When a request is launched

When a new request is launched, you can choose how WorkflowGen behaves from the following:

- Display the request follow-up form
- Start first action
- Display the follow-up form of the first action

Request launching

If this parameter is checked, the user has to confirm the launch of the new request.

When clicking on an action to do

- Display the follow-up form of the action
- Launch the action

When an action is completed

- Display the follow-up form of the request
- Display the follow-up form of the request or the next action
- Display the follow-up form of the request (except if action to assign)
- Display the follow-up form of the request (except if action to do)
- Display the list of actions to do
- Display the list of actions to do or the next action
- Display the list of actions to do (except if action to assign)
- Display the list of actions to do (except if action to do)
- Display the homepage
- Display the homepage or the next action
- Display the homepage (except if action to assign)
- Display the homepage (except if action to do)
- Display the homepage and expand the actions to do
- Display the homepage and expand the actions to do or the next action
- Display the homepage and expand the actions to do (except if action to assign)
- Display the homepage and expand the actions to do (except if action to do)

Action completion mode

Specifies if the action completion treatment is processed in the background (threading). This option can sometimes improve the response time to the end user or prevent timeout issues, especially if there are large amounts of processing after a web form submission.

Maximum number of records in home page list (required)

Maximum number of records in lists on the **User Portal** home page before showing pages.

Customized banner URL

URL of the banner displayed at the top of the **User Portal**. Example: http://www.mycompany.com/welcome.htm

Customized banner height (optional)

Height of the banner (in pixels) displayed at the top of the **User Portal**. Example: 50

Search redirection

Specifies if the search result is redirected to the follow-up form when there is only one item found.

Advanced view

- **Display the result as a customizable report by default**
- **Enable Quick approval by default:** Enables the **Display Quick approval buttons** option in the **Search** form by default.
- **Enable custom column editing for process managers and supervisors**
- **Enable custom column editing for standard users**
- **Enable custom chart editing for process managers and supervisors**
- **Enable custom chart editing for standard users**

Link and email address formatting

Displays URLs and email addresyses as clickable links.

Process grouping

Specifies if the processes are grouped by category in the drop-down list box used to switch to the single process view.

Default process data column size (required)

Specifies the default width (in pixels) of the columns that display the associated data when the end-user UI is switched to the single-process view. Default: 150

Quick View: Activate Quick View

Allows you to enable or disable the **Quick View** functionality in the **User Portal**.

Quick View data name

Specifies the process data value to display within the **Quick View** dialog box. Example: FORM_ARCHIVE

Display Quick View on mouse event

You can choose between two different events to trigger the **Quick View** dialog box to open: **Click (Default)** or **Hover** (also referred to as 'mouseover').

Common process data name list

This parameter allows you to enter the same names and data types, which can then be used in a multi-process view.

For example, if you have process data such as CUSTOMER (TEXT) that are used in most of your processes, you can define these data as Portal common process data by entering them in the Common process data name list field.

Note: When entering multiple data types in this parameter, each data type must be separated by a comma.

Graphical workflow display mode

Enables **HTML5** graphical workflow display. This is available in Internet Explorer (version 9 and above), Edge, Firefox, Chrome, and Safari. If disabled, the graphical workflow will revert to Flash, as in previous versions of WorkflowGen. Default: enabled

Calling card

User calling cards are enabled by default. Uncheck this to disable calling cards.

Request

Delete ghost requests that are older than (days) (required)

Specifies the maximum number of days before deleting requests that have been launched but never assigned to a user, other than the requester. Default: 3

Maximum number of simultaneous instance creations per action (required)

The maximum number of simultaneous launches of the same process action. This parameter allows you to avoid simple loops at runtime. Example: 100

Request deletion

When this is selected, managers and supervisors can delete requests even if the process status is set to Active.

Associated data

Uncheck this to hide data with empty values in the follow-up form.

Request data lock timeout for concurrent applications (minutes) (required)

Request data will be locked during the time period specified in order to avoid "competition" for access to the same data. Example: 5

User notification

Email notification

- **Activate email notification:** This parameter allows you to enable or disable email notifications. This will affect all processes regardless of their status.
- **Notify the user when they are both the sender and recipient of the notification:** If this parameter is enabled, email notifications are sent even if the sender and recipient email addresses are the same.

Default sender name (optional)

Sets the default sender name for email notifications. If not set, the default sender email address will be displayed as the sender name.

Default sender email (required)

Sets the default email sender for email notifications. This is only used if a notification is sent by the system. Example: workflowgen@mycompany.com

Default reply-to email (required)

Default email address for replies to email notifications.

Maximum number of users to notify (required)

Maximum number of simultaneous email notifications that can be sent by WorkflowGen. Example: 100

Maximum attachment size (MB) (required)

Maximum size of attachments to requests in megabytes.

Notification default language

If the user has no default or preferred language selected, this parameter is used to specify which language to use for the email notification texts.

Link and email address formatting

Displays URLs and email addresses as clickable links.

Log level

This sets the type of information stored in the notification log file.

- **0 – Disabled:** No log file will be created.
- **1 – Errors only:** The log file will display only information pertaining to errors.

- **2 – All notifications:** The log file will contain information pertaining to errors and notifications, such as the time stamp and the recipient's email address.

Delegation

Activate user delegation

If this parameter is checked, end-users can delegate their tasks to other WorkflowGen users. Otherwise, only administrators are able to manage the delegation rules from the **Administration Module**.

Host application

This is used to specify the URL of the host application. For example, in SharePoint, you can create a webpart to display and use the WorkflowGen **User Portal** or **Admininstration Module** in the same way as a stand-alone web browser. This way, a user can remain in the SharePoint portal and use WorkflowGen at the same time without having to work in separate windows.

In this case, you have to specify the host URL in order for WorkflowGen to function properly inside the SharePoint webpart.

Security

Throw an exception when a self service assignment error occurs

This option will force WorkflowGen to throw an assignment exception error when a self service action is assigned to an invalid user. You should design your process to handle assignment exceptions, otherwise it will halt your workflow.

Statistics

Number of users displayed in report (required)

Number of users displayed in statistic reports. Example: 10

Number of actors displayed in report (required)

Number of actors displayed in statistic reports. Example: 10

Number of requesters displayed in report (required)

Number of requesters displayed in statistic reports. Example: 10

Link and email address formatting

Displays URLs and email addresses as clickable links.

Export format

You can choose between two different formats when exporting the results generated from a data statistic report. The available formats are:

- **CSV (comma-separated values):** This format does not support Unicode characters.
- **Unicode text (tab separator):** The values are separated by tab characters but the Unicode character range is supported.

Comments

Activate portal comments

Enables or disables **User Portal** comments.

Maximum number of comments displayed on the home page

Sets the total number of comments that can be displayed on the home page.

Auto-refresh frequency (required)

Sets the follow-up form comments list auto-refresh rate in milliseconds. Use the value 0 to disable the auto-refresh feature. Default: 60000 (1 minute)

Window pop-up width (required)

Sets the action runtime menu comments list window pop-up width size in pixels. Default: 380

Note: The following corresponding style widths must be updated separately in the Portal's Cascading Style Sheet ("\App_Themes\Default\portal\css\Default.css") when the pop-up width is changed:

- div.CommentsViewOpenedRightAlign
- div.CommentsViewSubOpenedRightAlign
- div.CommentsViewOpenedPopUpRightAlign
- div.CommentsViewSubOpenedPopUpRightAlign
- .CommentsListHeader .ListRow .CellOpenedRightAlign
- .CommentsList .ListRow .ListCell .Comment .Row .CellHeader
- .CommentsListInput .ListRow .ListCell .NewComment .Row .Cell .TextArea

Window pop-up height (pixels) (required)

Sets the action runtime menu comments list window pop-up height size in pixels. Default: 550

Note: The following corresponding styles height must be updated separately in the Portal's Cascading Style Sheet ("\App_Themes\Default\portal\css\Default.css") when the pop-up height is changed.

- div.CommentsListBodyPopUp
- div.CommentsListBodyPopUpHidden
- div.CommentsListBodyPopUpReadOnly
- div.CommentsListBodyPopUpReadOnlyHidden

Default sort field

Sets the default comment list sort by field. Default: date

Default sort order

Sets the default comment list sort order. Default: ascending

Default display mode

Expand the comments view displays the comment list the first time the follow-up form is displayed. Default: unchecked (hidden)

Administration

Display

Application language

Allows you to define the application language for the **Administration Module**. Selecting **User preference** allows users to choose their own language, but you can impose one by selecting a language from the list.

Number of records displayed in lists (required)

Number of records displayed in lists of the **Administration Module**. Default: 100

Number of pages displayed in lists (required)

Number of pages displayed in lists of the **Administration Module**. Default: 10

Maximum number of users in a list before filtering by name (required)

You can specify a maximum limit before a filter appears in the users' lists. Default: 100

Name encoding restriction (required)

If **Restrict name encoding to ANSI character set** is checked, only ANSI characters are permitted in the "Name" fields. If this parameter is not checked, only special characters (**'**, **"**, **tab**, **space**, **%**, **/**, \, *****) are discarded.

Graphical workflow display mode

Enables **HTML5** graphical workflow design mode. This is available in Firefox, Chrome, Safari, Edge, and Internet Explorer (version 9 and above). If HTML5 is not enabled, the graphical workflow display will revert to Flash mode, as in previous versions of WorkflowGen. Default: enabled

Form

Databind data providers

The databind data providers, separated by commas (**,**).

Maximum number of undo operations (required)

Sets the maximum number of undo operations in the form designer. Default: 30

User

New user default language

When a new user is created, the language selected here will be applied to their profile as their default language.

Check deletion rules when displaying users, groups, and directories

Enables the deletion rules check for users, groups, and directories. Disable this option to improve list and form response times.

Security

Restrict process managers from editing global participants

Disables process managers' permissions to modify a global participant's information (either via the process participants or while importing a process) such as name, description, and user/group/directory associations.

Note: Even if this option is enabled, process managers cannot create new global participants.

Windows Services

Service identity (required)

The Windows Service identity to use in order to run the WorkflowGen services.

Directory synchronization

General

Synchronize only group members that are associated with a participant:

If this option is enabled, the directory synchronization will synchronize the group's members only if the group is associated to at least one participant. This option is useful to reduce synchronization run time by skipping a group's member synchronization when the group is not used in a participant.

Maximum number of users to delete per synchronization cycle (required)

Defines the maximum number of account deletions per synchronization run. This option is useful for batch account deletion in order to optimize synchronization performance. The default is 0 (unlimited).

Logs

Remove temporary files

If **Automatically delete old log files** is selected, the temporary XML files created by WorkflowGen are removed once the synchronization is complete.

Detailed report

If **Display Update entries in logs** is selected, the synchronization logs each action performed on the directory data.

Keep log files history for (days) (required)

Number of days before deleting the log files. Example: 31

Display warnings in logs

If this is selected, warnings will be displayed in the log files.

Automatic synchronization

Week day for the weekly synchronization

Day of the week to perform the automatic weekly synchronization (e.g. Monday).

Month date for the monthly synchronization

Date of the month to perform the automatic monthly synchronization (e.g. 1 for the 1st of the month)

Start synchronization at

Hour of the day to perform the automatic monthly synchronization (in 24-hour format).

Remote Approval

See the **Remote Approval** chapter for information on setting up Remote Approval, such as approval emails, actions, and questions.

Remote Approval

Activate

Enable Remote Approval.

Refresh interval (seconds) (required)

Refresh interval for Remote Approval email (in seconds). Default: 180 seconds

Quick mode

Enables **Quick mode**, which lets the user reply to approval emails on one line, without any other formatting necessary (the user can still leave an optional comment on the second line). Default: disabled

Subject line validation

Enable this mode to use the action reference code in the subject line for validation. Default: disabled (recommended for greater security)

Case sensitive answer

Enable this to enforce case sensitivity on email answers. Default: disabled

Log file trace level

Sets the amount and type of information stored in the notification log file:

- **0 – Disabled:** None (no log file will be created)
- **1 – General messages:** Execution summary messages only
- **2 – Error messages:** Exception error messages only
- **3 – General and error messages:** Execution summary messages and exception error messages
- **4 – Full details for debugging (including Event Viewer):** Execution summary messages and full detail exception messages (including Event Viewer information logs)

Log file life span (days)

Sets the life span for temporary log files. Default: 1 day

Incoming mail server

Server address (required)

The address (or, if using Exchange, the name) of the server to receive emails.

Port

The port number for an IMAP or POP connection (not required for Exchange).

Type

Type of email server (POP, IMAP, Exchange 2007, or Exchange 2010).

Security

Enables SSL (use SSL for Exchange). Default: None

Default reply-to email (required)

Email address for Remote Approval to send and receive approval emails.

Username (required)

Username used to log in to the POP, IMAP, or Exchange server.

Password (required)

Password used to log in to the POP, IMAP, or Exchange server.

Domain

The domain name for the incoming Exchange server account.

Diagnostic

File size

The total size refers to the combined size of all the files on the server. The average size refers to the average size of the files on the server. The maximum size refers to the largest filerev on the server.

Stuck requests

This refers to a request that is open, but with no follow-up action associated with it. It is an irregular request.

Automatic actions in timeout

Displays a list of actions that have timed out.

Unexpected errors

Displays a list of errors that are not timeout errors.

Product information

License information

Version

The current version of the WorkflowGen installation.

Serial number

The activation serial number of the WorkflowGen installation, and copyright information.

Assembly versions

The various library versions used by the WorkflowGen application.

User management

Overview

To participate in a process or manage processes, the user must be identified as a user in WorkflowGen and have an account (username and password) in the company directory that WorkflowGen will use for authentication.

Users can be members of one or more directory groups; however, a directory group cannot belong to another directory group.

A user may have an active or inactive status. If a user's status is set to inactive, they cannot access the application.

A user can only be truly deleted from the WorkflowGen database if they are not referenced anywhere in WorkflowGen. If they are referenced, then the user will be archived. Archiving means that the username will be renamed and will be set to archived status, and the user will no longer be able to access the application.

Several directories can be managed in WorkflowGen. This is particularly useful when the synchronization module is used. For example, one directory can be managed manually in WorkflowGen while another can be synchronized based on an existing directory (e.g. Active Directory). Even if many directories are being used, each username must be unique across the entire system. If multiple directories are being used to synchronize several Active Directory domains, domain names can be prefixed to the user name to eliminate the unique user issue (in the event that user names are identical across domains).

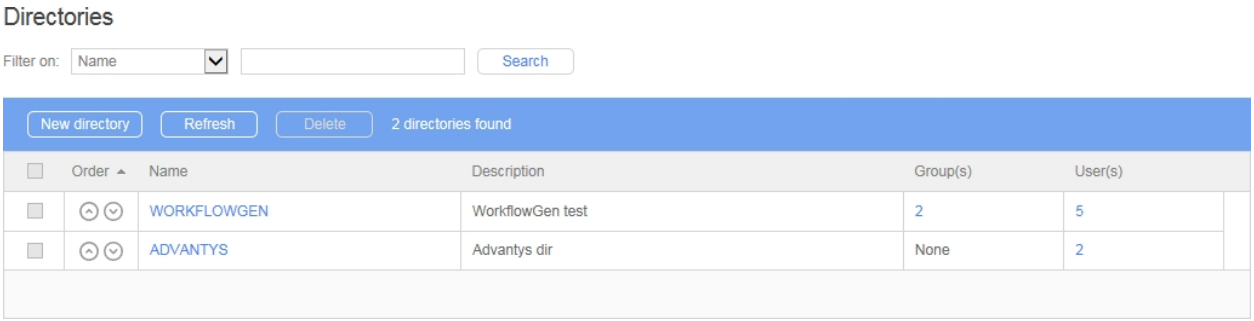
User management can only be modified by users with an administrator profile.

By default, WorkflowGen is delivered with the WORKFLOWGEN directory and one administrative user, neither of which can be deleted.

Directories

Directory screen

On the **Administration Module** home page, click **Directories** to display the Directories list.



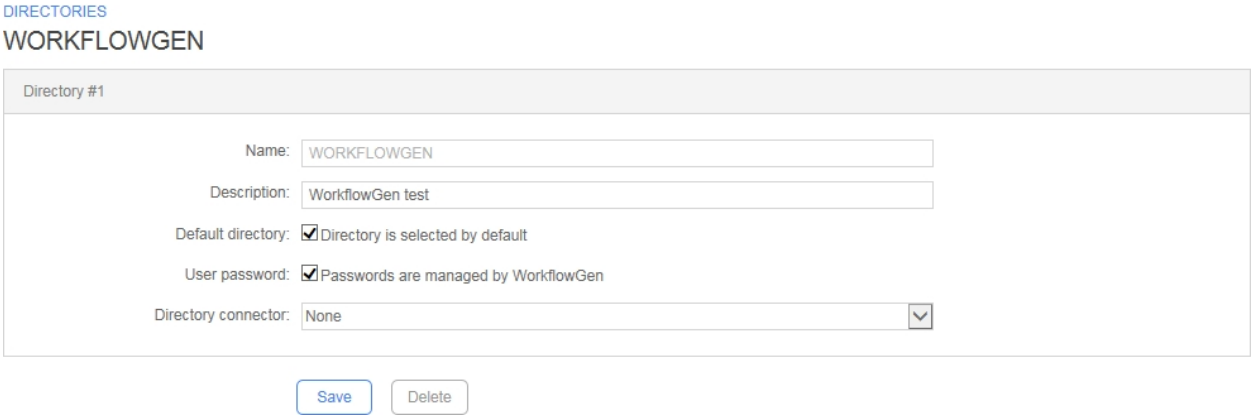
Links	Remarks
New directory	Displays a blank directory form to add a new directory
Refresh	Refreshes the directory listing
Delete	Delete a directory

Directory list

Columns	Remarks
Order	Use the up and down arrows to change the order of the list
Name	Directory name A link displays the directory form in edit mode.
Description	Directory description
Group(s)	Number of groups associated to the directory A link displays the corresponding groups.
User(s)	Number of users associated to the directory A link displays corresponding users.

Edit directory

To edit a directory, click its name in the Directory list.



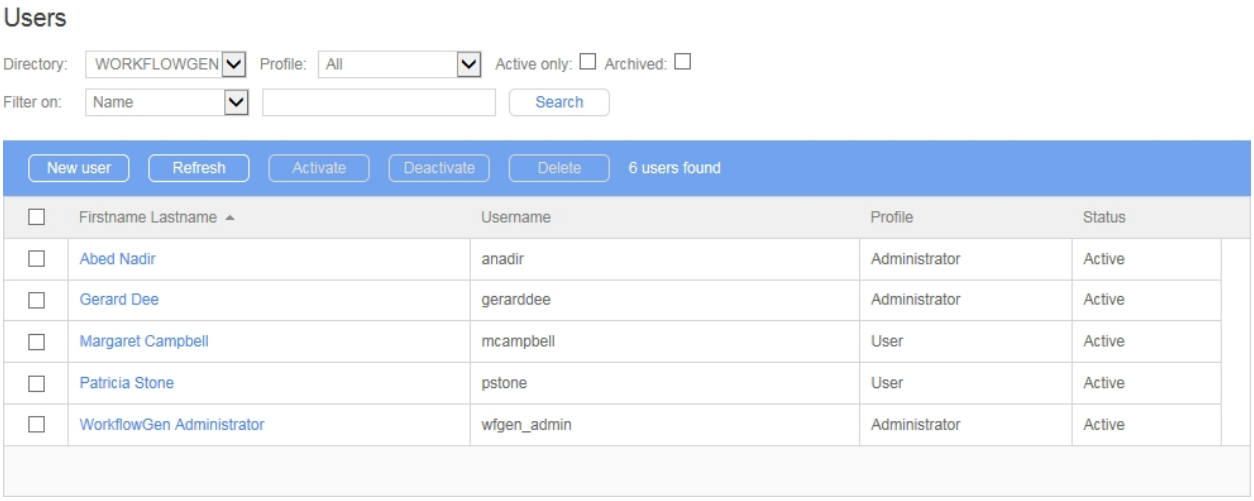
Fields	Remarks
Name	**Required field** Unique identifier for the directory; must respect nomenclature and be limited to 50 characters
Description	**Required field** Directory description limited to 255 characters
Default directory	If checked, the directory is displayed first among the directory selection lists in the administration module
User password	Check to allow WorkflowGen to manage passwords
Directory connector	Various sources that can be used for authentication management

Deleting a directory

- The WORKFLOWGEN directory cannot be deleted.
- A directory containing users or groups cannot be deleted.
- A directory can only be deleted if it is empty.

Users

User list



User screen

USERS

anadir

Activity report

User #19 - Created on 3/17/2015 - Modified on 3/30/2015

Directory: WORKFLOWGEN
Username: anadir
Password: ••••••••
Lastname: Nadir
Firstname: Abed
Email: anadir@yourcompany.com
Profile: Administrator
Group(s): add...
Status: Active Inactive
Synchronized: User is managed by the directory synchronization
Default language: English (United States)
Selected language: Select...
Default time zone: (GMT-07:00) Mountain Time (US and Canada)
Selected time zone: Select...

Manager: John Smith
Staff members: No user
Phone: 1-719-555-5333
Mobile: 1-719-555-8769
Fax: 1-719-555-3326
Pager:

Save Replace Delete

Menu banner

Links	Remarks
New user	Displays a blank user form to add a new user
Refresh	Refreshes the user list displayed

Filters

External filters	Remarks
Directory	Displays the specified user directory

Profile	Displays users with the selected profile
Status	Displays users with the specified status(es): **All**, **Active or inactive**, **Active**, **Inactive**, or **Archived**
License type	Displays users by license type: **Requester** or **Standard User**
Filter on	Filters by specified criteria (e.g. name, username, email, etc.)
Search	Search for users by name, username, email, etc.

Filter on *	Remarks
Name	Filters by user's name
Username	Filters by user's username
Email	Filters by user's email address
Department	Filters by user's department
Company	Filters by user's company name
Employee number	Filters by user's employee number
Telephone	Filters by user's telephone number
Mobile	Filters by user's mobile phone number
Fax	Filters by user's fax number
Pager	Filters by user's pager number
Office	Filters by user's office
Job Title	Filters by user's job title
Employee type	Filters by user's employee title
Initials	Filters by user's initials
Personal Title	Filters by user's title
Postal address	Filters by user's postal address
Zip code	Filters by user's zip code
City	Filters by user's city
State/Area	Filters by user's state or area
Country	Filters by user's country
LDAP Path	Filters by user's LDAP path
Extended attribute 1	Filters by user's extended attribute #1
Extended attribute 2	Filters by user's extended attribute #2
Extended attribute 3	Filters by user's extended attribute #3
Extended attribute 4	Filters by user's extended attribute #4
Extended attribute 5	Filters by user's extended attribute #5
Display name	Filters by user's displayed name
Distinctive name	Filters by user's distinctive name
System identifier	Filters by user's system identifier (SID)

* A filter can be applied to a part of a field

User lists

Columns	Remarks
Multi-select checkboxes	Actions: • Activate the selected users • Deactivate the selected users • Delete the selected users
Lastname Firstname	User's last name and first name A link displays the user form in edit mode.
Username	Username of the user
Profile	Profile of the user
Status	Status of the user's account: active or inactive
Directory	User directory **Note:** This column is only visible when you select **All** from the **Directory** drop-down list.

User form

Fields	Remarks
Directory	User directory
Username	**Required field** Unique user identifier in all directories; limited to 255 characters **Note:** The username cannot contain the " **:** " (colon) character.
Password	User's password Click **Change password** to change the user's password
Last name	**Required field** User's last name
First name	User's first name
Email	User's email address
Profile	User's profile (defines application access rights: administrator or user)
Group(s)	Name of the directory group the user is associated A link displays the corresponding groups.
Status *	User's account status: active/inactive
Synchronized	If checked, the user is synchronized
Default language	Language applied when the user's account was created
Selected language	Language selected by the user
Default time zone	Time zone applied when the user's account was activated
Selected time zone	Time zone selected by the user
Manager	The user selected as manager
Staff members	Count of users who have been assigned this user as manager Clicking this allows access to the staff member list.
Telephone *	User's telephone number

Mobile *	User’s mobile telephone number
Fax *	User’s fax number
Pager *	User’s pager number
Office *	User’s office number
Department *	User’s department number
Company	User’s company name
Job title *	User’s job title
Employee type *	Employee type the user belongs to
Initials *	User’s initials
Title *	User’s title
Employee number	User’s employee number
Postal address *	User’s postal address
Zip code *	User’s zip code
City *	User’s city
State/Area *	User’s state or area
Country *	User’s country
LDAP path *	User’s LDAP path
Display name *	User’s displayed name
Distinctive name *	User’s distinctive name
Extended attribute 1 to 5 *	User's extended attribute
System identifier *	User's SID

* Fields that can be synchronized with Active Directory. These fields are not required by the application; however, it is possible to use them through workflow macros.

Deleting/archiving users

A user will be archived and not deleted if:

- The user is associated to a participant as a user.
- The user is the creator or modifier of a process.
- The user is associated to a request or an action.

A user cannot receive an inactive, deleted, or archived status if:

- The user is the only person assigned as a coordinator to a **List of persons**.
- The user is the only person in a group assigned to a **List of persons** type participant.
- The user is the only person in a **List of persons** type participant.

Replacing

You can replace a user with another one (the user that replaces another user must belong to the same directory and to the same groups). All roles in process definitions will be reassigned to the new user.

Ongoing (open) requests will be reassigned to the new user; closed (historical) actions will maintain the correct participant who performed the action.

This function is useful when a someone leaves their position in the organization and their ongoing tasks and roles must be reassigned.

Unlocking a user account

If a user exceeds the maximum number of connection attempts set in the **Configuration panel**, their account will be locked and must be unocked by an administrator. To do this, open the user's profile and click the **Unlock user** button.

Activity report

The user activity report can be generated by selecting the **Activity report** link in the user's profile page.

User Activity Report - Internet Explorer

Gerard Dee
User #2 - created on 4/8/2014, modified on 3/30/2015

Print Refresh

Usage

Requests	In progress	Closed	Total
Real requests	1	0	1
Requests in test	0	0	0

Actions	In progress	Closed	Total
Real actions	1	0	1
Actions in test	3	0	3

Delegations from Gerard Dee

Process	Participant	Global	Delegated user	Begin	End
IT/IT_CHANGE v1	CAB		Abed Nadir	NA	NA
IT/IT_CHANGE v1	CAB		Peter Nicoll	NA	NA
IT/IT_CHANGE v1	CAB		John Smith	NA	NA
IT/IT_CHANGE v1	CAB		John Smith	NA	NA
IT/IT_CHANGE v1	CAB		John Smith	NA	NA
IT/IT_CHANGE v1	CAB		Patricia Stone	NA	NA

Delegations to Gerard Dee

Process	Participant	Global	User	Begin	End
ACCOUNTING/EXPENSE_REPORT v1	SUPERVISOR		John Smith	NA	NA

Participants

Process	Participant	Global	Role	Directory	Groups	User	Coordinator
ACCOUNTING/EXPENSE_REPORT v1	ACCOUNTING		Actor			Gerard Dee	
ACCOUNTING/EXPENSE_REPORT v1	EMPLOYEE		Requester			Gerard Dee	
ACCOUNTING/EXPENSE_REPORT v1	SUPERVISOR		Actor			Gerard Dee	
IT/HELPDESK v1	REQUESTER		Requester			Gerard Dee	
IT/HELPDESK v1	SUPPORT_L1		Actor			Gerard Dee	
MATERIEL_MANAGEMENT/WORK_ORDER v1	TECHNICIAN		Actor			Gerard Dee	

Folder Managers

Folder	Participant	Directory	Groups	User

Global List Managers

Global List	Participant	Directory	Groups	User

The generated report summarizes all the activities for the selected user, such as:

Request use

- Request type
- In progress

- Closed
- Total

Action activity

- Action type
- In progress
- Closed
- Total

Delegations from someone

- Process
- Participant
- Global
- Delegated user
- Begin
- End

Delegations to someone

- Process
- Participant
- Global
- User
- Begin
- End

Participants that the user belongs to

- Process
- Participant
- Global
- Role
- Directory
- Groups

- User
- Coordinator

Folder manager

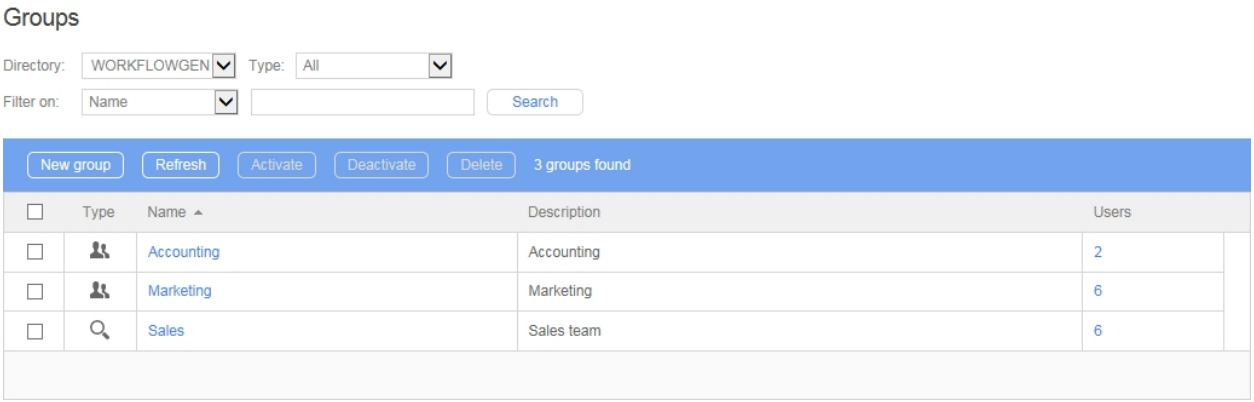
- Folder
- Participant
- Directory
- Groups
- User

Global list managers

- Participant
- Directory
- Groups
- User

Groups

Group list screen



represents a group of users from a single directory (created by a synchronization or defined within WorkflowGen).

represents a virtual group of users from a single directory filtered by an SQL-like query (directory filter).

Associated users

Users are associated with a group only when the group is saved (at creation or when manually re-saved). If synchronized, the user list is refreshed at the time of the synchronization. If no synchronization has been defined for that directory, users in the virtual groups of that directory will not be updated automatically.

Menu banner

Links	Remarks
New group	Displays a blank group form to add a new group
Refresh	Refreshes the group list displayed

Filters

External filters	Remarks
Directory	Displays the specified group directory
Type	All / Directory / Query

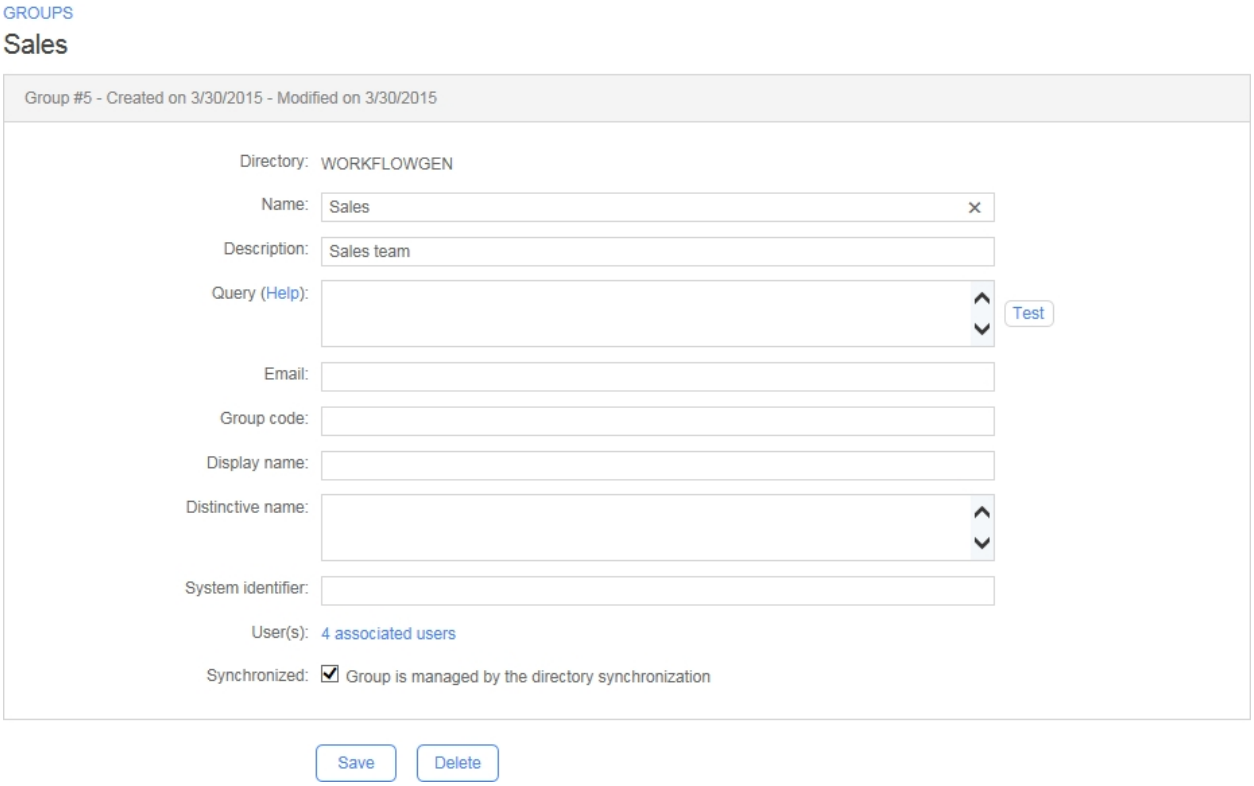
Filter on *	Remarks
Name	Filters by group's name
Description	Filters by group's description
Query	Filters by group’s query
Email	Filters by group's email address
Group code	Filters by group's code
Display name	Filters by group's displayed name
Distinctive name	Filters by group's distinctive name
System identifier	Filters by group's system identifier (SID)

* A filter can be applied to part of a field.

Group list

Columns	Remarks
Multi-select checkboxes	Actions: • Activate the selected group’s members • Deactivate the selected group’s members • Delete the selected groups
Name	Name of the group A link displays the group form in edit mode.
Description	Description of the group
Users	Number of users associated to the group A link displays the corresponding users.
Directory	Group directory **Note:** This column is only visible when you select "All" from the Directory dropdown list.

Group screen



Group form

Fields	Remarks
Directory	Group directory
Name	**Required field** Unique identifier for the group in the directory
Description	**Required field** Group description
Query	Statement allowing a group definition based on query parameters (directory filter) ***Examples:*** • User of a group: {ISMEMBER(FINANCE)} • Users from a defined city: CITY = 'LOS ANGELES' • Combinations, such as: Country='USA' and {ISMEMBER (FINANCE)}
(Help)	Help on query syntax (field name list)
Test	Query syntax test and query result
Email	Group email address
Group code	Group code

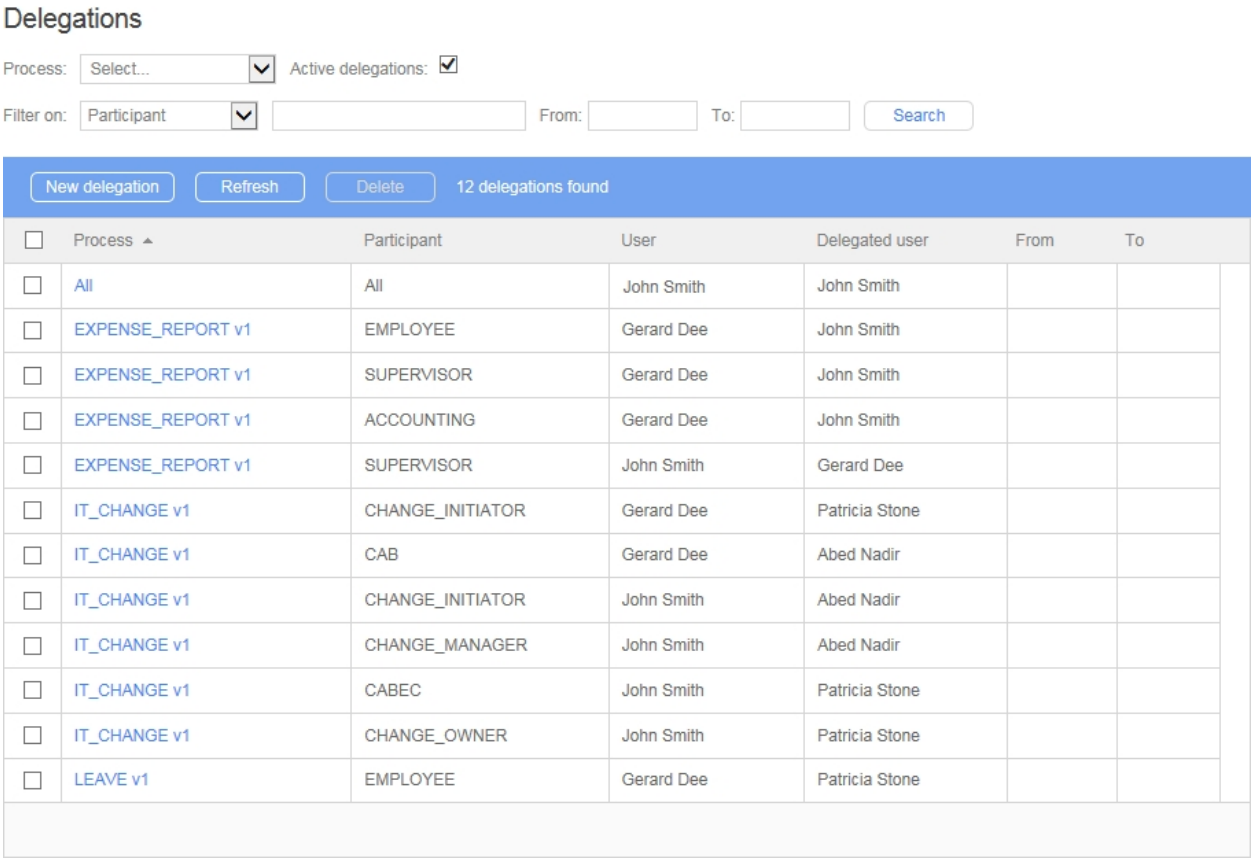
Display name	Group displayed name
Distinctive name	Group distinct name
System identifier	Group SID
User(s)	Number of users associated to the group A link displays the corresponding users.
Synchronized	If checked, the group is synchronized

Deleting a group

Deleting a group does not delete the associated users.

Delegations

Delegation list screen



Menu banner

Links	Remarks
New delegation	Displays a blank delegations form to add a new delegation
Refresh	Refreshes the delegations list

Filters

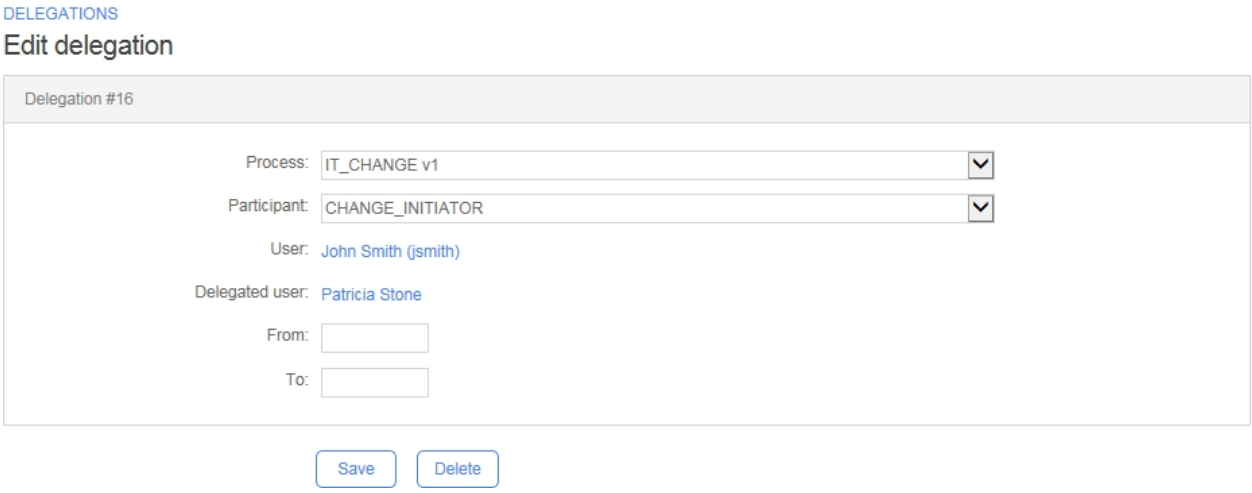
External filters	Remarks
Process	Displays the delegations of the selected process (only active or archived processes are listed)

Filter on	Remarks
Participant	Filter by participant
User	Filter by user (delegator)
Delegated user	Filter by delegated user

Delegation list

Column	Remarks
Process	Process name
Participant	Participant name
User	User name (delegator)
Delegated user	Delegated user name
From …	Delegation start date (included) If not defined, the delegation is unlimited.
To …	Delegation end date (included) If not defined, the delegation is unlimited.

Delegation editing screen



Delegation editing

Fields	Remarks
Process	Lists all active processes that the user plays a role in Archived processes are listed if the **Show all processes versions** box is checked. This allows for the addition and modification of delegations defined on ongoing requests based on archived processes (previous versions). If not checked, the participant field is disabled. You can select all processes. In this case, the delegation will be based on all process functions associated with the selected user. Note that process-specific delegations override the All process delegation.
Participant	Participant of the selected process (except if "All")
User	The user associated with the selected participant (delegator) to whom a process function is to be delegated
Delegated user	The user intended to act as the delegatee on the selected process function The delegated user must be different than the delegator.
From …	Delegation start date (included) If defined, the end date is required (delegation period). If not defined, the delegation is unlimited.
To …	Delegation end date (included) If defined, the start date is required (delegation period). If not defined, the delegation is unlimited.

Adding a delegation

When adding a new delegation, you can decide whether or not to send a notification email to the delegated user via the displayed message box.

A delegation is unique based on the process, the participant, the user, and the delegated user. This means that you cannot define multiple time periods for a given delegation.

You cannot define cross-delegations on overlapping periods between the same users on the same participant.

You cannot define multi-level delegations. If user A has delegated actions to user B, user B cannot then delegate these actions to user C.

Deleting a delegation

Deleting a delegation does not delete the associated user.

Process versioning

Delegations are process version-specific:

- New versions of a process copy all existing delegations where possible, based on matching participant names.

- Since delegations can only be created for active processes, delegations are only carried forward when a versioned process is activated.
- A delegate can only see the delegator's actions and requests from the version at which they were delegated the role, and going forward if copied by creating a new version and not changed subsequently.
- When a user changes a delegation in the current version, it does not affect prior delegations performed for previous versions.
- If prior version actions and requests need to be delegated also, an administrator must use the administrator delegation screen to add prior versions delegations.

Directory synchronization

Overview

The **Directory synchronization** module provides an efficient way to synchronize WorkflowGen users and groups with one or more existing enterprise directories.

The following are some key points about synchronization:

- The synchronization process can be manual or automatic.
- The WORKFLOWGEN built-in directory cannot be synchronized.
- A user's username must be unique across all WorkflowGen directories.
- You can synchronize multiple directories or multiple portions of a directory with different connectors.
- In the case of an account deletion, the user will either be archived or deactivated, depending on parameters specified. If archived, the username will then be renamed and the account disabled.

Recommendation for per-user license mode

It is recommended that you synchronize a new user account with the option **New user default status** set to **Inactive**. These new accounts can later be activated manually by the administrator in the user/group lists, or automatically by using the self-activation feature.

General usage

Accessing the synchronization module

Only users with an administrator profile can access the synchronization module.

Description of synchronization parameters

From the WorkflowGen **Administration Module**, you can list the directory synchronizations, consult synchronization parameters, or add new synchronizations.

When creating a new synchronization that is based on Active Directory, LDAP, or TEXT, the following fields will appear to define the method of synchronization.

Note: Once saved, it is no longer possible to change the directory connector.

Separator

For the text connector, the column separation character in the text file can be a semicolon (" **;** "), a comma (" **,** "), or a tab character.

File path

This field makes it possible to specify a path to access the files for the text connector. It takes as a value the path where the files are located, followed by the synchronization name.

Note: The synchronization name is used to name the files.

LDAP path

For Active Directory, an LDAP path is required. Only a single LDAP path is supported per connector.

User synchronization query

For an LDAP query, an LDAP query must be specified to query user accounts.

Group synchronization query

For an LDAP query, an LDAP query must be specified to query groups.

Directory login and password

For Active Directory or LDAP connectors, a login and password may be required to provide access to the directory server.

Deep search mode

For the Active Directory connector, define if the synchronization should include only the container of the targeted OU or include all the children of the targeted OU.

Data to synchronize

With WorkflowGen, groups and users can be synchronized. User synchronization is required, but group synchronization can be activated or deactivated.

Note: With LDAP synchronization, a group query must be defined even if the group is not set to synchronize.

Users synchronization field

In order to perform synchronization, the module uses a field to identify the users, and defines the additions, deletions, or updates. The default field is "USERNAME", but you can choose any field from WorkflowGen (e.g. Ads_Path, EMPLOYEENUMBER, etc.) as long as it is processed by the connector.

Groups synchronization field

As with users, parameters can be set for the group synchronization field.

Prefix username by

To facilitate importing, and in certain cases to avoid double entries concerning user names, it is possible to prefix usernames with a character string. Example: Domain\

Note: The username prefix cannot contain the " **:** " (colon) character.

Prefix groupname by

To facilitate importing and to avoid, in certain cases, double entries concerning group names, it is possible to prefix the group names with a character string. Example: Domain\

User synchronization type

There are three synchronization modes: **Add only** allows new users to be imported, **Add and modify** also allows data for existing users to be updated, and **Add, modify and delete** has an additional function that enables archiving of WorkflowGen users who are not included in the Imported Directory.

Add only: During synchronization, any user that exists in the directory to be imported but does not exist in the WorkflowGen directory will be added to the latter. Data for existing users will not be modified. In order to be added, a user must at least have a user name (USERNAME) and a last name (LASTNAME). If this condition is not satisfied, an error occurs and the add is cancelled. In case of a defect with one of these values (USERNAME and LASTNAME), an alert (WARNING) is generated.

Add and modify: This type of synchronization functions the same as the preceding one with regards to additions. It also allows you to update data for users who are already present in the directory and are to be synchronized. In this way, data for a user present in the WorkflowGen directory and in the directory to be imported will be updated.

Add, modify and delete: You can delete users from a WorkflowGen directory through synchronization. In this mode, the user is deleted when they are present in the WorkflowGen directory but not in the directory to be imported.

Group synchronization type

There are three synchronization modes: **Add only** allows only new groups to be imported, **Add and modify** allows data for existing groups to be updated, and **Add, modify and delete** has an additional function that enables archiving of WorkflowGen groups that are not included in the imported directory.

New user default status

This option defines the default status of new user accounts that are created during the synchronization. Set the status to **Active** if you want a new user account to be activated by default. Set the status to **Inactive** if you want to manage a new user account activation manually, or to enable the user self-activation feature. This is recommended for clients who are using the per-user license mode.

Self-activation

This option allows an inactive new user account to activate itself when logging into WorkflowGen for the first time. The ‘Inactive’ new user default status option must be selected in order to use this option.

If a user is deleted

In order to provide proper user tracking in WorkflowGen, when a deletion request is generated, users that have performed actions are not actually deleted; you can either deactivate them or archive them. Once archived, the user will retain their unique internal ID, but their username will be renamed with an "archive" suffix and sequence number.

Launching mode

Triggering can occur manually (using the **Synchronize** button) or automatically.

Manual: Manual synchronization makes it possible to perform synchronization on an on-demand basis only. To do this, click the **Synchronize** button on the synchronization file concerned.

Test: This mode has the same running mode as manual synchronization, except that processing is, in reality, not performed. Instead, it is only simulated in order to anticipate if synchronization will take place correctly or not. To do this, click the **Test** button. A synchronization test is logged in the same way as a real synchronization.

Automatic: Data synchronization can take place automatically. In this case, a scheduled task analyzes the configuration of all the synchronizations on a daily basis, and subsequently runs the process.

Frequency

If synchronization is performed automatically, you can choose the frequency for synchronization. This can be every day, once a week, or once a month. For automatic synchronization, see **Configuration panel** on page 24 for instructions on how to set specific dates and times for the operation.

Active Directory connector

Overview

The purpose of the connector is to import users and groups from Active Directory into a WorkflowGen directory. The connector operates with the LDAP protocol using ADSI (Active Directory Service Interface). Access to Active Directory is read-only.

Requirements

- Read-only LDAP access to Active Directory is required for an anonymous account or for an account that has access to the Active Directory server.
- If the Active Directory server is located behind a firewall, the LDAP protocol must be open.
- You can use the utility tool ADSVIEW provided in the setup package to check that your LDAP path refers to the correct container to retrieve the users and groups of your directory.

LDAP path

The connector needs an LDAP path in order to retrieve the data in Active Directory. This path consists of:

- The protocol: "LDAP://", in this case.
- The name of the server or its IP address.
- The port separated from the name of the server with " **:** " (colon). Default: 389

  Note: If you're using LDAP in SSL mode, you must use port 636; otherwise, you can omit the port number, or use the default one.
- The path in the server's LDAP tree structure.

In order to run the query that is needed to synchronize the users, the Organization (O) and the Organizational Units (OU) must be specified starting from the bottom upwards, preceding them with "DC=" and separating them with " **,** " (comma).

Example:

An Active Directory structure is as follows:

- **Top level Domain (DC):** thecompany.com
- **Organization unit (OU):** group within the domain: BusinessUnit2
- **Sub-unit (OU):** sub-group within the domain: IT Department

In order to access users and groups of "IT Department", the LDAP path would be

"LDAP://servername:port/OU=IT Department,OU=BusinessUnit2,DC=thecompany,DC=com".

The LDAP path does not support the " **.** " operator, but it does support spaces. Therefore, the ".com" is identified by the DC=com operator.

Important notes

- CN is also supported as a container type.
- Only one branch of the directory can be associated with a given directory. If multiple OUs at the same level must be queried, then the parent of both OUs must be queried, or two directories created. For example, if the structure /Company/Department1 and /Company/Department2 and /Company/Department3 exists, and only departments 1 and 2 must be queried, then either the entire /Company OU should be specified (all three department OUs will be synchronized), or two separate synchronization directories should be created each with one OU specified.
- LDAP query filters are not supported.
- The group query is inherently the same as the user query.
- Groups and users linked to them must exist within the same LDAP path, otherwise mismatched group/user combinations will be excluded from the synchronization and appear as errors in the synchronization log. This typically occurs when Active Directory groups are defined as CNs within an OU that point to users that are in fact defined in other OUs outside the scope in the LDAP path provided.

  For example, this situation will arise if the LDAP path is defined to link only to the /Company/Department1 OU, and within this OU the /Company/Department1/Team1 group points to users in /Company/Department2. In this case, it is recommended to either choose an LDAP path that includes all OUs that are involved in the groups, or to use the "LDAP" connector type instead to create more refined individual user/group queries and filters.

For more information, see **LDAP connector** on page 64)

Data to import

Synchronization is performed for users. However, it is also possible to synchronize groups, and consequently group user memberships. You can import data directly from the OU or the container that is the target path. You can retrieve data from the child containers by activating the **Deep search mode**.

For users to be synchronized, their "sn" and "sAMAccountName" attributes must be set in Active Directory. These map to Last name and Username, respectively.

Synchronization fields

User synchronization field and **Group synchronization field** are set to **System identifier** by default.

If you have an existing WorkflowGen installation that uses an Active Directory connector for synchronization, we recommend switching the user and group synchronization fields to **System identifier**, since it is a unique identifier for each user and group object in Active Directory.

Retrieving Active Directory data

The information is retrieved in Active Directory using the LDAP path. As such, it provides an in-depth access to the data by targeting the OU from which the users and groups are to be retrieved.

The tables below list the correspondence between the key-entry fields for a user and the field names with Active Directory. If you are using a directory LDAP connector, you can edit these mappings by clicking the **Edit mapping** button in the directory editing page.

Users

Field	Active Directory default mapping
Username	sAMAccountName
Password	userPassword
Name	sn
First name	givenName
Email	mail
Default time zone	(none)
Manager	manager
Phone	telephoneNumber
Mobile	mobile
Fax	facSimileNumber
Pager	pager
Office	physicalDeliveryOfficeName
Department	department
Company	company
Job title	title
Employee type	employee Type
Initials	initials
Title	personalTitle
Employee number	employeeID
Postal address	postalAddress
Zip code	postalCode
city	l

State/Area	st
Country	co
LDAP path	ADsPath
Display name	distinguishedName
Distinctive name	cn
Extended attribute 1	extensionAttribute1
Extended attribute 2	extensionAttribute2
Extended attribute 3	extensionAttribute3
Extended attribute 4	extensionAttribute4
Extended attribute 5	extensionAttribute5
System identifier	objectSid

Groups

Field	Active Directory default mapping
Name	sAMAccountName
Description	Description
Email	mail
Group code	groupCode
LDAP path	AdsPath
Display name	cn
Distinctive name	DistinguishedName
System identifier	objectSid

LDAP connector

Overview

The purpose of the LDAP connector is to import users and groups from a generic LDAP directory (e.g. AD, Sun ONE, ADAM, etc.) into a WorkflowGen directory. The connector operates with the LDAP protocol and the connection is performed as read-only.

Requirements

Read-only LDAP access is required for an anonymous account or for an account that has access to the LDAP server. If the LDAP server is located behind a firewall, the LDAP protocol must be open.

User and group synchronization queries

The connector needs an LDAP query in order to retrieve the data in the directory. This query consists of:

- The protocol: "LDAP: //", in this case.
- The name of the server or its IP address.
- Optionally, the port separated from the name of the server with " **:** " (colon). The default port is 389.

  Note: If you're using LDAP in SSL mode, you must use port 636; otherwise, you can omit the port number, or use the default one.
- The top level domain.
- The LDAP query and/or filters.

Examples:

An LDAP structure is as follows:

- **Top level Domain (DC):** "thecompany.com"
- **Organization unit (OU):** Group within the domain: "BusinessUnit2"
- **Sub-unit (OU):** Sub-group within the domain: "IT Department"

In order to access users and groups of "IT Department", the LDAP queries would be (assuming an Active Directory LDAP structure):

User

LDAP://servername:port/DC=thecompany,DC=com;(&(objectCategory=person)(objectClass=user)(sn=*)(sAMAccountName=*)(memberOf=CN=TheSpecificCN,OU=LowestOU,OU=HigherOU,DC=thecompany,DC=com)(!(userAccountControl:1.2.840.113556.1.4.803:=2)));adsPath,OBJECTSID,sAMAccountName,sn,GivenName,mail,telephoneNumber,mobile,pager,facSimileTelephoneNumber,department,company,EmployeeType,EmployeeId,title,initials,postalAddress,postalCode,physicalDeliveryOfficeName,st,L,co,manager;subtree

Group

LDAP://servername:port/DC=thecompany,DC=com;(&(objectClass=group));adsPath,objectSid,sAMAccountName,Description;subtree

To use a specific CN referencing two groups, the following query filters may be used:

User

LDAP://servername:port/DC=thecompany,DC=com;(&(objectCategory=person)(objectClass=user)(sn=*)(sAMAccountName=*)(memberOf=CN=TheSpecificCN,OU=LowestOU,OU=HigherOU,DC=thecompany,DC=com)(!(userAccountControl:1.2.840.113556.1.4.803:=2)));adsPath,OBJECTSID,sAMAccountName,sn,GivenName,mail,telephoneNumber,mobile,pager,facSimileTelephoneNumber,department,company,EmployeeType,EmployeeId,title,initials,postalAddress,postalCode,physicalDeliveryOfficeName,st,L,co,manager;subtree

Group

LDAP://thecompany/dc=thcompany,dc=com;(&(objectClass=group)(|(sAMaccountName=Group1)(sAMaccountName=Group2)));adsPath,objectSid,sAMAccountName,Description;subtree

Important notes

- Only one user and group query can be associated with a given directory. If multiple OUs at the same level must be queried, then the parent of both OUs must be queried, two directories created, or a specific query filter devised that includes both OUs.

  For example, if the structure /Company/Department1 and /Company/Department2 and /Company/Department3 exists, and only departments 1 and 2 must be queried, then either the entire /Company OU should be specified (all the department OUs will be synchronized), or a specific filter must be devised that queries only those two OUs.

- Groups and users linked to them must exist within the same LDAP path, otherwise mismatched group/user combinations will be excluded from the synchronization, and appear as errors in the synchronization log. This typically occurs when AD groups are defined as CNs within an OU that point to users that are in fact defined in other OUs outside the scope of the LDAP path provided.

  For example, if the LDAP path is defined to link only to the /Company/Department1 OU, and within this OU the /Company/Department1/Team1 group points to users in /Company/Department2, this situation will arise. In this case, it is suggested to choose a user query that includes all OUs that are involved in the groups.

References

See the following web pages for additional samples of generic LDAP queries:

http:/www.petri.co.il/ldap_search_samples_for_windows_2003_and_exchange.htm

http://msdn2.microsoft.com/en-us/library/aa746475.aspx

http://technet.microsoft.com/en-us/library/aa996205.aspx

Data to import

Synchronization is performed for users. However, it is also possible to synchronize groups, and consequently, group user memberships.

For users to be synchronized, their "sn" and "sAMAccountName" attributes must be set in Active Directory. These map to Last name and Username, respectively.

You can import data directly from the OU or the container that is the target path. You can also retrieve data from the child containers by activating the Deep Search Mode.

Synchronization fields

The default synchronization fields are set as follows:

Users: System identifier
Groups: name (sn)

Retrieving LDAP data

Below is a table of correspondence between the key-entry fields for a user and the field names with LDAP. These mappings may be edited by selecting the **Edit mapping** button on the directory editing page.

Users

Field	LDAP default mapping
Username	sAMAccountName
Password	(none)
Name	sn
Firstname	givenName
Email	mail
Default time zone	(none)
Manager (must be a valid username)	manager
Phone	telephoneNumber
Mobile	mobile
Fax	facSimileNumber
Pager	pager
Office	physicalDeliveryOfficeName
Department	department
Company	company
Job title	title
Employee type	employee Type
Initials	initials
Title	personalTitle
Employee number	employeeID
Postal address	postalAddress
Zip code	postalCode
city	l
State/Area	st
Country	co
LDAP path	ADsPath
Display name	distinguisedName
Distinctive name	cn

Extended attribute 1	extensionAttribute1
Extended attribute 2	extensionAttribute2
Extended attribute 3	extensionAttribute3
Extended attribute 4	extensionAttribute4
Extended attribute 5	extensionAttribute5
System identifier	objectSid

Groups

Field	LDAP default mapping
Name	sAMAccountName
Description	Description
Email	mail
Group code	groupCode
LDAP path	AdsPath
Display name	cn
Distinctive name	DistinguishedName
System identifier	objectSid

Text

Overview

The purpose of the connector is to import users and groups using text files into a WorkflowGen directory.

Requirements

The TEXT connector requires three different text files:

- **User:** One text file that contains the data related to the users to synchronize.
- **Group:** One text file that contains the data related to the groups to synchronize.
- **Usergroup:** One text file that contains the relationships between the users and the groups according to the selected synchronization fields.

Data to be imported

Synchronization takes place for the users, but it can also be activated for groups. To do this, check the corresponding box in the synchronization configuration sheet.

Selecting files

Since files to be imported have a standard suffix, use Filepath and key in the path followed by the part that is common to the names of the three files.

Example:

If you decide to name your import "importWorkflowGen" and you have saved it to the "DRIVE:\Extract\" directory, you will need to have the "importWorkflowGen_USER.txt" file in this directory. If you want to perform group synchronization as well, you also need the "importWorkflowGen_GROUP.txt" and "importWorkflowGen_USERGROUP.txt" files. When setting the parameters for synchronization, once you have chosen the "Text" connector, enter "DRIVE:\Extract\importWorkflowGen" in "Filepath".

Text file names

Data import files must have suffixes as described in the following manner:

- The user file must end with "_USER.txt".
- The group file must end with "_GROUP.txt".
- The group user member file must end with "_USERGROUP.txt".

The rest of the file name must be the same for the three files.

Text file structure

Text files begin with a line listing each of the property names separated with a character that is defined as a constant in the connector file. Each line then corresponds to a record, such as a user, with the values also separated by the delimiting character. If a property is empty, it must nevertheless be delimited by the separating character. The default delimiter is " **;** " (semicolon).

Note: The " **,** " (comma) separator cannot be used on a server that uses this character as a decimal separator, such as a French server.

The group user member file only has two fields: synchronization fields for groups and for users. These fields are chosen in the **Synchronization module**. As well, it is possible to prefix the names of these fields in order to avoid cases where a field name for synchronizing users is the same as that for groups. These parameters are set in the **Configuration panel** of the **Administration Module** when setting the Active Directory synchronization values.

For example, if the user synchronizing field is "Username" and the field for the groups is name, the file must contain the "GROUP_sAMAccountName" and "USER_sAMAccountName" fields.

ADS path

With text files exported from Active Directory, the connector needs the LDAP path in order to allow it to rebuild the ADSPATH property for the users.

List of properties

The following is the list of properties that are needed for synchronizing users, with their equivalents in WorkflowGen. These mappings define the column names in the text file and may be edited by selecting the **Edit mapping** button in the directory editing page.

Users

Field	Text default mapping
Username	sAMAccountName
Password	(none)
Name	sn
Firstname	givenName
Email	mail
Default time zone	(none)
Manager (must be a valid username)	manager
Phone	telephoneNumber
Mobile	mobile
Fax	facSimileNumber
Pager	pager
Office	physicalDeliveryOfficeName
Department	department
Company	company
Job title	title
Employee type	employee Type
Initials	initials
Title	personalTitle
Employee number	employeeID
Postal address	postalAddress
Zip code	postalCode
City	l
State/Area	st
Country	co
LDAP path	(none)
Display name	(none)
Distinctive name	(none)
Extended attribute 1	(none)
Extended attribute 2	(none)
Extended attribute 3	(none)
Extended attribute 4	(none)
Extended attribute 5	(none)
System identifier	(none)

Groups

Field	Active Directory default mapping
Name	sAMAccountName

Description	Description

User groups

These are the required fields for the group user member file:

- Synchronization field name for groups (e.g. GROUP_ SAMAccountName)
- Synchronization field name for users (e.g. USER_ SAMAccountName)

Active Directory export text file

You can generate an export text file for user data by using the following command:

```
csvde –f file.csv –s SERVERNAME –d "OU=myOu,DC=mycompany,DC=com" –p subtree –r "
(objectClass=OrganizationalPerson)" –l
"ADsPath,cn,displayName,givenName,sn,sAMAccountName,mail,
telephoneNumber,mobile,pager,facSimileTelephoneNumber,physicalDeliveryOfficeName,department
,company, initials,title,employeeID,employeeType,postalAddress,postalCode,l,st,co,personalTitle"
```

In this case "SERVERNAME" is the name of the server hosting the directory, "file.CSV" is the name of the resulting text file, and "OU=myOu,DC=mycompany,DC=com" is the path to the container in which you want to put the list of users.

To execute this synchronization automatically, this data export process must be added to the task scheduler before the synchronization script is run. To add a task, see the administrator documentation for the **Synchronization module**. This method does not allow groups to be synchronized.

Examples of text files

User file

```
sn;givenName;sAMAccountName;mail;
"USER1-01";"Paul Smith";"psmith";"paul.smith@mycompany.com";
"USER1-02";"John Doe";"jdoe";"john.doe@mycompany.com";
"USER1-03";"Jack Ryan";"jryan";"jack.ryan@mycompany.com";
"USER1-04";"Ted Graham";"tgraham";"ted.graham@mycompany.com";
```

Group file

```
sAMAccountName;Description
"HR";"GRP1-01"
"IT";"GRP1-02"
```

User group file

```
GROUP_sAMAccountName;USER_sAMAccountName
"HR";"psmith"
"HR";"jdoe"
"IT";"jryan"
"IT";"tgraham"
```

Synchronization logs

Overview

Each synchronization, whether manual or automatic, is logged and available to be viewed by administrators only, in the **Synchronization logs** option in the **Directories** menu.

By default, 31 days of logs are maintained. This parameter can be changed by an administrator in the **Configuration panel**.

Each log provides the details of each synchronization action performed, including listing all users and groups added, modified, or deleted (archived). This also includes warnings (such as a missing email) and errors (such as a missing last name). Log files can be viewed or deleted.

Location of log files

Log files can be found on the WorkflowGen server under the "\wfgen" application folder at the following location:

\wfgen\App_Data\LogFiles\Dir\Synchro

Global information

Overview

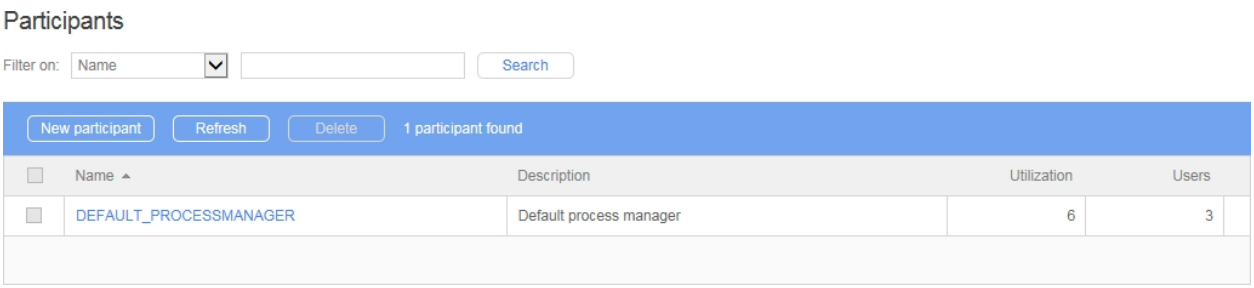
Global information relates to information that can be used by all processes:

- **Participants** represent the company's organization in the management and execution of processes.
- **Applications** are the definitions of workflow applications called by WorkflowGen to execute human or system actions.
- **Categories** are keywords associated with processes for search and sort purposes in the user portal only.

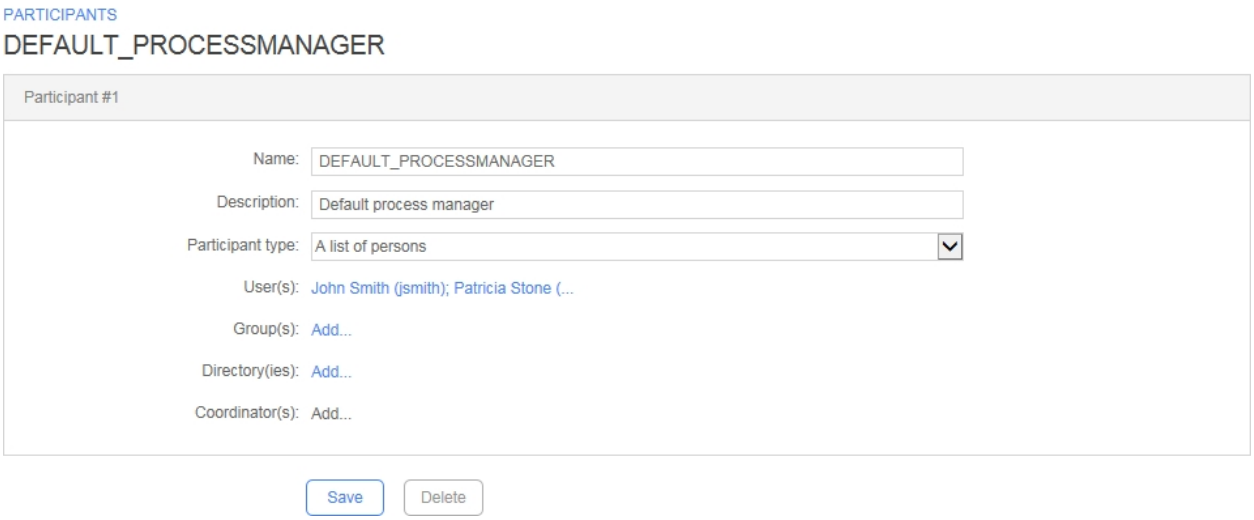
Global information can only be managed by users with a WorkflowGen administrator profile.

Participants

Participant list



Participant screen



Menu banner

Links	Remarks
New participant	Displays a blank participants form to add a new delegation
Refresh	Refreshes the participant list displayed

Filters

Filter on *	Remarks
Name	Filters by participant name
Description	Filters by participant description

* A filter can be applied to a part of a field.

Participant list

Columns	Remarks
Name	Participant's name A link displays the participants form in edit mode.
Description	Participant description
Utilization	Number of processes the participant belongs to, added to the number of files the participant is a manager of
Users	Number of potential users of the participant

Participant form

Fields	Remarks
Name	**Required field** Unique identifier for the participant, must respect nomenclature and be limited to 30 characters
Description	**Required field** Participant description limited to 255 characters
Participant type	**Required field** Type of participant defining possible associations to the directory: • Person • List of persons • List of persons with coordinator(s)
User(s)	List of users associated to a participant A link allows associated users to be added or deleted.
Group(s)[1]	List of groups associated to a participant A link allows associated groups to be added or deleted.
Directory(ies)[1]	List of directories associated to a participant A link allows associated directories to be added or deleted.
Coordinator(s)[2]	List of coordinators associated to a participant A link allows associated coordinators to be added or deleted.

1. Accessible only to participants of the **List of persons** and **List of persons with coordinator** type.
2. Accessible only to participants of the **List of persons with coordinator** type.

Directory associations

Fields	Remarks
Name *	Filters by person's name
Available	List of possible associations to the directory
Selected	List of existing associations to the directory

* Visible only if associated with a user or a coordinator and if the number of users in the database is higher than the limit set by the software administrator.

A **Person** type participant is associated with a single user.

A **List of persons** type participant is associated to one or more users and/or groups and/or directories.

A **List of persons with coordinator** type participant is associated with one or more coordinators, and to one or more users and/or groups and/or directories.

When adding users, groups, and directories to a participant, note that the list is ***cumulative*** in that adding 3 users, 2 groups, and 4 directories will result in a list of users that contain the sum of those users, groups, and directories.

A group or directory does not need to be specific to add users that belong to those groups or directories; adding those groups or directories will result in adding ***all*** the users that are part of those groups and directories to the participant list.

Changing the participant type

The following matrix shows the conditions allowing a change to a participant type.

		New Type		
		Person	List of persons	List of persons with coordinator
Current Type	Person		The participant is not used in a process action	The participant is not used in a process action
	List of persons	A single user is associated with the participant The participant is not used in a process action		Add at least one coordinator
	List of persons with coordinator		The participant is not used in a process action where the assignment is made by the coordinator	

Deleting a participant

A participant cannot be deleted if the person (or persons) is part of a process or is a process/folder manager.

Applications

Application screen

APPLICATIONS

FDFTOXML

Application #9

Name: FDFTOXML

Description: Fdf Transformation

Type: Web Service

URL: /wfgen/wfapps/webservices/FdfToXml/service.asmx/Convert

Username: wfgen_admin

Password:

Encoding: Default (application/x-www-form-urlencoded)

Parameters: IN:FORMAT;IN:RESULT_FILEEXT...

Default application: ☐ Application is selected by default

Active: ☑ Application can be used in processes

XML schema: ◉ ADO Recordset ○ WorkflowGen

Schema definition: ☑ Embed schema definition in the xml

Save Delete

Menu banner

Links	Remarks
New application *	Displays a blank application form to add a new application
Refresh	Refreshes the displayed application list

Filters

Filter on *	Remarks
Name	Filters by application name
Description	Filters by application description

* A filter can be applied to a part of a field.

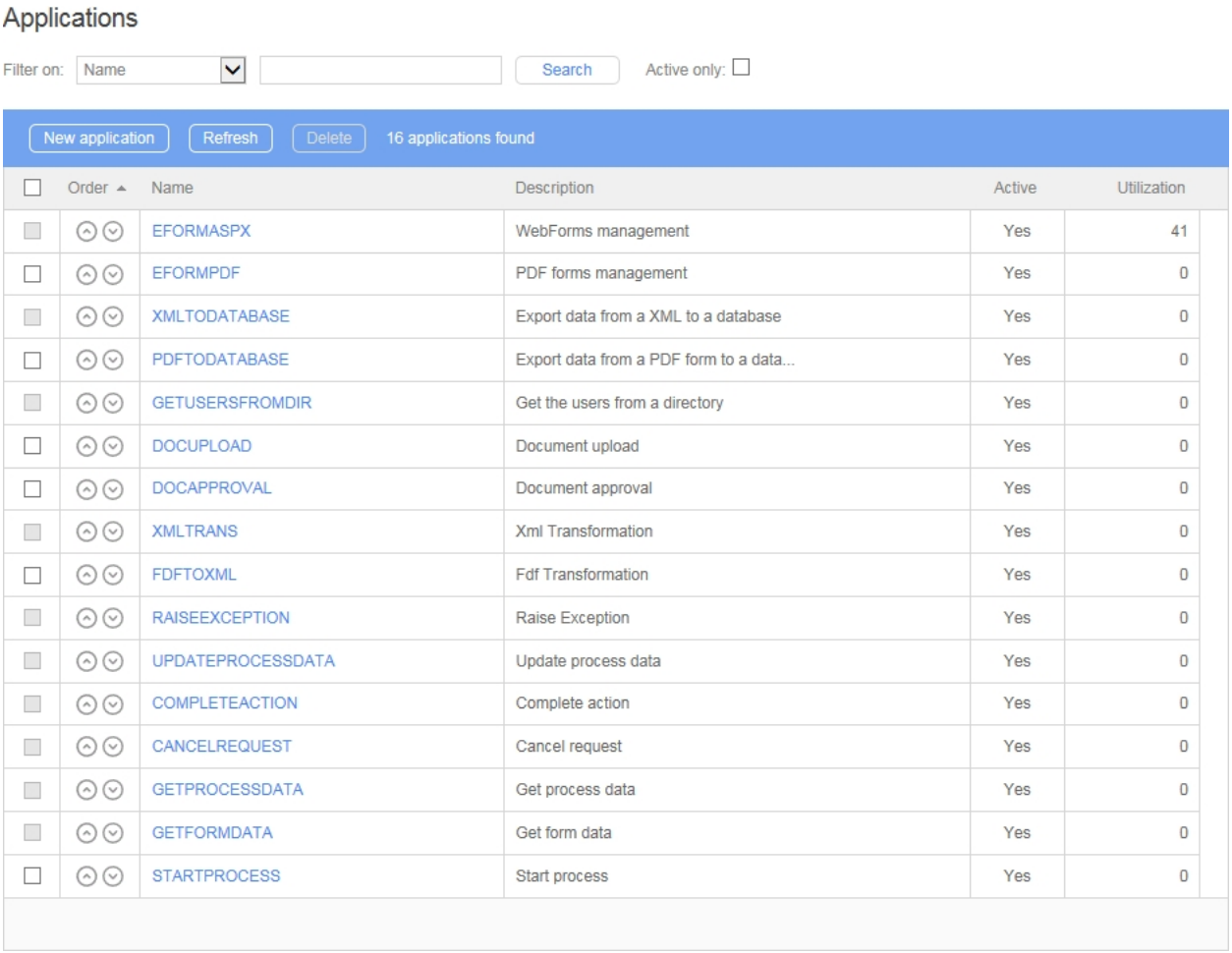
External filters	Remarks
Actives only	Displays active applications only

Application form

Fields	Remarks
Name	**Required field** Unique identifier for the application; must respect nomenclature and be limited to 30 characters
Description	**Required field** Application description limited to 255 characters
Type	Application type: • Assembly • Asynchronous Web Procedure • WCF Service • Web application • Web procedure • Web service
URL	**Required field** Both the relative or absolute URL of the application will work
WSDL	The WSDL URL to define a WSDL-based web service (if applicable) See **WSDL web services** on page 83 for details on WDSL-based web services.
Username *	Username to be used if an authentication is required to access the application's URL
Password *	Password to be used if an authentication is required to access the application's URL
Encoding	Type of data encoding to be used when the application returns to WorkflowGen: • Default (application/x-www-form-urlencoded) • Upload (multipart/form-data) • application/xml; charset=UTF-8
Parameters	Application parameters A link displays the parameters form in edit mode.
Default application	If checked the application is the default one
Active	If checked the application is active
XML schema	Choose between an ADO recordset or WorkflowGen schema types
Schema definition	If checked the schema will be embedded inline in the XML

* Only needed by the web procedures and the web services.

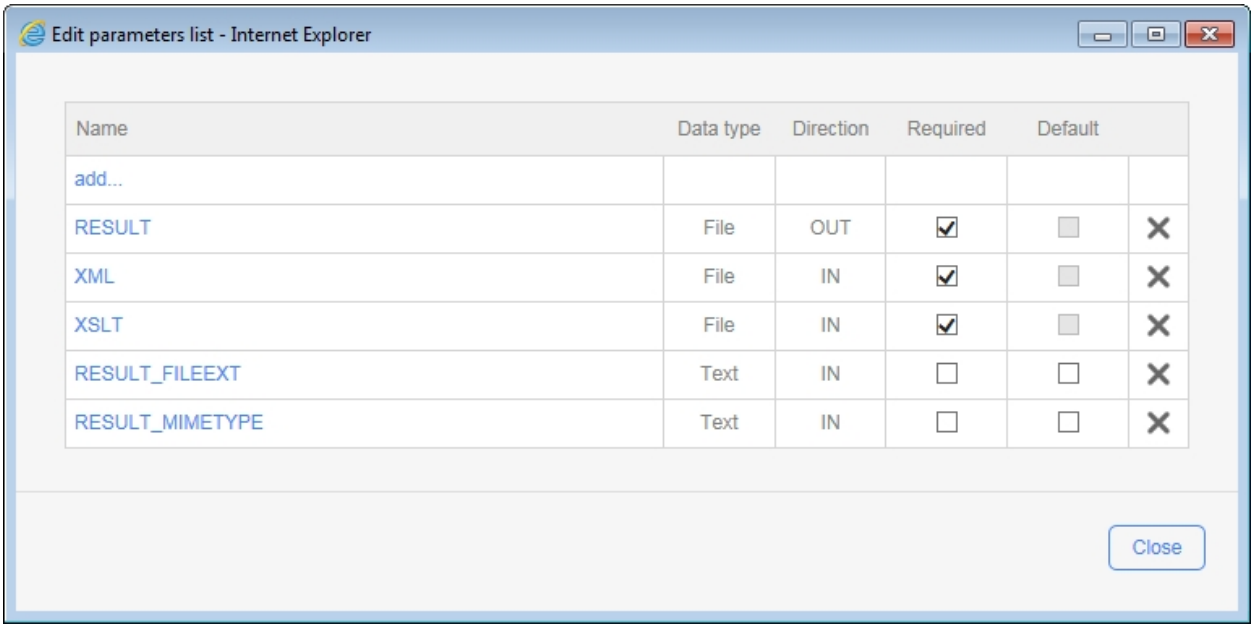
Application list screen



Application list

Columns	Remarks
Order	Display the application in order list
Name	Application name A link displays the application form in edit mode.
Description	Application description
Active	Application is active
Utilization	Number of actions in which the application is used

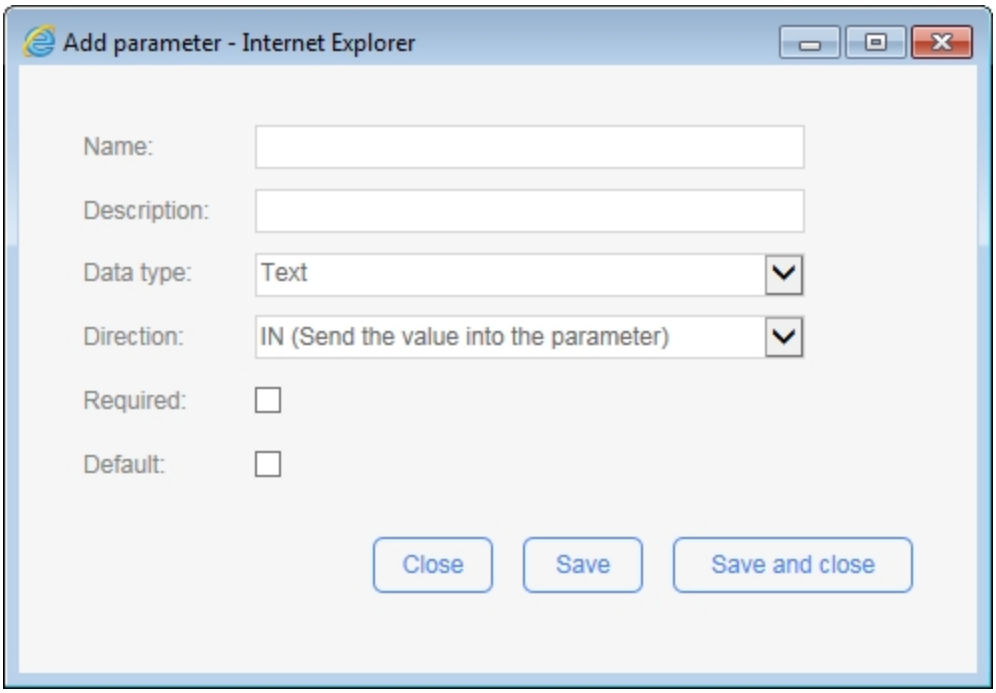
Edit parameters list screen



Columns	Remarks
Name	Application parameter name
Data type	Application parameter data type
Direction	Application parameter direction
Required	Required parameter
Default	Optional parameter; displays the parameter in the parameter list of the actions based on the current application by default
Deletion *	Link to delete the application parameter

* The delete link is identified by an **x** visible only if the application is not used by a process action.

To add a parameter, click the **Parameters** link on the **Edit application** screen, then click **Add** on the **Edit parameters list** screen.



Add application parameters

Fields	Remarks
Name	**Required field** Application parameter name
Description	**Required field** Application parameter description
Data type	Application parameter data type: • Text • Numeric • Date/Time • File
Direction	Application parameter directions: • IN: Input • OUT: Output • INOUT: Input/Output
Required	Is this parameter required? • Yes (disables the default property) • No (enables the default property)
Default	If checked, the parameter is displayed in the parameter list of the action based on the current application

Deleting an application

An application cannot be deleted if it is used in a process.

Deleting a parameter

A parameter cannot be deleted if its application is used in a process.

Assembly application

This application allows you to declare a .NET class method as a workflow application. It is the fastest solution to develop a custom workflow application (compared to web services). The execution performance is exceptional because WorkflowGen instantiates the Assembly directly without network communication or web service authentication.

Example:

1. Copy a sample .DLL assembly into a WorkflowGen bin folder.
2. In the **Administration Module**, click **Applications** and then **New application**.
3. Enter the following information in the appropriate fields:
   i. **Name:** SAMPLE_GET_STRING
   ii. **Description:** Returns a string with a **!** (exclamation point)
   iii. **Type:** Assembly
   iv. **Assembly full name or path:** WorkflowAppSample
4. Click **Save**.

   Class full name: Select "WorkflowApp.Test"
   Method: Select "GetString"

These parameters are automatically generated:

IN message (Text)
OUT RETURN_VALUE (Text)

You can now use this workflow application in your process.

WCF service application

This application allows you to declare a WCF service client proxy .NET class method as a workflow application.

Example:

1. In the WorkflowGen **Administration Module**, click **Applications** and then **New application**.
2. Enter the following information in the appropriate fields:
   i. **Name:** WCFSERVICE_SAMPLE_GET_STRING
   ii. **Description:** Returns a string with a " **!** " (exclamation mark)

iii. **Type:** WCF service

iv. **Assembly full name or path:** WorkflowAppWCFSampleTest

4. Click **Save**.

Class full name: Select "workflowAppWCFSampleTest.ServiceClient"
Method: Select "GetString"

These parameters are automatically generated:

IN message (Text)
OUT RETURN_VALUE (Text)

You can now use this workflow application in your process.

Name: WCFSERVICE_SAMPLE_GET_STRING

WSDL web services

Overview

WorkflowGen supports web services based on the SOAP standard. This means that web services can now be integrated into WorkflowGen to be used by process actions, without the need to program them. WorkflowGen can now use predefined web services and reference them by using their WSDL (Web Services Description Language) file.

A URL to the WSDL file defining the web service is required to display the available web methods that can be called by WorkflowGen. Once the WSDL is referenced and saved (in the WorkflowGen application definition), and one of its defined web methods are selected, the WorkflowGen application parameters are automatically generated.

The data types of the parameters are mapped to the corresponding WorkflowGen data types (numeric, text, datetime). All complex XML types are mapped to a WFG file data.

Public web services

Public web services are web services that are available for public re-use. To reference one as a WorkflowGen Application, follow the example below.

Create a WSDL web service

1. In the **Administration Module**, create a new WorkflowGen application and define the following:

i. Name

ii. Description

iii. Type: Web service

iv. Username: [a valid WorkflowGen administrator]

v. Password: [the valid password for the username]

2. Reference a web service and WSDL: define a URL to a valid web service and to its related WSDL file and save the application.
   - URL example: http://quickstarts.asp.net/QuickStartv20/webservices/Samples/MathService/vb/Server/MathService.asmx
   - WSDL example: http://quickstarts.asp.net/QuickStartv20/webservices/Samples/MathService/vb/Server/MathService.asmx?WSDL
3. Select the web method to use. The WSDL defines which web methods are available to be used. Once you select a web method and save the application, the associated parameters are automatically mapped and the application may now be used by process actions.

Private web service example

Overview

Private web services are web services that are not available for public re-use. They generally use a secure URL that requires the proper authentication. To reference one as a WorkflowGen application, follow the example below.

Create a WSDL web service

1. In the **Administration Module**, create a new WorkflowGen application and define the following:
   i. Name
   ii. Description
   iii. Type: Web service
   iv. Username: [a valid WorkflowGen administrator]
   v. Password: [the valid password for the username]
2. Reference a web service and WSDL: define a URL to a valid web service and to its related WSDL file and save the application.

   The examples below demonstrate the use of a web service located on a SharePoint 2007 web site. In this example, the web service is called "lists.asmx". For more information, see http://msdn2.microsoft.com/en-us/library/ms445760.aspx.

   - URL example: http://myspsserver/_vti_bin/lists.asmx
   - WSDL example: http://myspsserver/_vti_bin/lists.asmx?WSDL
3. Select the web method to use.

   The WSDL defines which web methods are available to be used. Once you select a web method and save the application, the associated parameters are automatically mapped and the application can now be used by process actions.

WSDL web service action: other parameters

Overview

WorkflowGen will create some extra parameters when referencing a WSDL. Other parameters can also be used in addition to those already defined in the WSDL file.

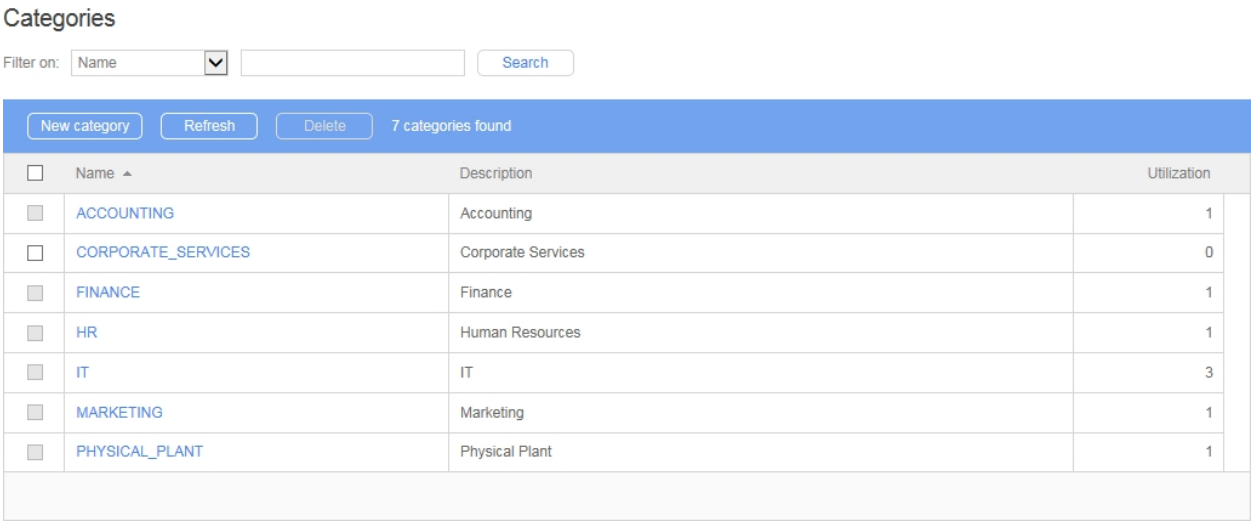
Other parameters

The other parameters that are defined by WorkflowGen are:

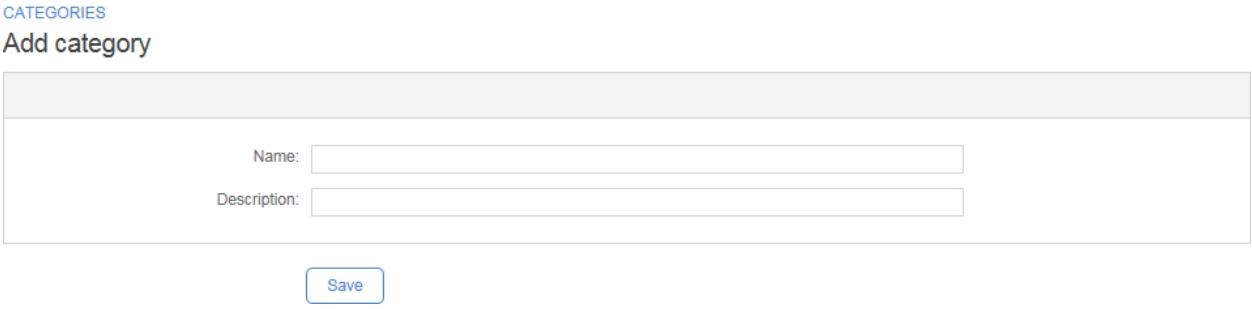
- **RETURN_VALUE:** If the web service returns a value, WorkflowGen will automatically add an OUT parameter.
- **WFG_WS_URL:** Specify a web service URL to override the predefined URL.
- **WFG_WS_USERNAME:** Specify a username to override the predefined username.
- **WFG_WS_PASSWORD:** Specify a password to override the predefined password.

Categories

Category list



Category screen



Menu banner

Links	Remarks
New category	Displays a blank categories form to add a new category
Refresh	Refreshes the displayed category list

Filters

Filter on *	Remarks
Name	Filters by category name
Description	Filters by category description

* A filter can be applied to a part of a field.

Category list

Columns	Remarks
Name	Category name A link displays the category form in edit mode.
Description	Category description
Utilization	Number of processes listed in the category

Category form

Fields	Remarks
Name	**Required field** Unique identifier for the category; must respect nomenclature and be limited to 30 characters
Description	**Required field** Category description limited to 255 characters

Deleting a category

A category cannot be deleted if used by a process.

Global Lists

Overview

The **Global Lists** module allows authorized users to manage data lists from the **Administration Module** to be used with web forms.

Global Lists management provides a solution to manage and centralize data to fill dropdown lists on your web forms.

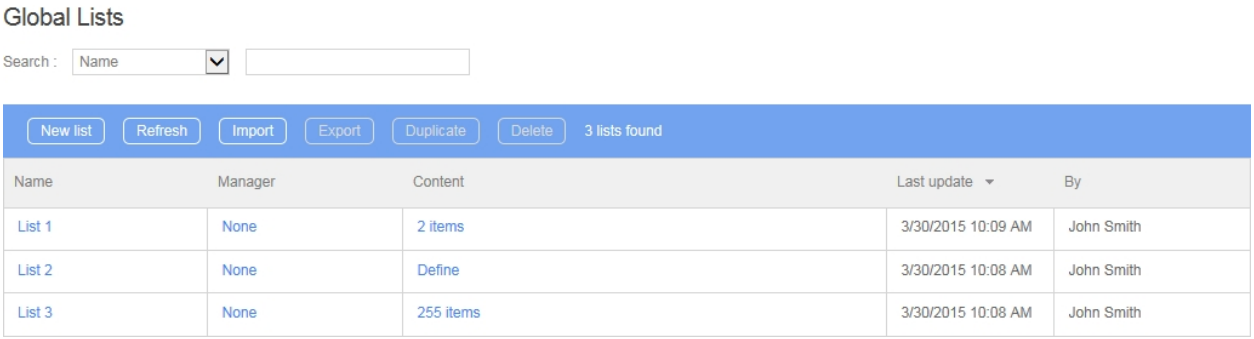
There is no limit to the number of items in a global list, which can have up to 20 columns. Good user interface performance depends on the number of cells (items × columns), and is optimized for at least 5000 cells (for example, 1000 items with 5 columns or 250 items with 20 columns).

The supported data types for columns are text, numeric, or date.

The data that populate a **Static global list** come from within the user interface.

The data that populate a **Dynamic global list** come from a database. The content of the list is updated each time the web form is executed.

Global Lists screen



Menu banner

Links	Remarks
New list	Displays a blank categories form to add a new category
Refresh	Refreshes the global list
Import	Imports data from CSV or XML format into an existing list or as a new list This is useful to quickly fill data from file or copy/paste from clipboard.
Export	Exports data to CSV or XML file This is useful to export data for multiple environments (development, production, test, etc.).

Duplicate	Duplicates a global list
Delete	Delete a global list

Filters

Search	Remarks
Name	Filters on the list's name
Manager	Filters on the name of the manager of the list
Update date	Filters on the update date (period from/to)
Updated by	Filters on the last user who has updated the list (lastname or firstname).

Global Lists list

Columns	Remarks
Name	Name of the list
Manager	None (no restriction) or the global participant authorized to update the list You can restrict the access to the global list to user(s) of a global participant.
Content	Number of items or a link to define the global list form
Last update	Date and time of the last update
By	Last user who has updated the list

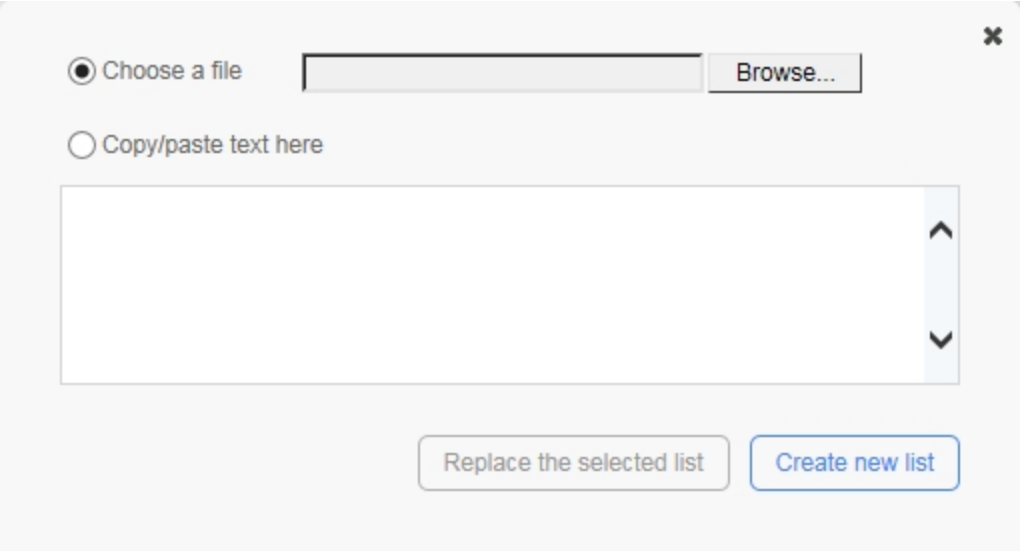
Global Lists form

Click the **Define** link to define or edit a global list.

Tabs	Remarks
Items	Add static items into the list Items can be sorted by value or descriptive text. Translation languages can be chosen from a drop-down list.
Columns	Add columns (limited to 10 columns) Supported data types are: • Text • Numeric • Date By default, columns are Text (text data type) and Value (text data type).
Databind	Connection string to the bound database • Name of the connection string defined in the web.config file of WorkflowGen by the administrator • Connection string to a database • SQL query (SELECT command) to retrieve data

Import data

You can import data into a global list from a file or a copy of your clipboard. The supported formats are WorkflowGen Global List XML or CSV.



The CSV format must be as follows:

```
COL_NAME[,...n]
["TEXT|NUMERIC|DATE"[,...n]]
VALUE[ ,...n]
```

Examples:

Importing text-only columns

By default, columns are considered as text data types; therefore, if all columns are text data types, it is not necessary to specify the data types.

```
iso,country
AD,Andorra
AE,United Arab Emirates
AF,Afghanistan
AG,Antigua and Barbuda
AI,Anguilla
```

Importing with numeric and/or date data types

In this case, the second line is used to set the columns' data types.

```
Id,iso,Country
NUMERIC,TEXT,TEXT
1,AD,Andorra
2,AE,United Arab Emirates
3,AF,Afghanistan
```

```
4,AG,Antigua and Barbuda
5,AI,Anguilla
```

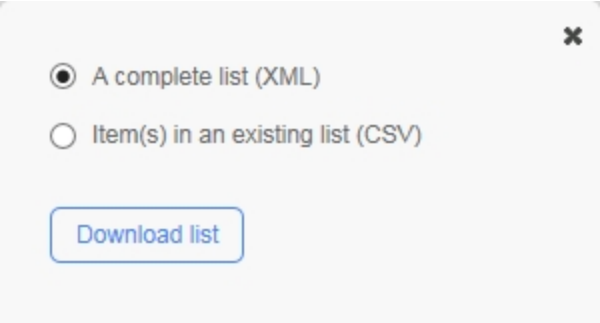
Importing with enclosed strings

To protect some data like double quotes, commas, etc., you can enclose the string with double quotes.

```
Id,Lastname,Firstname,Address,Birthday
NUMERIC,TEXT,TEXT,TEXT,DATE
1,DOE,John,"1111 N. Sample, Mt. Prospect, IL 60000","01/01/1980"
```

Export data

You can export data from a global list to a file. The supported formats are WorkflowGen Global List XML or CSV.



Security

All connection strings in "\wwwroot\wfgen\web.config" are available for use in Global Lists and the Form Designer except for the master database connection string. While the application tries to verify that user-supplied SQL queries used in these contexts are secure and contain only SELECT statements, you should also make sure that exposed connection strings are secured at the database level. This means that if you don't want a process manager or a Global List manager to be able to update or modify a certain database, the connection string should have read-only access to your database.

Keep in mind that process designers can also use any connection string that they have access to from the Form designer's code-behind editor. If you want to restrict a Global List manager's access to a connection string, while still allowing the process designer to use it, you should add the connection string to the WebForm application's "web.config" ("\wwwroot\wfgen\WfApps\WebForms\web.config").

Connection strings in the WebForms "web.config" are not exposed in the WorkflowGen UI, so for process designers to be able to use them, they must know the name of the connection string. This is also a convenient way to give different process managers access to specific connection strings.

Process definition

Overview

Processes are organized in folders administered by managers. Only one folder level is possible in WorkflowGen.

A folder is assigned to a global participant. The persons who are part of that participant are known as folder managers or process managers. A manager may be one or more persons. However, the participant type **List of persons with a coordinator** cannot be used for the purpose of assigning folder managers.

Managers have full access to the process definition of their processes, but not to other folders or other administration features.

Users with a WorkflowGen administrator profile have complete access to all folders and their associated processes.

A process can have several versions, but only one can be active at any one time for the purpose of launching new requests. Existing requests launched in prior versions continue to function with the older process definition until the requests are closed but the processes for those prior versions cannot, for the most part, be edited.

A process can be declared as a sub-process and then used in another process action as an independent or embedded sub-process.

A process is made up of the following components:

- Participants (e.g. requester, actor)
- Relevant data (e.g. form, agreement, amount, etc,)
- Actions (e.g. find information, validate, process, wait)
- Transitions (e.g. next actions, conditions)
- Assignment method (e.g. automatic, manual, etc.)
- Notifications (e.g. assignment, closing, etc.)

The definition of a process involves building a number of rules. To simplify implementation, WorkflowGen groups process definition into several sections:

Process information

Information related to process creation (status, version, etc.) and general parameters (archiving, notification upon closing, process lead time).

Participant

Global participants selected or process specific participants that will take on the roles of either a requester, actor or process supervisor.

Data

Data that are used by the process per request and that are relevant and necessary to carrying out the process workflow.

Form

WYSIWYG built-in form designer to create the forms used by the workflow.

Workflow

Workflow definition that is made up of actions and their associated transitions, conditions, and exceptions.

Full screen / Exit full screen

Display or quit the process definition full screen mode.

Report

Provides both an overview and details of all parameters used in the process, and also provides a description of any workflow design errors. As well, the report shows summary usage statistics on the process.

Test

Allow testing the process if the status is set to **In test**. To be able to select the **Test** link, the process/folder manager must be one of the requesters of the process.

Folder

Folder list screen

Folders

Filter on: Name Search

New folder Refresh Delete 6 folders found

Folder	Description	Process	
FINANCE	Finance Processes	1	Edit
MARKETING	Marketing	1	Edit
IT	IT Processes	3	Edit
MATERIEL_MANAGEMENT	Materiel Management Processes	1	Edit
ACCOUNTING	Accounting Processes	1	Edit
HR	Human Resources Processes	1	Edit

Menu banner

Links	Remarks
New folder	Displays a blank folders form to add a new folder
Refresh	Refreshes the folder list displayed

Filters

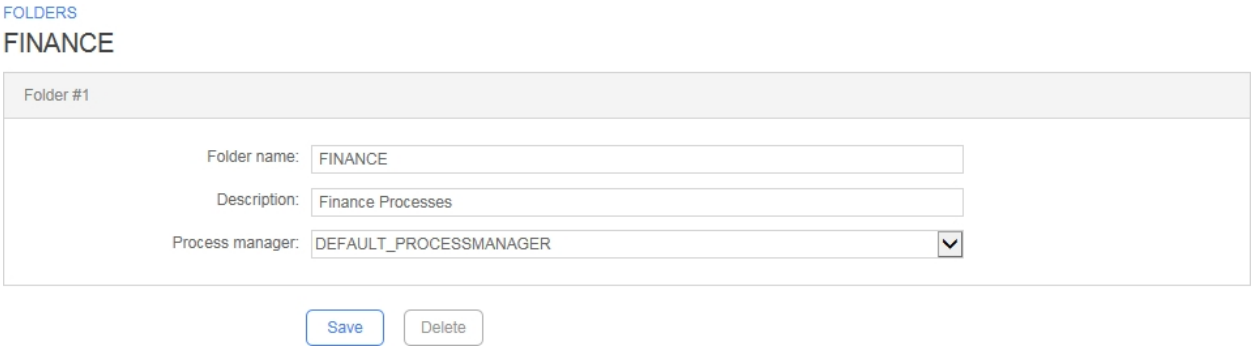
Filter on *	Remarks
Name	Filters by folder name
Description	Filters by folder description

* A filter can be applied to a part of a field.

Folder list

Columns	Remarks
Folder	Folder name A link displays the process list contained in the folder.
Description	Folder description
Process	Number of processes contained in the folder
Edit	Link to edit the folder information

Folder screen



Folder form

Fields	Remarks
Folder name	**Required field** Unique identifier for the folder; must respect nomenclature and be limited to 30 characters
Description	**Required field** Folder description limited to 255 characters

Process manager	**Required field** Name of the global participant managing the folder

Process manager

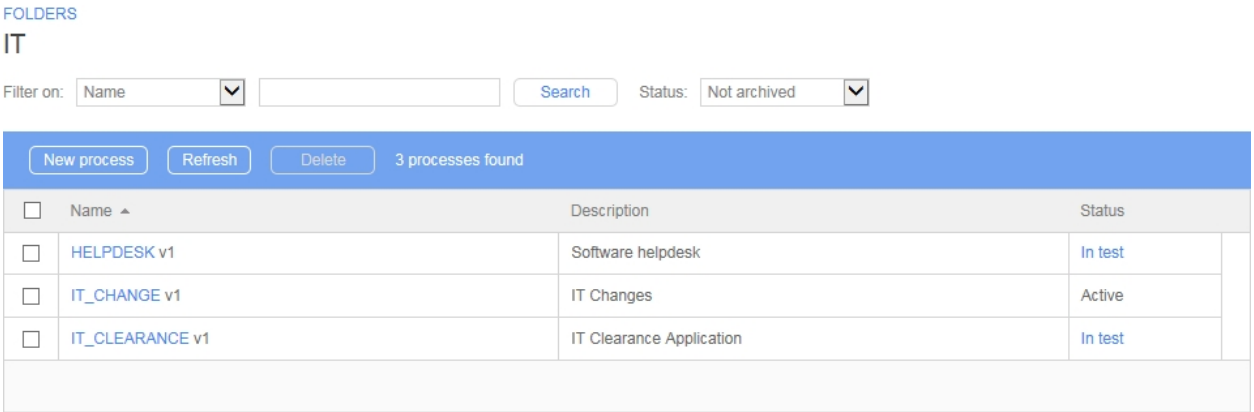
A process manager must be a **Person** or **List of persons** type global participant.

Deleting a folder

A folder cannot be deleted if it contains processes.

Process list

Process list screen



Menu banner

Links	Remarks
New	Displays a blank process form to where you can add a new process
Refresh	Updates the process list
Delete	Delete a process

Filters

Filter on *	Remarks
Name	Filters by process name
Description	Filters by process description

* A filter can be applied to a part of a field.

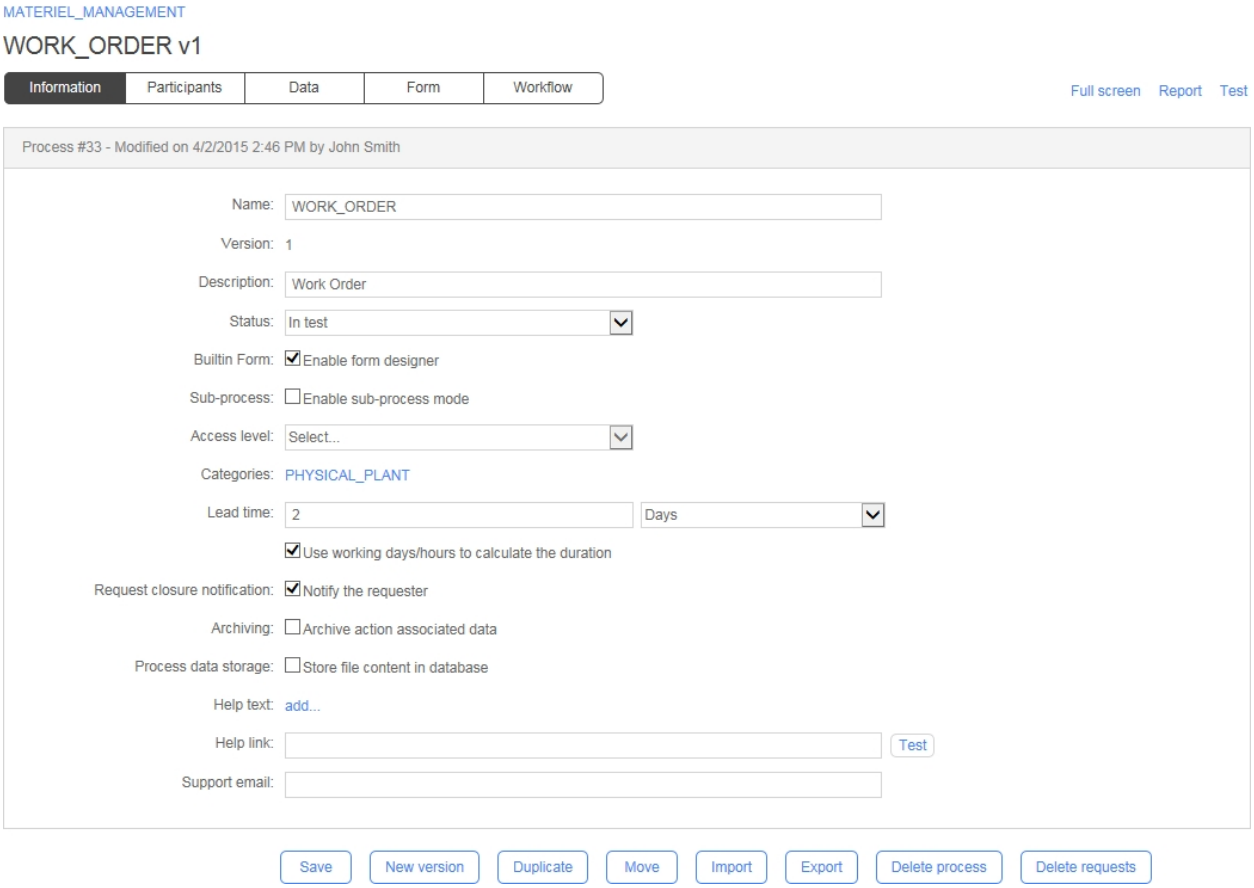
External filters	Remarks
Status	Filters by process status

Process list

Columns	Remarks
Name	Process name and version A link displays the process form in edit mode.
Description	Process description
Status	Process status

Process editing

Process information screen



Menu banner

Links	Remarks
Information	Displays the process form in edit mode
Participants	Displays process participant list

Data	Displays process data list
Form	Displays the form designer
Workflow	Displays process action list

Additional links

Links	Remarks
Full screen	Displays the contents of the different tabs in the menu bar in full screen
Report	Displays the process documentation and checks for the validity of the process definition
Test	Launches a new test request for this process

Process form

Fields	Remarks
Template	Selection of workflow template to be tested directly, customizable and usable in the "By default" list or in the "library" Default: • 2 levels approval • Parallel tasks • Simple approval • Simple request Library: • Expense report • Software helpdesk • Investment application • IT Changes • IT Clearance application • Leave application • New Product Creation • Work Order A customized workflow template can be created and deployed on the server with the following folder and file structure: \wfgen\App_Data\Templates\Processes\[language]\[folder name]\[process name]v[x].xml ***Example:*** \wfgen\App_Data\Templates\Processes \En\MyCompany\MY_PROCESSv1.xml **Note:** Only the processes with forms created with the built-in form designer can be used as workflow templates.
Name	**Required field** Unique identifier for the process; must respect nomenclature and be limited to 30 characters

Version	Process version number is read-only and automatically increments when creating new version
Description	**Required field** Process description limited to 255 characters
Status	Process status: • Active • In test • Under construction (default) • Archived
Built-in form: Enable form designer	Activate the built-in form designer
Sub-process: Enable sub-process mode	Determines if the process can be used as a sub-process by another process or as a stand-alone process
Access level	Required field if the sub-process option is checked If the process was declared as a sub-process, you can choose between two access levels: • Private: the process can only be instantiated by a parent process • Public: the process can be launched manually from the user module or instantiated by a parent process or an external application
Categories	Process categories list The **Add** link allows categories to be added or removed for the process.
Lead time	The amount of time before the process is considered late Units: • Years • Months • Days (takes only working days into account) • Hours (takes working days and hours into account) • Minutes (takes working days and hours into account) • Seconds (takes working days and hours into account) You can choose the way lead time will be calculated enabling or disabling the **Use working days/hours to calculate the duration** option.
Use working days/hours to calculate the duration	Calculate duration based on office hours
Request closure notification: Notify the requester	Send an email to the requester of the process upon closing the process (unchecked by default)
Archiving: Archive action associated with th data	Save the result of each request action at each step of the process (unchecked by default) If this option is not activated, all of the action history data and files are deleted once the request is closed and only the final data and files will be stored.
Process data storage	Allow process file data (including attachments) to be stored in the database This allows you to perform online WorkflowGen data backup without interrupting service (WorkflowGen users can continue to work during the backup).

Help text	Process help text in the user module; the **Add** link allows this text to be edited
Help link	URL of an external help document on the process, visible in the user module
Test	Test the **Help** link in a new browser window
Support email	Email for process support which will be displayed in the user module

Process actions

Functions	Remarks
New version	Creates a new version during process development This also allows the capability to create a new version from an XPDL definition file. The version number found in the XPDL will be kept if the version number was not already used for the current process; otherwise, it automatically increments.
Duplicate	Duplicates the current process definition as a new process
Move	Allows the process to be moved into a new folder
Export	Allows the process to be exported as an XPDL file
Import	Allows the process to be created from an XPDL file
Delete requests	Displays the dialog box for deleting requests

Deleting requests

Fields	Remarks
Request type	Type of requests to delete: • All • In test • Real (active)
Request status	Status of requests to delete: • All • Open • Closed • Closed – completed • Closed – cancelled
Launching period	Defines the launching period for requests to be deleted from Icons display a calendar allowing the date to be chosen.
Request number	Request numbers to delete (separated by commas)

Deleting a process

Only a process manager or an administrator can delete a process. Deleting a process causes all of the associated requests to be deleted.

If the process has "real" (active) requests, only the administrator can delete the process. This is allowed only if the process is not used as a sub-process by actions of another process.

Deleting process requests

Only the process/folder manager or administrator can delete requests that are associated with a process in test mode.

Only the administrator can delete requests that are associated with an active process.

Operational restrictions on active and archived status processes

If the process is active, modifications on it are restricted to the following:

- Modify process status
- Modify process categories
- Modify text, link, or support email of the process and actions
- Delete the process
- Create a new version of the process
- Duplicate the process
- Delete associated requests
- Modify which users are associated with the process participants from the directories
- Modify data visibility (but not security)

If the process is archived, modifications on it are restricted to the following:

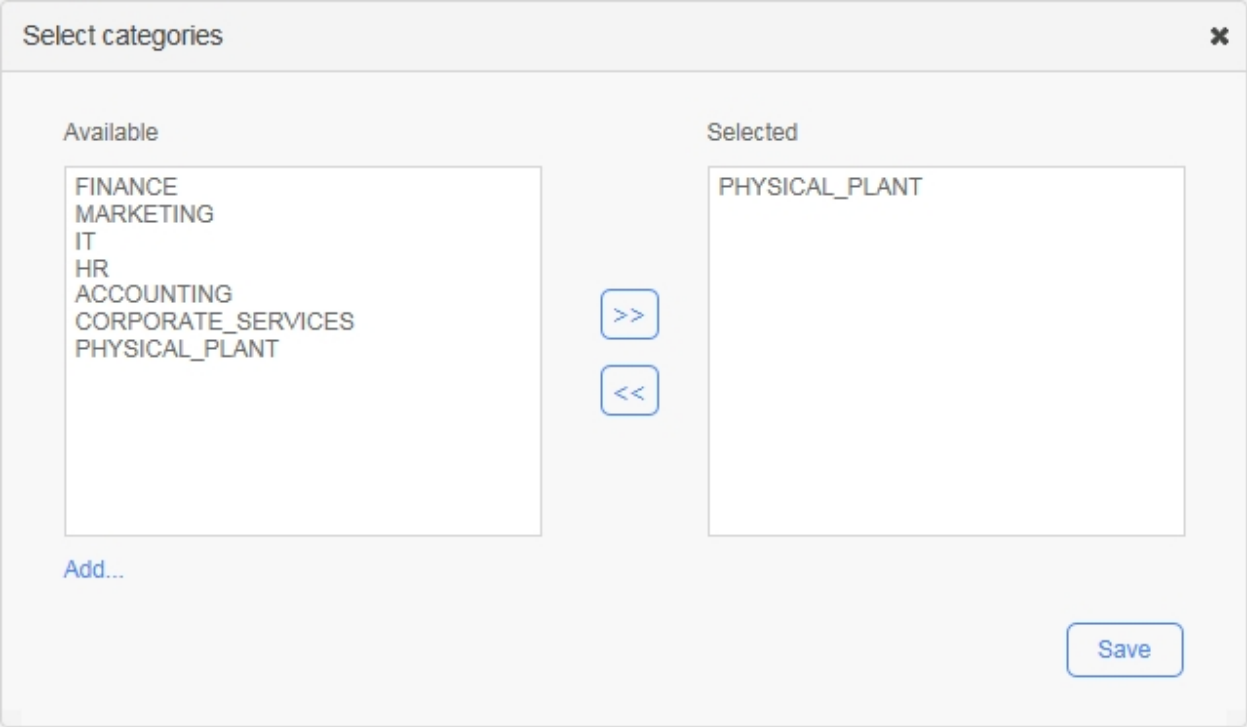
- Delete the process
- Create a new version of the process
- Duplicate the process
- Delete associated requests
- Modify which users are associated with the process participants from the directories
- Modify data visibility (but not security)

Activating a process causes a previous active version to be archived. Current/ongoing requests will continue to use the process version that was used when they were launched.

Folder changes

Only a WorkflowGen administrator can move a process from one folder to another. This does not affect the end users, but will affect which process/folder managers may then access the process.

Process categories



Area / Actions	Remarks
Available	Available categories
Selected	Selected categories
Add …	Link to a simple add category screen
Click **>>** or double-click an item in the **Available** list	Add selected categories from the **Available** list to the **Selected** list
Click **<<** or double-click an item in the **Selected** list	Remove selected categories from the **Selected** list
Save Button	Saves updates
Close Button	Closes the window

Exporting and importing XDPL process definitions

Only a WorkflowGen administrator or process/folder manager can export and import a process as an XPDL file.

Exported process elements

Elements	Description
Process Information	All process general information
Participants	All participants information
Data	All data information

Form	All form data
Workflow	All workflow actions information

Imported process elements

Elements	Description
Process Information	All process general information
Participants	All participants' information
Data	All data information
Form	All form data
Workflow	All workflow actions information

Note: As of version 5.1.7, any process that includes a Prior Overdue notification in an action cannot be imported into a version of WorkflowGen 5.1.6 or earlier due to incompatibilities.

Import rules for specific process elements

Fields	Remarks
Process version	When creating a new process by importing an XPDL, the version number of the process in the XPDL will be used. When creating a new version of a process from the WorkflowGen database, the version number of the new process will have the latest version number. When creating a new version of a process from an XPDL file, the version number of the new process will have the version number in the XPDL file if the version number of the process hasn't been already used; otherwise the latest version number will be automatically incremented for the new process.
Process category	No category will be added to the process, if the category information is missing in the XPDL file. If the category doesn't exist in WorkflowGen, it will not be added to the process.
Process notification to requester on closed	The notification will be checked if the notification value is missing in the XPDL file or the value is set to "Y". If "N" is set as value in the XPDL file then the notification is unchecked.
Participant scope	See the next section, **Import rules for participants**.
Participant associated user(s)	No user will be added to the participant if the user information is missing in the XPDL file. If the user doesn't exist in WorkflowGen, it will not be added to the participant.

Participant associated group(s)	No group will be added to the participant if the group information is missing in the XPDL file. If the group of a directory doesn't exist in WorkflowGen, it will not be added to the participant.
Participant associated directory(ies)	No directory will be added to the participant if the directory information is missing in the XPDL file. If the directory doesn't exist in WorkflowGen, it will not be added to the participant.
Participant associated coordinator (s)	No coordinator will be added to the participant if the coordinator information is missing in the XPDL file. If the coordinator doesn't exist in WorkflowGen, it will not be added to the participant.
Data security	In the "allow access for specific participants" case, if the user doesn't exist in WorkflowGen, it will not be added to the access list.

Import rules for participants

The import rules for participants vary depending on whether they are global or process participants, whether or not a participant with the same name already exists, and whether the import is being performed by an administrator or by a process manager.

Import rules for participants with global scope

If a global participant with the same name as the global participant being imported exists:

- The existing global participant will be associated to the process being imported.
- The associations in the XPDL file will be added to the existing global participant if the **Import associations into existing global participants** option is checked; otherwise, the associations in the XPDL file will be ignored.

  Note: The **Import associations into existing global participants** option is always available to administrators, but is only available to process managers when **Restrict process managers from editing global participants** is set to **false**. For information on this, see **Security** in the Configuration Panel Administration section.

If a process participant with the same name as the global participant being imported exists:

- The participant will be created in the process scope.
- The associations in the XPDL file will be added to the new process participant.

If the participant does not exist:

- Only administrators can create new global participants. (Process managers can only create process participants.)

- The participant will be created in the global scope.
- The associations in the XPDL will be added to the new global participant.

Import rules for participants with process scope

If a global participant (in WorkflowGen) with the same name as the process participant being imported exists:

- The existing global participant will be associated to the process being imported.
- The associations in the XPDL file will be added to the existing global participant if the **Import associations into existing global participants** option is checked; otherwise, the associations in the XPDL file will be ignored.

  Note: The **Import associations into existing global participants** option is always available to administrators, but is only available to process managers when **Restrict process managers from editing global participants** option is unchecked in the **Security** section on the **Administration** tab of the **Configuration panel**.

If a process participant (in WorkflowGen) with the same name as the process participant being imported exists:

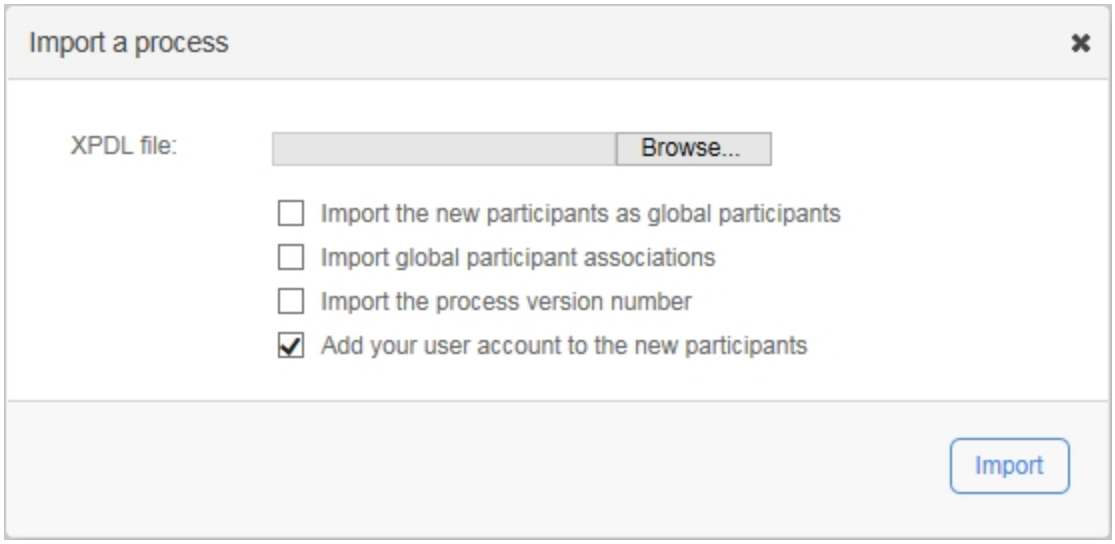
- The participant will be created in the process scope.

If the participant does not exist:

- The participant will be created in the process scope.

Import procedure

1. Click the **Import** button.

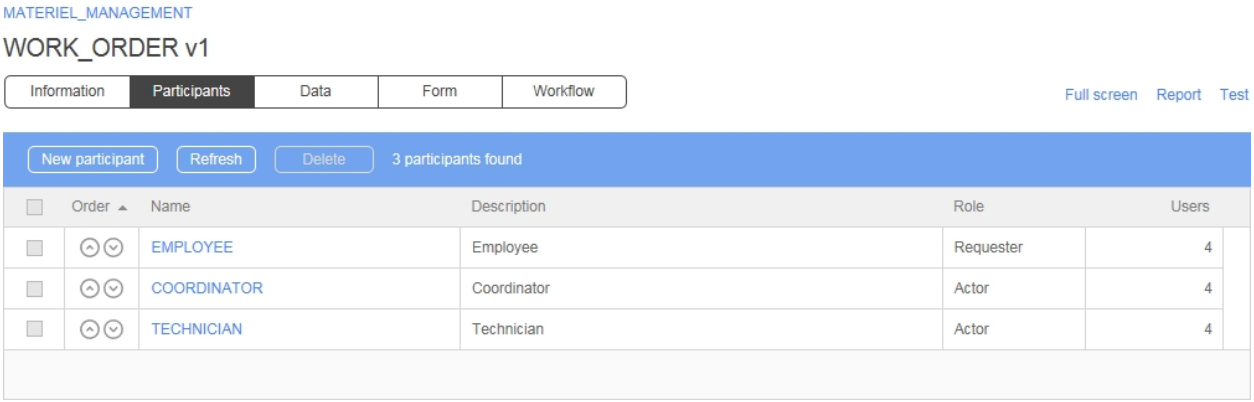


2. Browse for the XPDL file.

3. Select **Import new participants as global participants** to import the new participants as global participants (see the previous section, **Import rules for participants**).
4. Select **Import directory associations** to import users associated to existing participants.
5. Select **Import process version number** to import the version number.
6. Select **Add your user account to new participants** to add your user account as a user (and coordinator, if applicable) to participants representing more than one person (such as **A list of persons** or **A list of persons with coordinators**). This option is checked by default. Unchecking this option allows you to not add yourself as long as the participant has the minimum number of users and coordinators to be valid.
7. Click **Import** to start the import.

Process participants

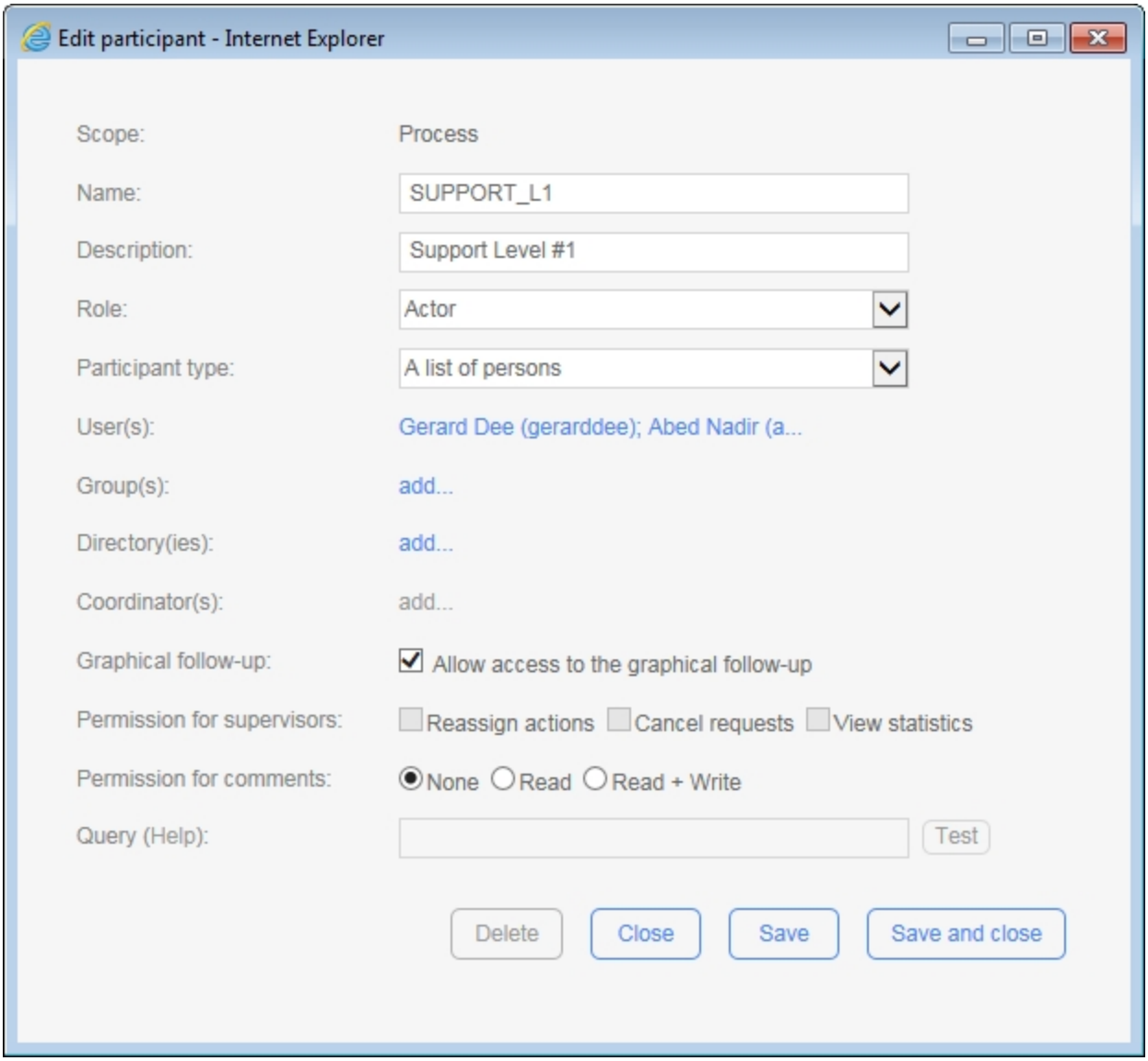
Process participant list screen



Participant list

Columns	Remarks
Order	Use the arrows to change the display order of the participant
Name	Participant name A link displays the participant form in edit mode. Click **New participant** to associate a global participant or to create a new process specific participant.
Description	Participant description
Role	Role of the participant in the process
Users	Number of users associated to the participant

Participant form



Fields	Remarks
Scope	Scope information: process or global
Name[1]	**Required field** Unique identifier for the participant (including global ones); must respect nomenclature and be limited to 30 characters
Description[1]	**Required field** Participant description limited to 255 characters
Role[2]	Role of the participant in the process: • Requester • Actor • Process supervisor[5]

Participant type[1]	**Required field** Participant type, define possible associations to the directory: • Person • List of persons • List of persons with coordinator(s)
User(s)	List of users associated with a participant A link allows associated users to be added or deleted.
Group(s)[3]	List of groups associated with a participant A link allows associated groups to be added or deleted.
Directory(ies)[3]	List of directories associated with a participant A link allows associated directories to be added or deleted.
Coordinator(s)[4]	List of coordinators associated with a participant A link allows associated coordinators to be added or deleted.
Graphical follow-up	Allow the associated users of the participant to view the graphical follow-up of the requests and the graphical help of the process from the user module.
Permission for Supervisors	• Reassign current actions • Cancel current requests • View statistics
Permission for comments	• **None:** The comments list will be hidden to the participant's associated users. • **Read:** The participant's associated users can only view the comments list • **Read + Write:** The participant's associated users can view and post new comments **Note:** The process supervisor will always have Read + Write permission.
Query (Help)	The supervisor limited scope feature allows for dynamic filtering of requests and actions for process supervisor participants only. A test link is available to validate the syntax of the supervisor limited scope query.

1. In read-only mode if the participant is of the global type.
2. Only one requester is allowed per process.
3. Accessible only to **List of persons** and **List of persons with coordinator** type participants.
4. Accessible only to **List of persons with coordinator** type participants.
5. Supervisor's participant does not have to be associated to an action.

Association with the directory

Fields	Remarks
Name *	Filters by person's name
Available	Lists possible associations to the directory
Selected	Lists current associations to the directory

* Visible only if associated with a user or a coordinator and when the number of users in the base is greater than the limit set by the software administrator.

A **Person** type participant can only be associated with a single user.

A **List of persons** type participant is associated to one or several users or groups or directories.

A **List of persons with coordinator** type participant is associated with one or several coordinators and to one or several users, groups or directories.

Deleting a participant

A participant cannot be deleted if the participant is being used in a process action.

Adding a global participant

A global participant can only be associated once to a process.

Process requester

There can only be one participant in the **Requester** role in a process.

Process supervisor

There can be multiple participants with the **Supervisor** role in a process, each with different security settings and different follow-up access specified via the limited scope query.

Changing the participant type

The matrix below shows the conditions allowing a participant type change:

		New Type		
		Person	List of persons	List of persons with coordinator
Current Type	Person		The participant is not used in a process action	The participant is not used in a process action
	List of persons	A single user is associated with the participant The participant is not used in a process action		Add at least one coordinator
	List of persons with coordinator		The participant is not used in a process action where the assignment is made by the coordinator	

Supervisor limited scope

Overview

The supervisor limited scope feature allows dynamic filtering of requests and action follow-up access for process supervisors. When a user is associated with a process supervisor participant with limited scope access enabled, the user's Portal homepage follow-up results, portlet RSS feeds, follow-up search results, and statistics reports will be shown only with accessible requests and actions. The supervisor limited scope is defined using criteria conditions in which the syntax is similar to SQL query criteria conditions and allows the usage of a user's profile and requests data information as filter criteria in the query definition.

Definitions

Process participant

The limited scope query can be defined for process participant with the process supervisor role only. You need to add a new process or edit a process supervisor participant and define the query in order to enable the limited scope feature. The query length is limited to a maximum of 255 characters.

If the query is empty, then the process supervisor has follow-up access to all requests and actions of the specific process.

Query help

To access online supervisor limited scope query definition help, click the **Query (Help)** link.

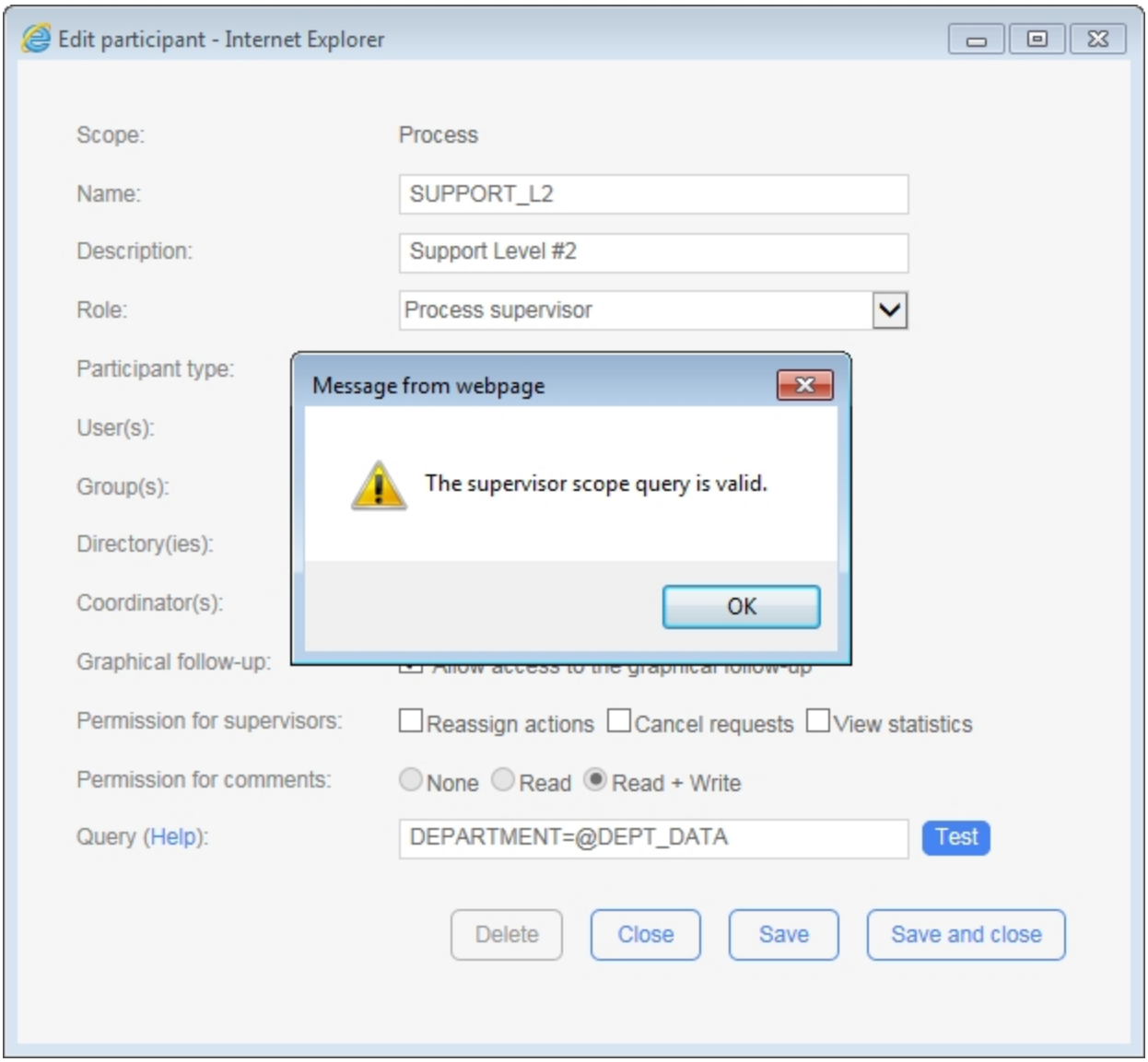
Supervisor scope query help - Internet Explorer

Available fields	Definition
LASTNAME	Last name
FIRSTNAME	First name
EMAIL	Email
PHONE	Telephone
MOBILE	Mobile
PAGER	Pager
FAX	Fax
OFFICE	Office
DEPARTMENT	Department
COMPANY	Company
JOBTITLE	Job title
PERSONALTITLE	Personal title
EMPLOYEENUMBER	Employee number
EMPLOYEETYPE	Employee type
POSTALADDRESS	Postal address
POSTALCODE	Zip code
CITY	City
STATE	State/Area
COUNTRY	Country

Available macros	Definition
{ISMEMBER(groupname)}	Member of the group 'groupname'
{ISMANAGER(username)}	Manager of the user 'username'
{ISSTAFFMEMBER(username)}	Staff member of the user 'username'

Query syntax validation

Click the **Test** link to validate the syntax of the supervisor limited scope query. Saving an invalid syntax query is not allowed.



Available fields and macros list for query

The fields and macros available for the supervisor limited scope query are listed below. The fields refer to the user's profile information. You can also use request data as a comparison value in criteria conditions for the query to filter the results.

Examples:

This example matches requests/actions for users is in the province of Quebec:

STATE = 'QC'

This example matches requests/actions for users who have an email ending with "advantys.com":

EMAIL LIKE '%ADVANTYS.COM'

This example matches users in my group:

{ISMEMBER(MYGROUPNAME)}

This example matches requests/actions for users whose department is equal to the value in request data:

DEPT_DATA:
DEPARTMENT = @DEPT_DATA

This example matches requests/actions for users whose city is equal to the value in request data MY_CITY and the value of request data MY_COUNTRY is CANADA:

CITY = @MY_CITY AND 'CANADA' = @MY_COUNTRY

Available fields	Definition
LASTNAME	Last name
FIRSTNAME	First name
EMAIL	Email
PHONE	Telephone
MOBILE	Mobile
PAGER	Pager
FAX	Fax
OFFICE	Office
DEPARTMENT	Department
COMPANY	Company
JOBTITLE	Job title
PERSONALTITLE	Title
EMPLOYEENUMBER	Employee number
EMPLOYEETYPE	Employee type
POSTALADDRESS	Postal address
POSTALCODE	Zip code
CITY	City
STATE	State/Area
COUNTRY	Country
EXTATT_1	Extended attribute 1
EXTATT_2	Extended attribute 2
EXTATT_3	Extended attribute 3
EXTATT_4	Extended attribute 4
EXTATT_5	Extended attribute 5

Available macros	Definition
{ISMEMBER(groupname)} *	Member of the group ‘groupname’
{ISMANAGER(username)} *	Manager of the user ‘username’
{ISSTAFFMEMBER(username)} *	Staff member of the user ‘username’

* Macros only support hardcoded static text as a parameter. Indicating a process data name is not supported. For example:

Valid: {ISMEMBER(my_group_name)}
Not valid: {ISMEMBER(@GROUP_NAME)}

Additional information

Comparison operators

You can use standard SQL comparison operators such as =, !=, <>, IS NULL, NOT IS NULL, LIKE, NOT LIKE, etc.

For better compatibility, it is recommended to use standard operators that are supported on the database hosting WorkflowGen.

Example:

This example matches requests/actions for users who are not located in Montreal:

CITY <> 'MONTREAL'

Logical operators and parentheses

You can use standard SQL logical operators such as AND and OR to combine multiple criteria conditions to a maximum of 255 characters length in the query. When there are many criteria conditions, it is strongly recommended to use parentheses to logically enclose them.

Example:

This example matches requests/actions for users who are located in either Toronto or CITY_DATA of CANADA:

COUNTRY = 'CANADA' AND (CITY = 'TORONTO' OR CITY = @CITY_DATA)

Text values

Text value in criteria conditions must be enclosed between single quotes. Double quotes are not supported for enclosure but are valid as a value. Wildcard characters such as " **%** " (percent sign) and " **_** " (underscore) can be used with the LIKE operator.

Example:

This example matches requests/actions for users whose last name starts with ‘AN’:

LASTNAME LIKE 'AN%'

Request data

You can use request data in criteria conditions to filter requests dynamically, since the request data value can be different from one request to another. To do this, call these request data in the criteria condition by prefixing them with the " **@** " (at) character.

Example:

This example matches requests/actions for users whose company is equal to the value of request data DATA1:

COMPANY = @DATA1

("DATA1" is an arbitrary convention; any request data name may be used.)

Note: Ensure that the requested data name used in the criteria condition has the exact name as the one defined in the WorkflowGen process data list.

Macros

You are also able to use macros in criteria conditions contained in the query. You just have to add an available macro in the criteria condition.

Example:

This example matches requests/actions for a user who is member of the Dev group, member of the WORKFLOWGEN directory and comes from Montreal:

CITY = 'MONTREAL' and {ISMEMBER(Dev)}

Note: It is very important to respect the syntax in the **Available macros** list.

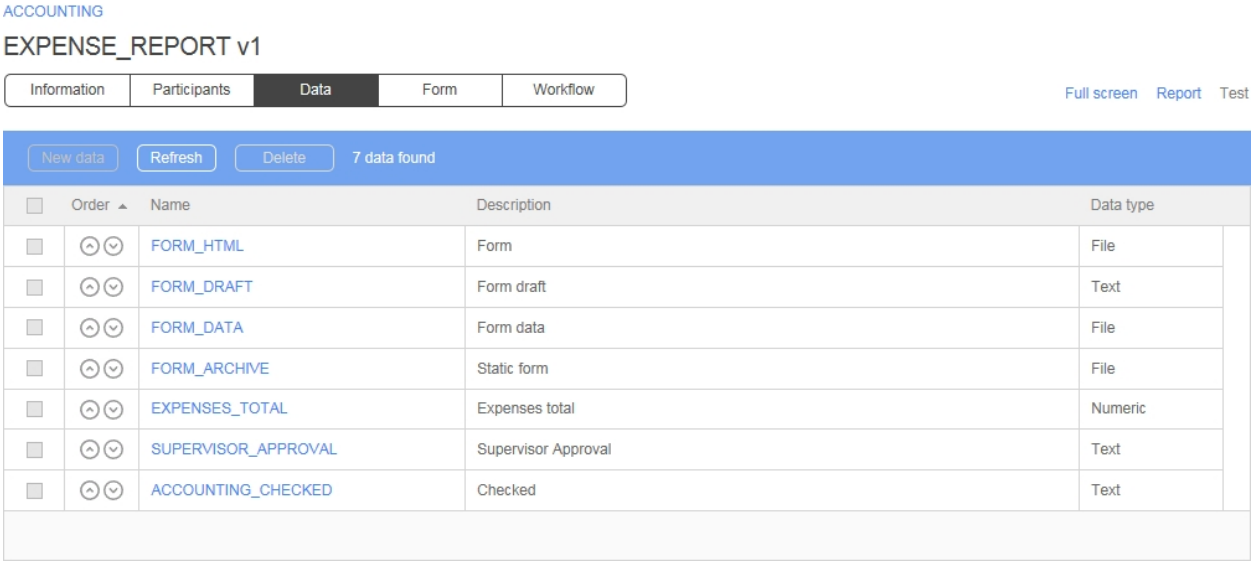
Performance impacts

In some cases, the WorkflowGen user portal is reduced in performance or has a slower response time when the limited scope is applied for a process supervisor with filtering queries that use LIKE operators and wildcard characters (" **%** ", " **_** ") in criteria conditions. The is due to a possible large amount of information that needs to be filtered by the limited scope engine for user accessible requests and actions.

We suggest testing the supervisor-limited scope query in a development environment before releasing for production.

Process data

Process data list screen



Data list

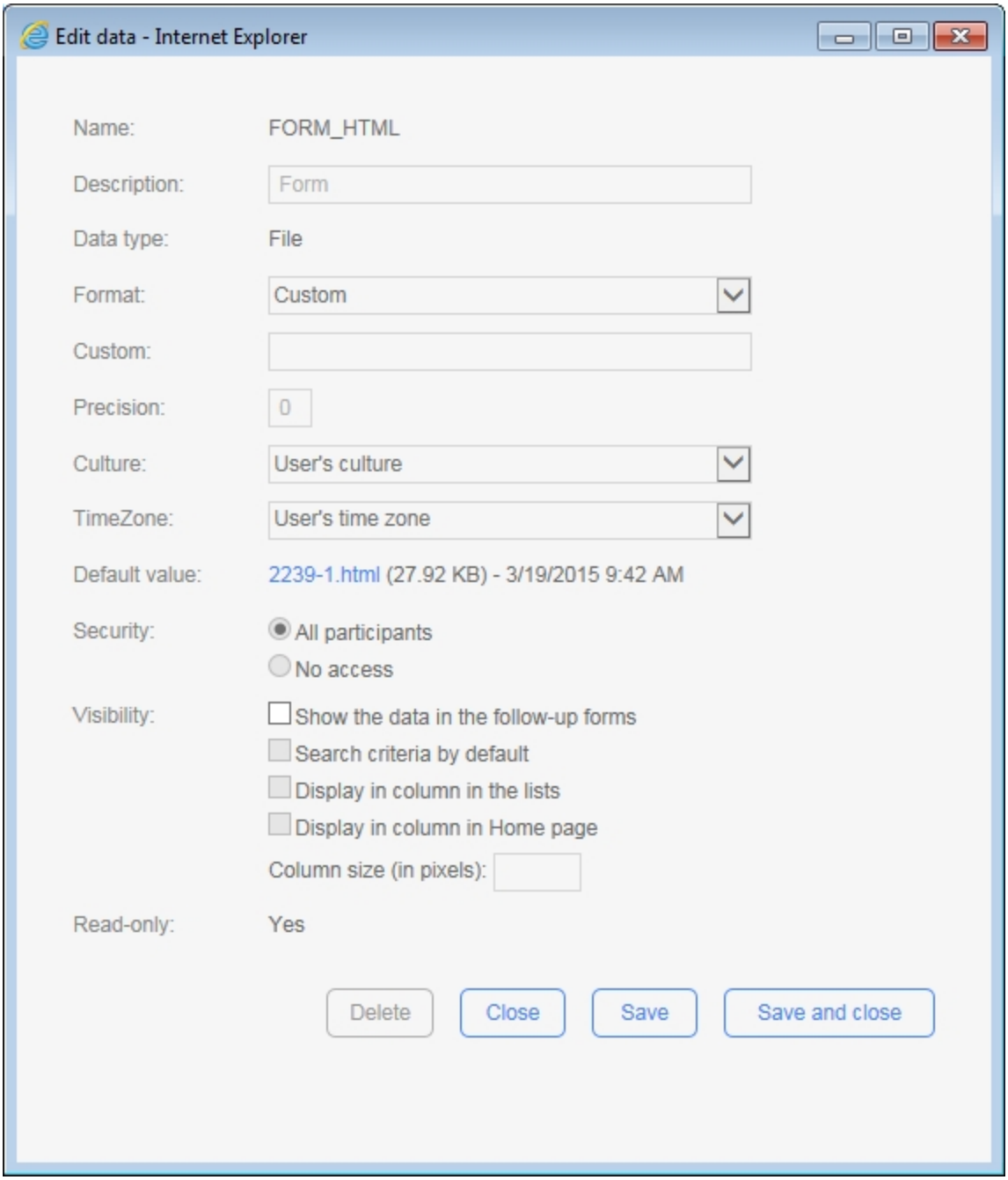
Columns	Remarks
Display order	The arrows allow the data display order to be modified. This can also be done by drag-and-drop. This affects the position of the data on the user module as well.
Name	Data name A link displays the data form in edit mode. To add new data, click **New data** to open a blank data form.
Description	Data description
Data type	Type of data
Direction *	Direction of the sub-process parameter

* Only displayed if the process was defined as a sub-process.

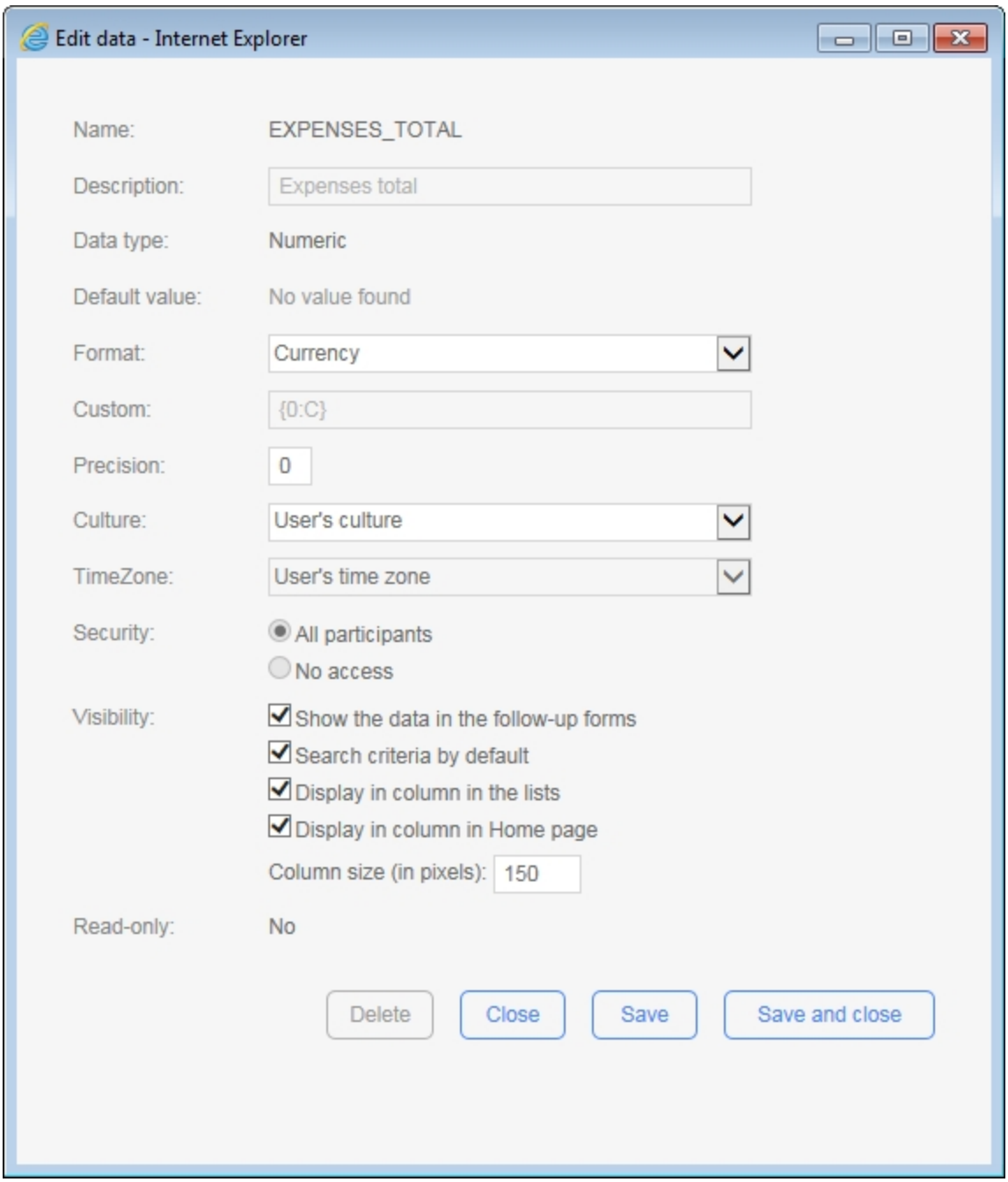
Data editing form

Note: The options available in the **Edit data** dialog box vary depending on the data file type.

When **Data type** is **File**:



When **Data type** is **Text**, **Numeric**, or **Date/Time**:



Data editing

Fields	Remarks
Name	**Required field** Unique identifier for the data; must respect nomenclature and be limited to 30 characters

Browse	Lists the IDs of all the form fields created with the built-in form designer and enables it to manually select the fields with their IDs to declare as process data **Note:** This button appears on the **Add data** form.
Description	**Required field** Data description limited to 255 characters
Data type	**Required field** Type of data: • Text • Limited to 4000 characters • Includes automatic detection of URLs (http://) and email addresses and displays them as links rather than plain text • Numeric • Date/Time • File
Default value	Default value of the data **For text type data:** Click the pencil icon to open the **Edit text** inline editor. The maximum number of characters is 4000. **For file type data:** Click the pencil icon to open the **Create file** or **Edit file** inline editor. You can specify a file name (otherwise the file will be saved with the data name by default) and the file will be saved with the extension that matches its type. If you enter an extension that doesn't match the file type, it will be appended with the correct extension. Alternately, click **Browse** or **Choose file** (depending on your browser) to choose a file. (If you choose a file in a format not supported by the editor, you will not be able to edit it and so the pencil icon will not appear.) To delete the file, click the **x** icon. In both editors, press **Ctrl+Space** to display a drop-down list from which you can choose and insert process data and WorkflowGen macros.

Format	Only applicable to 'Numeric' and 'Date/Time' type data. Upon saving the data, the **Format** drop-down will be populated with the following formats: **Numeric formats:** • Custom (user-defined) • Currency ({0:C}) • Decimal ({0:D}) • Scientific ({0:E}) • Fixed-point ({0:F}) • General ({0:G}) • Number ({0:N}) • Percent ({0:P}) • Round-trip (float) ({0:R}) • Hexadecimal ({0:X}) **Date/Time formats:** • Custom (user-defined) • Short date • Long date • Full date/time (short time) • Full date/time (long time) • General date/time (short time) • General date/time (long time) • Month day • Round-trip date/time • RFC 1123 date/time • Sortable date/time (ISO 8601) • Short time • Long time • Universal sortable date/time • Universal full date/time • Year month
Custom	Displays associated format Allows for custom formats to be specified if 'Custom' formatting is specified above.
Precision	Number of decimal places displayed (for applicable formats)
Culture	Force data to display using the selected culture (language format) Default value is the current user's culture.
Time zone	Applicable only to data of type 'Date/Time'. Specifying a specific time zone will force data to display using the selected time zone. The default value is the current user's time zone.
New file[1]	File to update/add
Choose file	Displays a file browser in a pop-up window
Sub-process parameter[2]	Direction of the data when used as parameter by a parent process
Security	Defines participants who have access to the data A link allows data access to be restricted to certain participants or processes. **Note:** You can only select from Participants with roles of Requester or Actor.

Visibility	Allow the definition of visibility options **Note:** Data visibility is still updatable on active or archived processes. **Option 1: Show the data into the follow-up forms (checked by default)** The selected data will be visible in the following places: • Request and Action follow-up forms • Default notification messages (e-mails • eFormPDF data popup window • Search criteria list **Note:** Unchecking this option disables and unchecks the three other options. **Option 2: Search criteria by default (unchecked by default):** The selected data will appear in every search screen as selected criteria without search parameters. **Note:** You can only filter by the data defined in the active process version or the latest process version if none are active. **Option 3: Display in column in the lists (unchecked by default):** The selected data will appear in every action or request list in a column when a single process is selected (single-process mode). **Option 4: Display in column in home page (unchecked by default):** The selected data will appear in the home page in a column when a single process is selected (single-process mode).
Column size (in pixels)	Define the data column size in the lists and home page Enabled when visibility option 3 or visibility option 4 are checked.
Read-only	Define data as read-only This saves disk space when used on file process data associated with the required parameter TEMPLATE of an eFormPDF action. This is performed by associating a single copy of the PDF per process for all closed actions and closed requests. **Note:** An action's OUT and INOUT parameters using data declared as "read-only" will not be updated. **Caution:** When using an electronic signature feature for PDF Forms, do not define the PDF form template as read-only. As well, in general do not define FORM_DATA elements of eForm applications (which contain the data of a form) as read-only.

1. Only displayed if the process data is a file.
2. Only displayed if the process was defined as a sub-process.

Changing the data type

The type of data can only be changed if the data are not used:

- By the parameters of the actions of the process
- In the dynamic assignment of an action of the process
- In the transition or notification conditions
- If the data is not a parameter of a sub-process that is in use

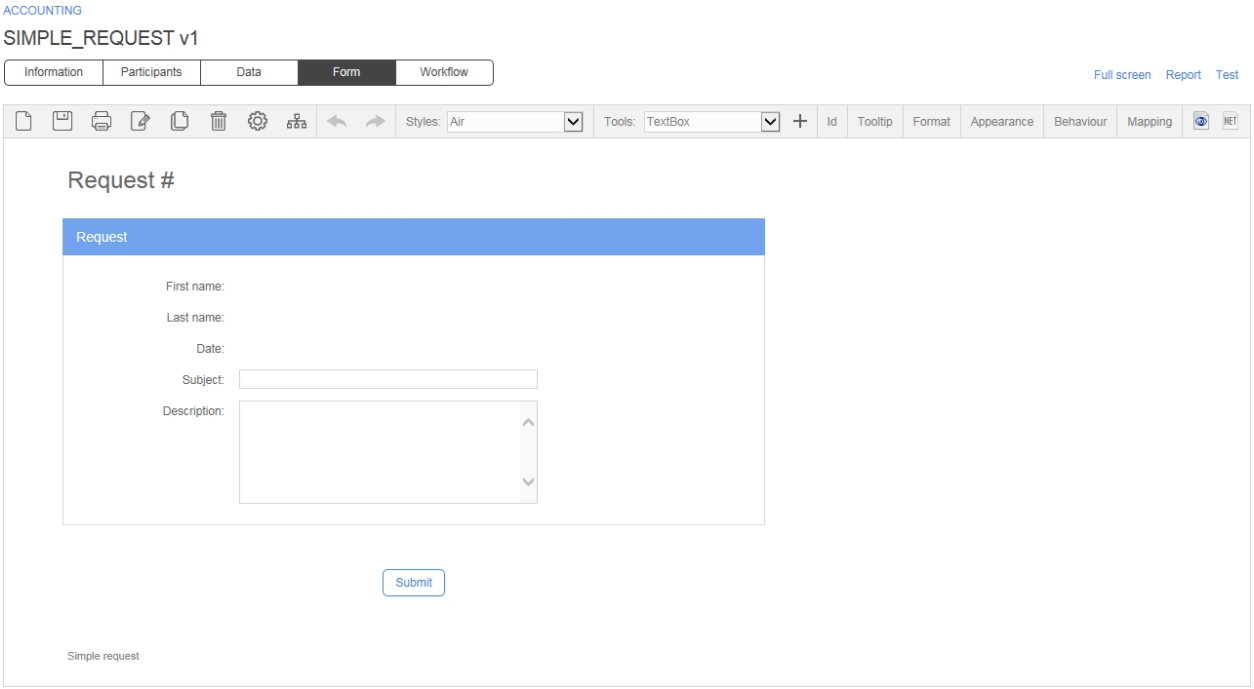
Deleting data

Data cannot be deleted if they are involved in the workflow of the process (as a parameter or in the transition conditions). Data cannot be deleted if they are set as a sub-process parameter and used by a parent process.

Form

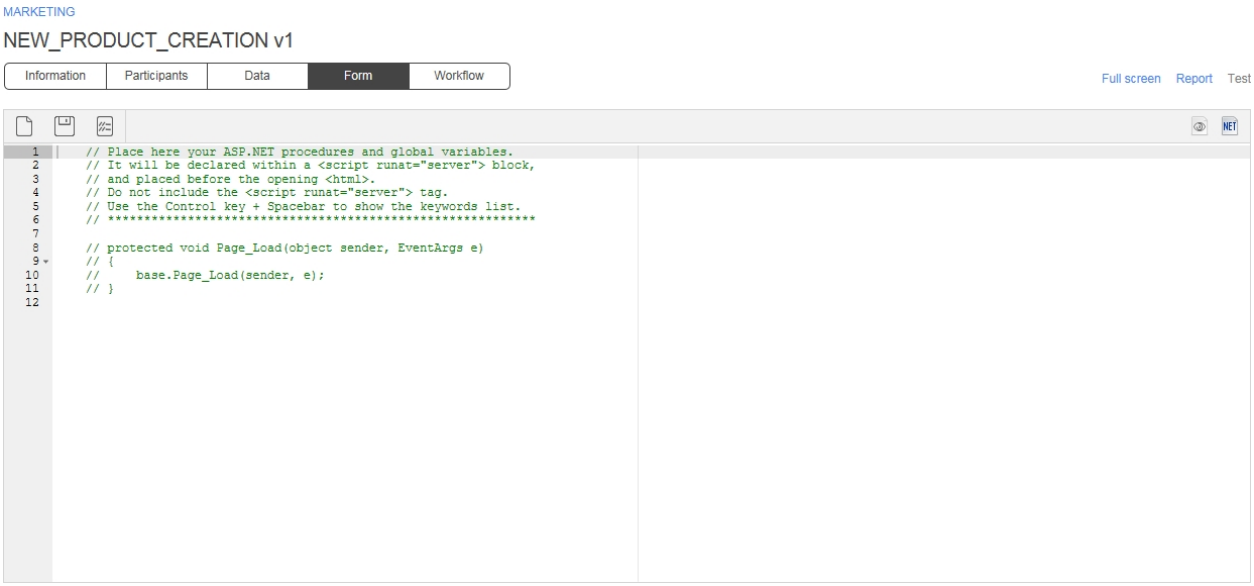
Process form screen

Design mode



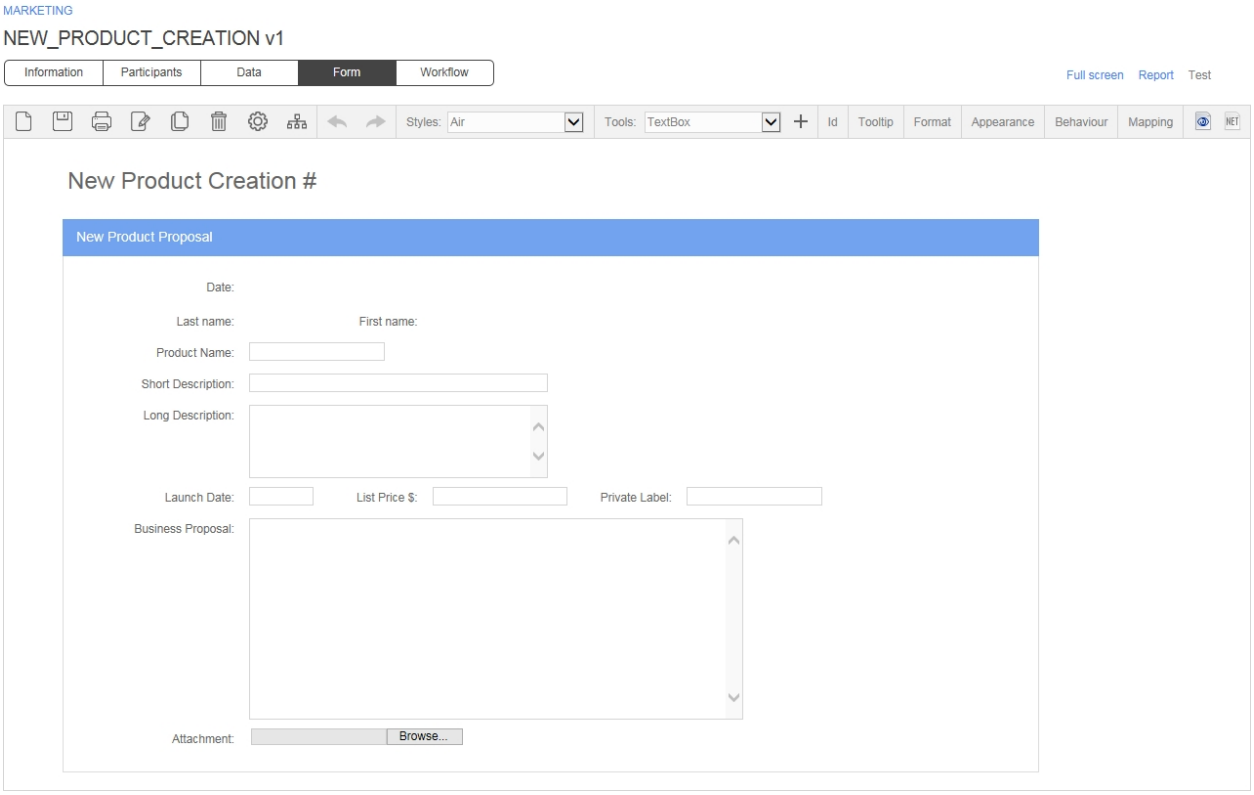
Process form screen (ASP.NET mode)

Click the **.NET** icon at the far right of the toolbar to open the ASP.NET code editor, which can be used to define server-side procedures, events, and global variables to handle any specific custom tasks. This feature is mainly intended for ASP.NET developers.



Form structure, appearance, and management

A form created with the built-in form designer has one header, one or several sections, one or several fields per section, a **Submit** button, an optional **Save-as-draft** button, and one footer.



Note: The themes in the **Styles** drop-down menu will be applied to the entire form. The **Appearance editor** lets you fully customize individual form elements, such as font and size, text and background colours, border styles and colours, and so on (see **Appearance editor** on page 153).

Header

- The header contains a title, a label, and an optional image.
- The title can be used to display the process name. Its text can be edited directly inthe form.
- The label is used to display the current request number. Its default identifier is CURRENT_REQUEST and can be referenced in an action parameter to receive the Request.Id macro.
- The image is used to display a logo. It can be resized or realigned.
- A fixed width and height can be set for the header in the form configuration window.

Section

- The section has a title to display the section name. Its text can be edited directly on the form.
- It can have one or several fields.
- Each section must have a unique identifier.
- Sections can only be aligned vertically and reordered using the mouse drag-and-drop action.
- When inserting a section tool into the form, the new section will be placed in the last position.
- Section width will be resized automatically based on the widest field in the form whenever there is a field width change.
- A fixed width can be set for all sections.
- The section's settings can be edited by clicking the pencil icon on the right side of the section name.

See **Tools** on page 133 for the different types of default section.

Field

- The field has a label and an input control.
- The label is used to display the name of the field. Its text can be edited directly on the form. It can be resized and realigned.
- A fixed width can be set for all labels (**General / Labels**).
- The input control is where a value is captured in the form. It can be resized and realigned.
- Each field must have a unique identifier.
- Fields within the same section are prefixed with the section's identifier following an underscore character.
- Fields within a section can be reordered vertically using the mouse drag-and-drop action.

- A field can be moved from one section to another section using the mouse drag-and-drop action.
- When inserting a field tool into the form, the new field will be placed in the last position of the selected section or the first section if no section is selected.
- By default, fields are aligned vertically on the same column.
- Two fields can be aligned horizontally on the same row using the **Remove line break** button (**left arrow**) on the right side of the first field.
- Two fields can be aligned vertically on the same column using the **Line break** button (**right arrow**) on the right side of the first field.
- The field's settings can be edited edited by clicking the pencil icon on the right side of the field.

See **Tools** on page 133 for the different types of default field.

Button

- The **Submit** and **Save as draft** buttons can be renamed in the form configuration window (**General / Buttons**) or in the **Appearance editor** (see **Appearance editor** on page 153).
- The **Save as draft** button can be enabled or disabled as well.
- Their identifiers are submitButton and saveAsDraftButton, respectively.

Footer

- The footer contains a title and an optional image.
- The title can be used to display a note. Its text can be edited directly on the form.
- The image is used to display a logo. It can be resized or realigned in the form configuration window (**General / Footer**) or in the **Appearance editor** (see **Appearance editor** on page 153).
- A fixed width and height can be set for the footer.

Note: You can also change the web form style sheet and other attributes (header image, footer, text, etc.) at runtime by adding the following .NET code to your form:

```
protected void Page_Load(object sender, EventArgs e)
{
     base.Page_Load(sender, e);
     String
     stylePath=HttpContext.Current.Request.PhysicalApplicationPath.Replace
     ("WfApps\\WebForms\\","App_Data\\Templates\\Forms\\En\\Default\\css");
     Page.Header.Controls.Remove(this.FindControl("StyleSheet"));
     Page.Header.Controls.Add(
          new LiteralControl(
               System.IO.File.ReadAllText(stylePath + "\\" + "metal.css")
          )
     );
     string imageUrl="http://mywebsite/mylogo.jpg"
     HeaderImage.Style["background-image"] = "url('" + imageUrl+ "')";
     HeaderTitleLabel.Text="My Title #";
     FooterTitleLabel.Text="My footer";
```

```
    imageUrl="http://mywebsite/myfooter.jpg";
    FooterImage.Style["background-image"] = "url('" + imageUrl+ "')";
protected void Page_Load(object sender, EventArgs e)
{
    base.Page_Load(sender, e);
    String
    stylePath=HttpContext.Current.Request.PhysicalApplicationPath.Replace
    ("WfApps\\WebForms\\","App_Data\\Templates\\Forms\\En\\Default\\css");
    Page.Header.Controls.Remove(this.FindControl("StyleSheet"));
    Page.Header.Controls.Add(
    new LiteralControl(
             System.IO.File.ReadAllText(stylePath + "\\" + "metal.css")
          )
    );
    string imageUrl="http://mywebsite/mylogo.jpg";
    HeaderImage.Style["background-image"] = "url('" + imageUrl+ "')";
    HeaderTitleLabel.Text="My Title #";
    FooterTitleLabel.Text="My footer";
    imageUrl="http://mywebsite/myfooter.jpg";
    FooterImage.Style["background-image"] = "url('" + imageUrl+ "')";
}
```

This replaces:

- The current style sheet with the "metal.css" template
- The header title label
- The header image
- The footer title label
- The footer image

Note: You should define the width and height of the images in the form configuration in the .NET code.

Example:

```
    FooterImage.Style["width"] = "200px";
    FooterImage.Style["height"] = "100px";
```

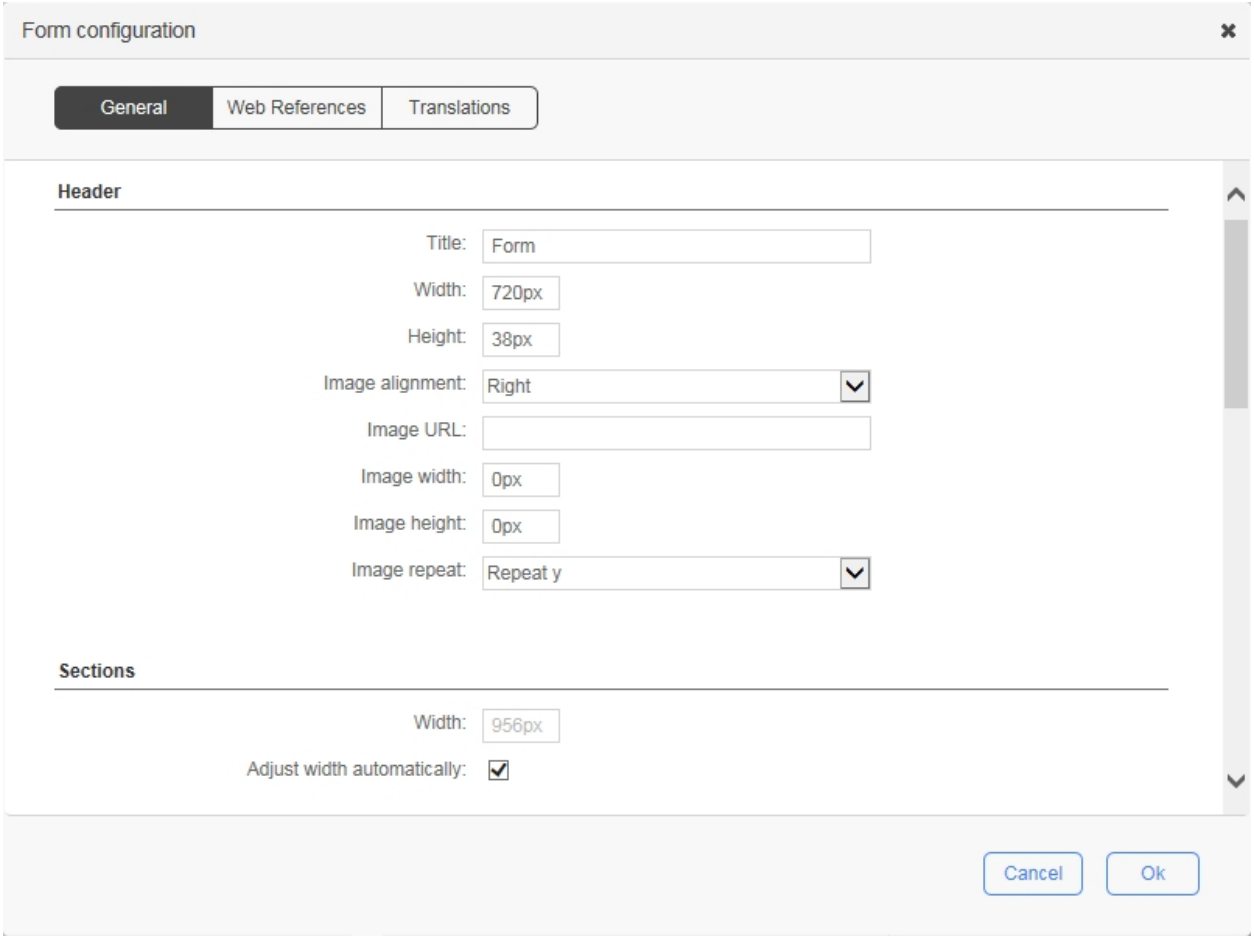
An absolute URL is recommended because the generated form archive (HTML) could be opened in the mail notification.

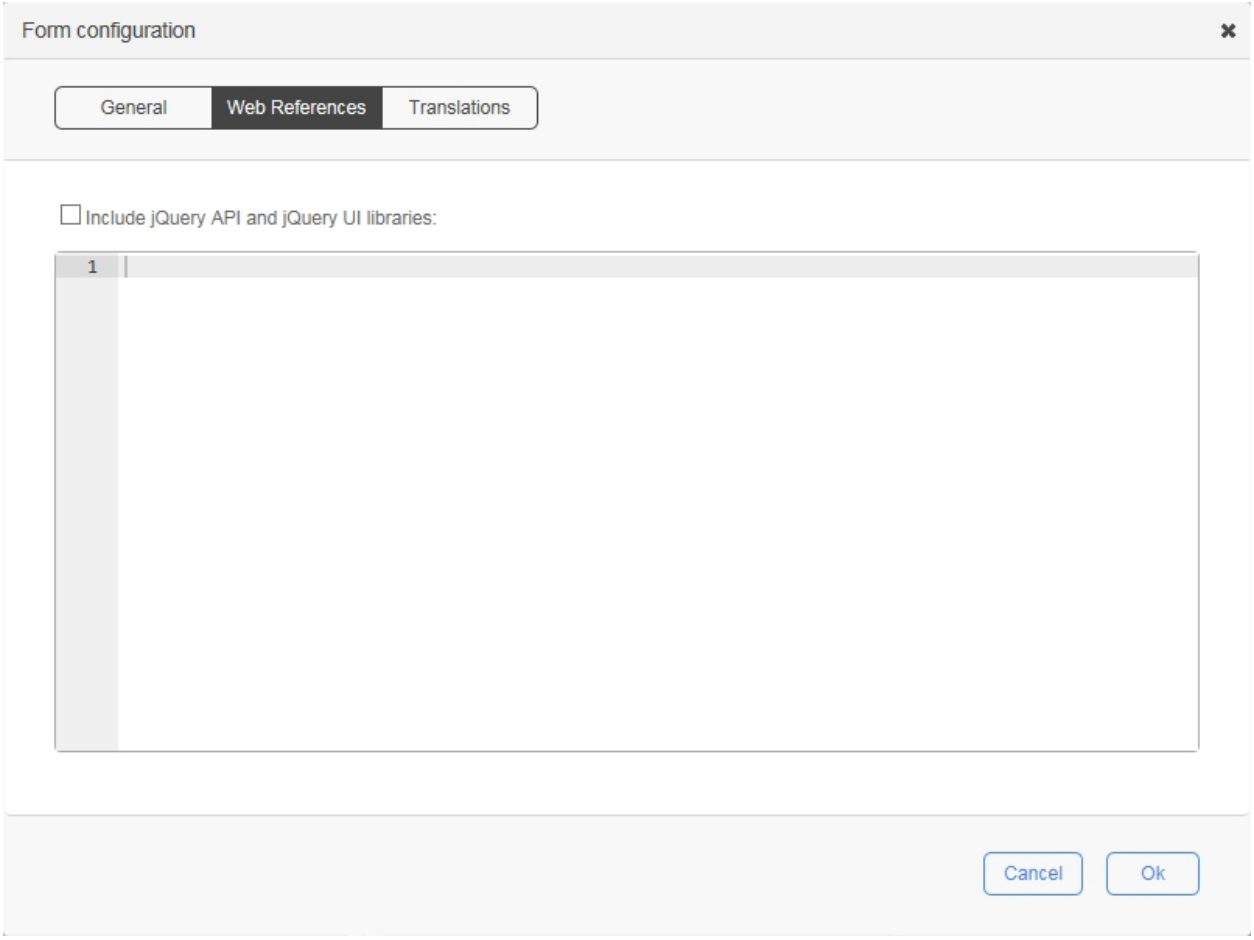
Toolbar

Icon	Name	Description
Design mode		
	New form	Creates a new form or replaces the current form
	Save the form	Saves the current form (you can also press **Ctrl+S** to save)

	Print the form	Prints the current form
	Save a section or field as tool	Saves the selected section or field as a custom tool
	Duplicate a section or field	Makes a copy of the selected section or field and inserts it in the form. The duplicate section or field will appear below the selected section or field.
	Delete a section or field	Deletes the selected section or field from the form
	Form configuration	Opens the **Form configuration** window
	Workflow view	Displays the interactive workflow view
	Undo/redo	Undoes or redoes the most recent changes made to the form
Styles:	Select a style	List of default and custom styles Select an item to change the style of the current form.
Tools:	Select a tool	List of default and custom tools Select an item in order to add the tool to the form using the Insert button.
+	Insert the selected tool	Inserts the selected tool in the form
Id	Edit field ID	Edit the identifier of the sections and fields
Tooltip	Edit field tooltip	Edit the tooltip of the sections and fields
Format	Edit field format	Edit the format of the fields
Appearance	Edit appearance	Edit the appearance of headers, footers, labels, and fields
Behavior	Edit field's action behavior	Displays the interactive view of the workflow, activates the clickable options **Required**, **Read-only**, and **Hidden** for each form field, and sets the behavior of sections and form fields for each action
Mapping	Edit field's action data mapping	Displays the interactive view of the workflow, activates clickable options **Retrieve the value** and **Send the value** for each form field and defines the data input and output for each action
	Design	Displays the WYSIWYG form designer
NET	ASP.NET	Displays the ASP.NET server-side code editor
ASP.NET mode		
	New	Clears the ASP.NET code
	Save	Saves the ASP.NET code

Form configuration





Name	Description
General	
Header	
Title	The title of the form
Width	The width of the form header Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 720px
Height	The height of the form header Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 38px
Image alignment	The alignment for the header image: • **Right:** The image will be aligned to the right. • **Left:** The image will be aligned to the left. • **None:** No alignment.
Image URL	The URL of the image to be shown
Image width	The width of the image
Image height	The height of the image

Image repeat	Sets if and how the image will be repeated: • **No-repeat:** the image will not be repeated • **Repeat:** the image will be repeated both vertically and horizontally (this is the default setting) • **Repeat x:** the image will be repeated only horizontally • **Repeat y:** the image will be repeated only vertically
Sections	
Width	The width for all sections: Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 720px
Adjust width automatically	Check to apply adjusted width to all sections
Labels	
Alignment	The alignment for all field labels: • **Right:** the label will be aligned to the right of the field • **Left:** the label will be aligned to the left of the field • **Top:** the label will be aligned on top of the field
Width	The width for all field labels: Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 150px
Apply the width	Check to apply the width to all field labels
Buttons	
Submit label	The label for the submit button
Save-as-draft label	The label for the save as draft button
Enable save-as-draft	Check to enable and display the save as draft button
Footer	
Width	The width of the form footer: Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 720px
Height	The height of the form header: Numeric value with or without the unit of measure (px, pt, in, cm, mm, pc, em, ex, %), e.g. 22px
Image alignment	The alignment for the footer image: • **Right:** the image will be aligned to the right side • **Left:** the image will be aligned to the left side • **None:** no alignment
Image URL	The URL of the image to be shown
Image width	The width of the image
Image height	The height of the image

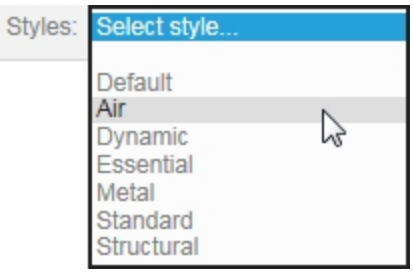
Image repeat	Sets if and how the image will be repeated: • **No repeat:** the image will not be repeated • **Repeat:** the image will be repeated both vertically and horizontally (this is the default setting) • **Repeat-x:** the image will be repeated only horizontally • **Repeat-y:** the image will be repeated only vertically
Security	
Enable XML Signature	Check to enable the use of XML signature in the form data Digital signatures are used to certify that a document has not been modified by the system or by someone who gained unauthorized access to the system. The XML signature is a W3C standard that defines the syntax and processing rules for creating and representing digital signatures. This is a method of associating a key with referenced data to insure the integrity of this data.
Misc.	
Display a confirmation message for quick deletion	Check to prompt a confirmation message prior to deletion
Web references	
Include jQuery API and jQuery UI libraries	Check to include the jQuery API (v 1.7.2) and jQuery UI (v 1.8.20) libraries in the run-time mode (execution of the form) By default, these libraries are available in design mode.

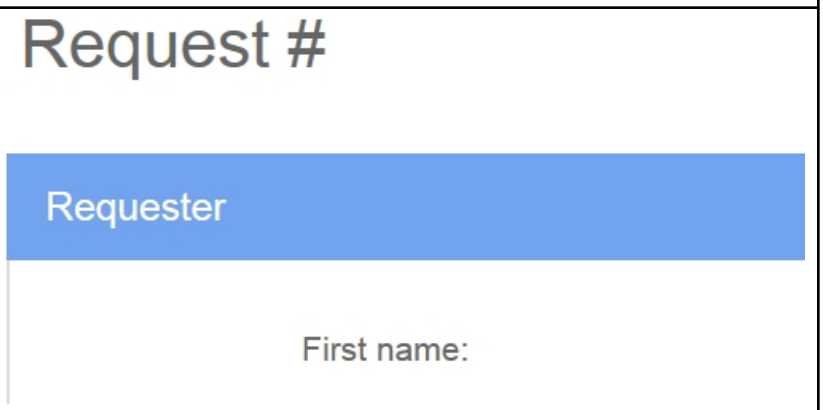
Free text	Custom web references to be included in the HTML head that will be available in both design and run-time modes. Only <script>, <meta>, <link>, and <style> tags are supported. When you enter a tag, the free text editor automatically inserts its closing tag.
	
	Example:
	
	`<link rel="stylesheet" type="text/css"`
	`href="mystyle.css" />`
	`<style type="text/css">`
	`body {background-color:yellow}`
	`p {color:blue}`
	`</style>`
	`<meta name="description" content="my content" />`
	`<script type="text/javascript">`
	`alert("Hello World!");`
	`</script>`
	`<script type="text/javascript" src="myscript.js">`
	`</script>`
	
	To fold a code block, click the down arrow next to the line number, which will insert a double-arrow icon in place of the code. To unfold the code block, click the right arrow.
	
	Press **Ctrl+Space** to show the **IntelliSense** drop-down menu, which displays the available variables and keywords.

Translations	
Select a language	The Form designer allows you to translate form labels and error messages to the languages available in WorkflowGen. Select a language for translation from the languages available in the drop-down list. **Note:** Generic language selections such as English, French, Spanish, etc., correspond to the version of the language that the administrator initially used to create a form. For example, if the administrator used **English (United States)** to create a form, then in this instance the selections **English (United States)** and **English** would be one and the same.
Free text	Write translated text that corresponds to the selected language. If a field is left empty, then the language will defer in the following order: **Country-specific language > Generic language > Default language**.

Styles

The built-in style templates contain additional CSS that will automatically format and optimize a web form to display on smartphone and tablet devices, based on their screen resolution.

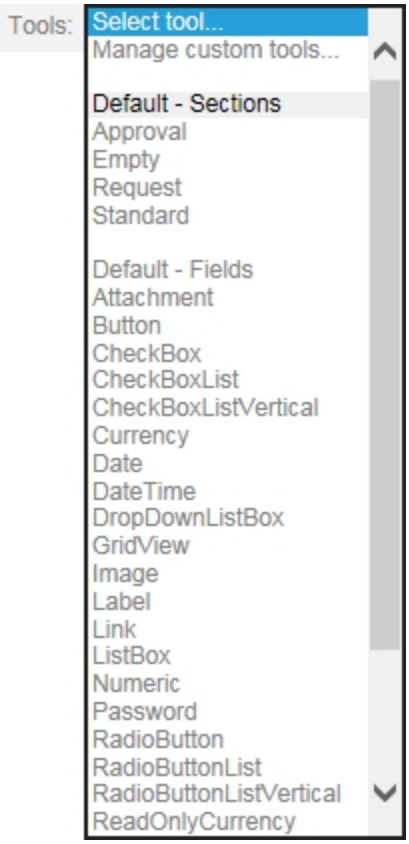


Name	Description
Default styles	
Air	

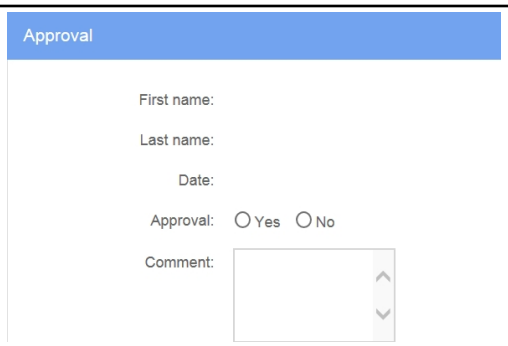
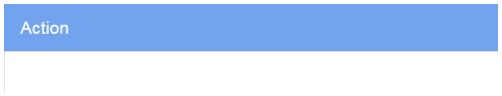
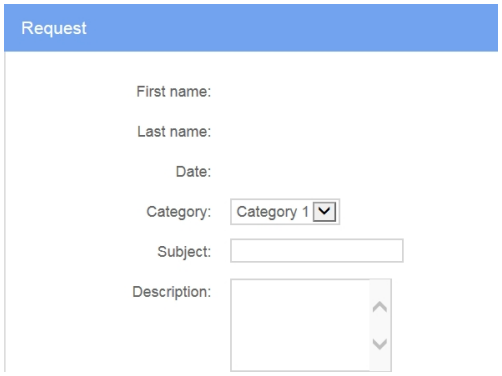
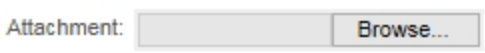
Dynamic	Request # Requester First name:
Essential	Request # Requester First name:
Metal	Request # Requester First name:
Standard	Request # Requester First name:

Structural	
Custom styles	
Custom style name	A custom style can be created and deployed on the server with the following folder and file structures: \wfgen\App_ Data\Templates\Forms\[language]\[folder name]\css\[style name].css ***Example:*** \wfgen\App_ Data\Templates\Forms\En\MyCompany\css\MyStyle.css

Tools



Name	Description
Manage custom tools…	Opens the **Manage custom tools** window
Custom – sections	List of custom section templates A custom section template can be created by using the **Save a section or field as tool** feature or by manually deploying it on the server with the following folder and file structures: \wfgen\App_Data\Templates\Forms\[language]\[folder name]\sections\[section name].txt ***Example:*** \wfgen\App_Data\Templates\Forms\En\MyCompany\sections\MySection.txt **Note:** A custom section template must comply with the content structures and rules used and known by the form designer. This is aimed at advanced users.

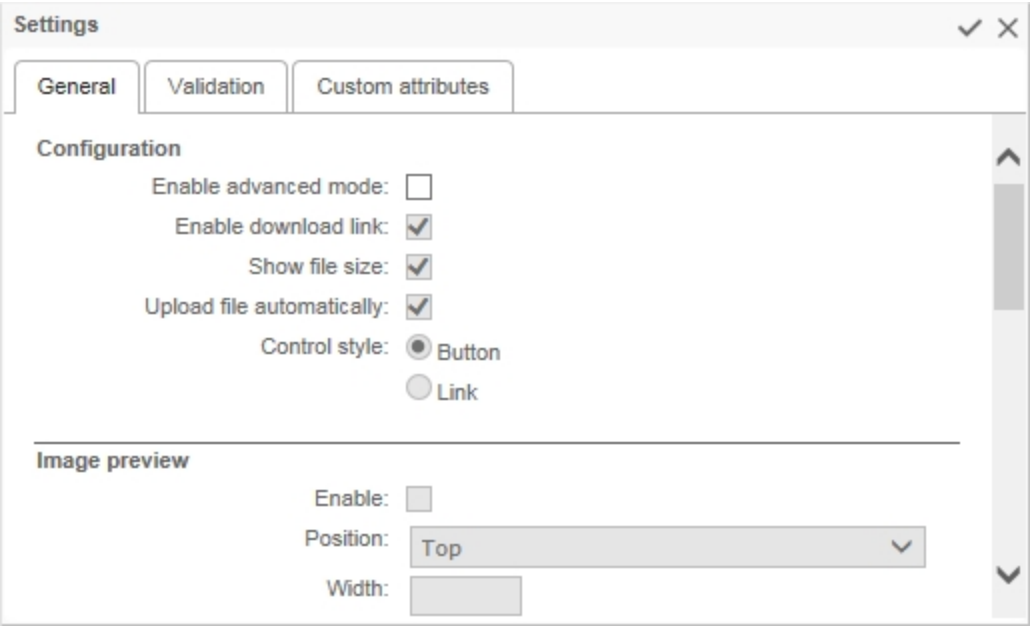
Custom – field	List of custom field templates A custom field template can be created by using the **Save a section or field as tool** feature or by manually deploying it on the server with the following folder and file structures: \wfgen\App_Data\Templates\Forms\[language]\[folder name]\fields\[field name].txt ***Example:*** \wfgen\App_Data\Templates\Forms\En\MyCompany\fields\MyField.txt **Note:** A custom field template must comply with the content structures and rules used and known by the form designer. This is intended for advanced users.	
Default sections		
Approval		A section that contains first name, last name, and date fields in read-only; also an approval radio button list and comment multiline textbox
Empty		A section that has no fields
Request		A section that contains first name, last name, and date fields in read-only; also a category dropdown list, subject textbox, and description multiline textbox
Standard		A section that contains first name, last name, and date fields in read-only
Default fields		
Attachment		Attach one file
CheckBox		Single checkbox

CheckBoxList	CheckBoxList: ☐ Option 1 ☐ Option 2	Multiple checkboxes in horizontal alignment
CheckBoxListVertical	CheckBoxList: ☐ Option 1 ☐ Option 2	Multiple checkboxes in vertical alignment
Currency	Currency:	Input for currency value
Date	Date:	Input for date value
DateTime	Datetime:	Input for date time value
DropDownListBox	DropDownListBox Select an item	List of items for a single choice selection
GridView	Gridview: Title Description Price Enter a text here Total: =SUM	Dynamic table of multiple input fields; each column represents a field and each row represents a record
Label	Label: Label	Text displayed in read-only
ListBox	ListBox: Select an item... Item 1 Item 2 Item 3	List of items for a multiple choice selection
Numeric	Numeric:	Input for numeric value
Password	Password:	Input for password value (the entered text will be masked)
RadioButton	RadioButton: ○ Yes	Single radio button
RadioButtonList	RadioButtonList: ○ Yes ○ No	Multiple radio buttons in horizontal alignment
RadioButtonListVertical	RadioButtonList: ○ Yes ○ No	Multiple radio buttons in vertical alignment
ReadOnlyCurrency	Readonly Currency:	Read-only currency value
ReadOnlyDate	Readonly Date:	Read-only date value
ReadOnlyDateTime	Readonly Datetime:	Read-only date time value
ReadOnlyNumeric	Readonly Numeric:	Read-only numeric value
ReadOnlyText	Readonly Text:	Read-only text value
TextArea	TextArea:	Multiline textbox
TextBox	TextBox:	Single line textbox

Section settings

Name / Icon	Description
✓	Close and apply the changes to the section
×	Close and cancel the changes
Validation	
Behavior **Note:** To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Required	Sets the section fields to be required
Condition	The section fields are required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Read-only	Sets the section's fields to read-only
Condition	The section fields are read-only based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the section fields to be hidden
Condition	The section fields are hidden based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"

File attachment field settings



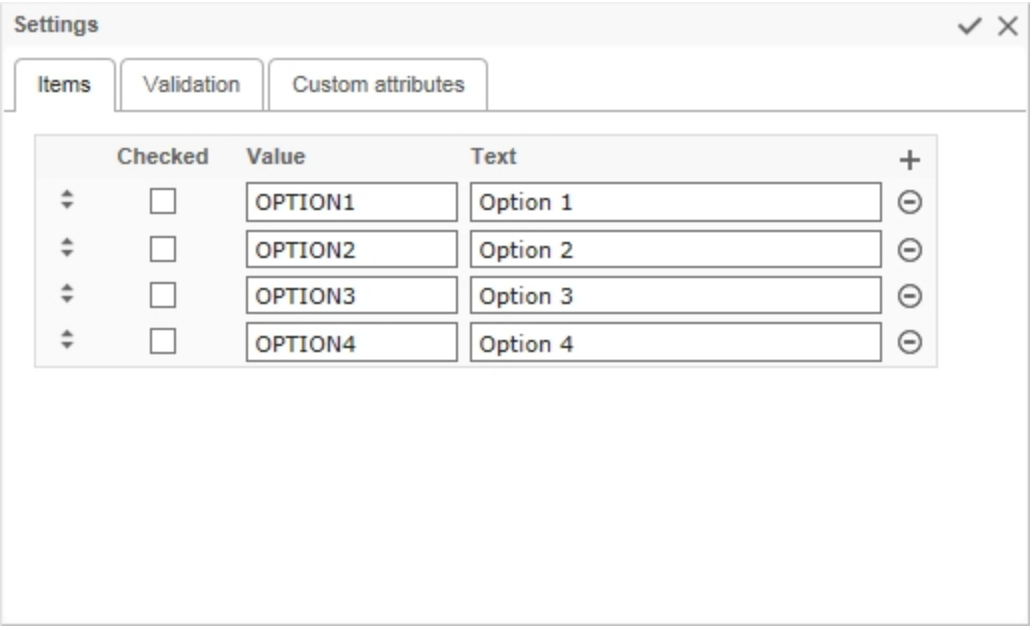
Name / Icon	Description
✓	Close and apply the changes to the field
×	Close and cancel the changes
General	
Enable advanced mode	Enables the file attachment settings listed below
Enable download link	Check if you want to enable the link to open file
Show file size	Displays the size of the uploaded file beside the download link
Upload file automatically	Automatically uploads the file, otherwise an upload button will be displayed
Control style	Display the Modify and Delete controls as links or buttons
Image preview	Display an image preview (thumbnail)
Position	Display the image preview above (Top) or below (Bottom) the attachment filename and controls
Width / Height	Sets the width and/or height of the image preview in pixels **Important:** You should only set one of these values in order to preserve the aspect ratio of the original image as displayed in the preview; otherwise, the image will appear distorted.
Storage in form archive	**Web address (URL):** Stores the image in the form folder **Embedded image:** Embeds the image in the form archive HTML
File size limit (kB)	Defines the maximum size of the uploaded file in kilobytes
Size restriction error message	Write error that will appear if file exceeds the file size limit

Allowed extensions	Restricts the allowed file type by extension e.g. .txt, .doc, .html, .xml, .png
Forbidden extensions	List of file extensions not allowed for links
Extension restriction error message	Write error message that will be displayed when file extension error occurs
Empty file error message	Write error message that will display when there is no file to link to
Add button label	Display text for the add button
Update button label	Display text for update button
Delete button label	Display text for delete button
Overwrite button label	Allows you to choose a new file
Cancel button label	Allows you to cancel request for a new file
Display mode	Sets the default display mode • **Display:** the field is read-only • **Edit:** the field can be edited
Download link	Check to display a link to download the uploaded file
Validation	
Behavior **Note:** To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Required	Sets the field to be required
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. To help with the capture of the condition, the list of form fields and a list of operators are displayed. e.g. MyTextBox.Text == "Hello World"
Read-only	Sets the field to be read-only
Condition	The field is read-only based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. To help with the capture of the condition, the list of form fields and a list of operators are displayed. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the field to be hidden
Condition	The field is hidden based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. To help with the capture of the condition, the list of form fields and a list of operators are displayed. e.g. MyTextBox.Text == "Hello World"

Custom attributes	
Name	Any name that is not in the list of standard reserved attribute names (id, name, class, style, title, multiple, type, value, checked, runat) Additional reserved attribute names specific to **File attachment / General**: accesskey, dir, lang, tabindex, xml:lang, onblur, onchange, onclick, onfocus, onmousedown, onmousemove, onmouseout, onmouseover, onmouseup, onkeydown, onkeypress, onkeyup, onselect, enabled, visible, ondatabinding, ondisposed, oninit, onload, onprerender, onunload A list of examples of custom attributes is displayed at the beginning of the tab; you can choose one or enter a specific name.
Value	Any value
+	Add a new attribute
⊖	Remove the current attribute

CheckBox/RadioButton field settings

These settings apply to CheckBoxList, CheckBoxListVertical, RadioButtonList and RadioButtonListVertical fields as well.

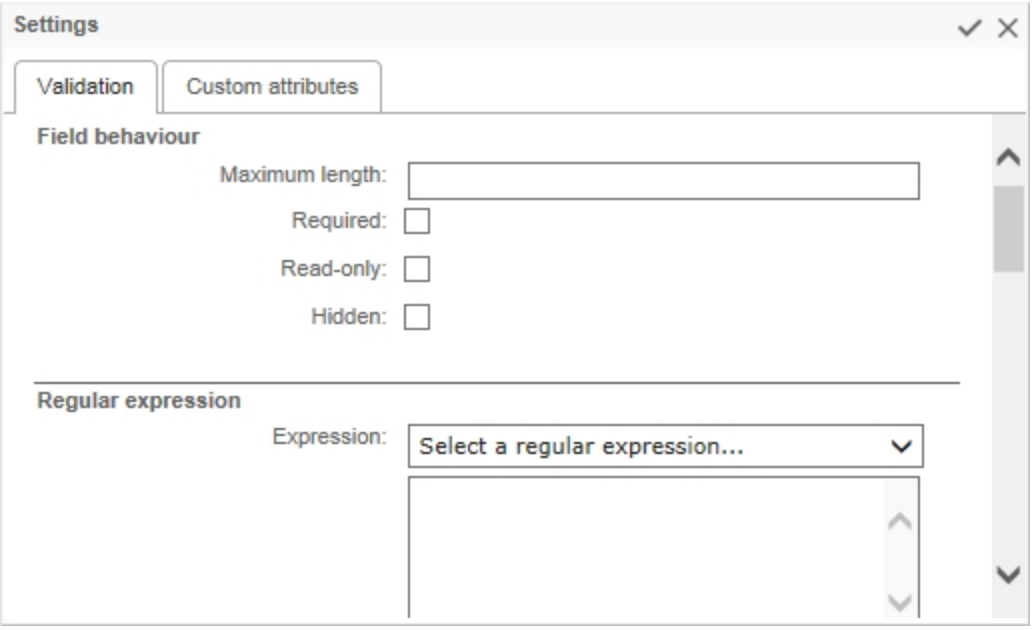


Name / Icon	Description
✓	Close and apply the changes to the field
×	Close and cancel the changes
Items	
↕	Drag-and-drop to change the order of the items
Checked	Check the default selected items in the field. The radio button field supports single selection whereas the checkbox field supports multiple selections.

Value	Value of the checkbox/radio button
Text	Display text of the checkbox/radio button
+	Add a new checkbox/radio button
⊖	Delete the current checkbox/radio button
Validation	
Behavior **Note:** To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Required	Sets the field to be required
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World" **Note:** The checkbox fields (list or single) and single radio button are not supported by this behavior.
Read-only	Sets the field to be read-only
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the field to be hidden
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Custom attributes	
aslist	This property allows a radiobutton and checkbox field with one item to be converted as a list control (RadioButtonList / CheckBoxList) instead of a RadioButton / CheckBox control in the web form. Accepted Boolean value: true or false

Textbox field settings

These settings apply to Currency, Date, DateTime, Numeric, Password, and TextArea fields.



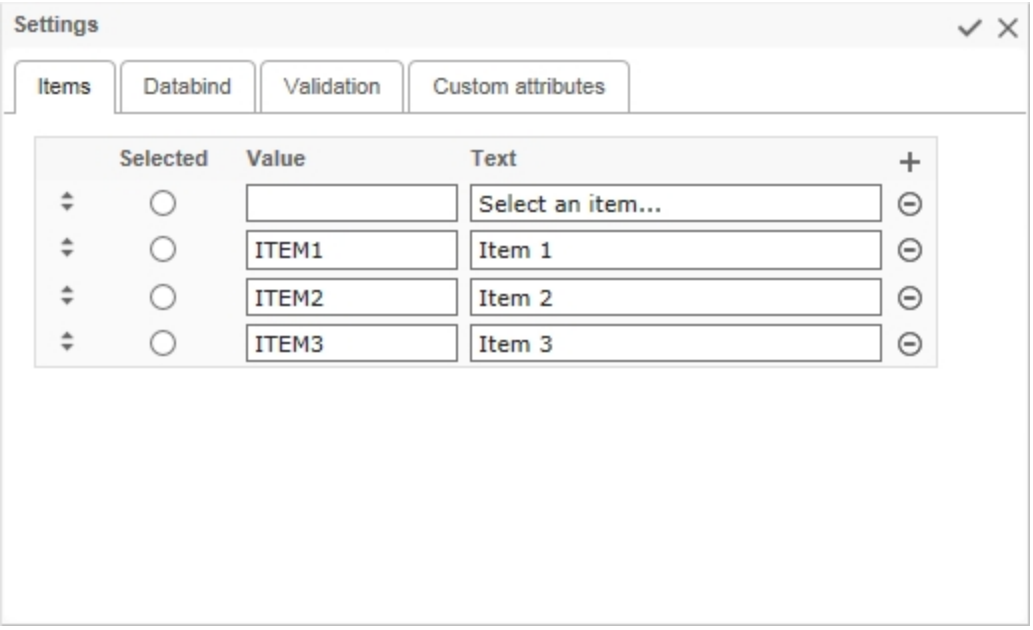
Name / Icon	Description
✓	Close and apply the changes to the field
×	Close and cancel the changes
Validation	
Behavior **Note:** To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Maximum length	The maximum number of characters that can be entered **Note:** Not available for TextArea field.
Required	Sets the field to be required
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Read-only	Sets the field to be read-only
Condition	The field is read-only based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the field to be hidden

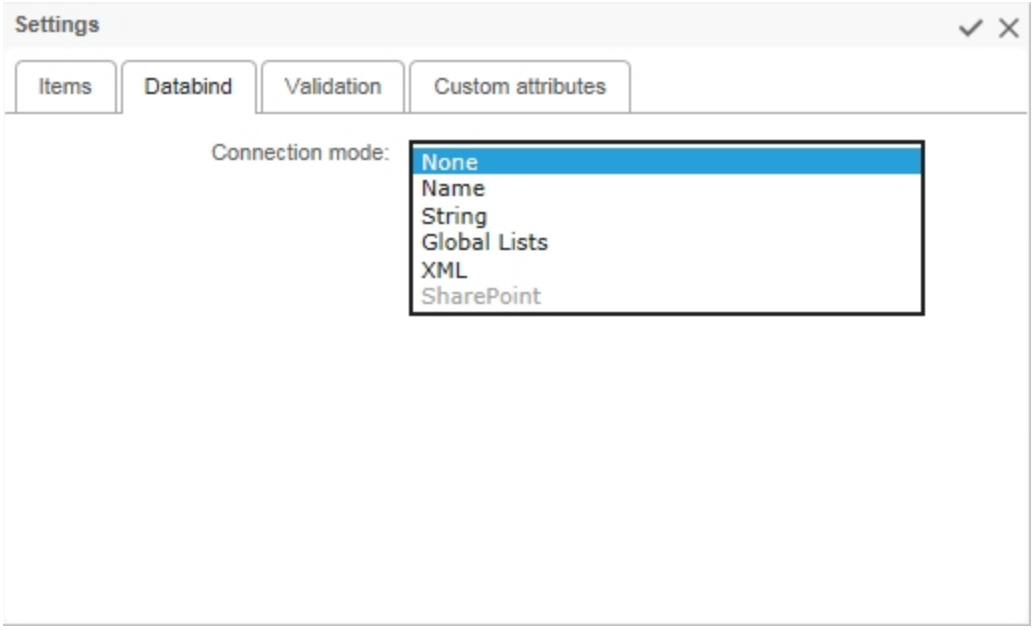
Condition	The field is hidden based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Regular expression	
Expression	A regular expression to determine validity. e.g. email address: \b[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]{2,4}\b A regular expression can be entered freely into the designated area. It is also possible to use regular expressions in the **Select a regular expression** list Example of regular expressions provided by default: Email address Internet URL French phone number American/Canadian phone number French INSEE code American social security number Canadian social insurance number French postal code American zip code Canadian postal code Date (dd-MM-yyyy) Date (MM-dd-yyyy) Date (yyyy-MM-dd) Time (00:00 to 23:59) Dollar ($999.99) Percentage (%999.99) Decimal Visa MasterCard American Express
Error message	Message to display when the validated field is invalid
Range	
Minimum value	Minimum value for the field being validated
Maximum value	Maximum value for the field being validated
Error message	Message to display when the validated field is invalid
Custom	
OnServerValidate	Server-side C# syntax validation code; must return a Boolean value (true or false)
Validate empty text	Whether the validator validates the control when the text of the control is empty
Error message	Message to display when the validated field is invalid
Compare	
Value to compare	Value to compare against
Control to compare	Select another field in the current form to compare against

Operator	Comparison operation to apply to values: • Equal • Greater than • Greater than equal • Less than • Less than equal • Not equal
Error message	Message to display when the validated field is invalid
Custom attributes	
timezoneconversion	Applicable to Date and DateTime Textbox fields only This property allows the disabling of the default user time zone conversion behavior when the form field is in the Date or DateTime format. This option is useful if you want to capture and maintain a consistent date-only value in the form field and process data without applying the time zone conversion that sometimes changes the date value depending on the original and current user time zones. Accepted Boolean value: true or false
Additional reserved attribute names specific to validation: maxlength, requiredcondition, readonlycondition, hiddencondition, validationexpression, regularexpressionerrormessage, minimumvalue, maximumvalue, rangeerrormessage, onservervalidate, validateemptytext, customerrormessage, valuetocompare, controltocompare, operator, compareerrormessage.	

ListBox/DropDownListBox field settings

These settings (except **Items**) apply to Label, ReadOnlyCurrency, ReadOnlyDate, ReadOnlyDateTime, ReadOnlyNumeric, and ReadOnlyText fields as well.





Name / Icon	Description
✓	Close and apply the changes to the field
×	Close and cancel the changes
Items	
↕	Drag-and-drop to change the order of the items
Selected	Check the default selected items in the field The DropdownListBox field supports single selection whereas the ListBox field supports multiple selections.
Value	Value of the item
Text	Displays text of the item
+	Add a new item
⊖	Delete the current item
Databind	
Connection mode	Select the type of connection for data binding: • Name • String • Global lists • XML • SharePoint
Connection by name	
Connection name	List of connection names defined in the WorkflowGen web configuration file (<connectionStrings>)
Select command	SQL select query e.g. select column_id, column_text from table_name;
Data value field	The data field that provides the item value e.g. column_id

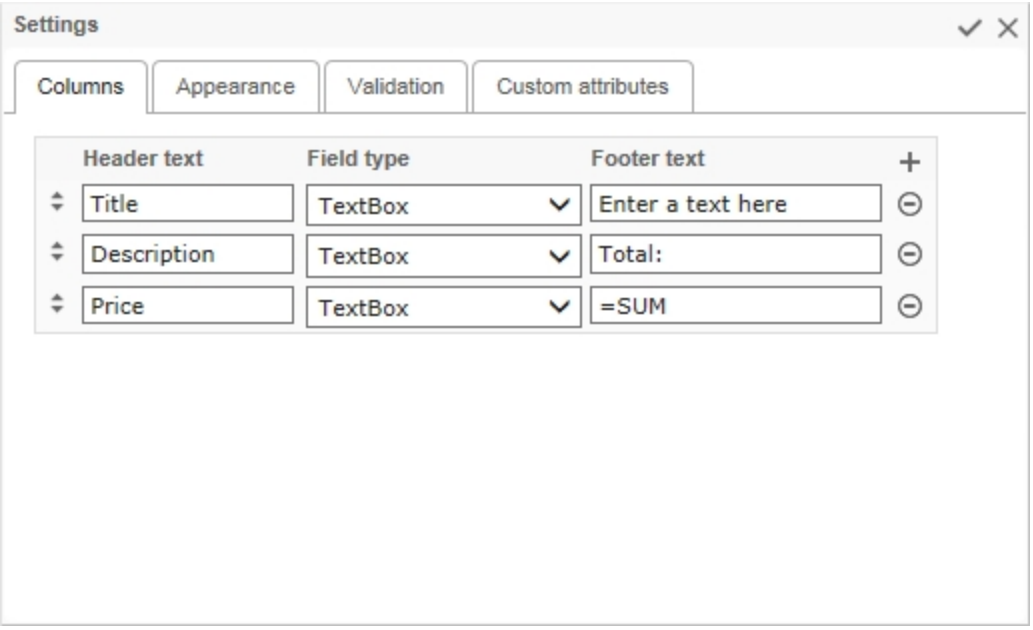
Data text field	The data field that provides the item text e.g. column_text
Append data bound items	Check to append the data bound items to the list. Otherwise, the data bound items will replace all the existing items in the list.
Parameters	
Name	Specifies the parameter name if the Select command uses a filter with a dynamic value from a parameter in the select query. e.g. Name=PARAM; Select command=select column_id, column_text from table_name where column_id > @PARAM
Data type	Specifies the data type of the parameter: • Boolean • Byte • Char • DateTime • DBNull • Decimal • Double • Empty • Int16 • Int32 • Int64 • Object • SByte • Single • String • UInt16 • UInt32 • UInt64
Filter by field	Specifies another field in the current form where the dynamic value will be retrieved
Default filter value	Specifies the default value if the parameter field has an empty value or no value
If the value is empty	Select from one of the following: • Do nothing • Remove all items • Filter on empty value
Connection by string	
Connection String	Specifies the connection string e.g. Data Source=sqlserver_name;Initial Catalog=wfgen;User ID=wfgen_user;Password=abc123!;
Provider name	List of provider names defined in the WorkflowGen web configuration file (AdministrationFormDataProviderName). It also supports custom defined third-party .NET data providers. • System.Data.SqlClient (.NET FWK Data Provider for SQL Server) • System.Data.OleDb (.NET FWK Data Provider for OLE DB) • System.Data.Odbc (.NET FWK Data Provider for ODBC) • System.Data.OracleClient (.NET FWK Data Provider for Oracle)

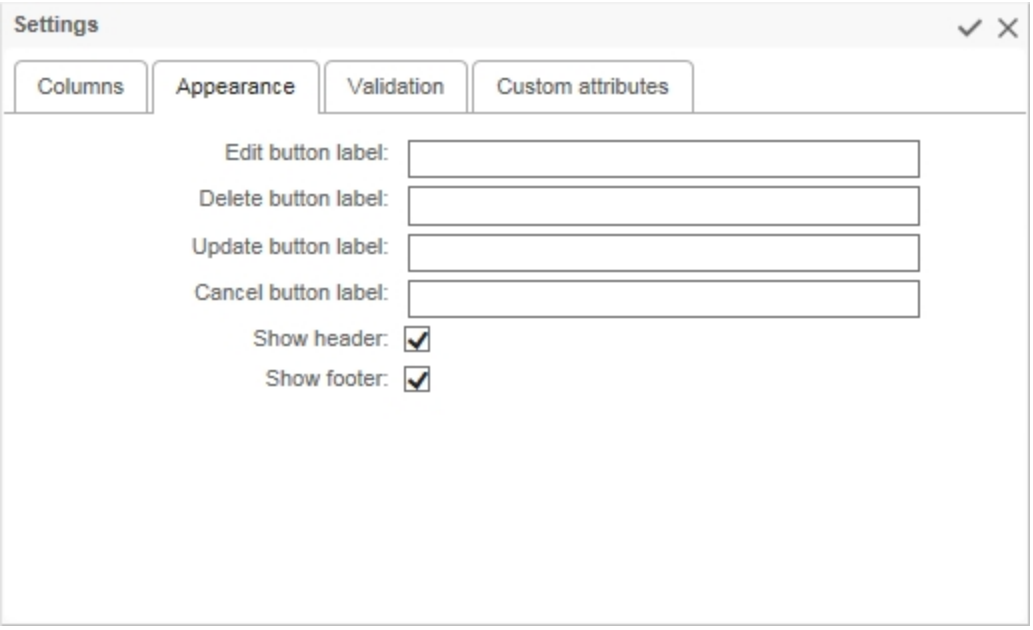
Select command, Data value field, Data text field, Append data bound items, Parameters (Name, Field, Default value and Data type)	Same as **Connection by name**
Connection by global lists	
List name	Specifies the list name
Data value column	Select the column used for item's value
Data text column	Select the column used for item's label
Sort column	Select the column used to sort the list
Append data bound items	Check to append the data bound items to the list. Otherwise, the data bound items will replace all the existing items in the list.
Filter	
Column	Specifies the column name used to filter data
Comparison operator	• Equal (=) • Not equal (<>) • Greater than (>) • Greater than or equal to (>=) • Less than (<) • Less than or equal to (<=) • Contains • Begins with • Ends with • Is null • Is not null • In • Not In • Between
Filter by field	Select the form field that contains the filter's value
Default filter value	The default value if the field is empty
If the value is empty	Set the behavior of the filter if the value is empty

Connection by XML	
URL	Specifies the file name of an XML file for data binding e.g. c:\myfile.xml e.g. http://server_name/myfile.xml e.g. http://server_name/service.asmx/getmyfilexml The XML file must be structured so that the properties of each element are expressed as attributes. If you have an XML file in which property values are expressed in a format other than attributes, you must: • Create a transformation file (.xslt) that can dynamically reformat the .xml file so that it is compatible with the XmlDataSource control. • Specify the path of your XSLT file in the "XSL transform file" parameter (see below).
XPath	Specifies an XPath expression to be applied to the XML data contained by the XML file, e.g. rss/channel/item
XSL transform file	Specifies the file name of an Extensible Stylesheet Language (XSL) file (.xsl) that defines an XSLT transformation to be performed on the XML file e.g. c:\myfile.xsl
Data value field, Data text field, Append data bound items	Same as **Connection by Name**
Connection by SharePoint 2007 and 2010 **Note:** The settings in the config file have to be set to detect SharePoint for this option to be active .	
URL	URL of the SharePoint list e.g. http://www.mysitesps.com/mylists
Name of the list	Name of the SharePoint list e.g. Country
Data field value	Name of the column containing the value of the item e.g. Id_Country
Data text field	Name of the column containing the text of the item e.g. Description
Validation	
Behavior	
Note: To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Maximum length	The maximum number of characters that can be entered **Note:** Not available for TextArea field.
Required	Sets the field to be required

Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Read-only	Sets the field to be read-only
Condition	The field is read-only based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the field to be hidden
Condition	The field is hidden based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Custom attributes	
timezoneconversion	Applicable to Date and DateTime Label fields only This property allows for the disabling of the the default user time zone conversion behavior when the form field is in Date or DateTime format. This option is useful if you want to capture and maintain a consistent date-only value in the form field and process data without applying the time zone conversion that sometimes changes the date value depending on the original and current user time zones. Accepted Boolean value: true or false
Additional reserved attribute names specific to Databind: connectionname, connectionstring, providername, xmldatasource, xpath, transformfile, selectcommand, parametername, parametercontrolid, parameterdefaultvalue, parametertype, datavaluefield, datatextfield, appenddatabounditems, spsdatasource, spsdatalist, spsdatavaluefield, spsdatatextfield.	

GridView field settings





Name / Icon	Description
✓	Close and apply the changes to the field
×	Close and cancel the changes
Columns	
↕	Drag-and-drop to change the order of the columns
Header text	Display text on the column's header

Field type	List of field types supported in the GridView: • DropDownListBox • ListBox • Label • TextArea • TextBox **Notes:** • TextBox and TextArea fields in the GridView do not support the validation settings. • The Label field in the GridView does not support the databind settings.
Footer text	Display text of the column's footer The column's footer text can be plain text or an expression used to filter rows, calculate the values in a column, or create an aggregate column (e.g. to calculate a summary from all the row values of the same column: =SUM). For more information, refer to DataColumn.Expression at http://msdn.microsoft.com/en-us/library/system.data.datacolumn.expression(v=VS.80).aspx
+	Add a new column
⊖	Delete the current column
Appearance	
Edit button label	Display text for the edit button
Delete button label	Display text for the delete button
Update button label	Display text for the update button
Cancel button label	Display text for the cancel button
Show header	Check to display the header
Show footer	Check to display the footer
Note: To simplify the capture of a condition, the form fields and operators are listed in the **Select a field…** and **Select an operator…** drop-down menus. You can also press **Ctrl+Space** to show the IntelliSense drop-down menu, which displays the available variables and keywords.	
Required	Sets the field to be required
Condition	The field is required based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Read-only	Sets the field to be read-only
Condition	The field is read-only based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Hidden	Sets the field to be hidden

Condition	The field is hidden based on a custom condition. If the condition is empty then it will be true. The custom condition must be server-side C# syntax code. e.g. MyTextBox.Text == "Hello World"
Additional reserved attribute name specific to **GridView / Appearance**: edittext, deletetext, updatetext, showheader, showfooter	

ASP.NET user control field tool

The **Form designer** supports a custom field tool that is an ASP.NET user control. You can create this tool and manually deploy it on the server. It must have the following elements, folder and file structures:

The user control field template: \wfgen\App_Data\Templates\Forms\[language]\[folder name]\fields\[user control name].txt

The user control sources:

- ASCX: \wfgen\WfApps\WebForms\[user control name].ascx
- Code-behind: \wfgen\WfApps\WebForms\[user control name].ascx.cs

When you enter a tag, the user control field automatically inserts its closing tag. To collapse a code block, click the down arrow next to the line number, which will insert a double-arrow icon in place of the code. To expand the code block, click the right arrow. Press **Ctrl+Space** to show the **IntelliSense** drop-down menu, which displays the available variables and keywords.

The user control field supports the Custom attributes settings (see **File attachment field settings** on page 137).

ID editing

The **ID menu** in the toolbar will active the field's identifier edit mode. You can change the identifier of the header label, sections and fields. Identifiers are normally used to identify a form element such as a section or a field in WorkflowGen's action parameters (e.g. FORM_FIELDS_REQUIRED) or in the form's ASP.NET code-behind.

Rules

- Each identifier must be unique.
- It must start with a letter.
- It can only contain alphanumeric and the underscore characters.
- It is case-sensitive.
- Each field within a section will be automatically prefixed with the section's identifier following an underscore character. e.g. section id=ACTION1; field id=ACTION1_MYFIELD1
- Each field within a GridView field will be automatically prefixed with the GridView's identifier following the underscore character. e.g. "gridview id=ACTION1_MYGRIDVIEW1; field id=ACTION1_MYGRIDVIEW1_TITLE1".

- If the field is moved from one section to another section, then the field's identifier will be automatically prefixed with the new section's identifier.
- If the section's identifier is changed then all the fields within the section will be automatically prefixed with the new section's identifier.

Note: A tooltip with the full/real identifier of the element will be displayed when you mouseover the identifier input field.

Tooltip editing

The **Tooltip menu** in the toolbar will activate the field's tooltip edit mode. You can change the tooltip for the form fields only. Tooltips are normally used to display more information about the field when the user moves the mouse pointer over it.

Format editing

The **Format** menu in the toolbar will activate the field's format edit mode. You can change the format of TextBox, Currency, Date, DateTime, Numeric, Label, ReadOnlyCurrency, ReadOnlyDate, ReadOnlyDateTime, ReadOnlyNumeric and ReadOnlyText fields. Formats are normally used to specify the way to capture and display a specific type of value based on the user's language and culture.

Format types	Description
Numeric	The value is numeric
Currency	The value is a currency
Date Time (system)	WorkflowGen's default date time
Short date	6/15/2009 1:45:30 PM → 6/15/2009 (en-US)
Long date	6/15/2009 1:45:30 PM → Monday, June 15, 2009 (en-US)
Short time	6/15/2009 1:45:30 PM → 1:45 PM (en-US)
Long time	6/15/2009 1:45:30 PM → 1:45:30 PM (en-US)
Full date/time (short time)	6/15/2009 1:45:30 PM → Monday, June 15, 2009 1:45 PM (en-US)
Full date/time (long time)	6/15/2009 1:45:30 PM → Monday, June 15, 2009 1:45:30 PM (en-US)
General date/time (short time)	6/15/2009 1:45:30 PM → 6/15/2009 1:45 PM (en-US)
General date/time (long time)	6/15/2009 1:45:30 PM → 6/15/2009 1:45:30 PM (en-US)
Month/day	6/15/2009 1:45:30 PM → June 15 (en-US)
Round-trip date/time	6/15/2009 1:45:30 PM → 2009-06-15T13:45:30.0900000
RFC1123	6/15/2009 1:45:30 PM → Mon, 15 Jun 2009 20:45:30 GMT
Sortable date/time	6/15/2009 1:45:30 PM → 2009-06-15T13:45:30
Universal sortable date/time	6/15/2009 1:45:30 PM → 2009-06-15 20:45:30Z
Universal full date/time	6/15/2009 1:45:30 PM → Monday, June 15, 2009 8:45:30 PM (en-US)
Year/month	6/15/2009 1:45:30 PM → June, 2009 (en-US)

Appearance editor

While the **General** panel applies attributes to the entire form, the **Appearance editor** lets you customize the appearance of individual form items and provides further options. You can change the appearance of headers and footers, fields and their labels, radio buttons, checkboxes, the **Submit** button, and the optional **Save-as-draft** button. Click the **Appearance** tab to open the **Appearance editor**.

You can use the **Appearance editor** in **Express** or **Advanced** modes.

To use **Express** mode, mouseover the item you want to customize and a toolbar will appear that lets you change the appearance of text and the size of the top margin. (If the item contains several fields, toolbars will appear in the corresponding positions.) You can also change the width of labels and fields. To display the **Express** mode toolbars for all of the items on the form, press **Ctrl+Shift+A**.

Advanced mode provides extended customization options. To show the **Advanced** mode panel, mouseover the item to display the **Express** mode toolbar, then click the pencil icon at the right.

Text lets you set the text appearance, alignment, and word spacing. **Layout** sets the width and padding of the item. **Borders** adds and customizes the appearance of borders. **Field** sets the top, left, and right margins of the field.

You can also add images to section headers and bodies:

- The **Image URL** field contains the URL of the image to display.
- **Image repeat** sets if and how the image will be repeated:

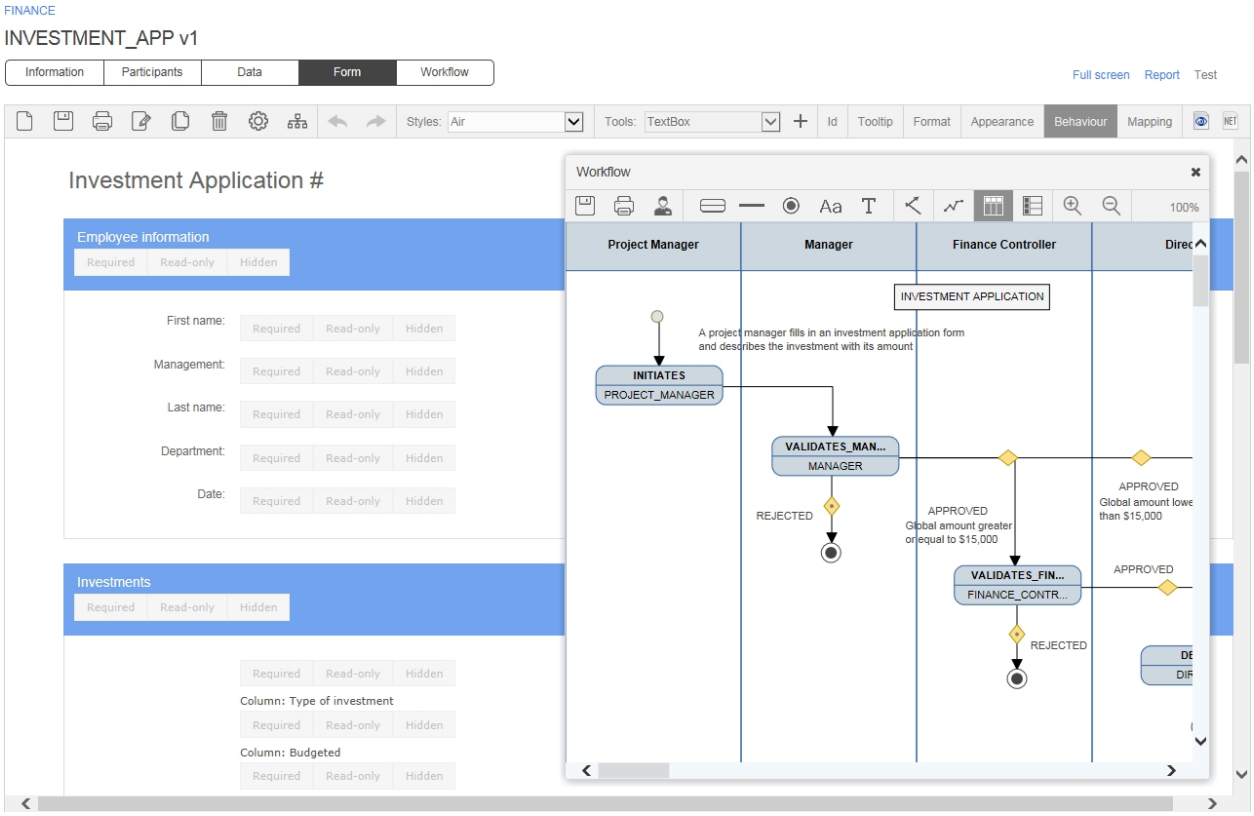
- **No repeat:** the image will not be repeated
- **Repeat:** the image will be repeated both vertically and horizontally (this is the default setting)
- **Repeat x:** the image will be repeated horizontally only
- **Repeat y:** the image will be repeated vertically only

- **Image position "x"** aligns the image to the left, horizontal center, or right.
- **Image position "y"** aligns the image to the top, vertical center, or bottom.

On the **Apply to…** tab, you can choose the items to which you want to apply the customized appearance settings using the checkboxes.

To apply your customized appearance and exit the Advanced mode menu, click the checkbox icon at the top right of the panel. To cancel changes and exit, click the **x** icon.

Define the behavior



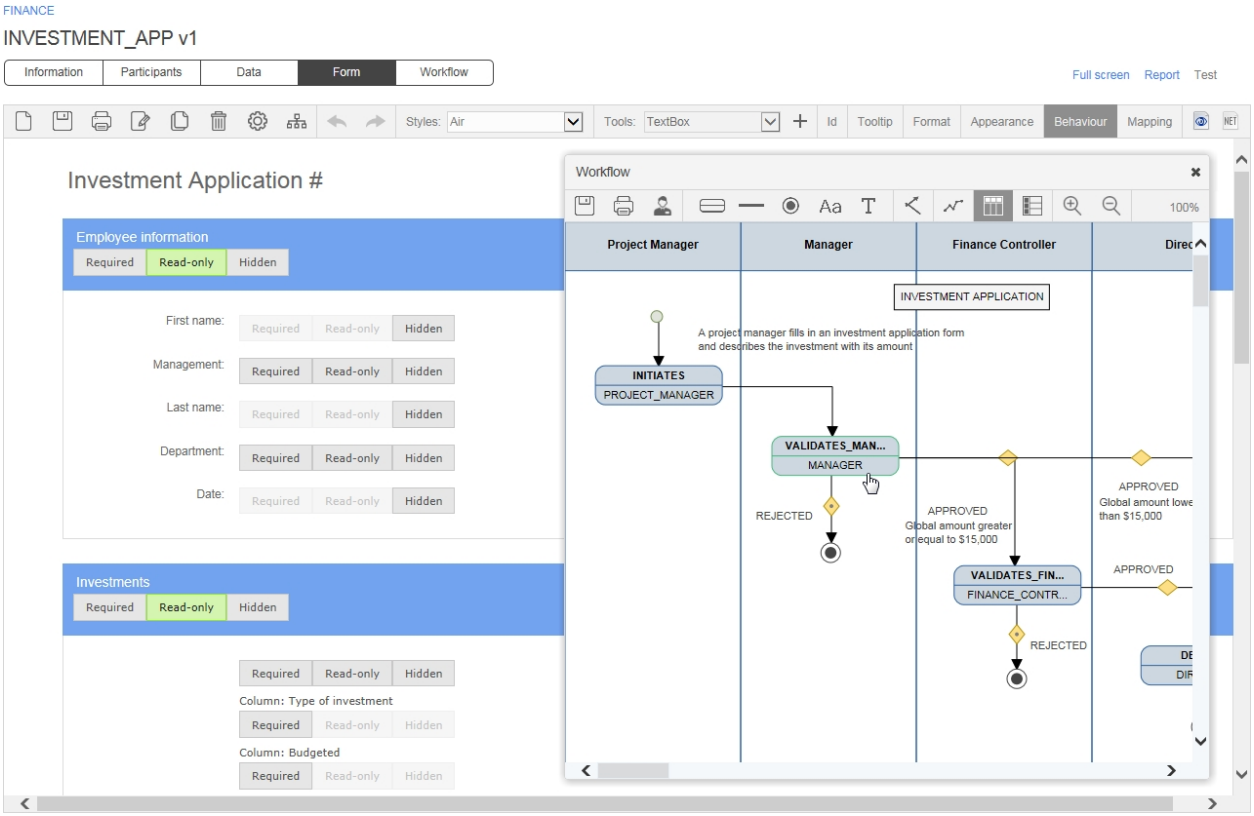
The **Behavior** section is used to visually define the behavior of sections of the form fields for each action of the workflow.

To activate the interactive workflow view and define the behavior of the form, click **Behavior** on the toolbar.

To define the behavior of sections and fields of the form at the action level, click the desired action in the interactive view of the workflow. Once the action is selected, the **Required**, **Read-only**, and **Hidden** settings

are activated as clickable buttons for each section and the form field.

To activate the **Required**, **Read-only**, and **Hidden** settings of each section and form field, click the button related to the section or field for which you want to manage the behavior.



To define the behavior of the form for the other actions of the workflow, click another action via the interactive view and repeat the above operation according to the desired behavior.

Table of supported behaviors for a section

Sections	Required	Read-only	Hidden
All sections	x	x	x

Table of supported behaviors per field type

Default – Fields	Required	Read-only	Hidden
File attachment (Standard .NET FileUpload control)	x	x	x
File attachment (WorkflowFileUpload control)		x	x
CheckBox		x	x
CheckBoxList		x	x
CheckBoxListVertical		x	x
Currency	x	x	x
Date	x	x	x

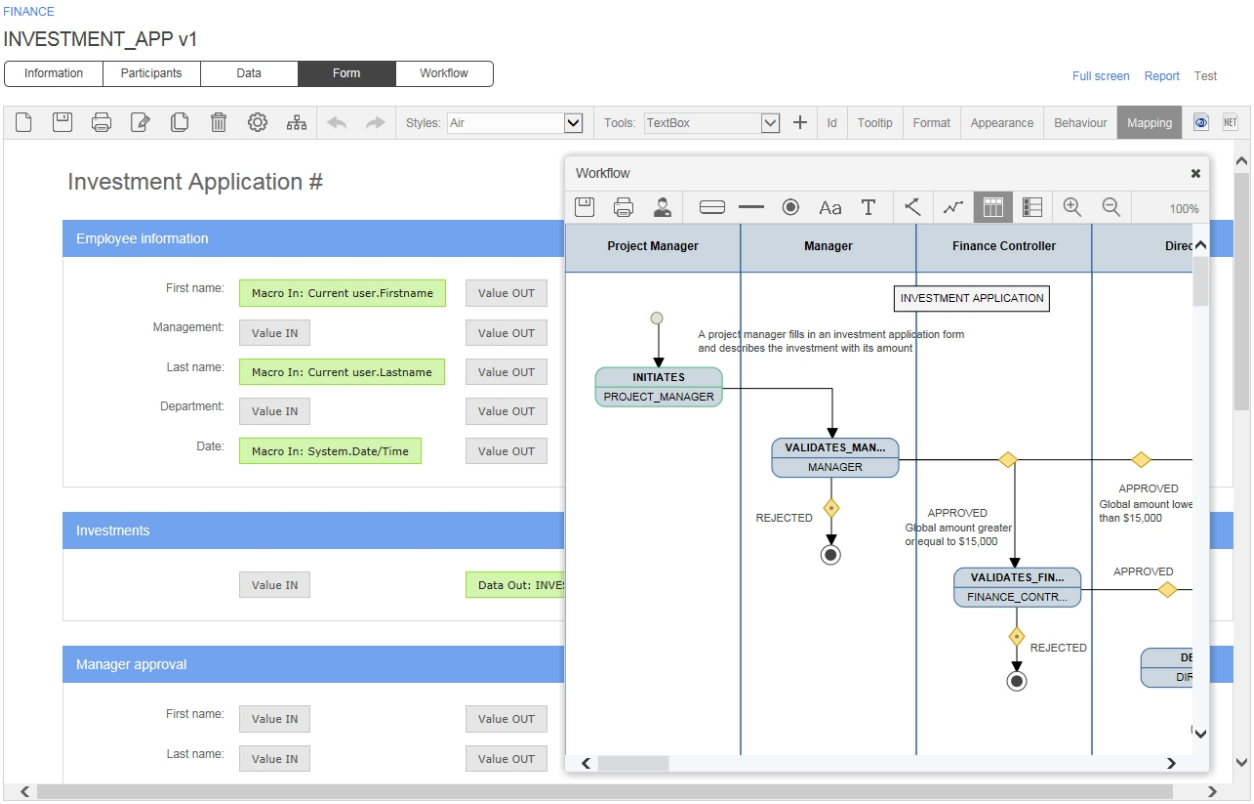
DateTime	x	x	x
DropdownListBox	x	x	x
Gridview	x*	x	x
Gridview - Column	x*		
Label			x
ListBox	x	x	x
Numeric	x	x	x
Password	x	x	x
RadioButton		x	x
RadioButtonList	x	x	x
RadioButtonList Vertical	x	x	x
ReadOnlyCurrency			x
ReadOnlyDate			x
ReadOnlyDateTime			x
ReadOnlyNumeric			x
ReadOnlyText			x
TextArea	x	x	x
Text	x	x	x

* Not supported in field conditions.

Manage the mapping

The **Mapping menu** enables you to visually define the default values (data in) and/or data to be stored by the workflow (data out) of the form fields for each action of the workflow.

To activate the interactive workflow view and manage the mapping of the form, click **Mapping** on the toolbar.



To set the default values of form fields at the action level, click the desired action in the interactive view of the workflow.

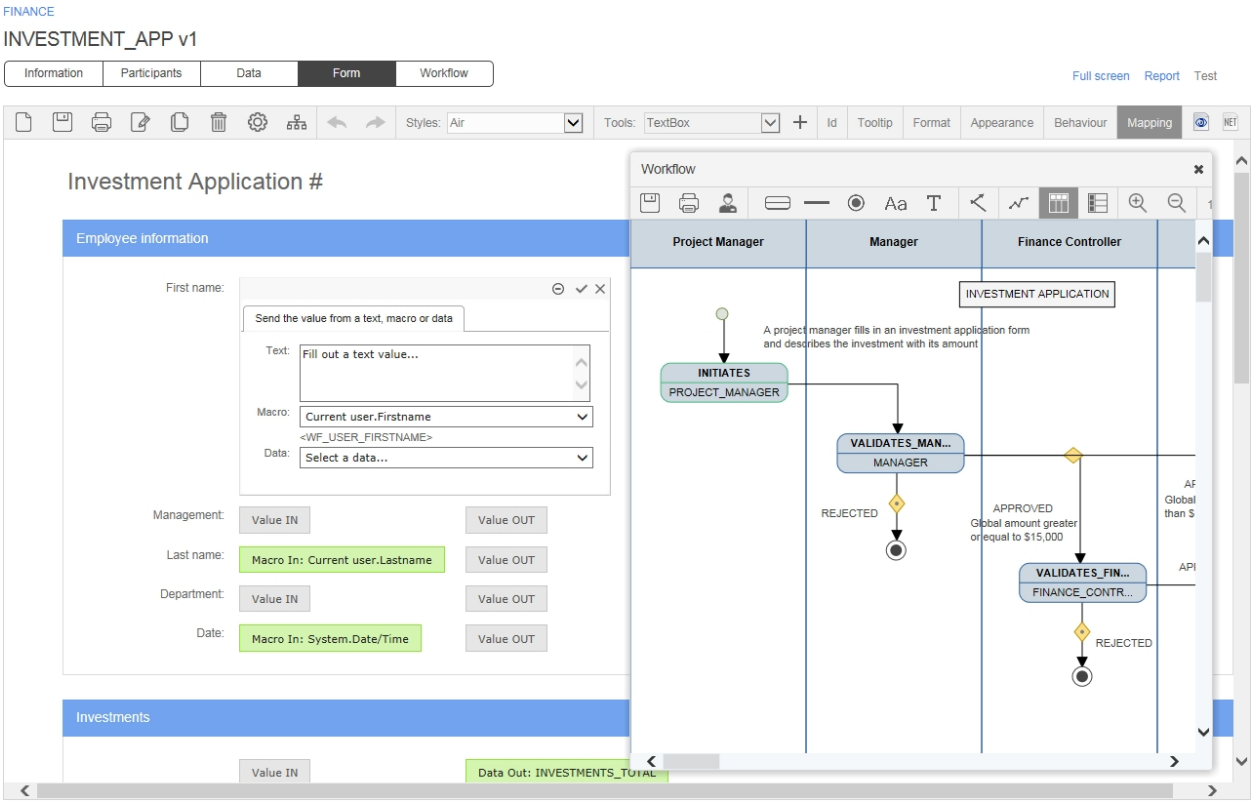
Once the action is selected, the **Value IN** and **Value OUT** buttons are activated in each form field.

Default value (data in)

A default value will automatically populate a field when displaying the form following the launch of an action. These default values can be of several types:

- Manually-entered text
- A macro selected from the list of available macros
- Workflow data selected in the data list

To set the default value of a field at the action level, click the **Value IN** button to the right of the field concerned.



In the dialog box that appears, set the default value of the field by entering text in the **Text** section, by selecting a macro from the drop-down **Macro** list, or by selecting process data in the **Data** combo box. Click the check mark at the top right to save.

To set the default values of other form fields for each of the actions of the workflow, click another action via the interactive view and repeat the previous operation.

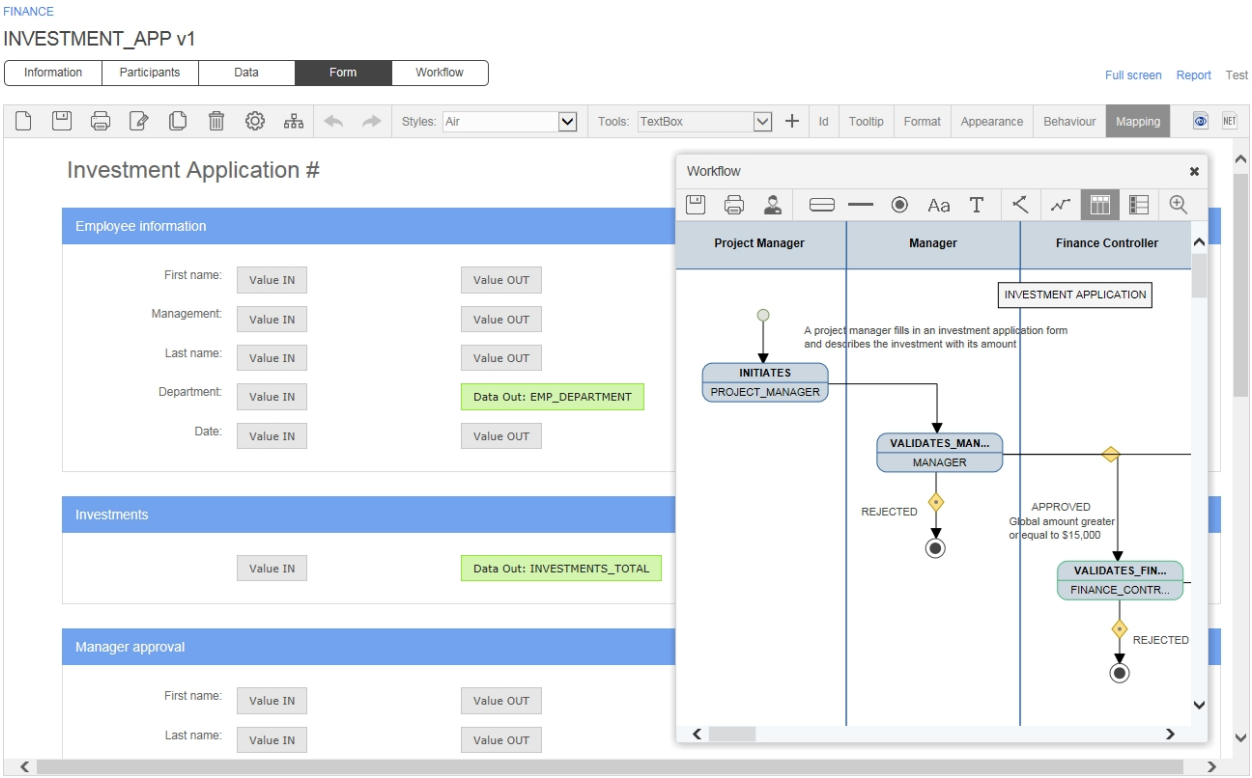
Data stored by the workflow (data out)

To set the form data to be stored for an action, click the desired action in the interactive view of the workflow.

Data stored by the workflow corresponds to the value of form fields that will be retrieved by the workflow as a result of an action, and that can be used for the following purposes:

- As conditions of workflows
- In the assignment of an action, setting the time for action and content of notifications
- Through the tracking features and/or statistics (reporting)

To send the value of a form field and therefore store it as process data, click **Value OUT** to the right of each field in question.



Fields whose values have been sent are automatically declared in the **Data** tab of the process definition and will be usable as workflow transitions, as tracking features and statistics (reporting), etc.

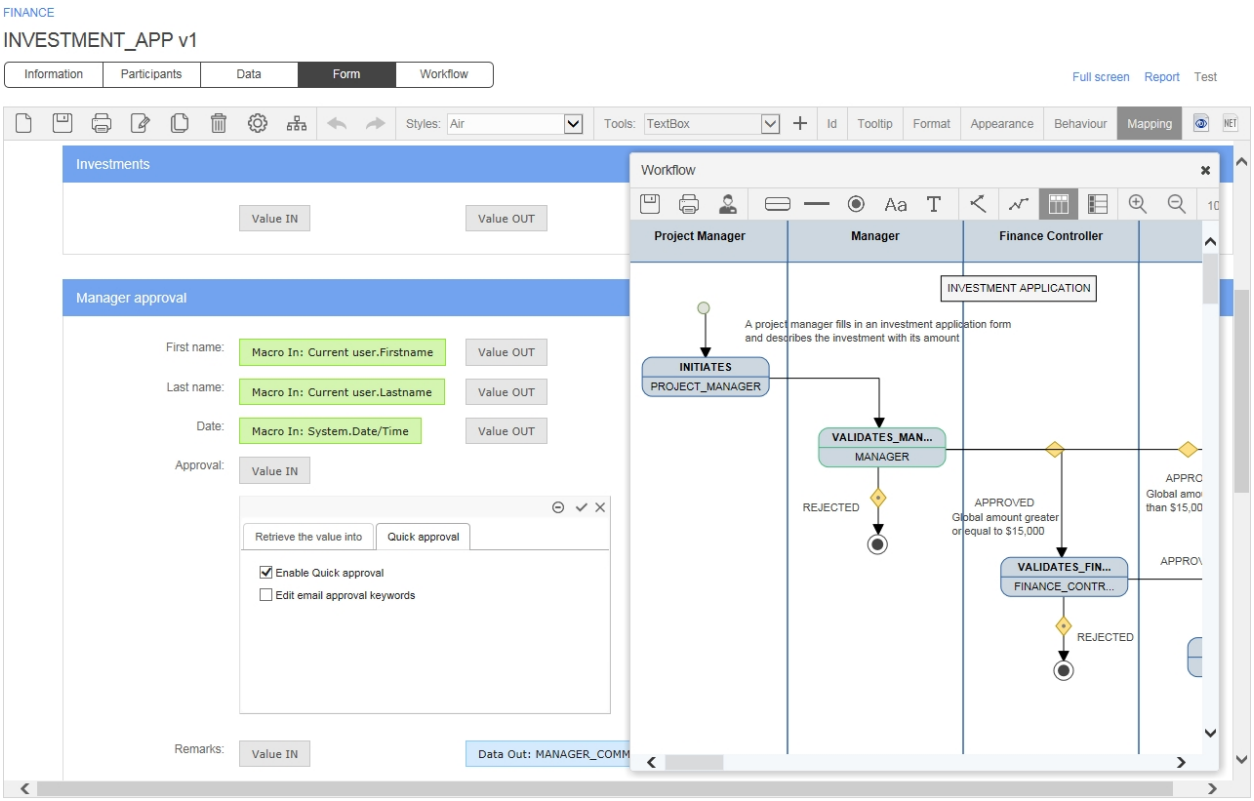
To define the data stored for each of the actions of the workflow, click another action via the interactive view and repeat the previous operation.

Quick approval

To enable the **Quick approval** feature on validation actions, click the **Quick approval** tab and check **Enable Quick approval**. Click **Edit email approval keywords** to specify email approval keywords (comma-separated) for the configured **Quick approval** parameters. Once enabled, you can also **Enable Quick approval comments** for comments actions.

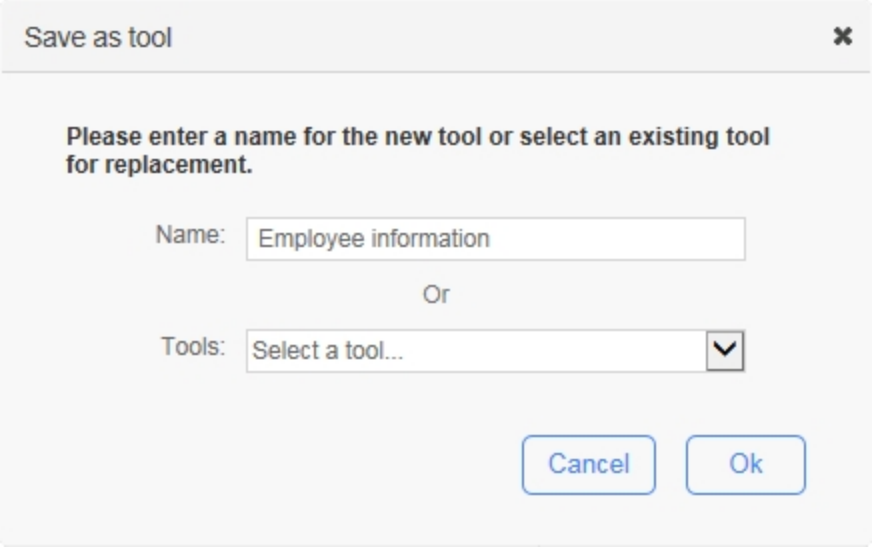
To enable **Quick approval** by default, check **Enable Quick approval by default** on the **Portal** tab in the **Configuration panel** of the **Administration Module.**

Note: If you have modified the default **Quick approval** parameters or added additional ones, the parameter values must be static and not bound to dynamic process data.



Save a section or field as tool

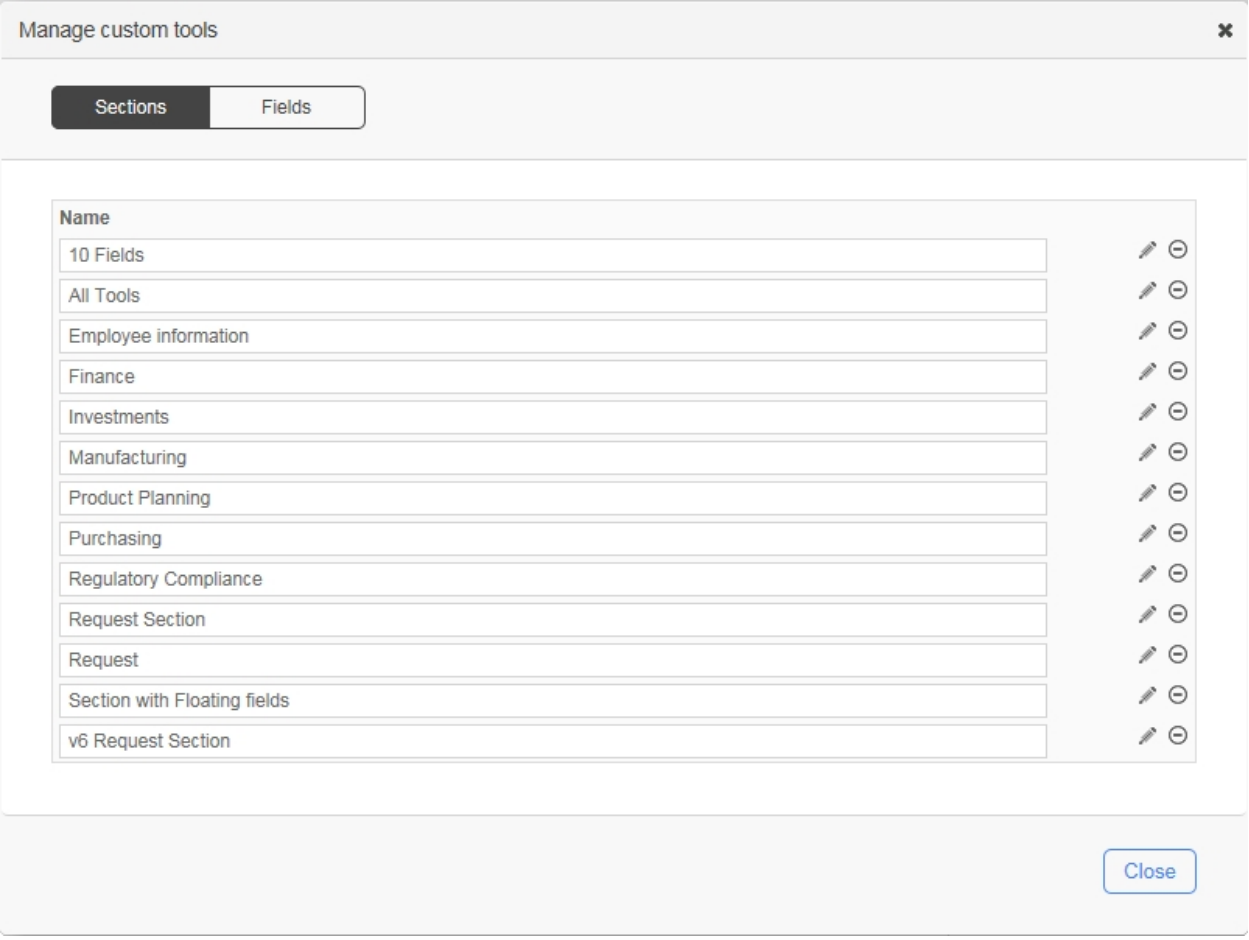
This feature allows a form designer to save an existing section or field in the current form as a custom tool template in order to be reused in other forms. First, select a section or field then click the **Save a section or field as tool** icon on the toolbar (see **Toolbar** on page 124).

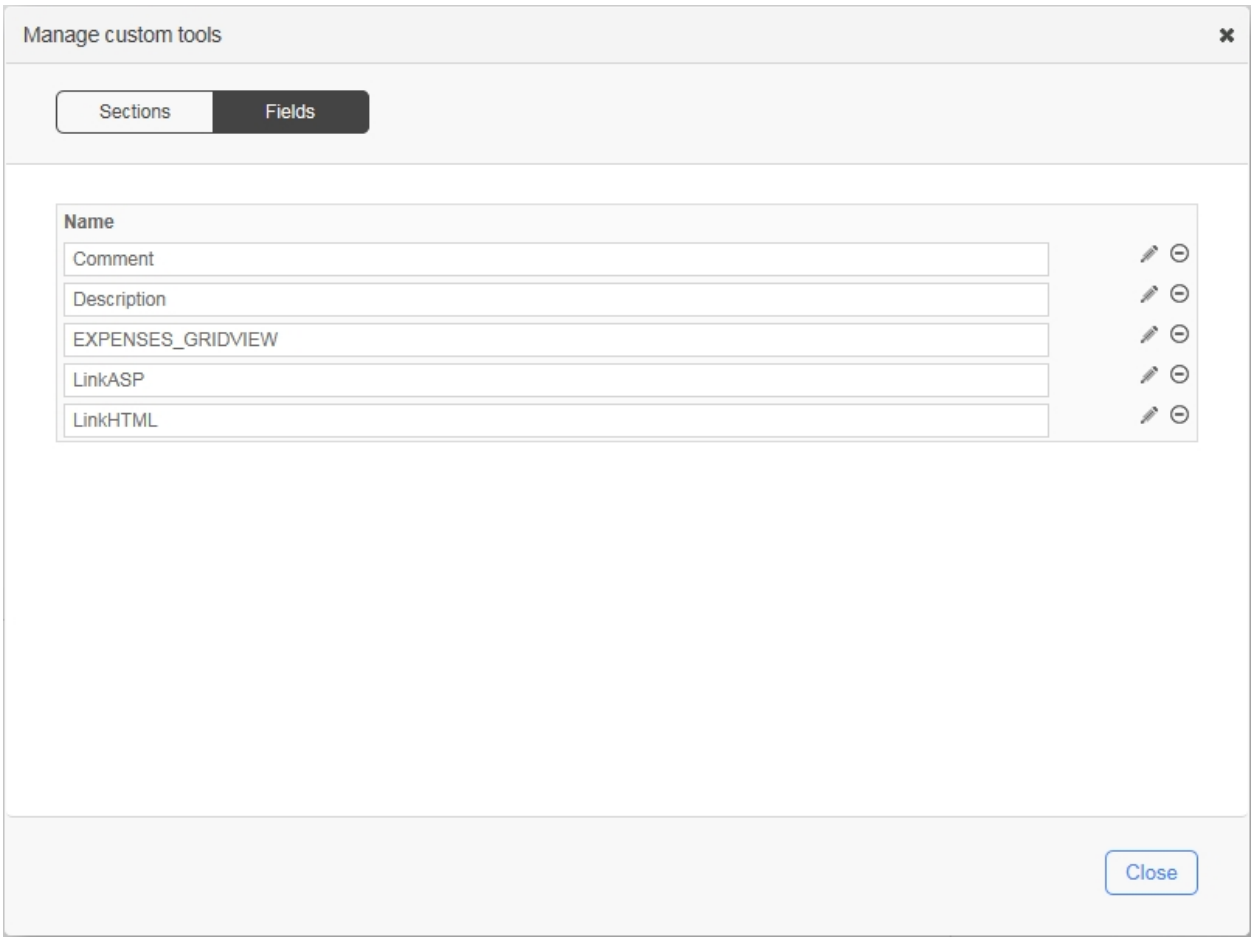


Fields	Description
Save as tool	
Name	Enter a unique name for the custom tool
Tools	Select an existing tool in the dropdown list for replacement

Manage custom tools

To open this window, click the **Tools** drop-down menu and select **Manage custom tools**, which allows you to delete custom tools.





Name / Icon	Description
Sections	
Name	Name of the custom section tool
⊖	Delete the current custom section tool
Fields	
Name	Name of the custom field tool
⊖	Delete the current custom field tool

Process form lifecycle

The built-in form designer creates a web form (aspx and code-behind) that is based mainly on both ASP.NET Framework and WorkflowGen.My libraries.

This gives you the advantage of many possibilities for customizing and integrating the web form to your specific needs, especially in an advanced and integrated development environment such as Visual Studio.

An example of the process lifecycle begins with the creation of a first version, which is done quickly and easily using the built-in form designer. The end-users will then test the first version as proof of concept. Later, the process can be deployed for production if it meets the business's and end-users' expectations. If there are

custom or advanced functionalities required in a new version that are not available in the built-in form designer, then the process can be migrated to the web form development.

In order to migrate a process with a built-in form to a process web form, follow these steps:

1. Make a new version or duplicate the process with the built-in form.
2. Uncheck the **Built-in form designer** option in the **New process** information tab.
3. In Visual Studio, open the web form website with the folder path (**\wfgen\wfapps\webforms\[process name]\V[version number]**) and start your development.
4. You can choose to leave your web form folder (**\[process name]\V[version number]**) as a sub-folder within the webforms web application (**\wfgen\wfapps\webforms**) or transform this folder into a web application in IIS.
    - The former case will make your web form dependent and uses the web forms web application resources (e.g. **\bin**, **\App_Data**, **\App_Resource**, **\App_Themes**, etc.) as it did prior to migration.
    - The latter case will make your web form as an independent web application. In this case, you will need to copy the webforms's bin sub-folder to your web form's folder and refresh the opened project in Visual Studio, if needed.

For more information on web form development, refer to the Web Form Developer Guide.

Security

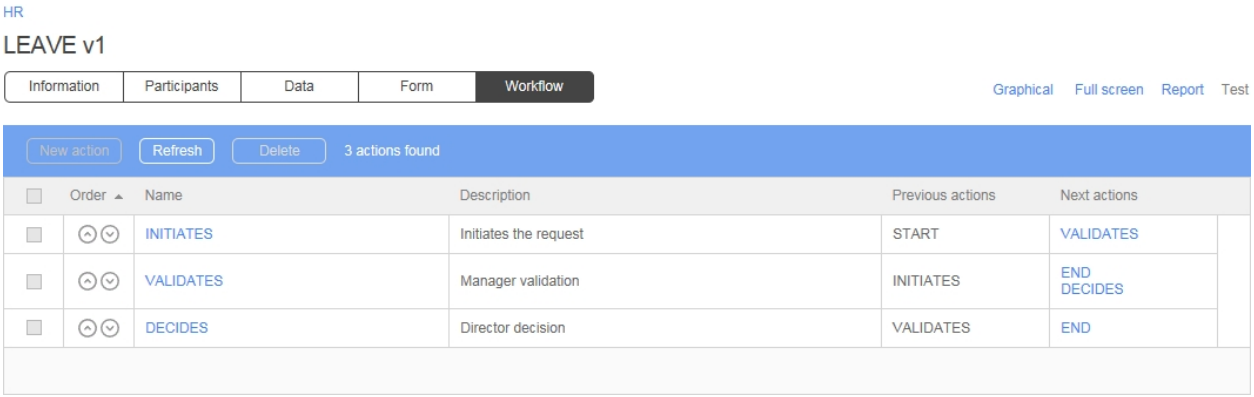
All connection strings in "\wwwroot\wfgen\web.config" are available for use in the Form Designer and Global Lists except for the master database connection string. While the application tries to verify that user-supplied SQL queries used in these contexts are secure and contain only SELECT statements, you should also make sure that exposed connection strings are secured at the database level. This means that if you don't want a process manager or a Global List manager to be able to update or modify a certain database, the connection string should have read-only access to your database.

Keep in mind that process designers can also use any connection string that they have access to from the Form designer's code-behind editor. If you want to restrict a Global List manager's access to a connection string, while still allowing the process designer to use it, you should add the connection string to the WebForm application's "web.config" ("\wwwroot\wfgen\WfApps\WebForms\web.config").

Connection strings in the WebForms "web.config" are not exposed in the WorkflowGen UI, so for process designers to be able to use them, they must know the name of the connection string. This is also a convenient way to give different process managers access to specific connection strings.

Workflow

Process workflow screen (list view)

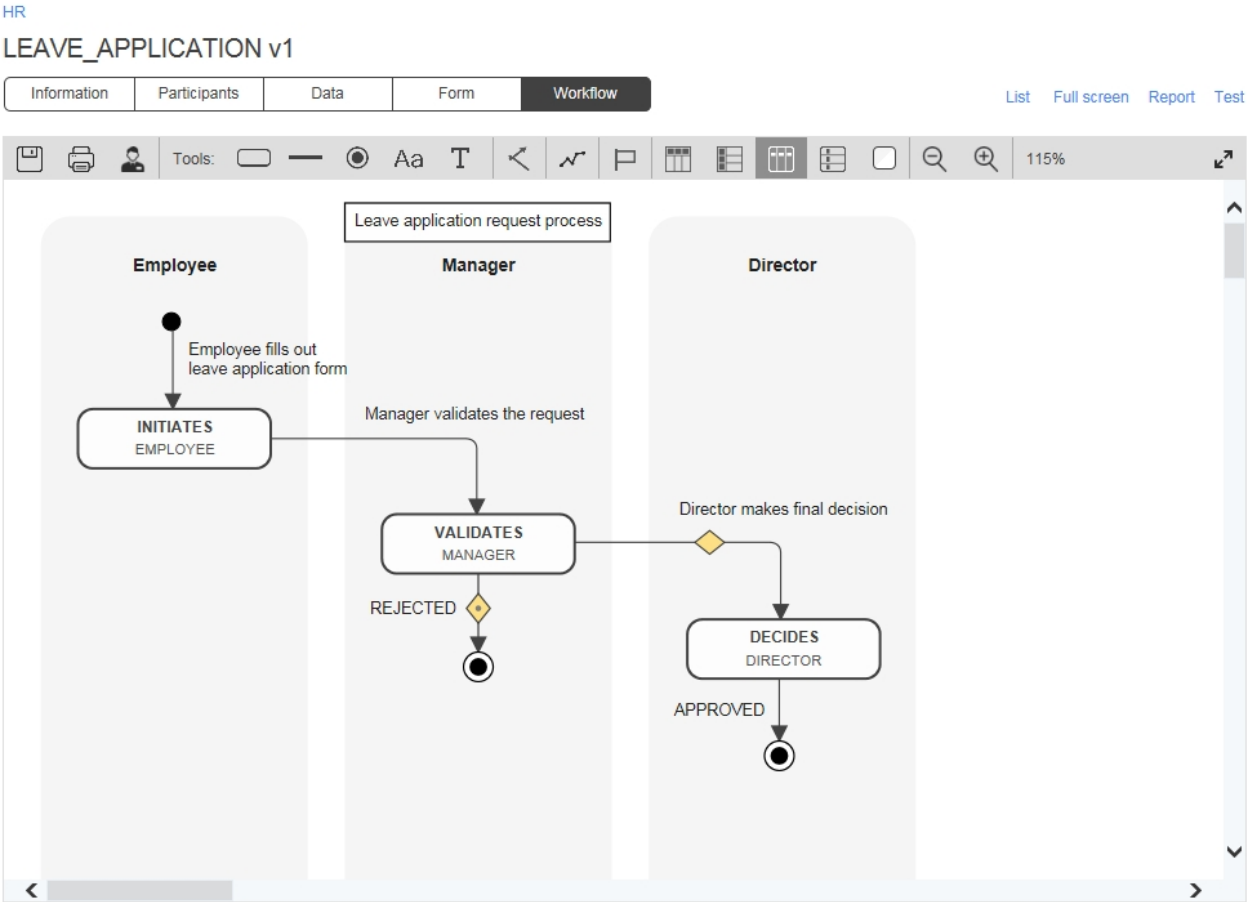


HTML5 graphical process workflow designer

WorkflowGen features an HTML5 graphical process workflow designer, built on the latest HTML5 and SVG standards, with a simpler user interface and improved behavior for a more fluid design experience. It also provides greater compatibility with different design environments (such as mobile devices) that might not support Flash, which was the mode used in previous versions of WorkflowGen.

HTML5 mode is enabled by default under **Display** on the **Administration** tab of the **Configuration panel**. If disabled, the workflow designer will revert to Flash mode. For a table that lists the Flash and HTML5 equivalents for workflow design functions, see the WorkflowGen knowledge base article at https://discuss.workflowgen.com/t/graphical-workflow-designer-html5-and-flash-comparison/.

Process workflow screen (graphical view)



Actions list view

Click the **List** link to see this view.

Button / Column	Remarks
New action	Opens the **Select an action type** window and then the **Add action** form
Refresh	Updates the action list
Delete	Deletes the selected action
Order	The arrows allow the action display order to be modified within the process workflow
Name	Action name A link displays the action form in edit mode. The **Add** link on the Edit action screen displays a blank action form to add new Help data.
Description	Action description
Previous actions	Lists actions preceding the current action within the workflow

Next actions	Lists actions following the current action within the workflow A link displays the **Edit action** form, which lists actions that following the current one. The **Add** link on the **Edit action** form displays the action form in edit mode for each following action.

Actions graphical view

Click the **Graphical** link to see this view.

Note: You must disable any popup blocker on the browser because the graphical view uses JavaScript events.

Icon	Tools	Remarks
	Save the layout	Save the current layout of the workflow diagram
	Print the diagram	Print the current diagram
	Add participant	Add a new participant to the process
	Add action	Add a new action to the process
	Add synchronization	Add a synchronization action to the process
	Add end point	Add an end point to the process
Aa	Add comment	Add a comment to the process
T	Add text	Add text to the process
	Add break points	Add break points to transitions
	Choose auto positioning mode	Switch between auto and manual positioning mode for the transition anchors
	Show assignment methods	Show assignment methods on actions
	Display vertical swimlanes	Add a vertical swim lane overlay on the graphical view with actions displayed in the participant columns
	Display horizontal swimlanes	Add a horizontal swim lane overlay on the graphical view with actions displayed in the participant rows
	Display vertical panels	Add a vertical panel overlay on the graphical view with actions displayed in the participant columns

	Display horizontal panels	Add a horiztonal panel overlay on the graphical view with actions displayed in the participant columns
	Display color picker	Display a color picker from which you can choose the swimlane/panel and the background color
	Decrease zoom	Decrease the zoom scale by 15%
	Increase zoom	Increase the zoom scale by 15%
	Maximize canvas	Maximizes the canvas size
	Return to default canvas size	Returns to the default canvas size

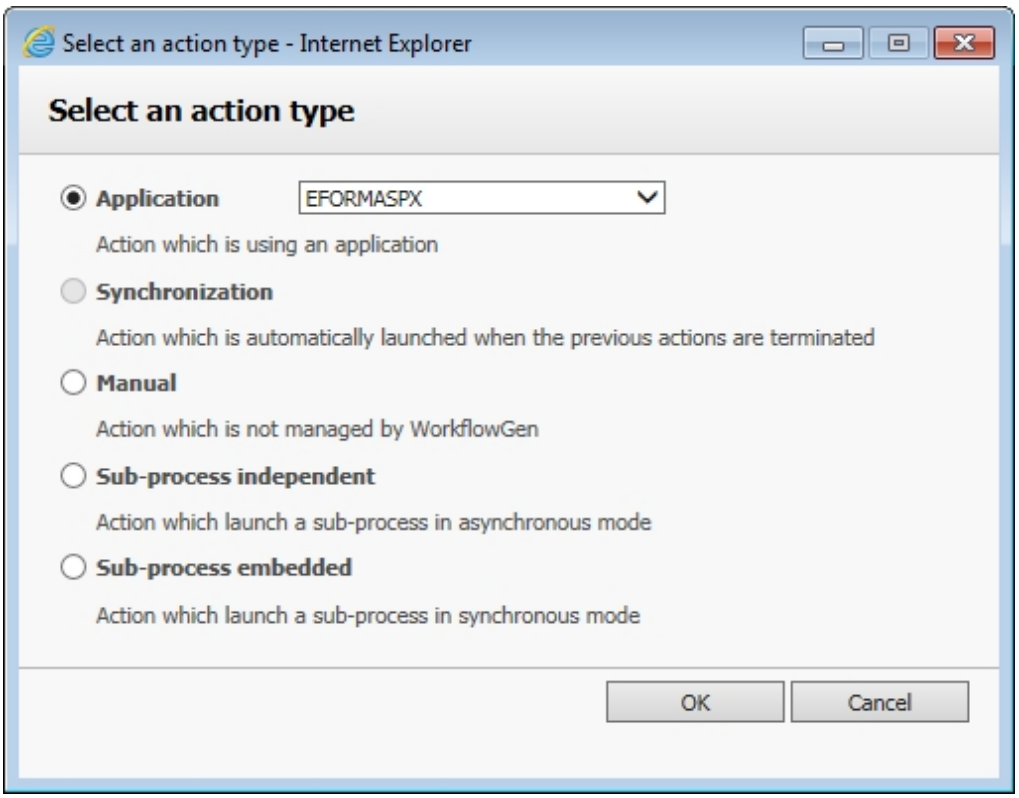
HTML5 graphical workflow designer functions

Function	Method
Add an element (action, synchronization, endpoint, comment, text)	Drag and drop the element from the toolbar onto the canvas.
Delete an element (action, synchronization, endpoint, comment, text)	Click the element, then click the **x** that appears in the top right corner.
Add a transition	Click the action and click the down arrow, then drag and drop it onto the desired action.
Add a transition loop	Click the action and click the down arrow, then drag and drop the transition onto the same action.
Delete a transition	Click the transition, then click the **x** that appears in the top right corner.
Add a condition	Double-click the transition.
Add more than one condition to a transition	You cannot add more than one condition to a single transition. Instead, create a new transition between the actions and add the condition here.
Update a condition	Double-click the transition or condition.
Delete a condition	Click the condition, then click the **x** that appears in the top right corner.
Delete a participant	Click the participant, then click the **x** that appears in the top right corner.
Auto positioning mode	Click the auto positioning mode tool then choose one of the options.
Add a breakpoint	Click the add breakpoint tool then click the transition (breakpoints will be created individually). As well, clicking the breakpoint tool will show all of the existing breakpoints.

Delete a breakpoint	Click the breakpoint, then click the **x** that appears in the top right corner or press the **DELETE** key (only the selected breakpoint will be deleted). In the case of loop transitions, a minimum of two breakpoints are required.
Change the position of a loop transition	Change the position of each of the breakpoints so that the transition points to the new position.
Change the target/source of a transition	Click the transition, hover over the target/source of a transition until the hand pointer appears, then drag and drop the target/source onto another action.
Change the loop of an action toward another action	Click the loop, then change the target and the source toward the other action.
Resize swimlanes	Click the participant, place the pointer over the border between participants, click the border, then drop it on the new position.
Change the order of participants	Click the participant, then drag and drop it onto the new position (the orange header indicates the new position of the participant).
Associate actions with participants in swim lanes	Can be enabled and disabled in the **Workflow** section on the **Administration** tab in the **Configuration panel**.
Zoom	The zoom percentage is displayed in the top right corner of the workflow.

Adding an action

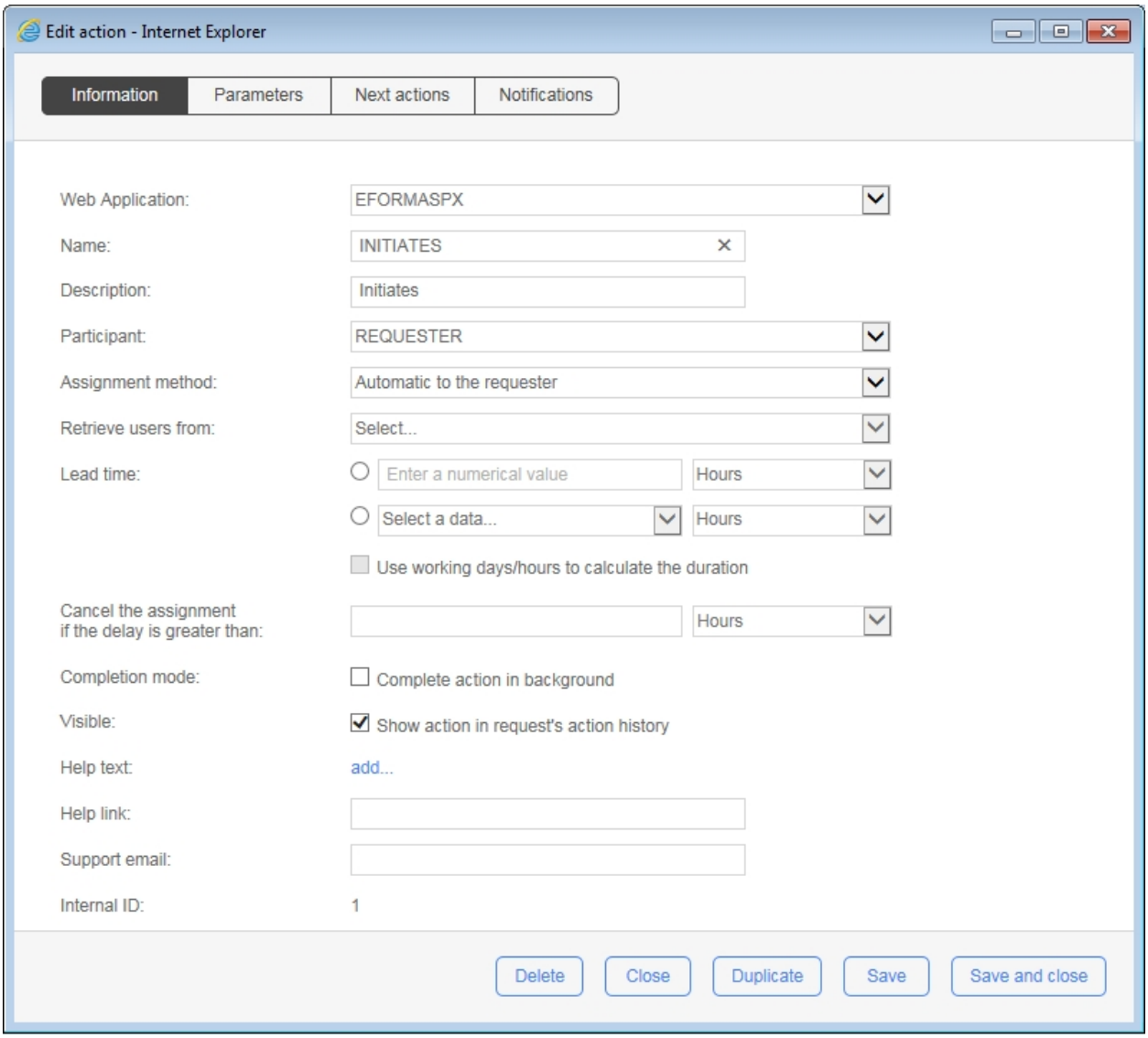
Drag and drop the **Add action** icon onto the view to open the **Select an action type** screen.



Fields	Remarks
Application	Allows an action to be created based on the selected application
Synchronization	Allows a synchronization type action to be created (synchronization bar)
Manual	Allows a manual type action to be created (an action that is not associated with a form)
Sub-process independent	Allows an independent sub-process type action to be created
Sub-process embedded	Allows an embedded sub-process type action to be created

Actions

Action editing screen



Menu banner

Links	Remarks
Information	A link displays the action form in edit mode
Parameters	Displays the list of required and additional parameters of an application type action
Next actions	Displays the list of actions following the current action in the workflow process
Notifications	Displays the automatic and additional notification lists for the action

Editing an action

Note: The fields displayed in the **Edit action** dialog box vary depending on the action type (for example, a human-based web form action or a sub-process action).

Fields	Remarks
Application or action type	Type of action or application used by the action
Name	**Required field** Unique identifier for the action; must respect nomenclature and be limited to 30 characters
Description	**Required field** Action description limited to 255 characters
Participant	**Required field**[1] Participant involved in the action
Sub-process	**Required field**[1] Sub-process associated to the action The list of available sub-processes is built according to the process status: • If the process is active you can choose only active or archived sub-processes • If the process is in test or under construction, you can choose in test, active, or archived sub-processes **Warning:** If you change the sub-process to another one, all of the current parameters of the previous sub-process will be deleted.
Sub-process version	The sub-process version (optional) **Auto** finds the most recent active, in test, or archived version (in that order) and chooses it, but if you specify a specific version in the **Number** field, that version will be chosen regardless of its status.
Sub-process requester	**Required field**[1] Process users automatically defined as the requester of the sub-process
Assignment method	**Required field**[2] Method of assigning the action to a participant

Retrieve users from	**Required field**[3] Process data containing a list of usernames (separated by a comma) of the persons to whom the action will be assigned
Lead time[4]	Amount and unit of time before the action is considered late The value can be specified by a fixed value or retrieved at runtime from a data value. Units: • Years • Months • Days (takes working days into account) • Hours (takes working days and hours into account) • Minutes (takes working days and hours into account) • Seconds (takes working days and hours into account) You can choose the way the lead time will be calculated by checking (or not checking) the **Use working days/hours to calculate the duration** option.
Cancel the assignment if the delay is greater than[5]	The action assignment can be automatically cancelled if the delay is greater than this specified value. You must specify a duration unit for this field.
Completion mode	Indicates if the action must be completed by the workflow engine in background This option is useful when the completion takes a long time (a lot of notifications, the action is followed by a web service or a web process, etc.). In this case, the user doesn't have to wait for the action completion to be redirected to the request follow-up form or the portal home page (according to the redirection setting defined in the configuration panel by the administrator).
Visible	Indicates if the action is displayed in the actions history of the request follow-up form of the user module
Help text	Help text for the action, visible in the user module A link allows this text to be edited.
Help link	URL of an external help document relating to the action, visible in the User Portal
Support email	Email address for support on the action, visible in user mode
Icon size	The action icon size for the process workflow graphical view; check **Apply size to all actions** to change the size of all action icons at once
Internal ID	Action’s ID

1. If the action is a sub-process.
2. If the action is an application
3. Available for **Automatic to the person** and **Manual** assignment methods.
4. Enabled if the assignment method is manual.
5. Enabled if a lead time is specified.

Deleting an action

Only a process/folder manager or an administrator can delete an action. If the process is active or archived, the action cannot be deleted.

Assignment methods

Automatic methods	Remarks
Automatic to the requester	The action is assigned to the user who initiates the request (e.g. first action of the process is assigned to the requester).
Automatic to the action initiator[1]	The action is assigned to the user who handled the previous action (e.g. launch of several actions one after the other by the same person).
Automatic to the person[2]	If the type of participant is **Person**, the action is assigned to the user associated with the participant. If the type of participant is **List of persons**, the action can be assigned to the user whose username is found in the chosen process data. If the process data contains a list of usernames (separated by a comma) then one instance of the activity is created and assigned to each user of the list. In this case an assignment error may occur if the assigned user is not associated with the participant.
Automatic to the person who handled … (an action)	The action is assigned to the user who handled the selected action (e.g. the final approval must be done by the same user who approved first.). The list of available actions to select (in the second drop-down) will be the ones to which the selected participant has previously been associated.
Automatic to the manager of the requester	The action is assigned to the manager of the user who initiates the request. An assignment error may occur if no manager is associated with the requester.
Automatic to the manager of the action initiator	The action is assigned to the manager of the user who handled the previous action. An assignment error may occur if no manager is associated with the action initiator.
Automatic to the manager of the person who handled … (an action)	The action is assigned to the manager of the user who handled the selected action. An assignment error may occur if no manager is associated with the user who handled the selected action. The list of available actions to select (in the second drop-down) will be the ones that the selected participant has previously been associated to.
Automatic to the system	Used for a synchronization related application or an automatic application (WebProcAsync, WebProc, Web Service).
Manual methods	**Remarks**
Manual by the action initiator	The user who handled the previous action selects the user to receive the next action assignment in the participant user list.

Manual by the person who handled … (an action)	The user who handled the selected action chooses the user who will receive the next action assignment in the participant user list. The list of available actions to select (in the second drop-down) menu will be the ones to which the selected participant has previously been associated. For processes which contain sub-processes or automatic applications, this method may replace 'By the action initiator' when the previous action has been handled by the system.
Manual by the coordinator	(Dispatching) One of the coordinators (of the selected participant) assigns the action to a user associated with the action participant.
Self service	The first user associated with the participant who decides to handle the action receives the action assignment (at that time others are not able to handle the action anymore).

1. Automatic to the action initiator; available if the participant of the previous action is the same as the participant of the current action.
2. Automatic to the person; if this method is selected, the **Retrieve the user from the data** field must be filled in.

The following table shows the available assignment methods depending on the action type and the action application type:

			Action Type			
			Synchronization	Application		Sub-process
				Application Type		
				Web Procedure Web Service Asynchronous WebProc.	Web Application	
Available Assignment Method	**Automatic**	Automatic to the requester			See next table	**x**
		Automatic to the action initiator[1]			**x**	**x**
		Automatic to the person[2]			**x**	**x**
		Automatic to the person who handled…			See next table	**x**
		Automatic to the manager of the requester			See next table	**x**
		Automatic to the manager of the action initiator			See next table	**x**
		Automatic to the manager of the person who handled…			See next table	**x**
		Automatic to the system	**x**	**x**	See next table	**x**
	Manual	Manual by the action initiator			See next table	
		Manual by the person who handled…			See next table	
		Manual by the coordinator			See next table	
		Self-service			See next table	

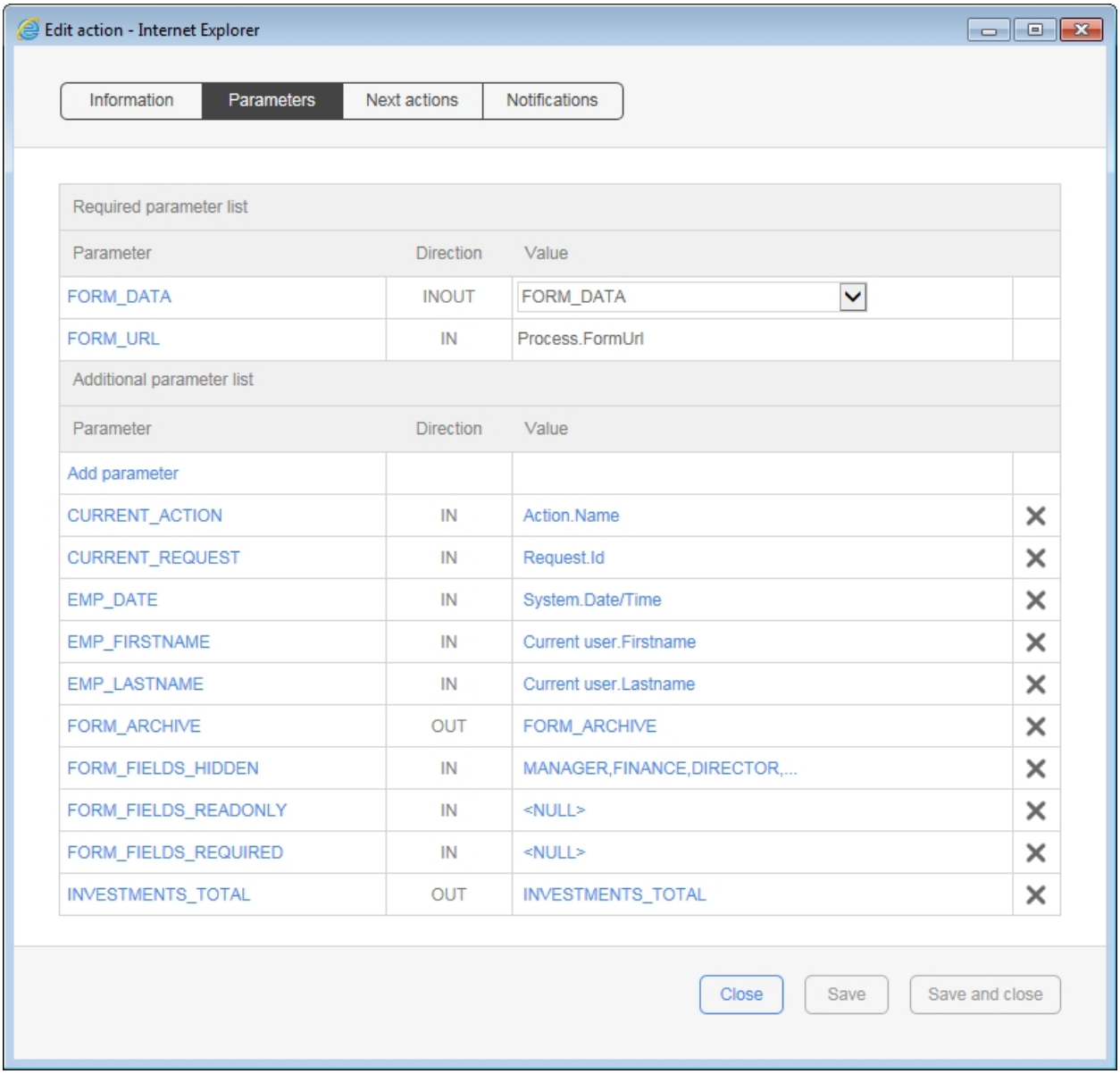
1. Automatic to the action initiator; available if the participant of the previous action is the same as the participant of the current action.
2. Automatic to the person; if this method is selected, the **Retrieve the user from the data** field must be filled in.

The following table shows the available assignment methods when selecting an **Application** action type and a **Web application** action application type depending on the associated participant type and participant role:

			Participant type				
			Person	List of persons		List of persons with coordinator	
				Participant Role		Participant Role	
				Participant	Requester	Participant	Requester
Available Assignment Method	Automatic	Automatic to the requester			x		x
		Automatic to the action initiator[1]	x				
		Automatic to the person[2]	x	x	x	x	x
		Automatic to the person who handled…		x	x	x	x
		Automatic to the manager of the requester		x	x	x	x
		Automatic to the manager of the action initiator		x	x	x	x
		Automatic to the manager of the person who handled…		x	x	x	x
		Automatic to the system					
	Manual	Manual by the action initiator		x	x	x	x
		Manual by the person who handled…		x	x	x	x
		Manual by the coordinator				x	x
		Self service		x	x	x	x

1. Automatic to the action initiator; available if the participant of the previous action is the same as the participants of the current action.
2. Automatic to the person; if this method is selected, the **Retrieve the user from the data** field must be filled in.

Parameters list screen



Required parameters list

Columns	Remarks
Parameter	Name of the application or sub-process parameter required by the action A link displays the parameter form in edit mode.
Direction	Parameter direction
Value	Process data associated to the parameter A link displays the parameter form in edit mode.

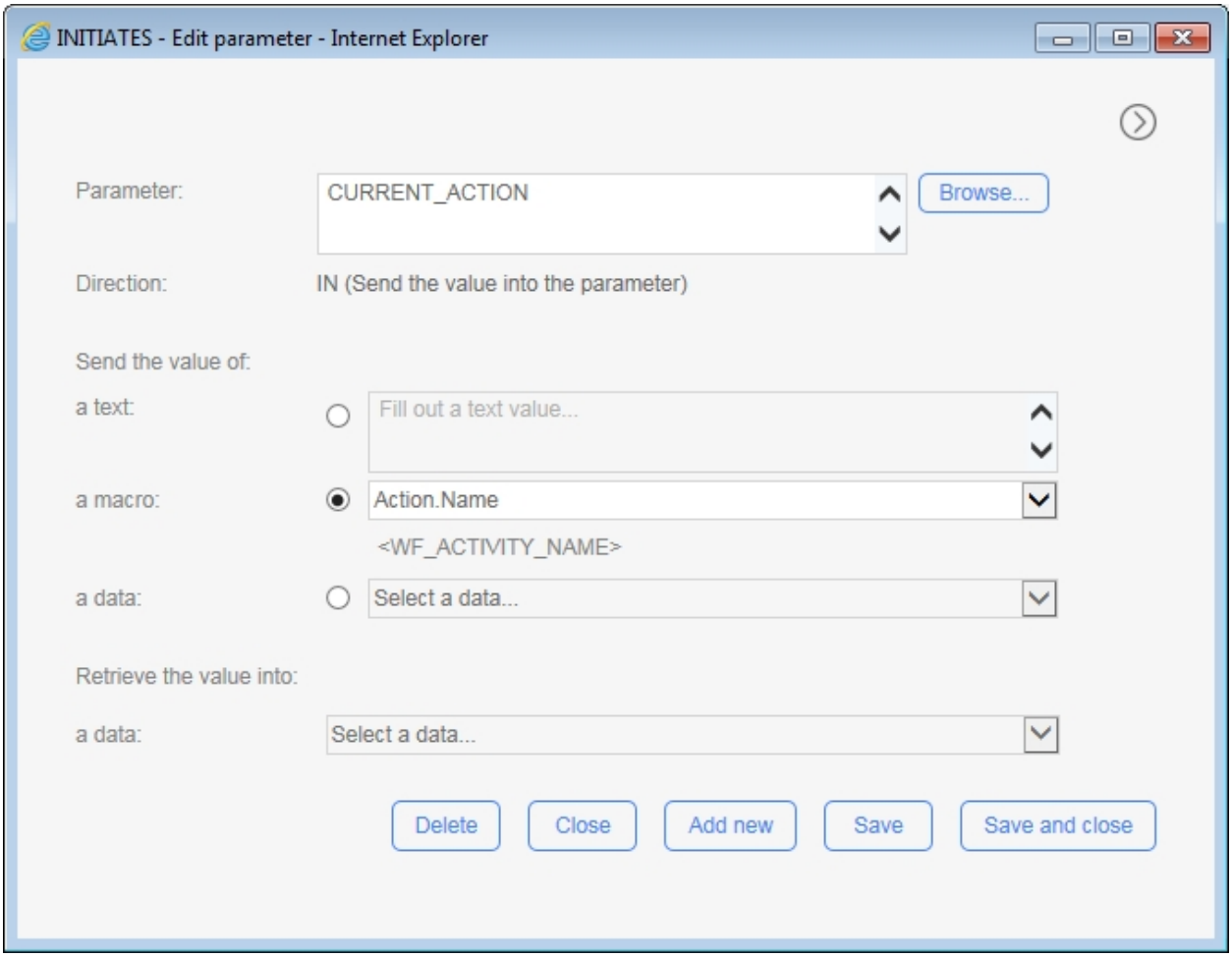
Additional parameters list

Columns	Remarks
Parameter	Parameter name A link displays the parameter form in edit mode. The **Add** link displays a blank parameter form to add new data.
Direction	Parameter direction
Value	Data associated to the parameter
Deletion	The **x** deletes the parameter

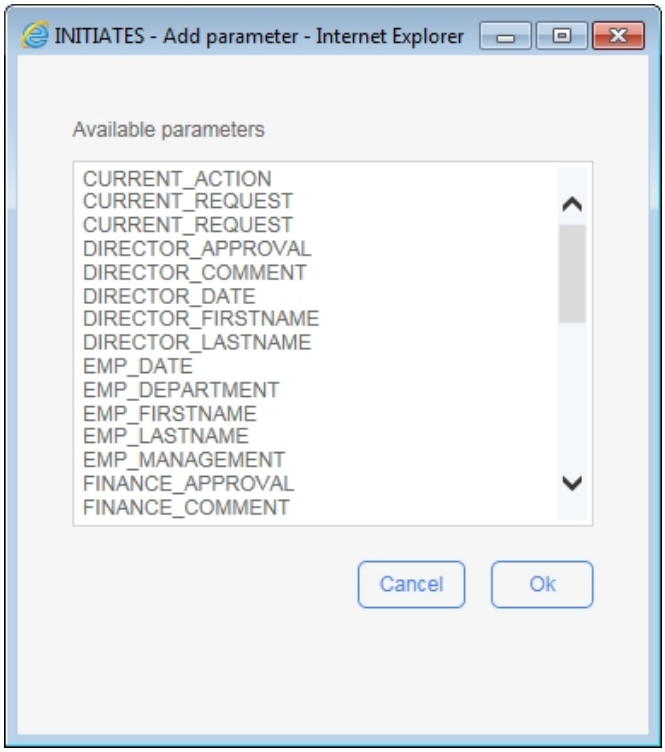
Invalid parameters list

If there are parameters that are no longer required by the selected sub-process, they become invalid and will appear in this list. They can be deleted manually.

Parameter editing screen

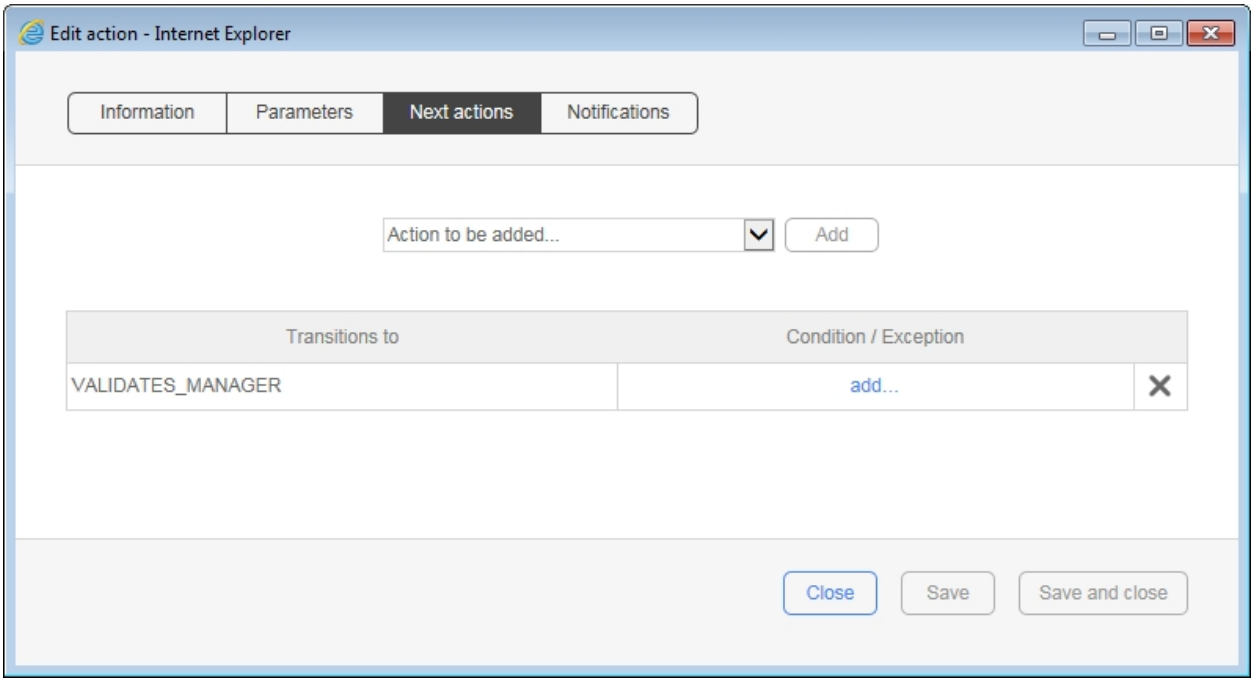


Editing parameters

Fields	Remarks
Parameter	**Required field** Unique identifier for the parameter; must respect nomenclature and be limited to 30 characters Application parameters such as "FORM_FIELDS_READONLY" are available through the browse button "Other parameters". This is commonly associated with the name/ID of the form field.
Browse	This button is only visible for the actions compliant with at least one of the following business rules: • The action is based on EFORMPDF and the TEMPLATE parameter is associated to data containing a PDF file as default value • The action has at least one default application parameter defined (Other parameters) ***Example:*** This lists all the fields of the PDF file associated with the action. 

Direction	Parameter direction: • **IN:** When the action is instantiated, the value of the parameter is initialized with a text, or the value of a macro or process data. • **OUT:** When the action is being closed, the value of the parameter is stored in a process data value. • **INOUT:** When the action is instantiated, the value of the parameter is initialized with a text, or the value of a macro or process data, and then, when the action is being closed, the value of the parameter is stored in a process data value.
Send the value of	The **IN** value to send to the parameter Depending on the type of data to be associated, this value can be process data, a macro or a freeform text value. It's possible to uncheck a checked radio button.
Receive the value into	The process data where the **OUT** value of the parameter is stored
Save button	Save changes
Save and close button	Save changes and close the screen
Add button	Save the current parameter and display a blank form to add a new parameter
Delete button	Allow the deletion of the current parameter
Close button	Close the screen without saving

Next action screen



Next action

Fields	Remarks
Action to be added *	Process action to add as the action following the current action

* An action can only be used once as the "next action" in the transition from the current action.

Columns	Remarks
Next action	Name of the next action
Transitions to	List of possible actions to follow
Condition/Exception	A link displays the transition's condition form in edit mode
Deletion	The **x** deletes the transition to the next action

Adding a loop on the first action

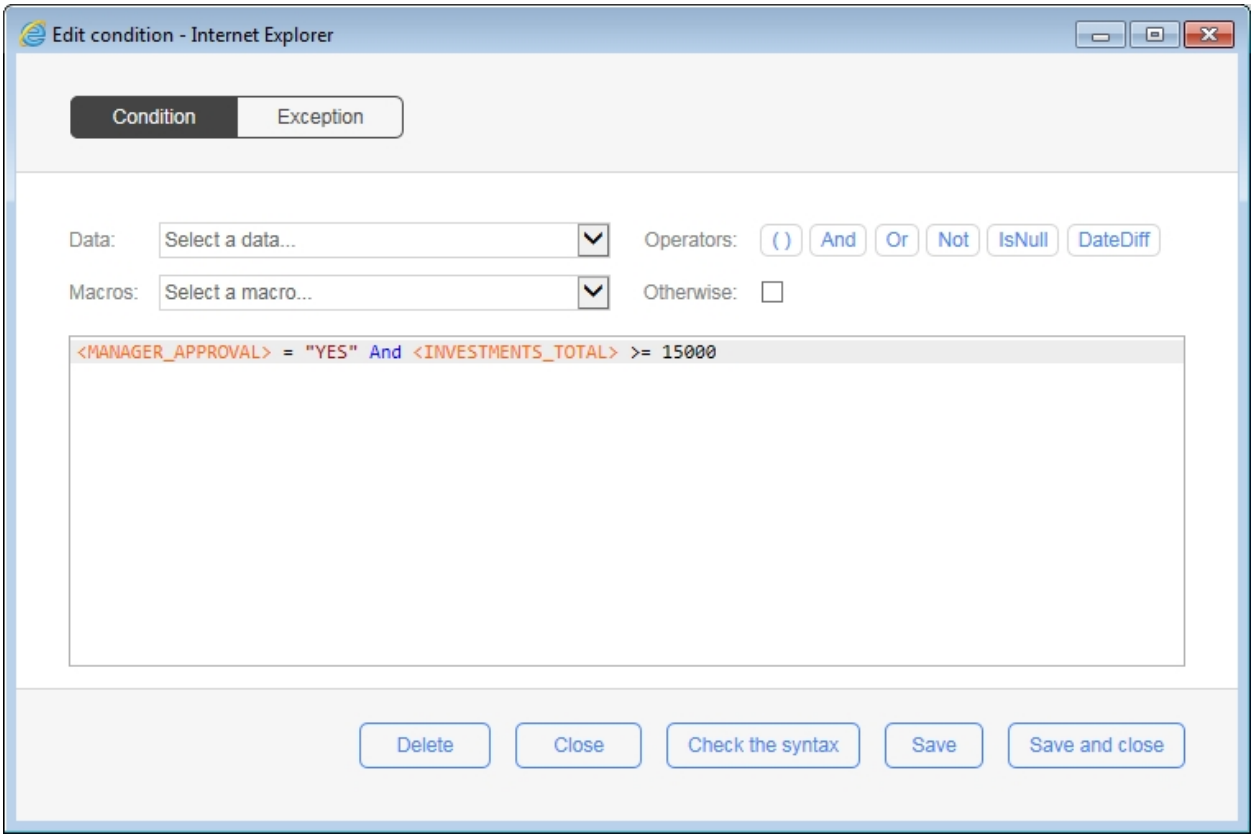
It is not possible to create a transition leading back to the first action of a process (this is not the same as a loop transition, which is permitted). You must add a new action which will be assigned automatically to the requester and create a loop with it.

Example:

Here, the action "UPDATES" is added:

- INITIATES > VALIDATES > UPDATES > VALIDATES > UPDATES > VALIDATES > ...

Edit condition screen



Editing transition conditions

This window allows a condition (evaluated during the transition to the next action) to be modified. The banner located above the input area allows the condition's expression syntax to be edited quickly and reliably. Any VBScript expression with a correct syntax can be used as a condition. The VBScript syntax is validated upon saving the condition or by clicking the **Check the syntax** button.

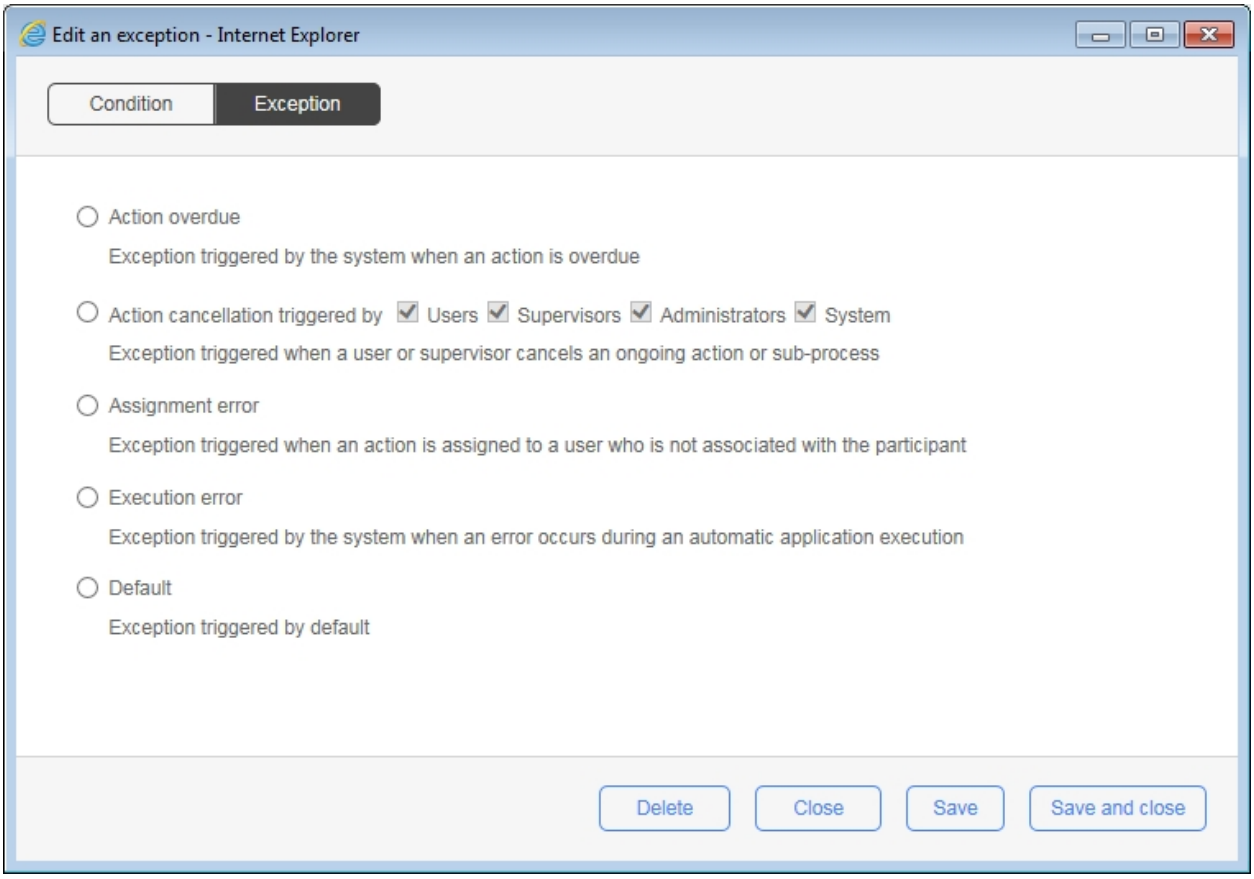
Fields	Remarks
Data	List of process data that can be used in the condition
Macros	List of WorkflowGen macros that can be used in the condition
( )	Enclose the selected text between parentheses
And	Inserts the logical operator AND
Or	Inserts the logical operator OR
Not	Inserts the logical operator NOT
IsNull	Test Function to find out if the data contains no value.
DateDiff	Inserts blank DateDiff condition syntax to set values (see **Overdue and pre-overdue notifications**)
Otherwise	Inserts the keyword OTHERWISE

Note: Press **Ctrl+Space** or **Alt+Space** directly within the editor to display a drop-down list from which you can insert process data and WorkflowGen macros, instead of choosing them from the **Data** and **Macros** drop-down lists above the editor.

Condition rules

- You can only add one condition to a transition. To add more conditions between the same actions, create additional transitions between the actions and place the additional conditions on them.
- You can only place one condition or one exception on a given transition.
- Each condition is evaluated individually. For example, if there are two conditions on separate transitions between actions, and both are TRUE, then the next action will be created twice.

Edit exception screen



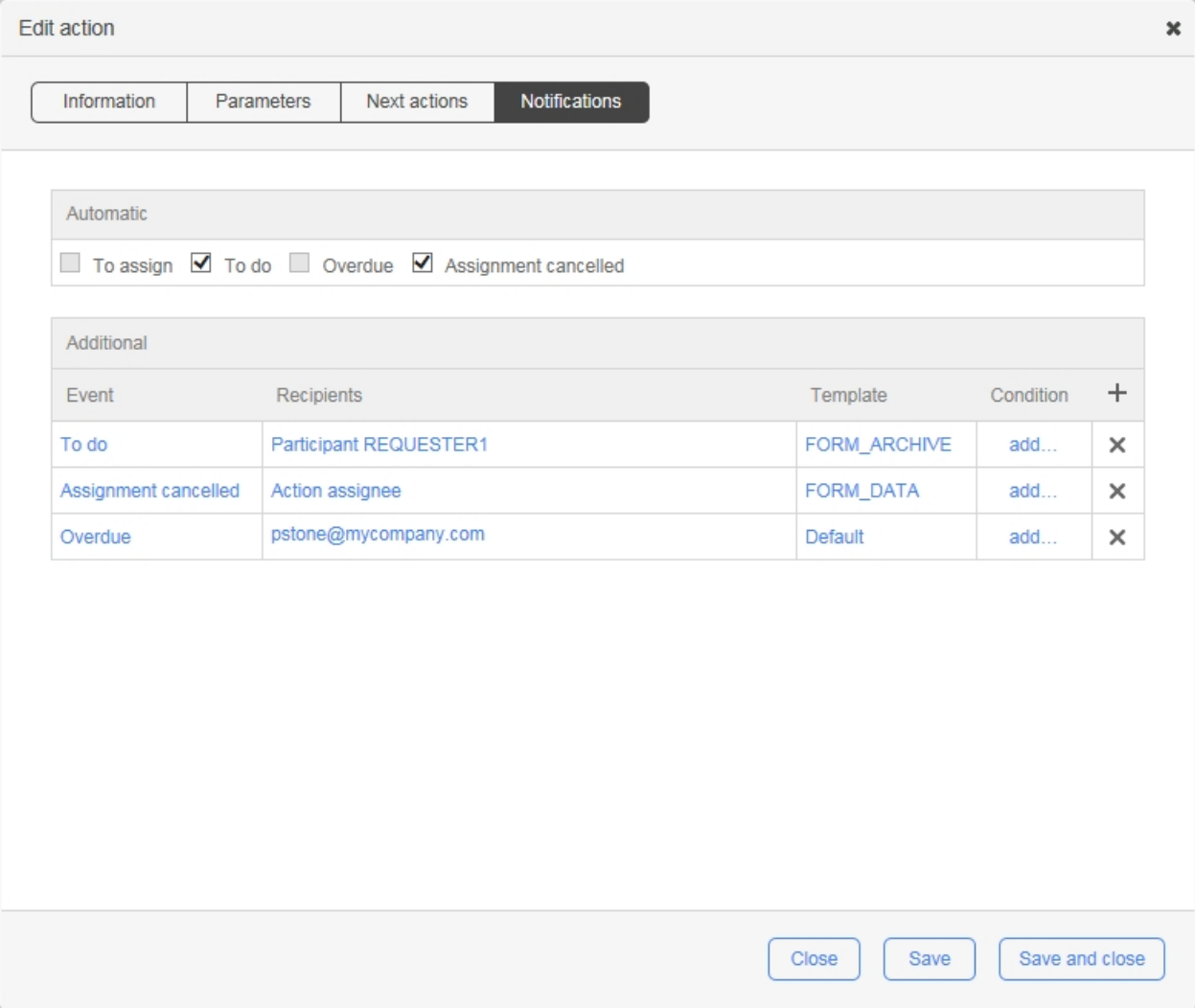
Exception type

Exception type	Remarks
Action overdue	Exception triggered by the system when an action is overdue
Action cancellation triggered by	Exception triggered when a user or supervisor cancels an ongoing action or sub-process To prevent users and/or supervisors from cancelling the action, uncheck **Users** and/or **Supervisors**. Otherwise, **Users**, **Supervisors**, **Administrators**, and System are checked by default and can all cancel actions. **Note: Administrators** and **System** cannot be unchecked, and can always cancel actions.
Assignment error	Exception triggered when an action is assigned to a user that is not associated with the participant
Execution error	Exception triggered by the system when an error occurs during an automatic application execution (a system action)
Default	Exception triggered by default

Exception rules

- You can only add one exception to a transition. To add more exceptions between the same actions, create additional transitions between the actions and place the additional exceptions on them.
- You can only place one exception or one condition on a given transition.
- Each exception is evaluated individually. For example, if there are two exceptions on separate transitions between actions, and both exceptions occur, then the next action will be created twice.
- When an exception occurs at runtime, the default exception is assumed if no specific exception path corresponding to the exception type was defined in the process definition.
- If an exception path is linked to the end of the process and the exception occurs at runtime, all the ongoing actions are cancelled and the request is closed with the status **Closed – Cancelled**.

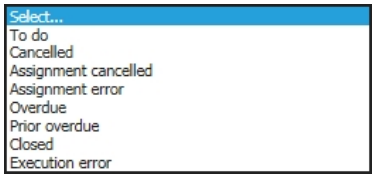
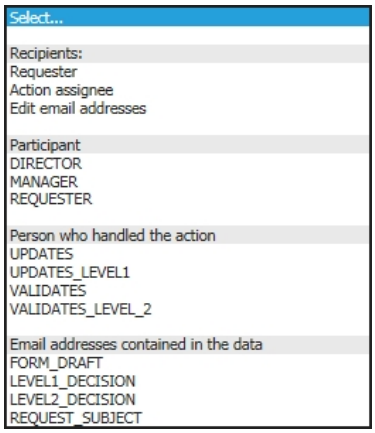
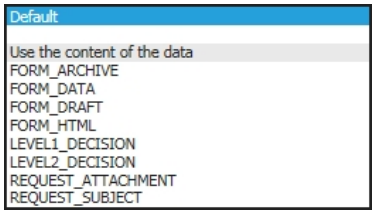
Notification screen



Automatic notifications

Fields	Remarks
To assign	Specifies if an email is automatically sent to the user who has to assign the action
To do	Specifies if an email is automatically sent to the user who has to handle the action
Overdue	Specifies if an email is automatically sent to the user who has to handle an overdue action
Assignment cancelled	Specifies if an email is automatically sent when an action assignment has been automatically or manually cancelled

Additional notifications

Fields	Remarks	Screenshot
Event	Type of event notifications: • To do • Cancelled • Assignment cancelled • Assignment error • Overdue • Prior overdue (pre-overdue) * • Closed • Execution error	
Recipient	Recipient(s) of the notification: • The requester • The action initiator (if the assignment method is manual) • The action assignee • Freeform email addresses (comma or semicolon separated) • The users associated to a participant • The user who has handled the action … (action name) • Email addresses contained in the data … (selected from the list below). Use " **,** " (comma) or " **;** " (semicolon) as email separator.	
Template	Email message templates: • Default (uses the standard email template located in /App_Data/Templates/Emails). • Use the content of the data (select one in the list below). The list is filled in with text and file process data. While defining your own template in data or a file you can use: • The reserved keyword "SUBJECT" to define an email custom subject line • Macros • See **Custom notification templates** for instructions on how to create custom email templates	

* The pre-overdue notification feature is available in WorkflowGen 5.1.7 and higher. A process XPDL using this feature will not be compatible with previous versions of WorkflowGen including release 5.1.6. An error will be raised when trying to import the new XPDL into those versions.

Columns	Remarks
Event	The type of event notification
Recipient	Recipient(s) of the email
Template	The selected template of the message to be sent

Condition	A link displays the notifications condition form in edit mode
Deletion	Click the **x** to delete the notification

Adding and editing additional notifications

To add an additional notification, click the plus sign (**+**) in the rightmost column header, choose an event and a template if desired (otherwise these will use the defaults of **To do** and **Default**, respectively), then choose the recipient(s). Click again to save the notification. You can then add a condition if desired.

Click on the event, the recipient(s), the template, or the condition to edit them. To remove a notification, click the **x** to the right of the notification.

Note: While additional notifications are automatically saved, you must click **Save** or **Save and close** to save changes to automatic notifications.

Overdue and pre-overdue notifications

You can define a hierarchy to handle overdue and pre-overdue action notifications by specifying additional notification conditions based on VBScript date/time calculation functions. You can do this using the **DateDiff** function, or by using the **Current Action.Overdue *[time unit]*** and **Current Action.Pre-overdue *[time unit]*** macros available as of version 6.1.5 (see the **Macros** chapter for more information).

Notes

- With overdue notification macros, the actual time overdue is rounded **down** to the nearest time unit, while with pre-overdue notification macros, the actual time pre-overdue is rounded **up** to the nearest time unit.
- For better precision in calculating the duration, it is suggested to use minutes as the time unit in your condition. For example, if you're using the DateDiff function in a condition, use "n" as the unit parameter; if you're using a macro, use **<WF_ACTIVITY_INST_OVERDUE_MINUTES>** or **<WF_ACTIVITY_INST_PREOVERDUE_MINUTES>**.

Examples:

In a process action, if you want to notify the requester that the action is late within one day, and also notify the process supervisor should the action continue to be late after two days, you have to add the two additional notifications on the action with the following settings:

Notify the requester if the action is late within 1 day

Type: Overdue
Recipient: Requester

Using DateDiff:

DateDiff("h",<WF_ACTIVITY_INST_LIMIT_DATETIME>,<WF_SYSTEM_DATETIME>) < 24

Using a macro:

<WF_ACTIVITY_INST_OVERDUE_HOURS> < 24

Notify the process supervisor if the action is late by 2 days

Type: Overdue
Recipient: The supervisor participant

Using DateDiff:

DateDiff("h",<WF_ACTIVITY_INST_LIMIT_DATETIME>,<WF_SYSTEM_DATETIME>) >= 48

Using a macro:

<WF_ACTIVITY_INST_OVERDUE_HOURS> >= 48

Pre-overdue notifications

In a process action, if you want to notify a user that an action will become late in advance of a due date, you have to add an additional notification on the action using the **Prior overdue** (pre-overdue) event.

To add a new pre-overdue notification to an action:

1. In a process action notification tab, under the **Additional** section, select the **Prior overdue** event.
2. Select the recipient(s).
3. Select the "Default" template or a custom template previously created.
4. Click **Add**.
5. Enter the condition (see below for examples).

Examples:

Notification sent within 3 days prior to being overdue

Using DateDiff:

DateDiff("d", <WF_SYSTEM_DATETIME> , <WF_ACTIVITY_INST_LIMIT_DATETIME>) <= 3

Using a macro:

<WF_ACTIVITY_INST_PREOVERDUE_DAYS> <= 3

Notification sent within 15 minutes prior to being overdue

Using DateDiff:

DateDiff("n", <WF_SYSTEM_DATETIME> , <WF_ACTIVITY_INST_LIMIT_DATETIME>) <= 15

Using a macro:

<WF_ACTIVITY_INST_PREOVERDUE_MINUTES> <= 15

There is no limit to the number of additional pre-overdue notifications that can be added to an action (e.g. 2 days, 1 day, 1 hour, 30 minutes, etc.).

Notes

- If you do not specify a condition, the pre-overdue notification will be sent whenever an action is created with a lead time and the Windows Engine service is run. It is best practice to add a condition as per the

above examples to control when the prior overdue notification is sent.

- As of version 5.1.7, any process that includes a pre-overdue notification in an action cannot be imported into WorkflowGen versions 5.1.6 and earlier due to incompatibilities.

Report

Process report screen

Process definition report - Internet Explorer

LEAVE v1

Process #35 - modified on 4/2/2015 by John Smith

Show simple report | View XPDL | Refresh | Print | Expand all | Collapse all

Errors and warnings

0 error 1 warning found

Type	Description
Warning	The data **FORM_DRAFT** is never used

Usage

Requests	In progress	Closed	Total
Requests	9	0	9
Requests in test	3	0	3

General information

Name	LEAVE
Version	1
Description	Leave application
Status	Active
Sub-process	No
Access level	Public
Categories	HR
Lead time	2 days
Use working days/hours in duration calculation	No
Notify requester when closed	Yes
Archive action associated data	Yes

Participants

+ EMPLOYEE
+ MANAGER
+ DIRECTOR

Data

+ FORM_ARCHIVE
+ FORM_DRAFT
+ FORM_DATA
+ FORM_HTML
+ EMP_EMPLOYEE
+ LEAVE_TIME_TOTAL
+ MAN_APPROVAL
+ DIR_APPROVAL

Actions

+ INITIATES
+ VALIDATES
+ DECIDES

Errors and warnings

Errors (prevent the workflow from running)

General validations performed by the report generator:

- A process must have at least a beginning and an end.
- A process must have one single participant in the role of requester.
- There can only be one "otherwise" condition in the transitions of an action.
- If more than one transition exists between two actions, all of the transitions must be conditions.
- All process data must be used in the action parameters or in the transition conditions.
- Data used in a condition must be associated to an OUT or INOUT direction action parameter if no default value is set.

Action validations performed by the report generator:

- All actions must have at least one next action or END.
- If an action has a transition to an end of a process, the transition of the next actions must have a condition.
- An action that loops must have a condition.
- For an application or a sub-process, all the required parameters of an action must be defined.
- Actions that include a transition with an "otherwise" condition must have another transition with a condition that is not an "otherwise condition.
- If the action comes from a synchronization, the **By the action initiator** assignment method is not possible.
- If the action can be launched after an exception transition, the **By the action initiator** assignment method is not possible.
- The **Automatic to the action initiator** assignment method is not allowed ***if*** the participant is not a requester and ***if*** the participant of the previous action is different.
- The **By the action initiator** assignment method is not allowed ***if*** the action is called after an exception.
- Ensure that all required application parameters for an action are defined.
- Ensure that all the required action parameters for a sub-process are defined

Warnings (do not prevent the workflow from running)

Action validations performed by the report generator:

- It is advised to use an exception transition if actions use the following assignment methods and if the username is retrieved from process data:

  - Automatic to the person who handled…
  - Manual by the person who handled…
  - Automatic to the person
- It is advised to use an exception transition if actions use an automatic application (Web proc, Web service or asynchronous Web proc).
- It is advised to use an exception transition if actions use a sub-process.
- All process data must be used.
- Ensure that default and additional parameters used as OUT types are linked with data.
- Automatic applications must use an exception.

Usage

Fields	Remarks
Requests	Request environment
In progress	Number of requests in progress
Closed	Number of requests closed
Total	Total requests launched

General information

Fields	Remarks
Name	Process name
Version	Process version
Description	Process description
Status	Process status
Sub-process	Is this a sub-process?
Access level	Public or private access level
Category(ies)	List of categories with which the process is associated
Lead time	Process lead time
Use working days/hours in duration calculation	Uses only office hours to calculate time schedule
Notify the requester when closed	Notification is sent to the requester when the request is closed
Archive the results of the actions	Saves the result of each process action at each step of the process

Participants

Fields	Remarks
Description	Participant description
Scope	The participant is defined in the global information

Role	Participant role in the process
Participant type	Type of association to the directory
Users	List of users associated with this participant
Groups	List of groups associated with this participant
Directories	List of directories associated with this participant
Coordinators	List of coordinator users for this participant
Graphical follow-up	Visible in the graphical follow-up
Permission for supervisors	Special permissions for supervisors
Permission for comments	None, read, or read and write permissions
Query	Supervisor limited scope query
Used in actions	Actions in which this participant is used

Data

Fields	Remarks
Description	Data description
Data type	Type of data
Default value	Default value of the data
Security	List of participants with access to the data
Show the data in the follow-up forms	The selected data will be visible in the following places: • Request and action follow-up forms • Default notification messages (emails) • eFormPDF data popup window • Search criteria list **Note:** Unchecking this option disables and unchecks the **Search criteria by default**, **Display in columns in the lists**, and **Display in column** options.
Search criteria by default	The selected data will appear in every search screen as selected criteria without search parameters
Display in columns in the lists	The selected data will appear in a column in all lists of requests and actions (single-process mode)
Display in column in homepage	The selected data will appear in a column on the home page (single-process mode)

Read-only	**Usage:** Saves disk space when used on file process data associated with the required parameter TEMPLATE of an eFormPDF action. This is performed by associating a single copy of the PDF per process for all closed actions and closed requests. **Note:** An action's OUT and INOUT parameters using data declared as "read-only" will not be updated. **Caution:** When using an electronic signature feature for PDF Forms, do not define the PDF form template as read only. As well, in general do not define FORM_DATA elements of eForm applications (which contain the data of a form) as read-only.
Used in actions	List of actions in which the data is used
Used in conditions	List of process transitions in which the data is used

Actions

Process definition report - Internet Explorer

Actions

- INITIATES
  - General

Web application	EFORMASPX
Description	Initiates
Participant	EMPLOYEE
Assignment method	Automatic to the requester
Retrieve users from	
Lead time	Not defined
Use working days/hours in duration calculation	No
Cancel assignment on overdue	
Complete action in background	No
Visible	Yes
Internal ID	1

  + Required parameters
  + Additional parameters
  + Previous action
  + Next actions
  + Notifications
  + Additional notifications
- APPROVES
  + General
  + Required parameters
  + Additional parameters
  + Previous action
  + Next actions
  + Notifications
  + Additional notifications

Action sections have sub-sections that provide information about the following:

- General
- Required parameters

- Additional parameters
- Previous action
- Next actions
- Notifications
- Additional notifications

Remote Approval

About Remote Approval

The Remote Approval feature lets a user perform request approvals via email, as an alternative to launching the actual form within the WorkflowGen User Portal.

Remote Approval is an optional route for a regular form approval action in a WorkflowGen process. It is embedded inside the form approval action that asynchronously triggers a notification to the user using the WorkflowGen notification engine.

User can still reply via the normal form approval procedure. The system will take the approval result from either approach based on a first-come-first-served basis and complete the action accordingly. No separate action is required in the workflow design process.

Remote Approval settings are set on the **Remote Approval** tab in the **Configuration Panel** (see **Remote Approval** on page 38).

Remote Approval action configuration

Remote Approval requires parameters to control which information to provide to the remote approver, and how. These parameters also control how to return the approval results as well as other approver information back to the WorkflowGen system.

Using parameters in a Remote Approval action

Remote Approval requires additional parameters to be added to an EFORMASPX action. These parameters are to define the questions for remote approver and mapping of the approver's response to the action.

Only approval answers and the approver's information need to be returned via Remote Approval parameters. Other regular action parameters that pass values in or out of the webform remain unchanged.

In order to send out a notification email to approver, a custom notification must be defined. Under the notification tab of an approval action, add an additional notification with **To do** as the event, an action assignee as recipient, and a custom email template with the information about the remote approval. This custom notification is the same as a regular custom notification for any WorkflowGen action.

Default parameters for Remote Approval actions

- **FORM_DATA (IN/OUT | FILE | required):** This is an IN/OUT parameter that holds the WorkflowGen request form data file. This is a default parameter for EFORMASPX actions.
- **FORM_ARCHIVE (OUT | FILE | default):** Remote Approval requires passing the **FORM_ARCHIVE** process data as WorkflowGen parameter in order to capture all the field updates that occur during Remote Approval. The parameter direction must be OUT in order to return the updated archive content back to WorkflowGen.

  Notes:

  - No update will be made to the archived web form if **FORM_ARCHIVE** is not defined in the Remote Approval action.
  - **FORM_ARCHIVE** is needed for EFORMASPX actions only.
- **KEYWORDS_BRACKETS (IN | TEXT | optional):** To answer a Remote Approval question in regular approval mode, you must follow a pre-defined syntax:

  Q1: [answer]

  The square brackets (**[** and **]**) are the default value if this parameter is not used. You can customize it by assigning different characters to enclose the answer. For example, you can set **KEYWORDS_ BRACKETS** to "**##**" for an answer format:

  Q1: #answer#

  Note: This consists of two characters only, for the opening and closing characters.
- **Qx_KEYWORDS_n (IN | TEXT | default):** See the **Email customization** section for details on this parameter.
- **Qx_RESULT_n (IN | TEXT | default):** See the **Email customization** section for details on this parameter.
- **Qx_RETURN_FIELDNAME (IN | TEXT | default):** The normalized result from **Qx_RESULT_n** will be passed to the field name specified in this parameter.

  Note: No other parameter should be defined in a Remote Approval that has the suffix **_RETURN_ FIELDNAME**.
- **USER_NAME_FORMAT (IN | TEXT | optional):** The full name of the approver who replies will be retrieved from the WorkflowGen database. The approver's full name will be returned to the field control in the web form if **USER_NAME_FIELDNAME** is defined. By default, the user's full name will be in the "Firstname Lastname" format. You can customize the format by using the control characters "**L**" and "**F**", for last name and first name, respectively. For example:

  John Doe → F L
  Doe, John → L, F
  John (Doe) → F (L)

- **USER_NAME_FIELDNAME (IN | TEXT | optional):** Regular web forms can use WorkflowGen macros to obtain the assignee's full name. In Remote Approval, the approver is defined based on the receipt of the approval reply, a specific parameter is required to return the actual approver's name back to WorkflowGen.

  Create this parameter to specify the field control ID that receives the returned approver name. Only TextBox type field control IDs are supported.

- **USER_FIRSTNAME_FIELDNAME (IN | TEXT | optional):** Create this parameter by assigning the field control ID in your form to display the approver's first name in the WorkflowGen user profile on the form archive page.

- **USER_LASTNAME_FIELDNAME (IN | TEXT | optional):** Create this parameter by assigning the field control ID in your form to display the approver's last name in the WorkflowGen user profile on the form archive page.

- **USER_TITLE_FIELDNAME (IN | TEXT | optional):** Create this parameter by assigning the field control ID in your form to display the approver's job title in the WorkflowGen user profile on the form archive page. Only TextBox, RadioButtonLIst, and DropDownList type field control IDs are supported.

- **COMMENT_FIELDNAME (IN | TEXT | optional):** Create this parameter by assigning the field control ID in your form to display the approver's comment on the form archive page. Only TextBox type field control IDs are supported.

  Note: You can specify the control ID by entering the text string or by passing a process data only if the process data contains the ID of the control. If no control ID is found, or the control ID is invalid, no name will be displayed and this parameter will be ignored.

- **COMMENT_REQUIRED_RESULTS (IN | TEXT | optional):** Create this parameter by specifying which approver results will require a mandatory comment. Approver results refer to **Qx_RESULT_n** parameters. You can enter a comma-separated text string for this parameter to specify more than one result requiring a comment. For example:

  Q1_RESULT_2,Q2_RESULT_2,Q3_RESULT_1

  Here, the second answers of questions 1 and 2 (**Q1** and **Q2**) and the first answer of the third question (**Q3**) will require comments.

  Notes:

  - Mandatory comments require the **COMMENT** parameter in the action.
  - All required results share the same **COMMENT** parameter.
  - The approver will receive an email for re-approval if a mandatory comment is missing.

- **QUICKAPPROVALMODE (IN | TEXT | optional): Quick mode** can be enabled or disabled globally for all Remote Approval actions in the **Configuration panel** as a default setting. Defining the **QUICKAPPROVALMODE** parameter for an individual Remote Approval action in a process will override the global default setting.

  Note: The only text string allowed for this parameter is "**Y**" or "**N**".

Remote Approval questions

Remote Approval supports three different types of approval questions: multiple choice, questions with numeric answers, and questions with free-form text answers.

Usually, Remote Approval is used to provide approval questions with two possible answers (for example, **Yes** or **No**). To do this, three main parameters are used:

- **Qx_KEYWORDS_n:** This parameter holds a list of possible keywords (comma-separated) for choice **n**.
- **Qx_RESULT_n:** This parameter holds the normalized answer for choice **n**.
- **Qx_RETURN_FIELDNAME:** This parameter specifies the web form field name that holds the final normalized answer for question **x**.

Since there can be more than one question in an action, the letter **x** in these parameters represents the question number. The letter **n** at the end represents the choice of answer. You can define as many keywords and results as you need.

Defining a question with two choices

In this example, there are two Y/N questions in a Remote Approval action:

Question 1

```
Q1_KEYWORDS_1=yes,y,ok
Q1_RESULT_1=yes

Q1_KEYWORDS_2=no,n,refused
Q1_RESULT_2=no
```

Question 2

```
Q2_KEYWORDS_1=approved,approve,ok
Q2_RESULT_1=approve

Q2_KEYWORDS_2=refuse,refused,reject,rejected
Q2_RESULT_2=reject
```

If the approver replies "ok" to question 1 and "bad" to question 2, the final normalized answers for questions 1 and 2 will be "yes" and "reject", respectively.

Defining a question with more than two choices

If you need to define more than two choices, you must add a new keywords/result combination. For example:

```
Q1_KEYWORDS_1=yes,y,ok
Q1_RESULT_1=yes

Q1_KEYWORDS_2=no,n,refused
Q1_RESULT_2=no

Q1_KEYWORDS_3=modify,moreinfo
Q1_RESULT_3=moreinfo
```

You can define as many keyword/result combinations as you need.

Defining other types of questions

Remote Approval also supports numeric and free-form type questions.

A numeric type question requires the following keywords/result combinations:

> Qx_KEYWORDS_1=[0-9] ([0-9] is a keyword reserved for numeric type questions; you only need to use Qx_KEYWORDS_1)
> Qx_RETURN_FIELDNAME (the web form field name that holds the retrieved answer)

A free-form text type question does not require a keyword, only Qx_RETURN_FIELDNAME (the web form field name that holds the retrieved answer).

Replying to a Remote Approval request

There are two Remote Approval answer modes: normal and quick.

In normal approval mode, a Remote Approval email can ask more than one question, and will expect replies in a structured format.

In quick approval mode, the email recipient can respond to the first question without any formatting needed. As well, they can include a comment by adding it to the second line under the response to the first question. This mode accepts only one question; as such, questions other than Q1_RETURN that have been specified as action parameters will be ignored. Quick approval mode is enabled on the **Remote Approval** tab in the **Configuration panel** (see **Remote Approval** on page 38).

Example in normal approval mode

An approval email contains the following:

> What is your choice?
> Question 1: Y or N
> Question 2: Y or N

To answer these questions, you would need to reply to the email using the following syntax:

> Q1: [Y]
> Q2: [N]
> COMMENT: [Request approved.]

Each answer is prefixed with **Qx:** where **x** is the question number. As well, answers are enclosed in brackets to indicate the beginning and end of the answer. Similarly, COMMENT has the same structure, except it is prefixed with the reserved word **COMMENT:**.

Example in quick approval mode

Only a keyword for question 1 is needed, with an optional comment. The first line below is the answer to question 1, and the second line is the comment:

> Y
> Request approved.

Validating approval emails

A custom to-do email notification must be defined to be sent to action assignees for a Remote Approval action. This is similar to the default to-do notification of a regular EFORMASPX action. This custom email relies on the WorkflowGen notification system to distribute the approval email to one or multiple approvers.

To prevent spam or other unrelated incoming emails from arriving in the Remote Approval collector email account, and to assure the approver's identity, a valid reply to a Remote Approval request must follow the following four conditions:

1. The email subject line cannot be empty.
2. The reply email should have the same email header key (Thread-Index) as registered for the associated request action in the WorkflowGen database.
3. The remote approver's email address must match the one used by WorkflowGen in order to ensure the reply address belongs to a valid WorkflowGen user.
4. The remote approver must be one of the action assignees for the particular request action.

Invalid emails will automatically be deleted from the collector email account.

Note: In some unusual cases, certain email server types or configurations might automatically remove the default header key (Thread-Index) from incoming emails. To prevent this:

1. Enable **Subject line validation** on the **Remote Approval** tab in the **Configuration panel**.
2. Add the WorkflowGen request and action IDs in the email subject in the following format:
   - WorkflowGen request ID prefixed by **#** (number sign)
   - WorkflowGen action ID prefixed by **-** (hyphen)

The following is an example of an email subject line containing the WorkflowGen request and action IDs:

Authorization for expenditure required #1374-4

Here, "Authorization for expenditure required" is the email subject, "1374" is the request ID (prefixed by a number sign), and "4" is the action ID (prefixed by a hyphen).

The email subject is defined on the first line of the custom email template with the prefix "SUBJECT:". The WorkflowGen request and action IDs can be appended to the subject line using the <WF_PROCESS_INST_ID> and <WF_ACTIVITY_INST_ID> WorkflowGen macros, respectively.

Remote Approval will validate the email reply by verifying the request and action IDs obtained from the email subject. Validation conditions 2 and 3 (see above) are still applicable during the validation process.

It is highly recommended to keep the **Subject line validation** option disabled for greater security.

Approval email with incorrect answer or missing comment

In case of an email approval reply with an incorrect answer or missing a required comment, Remote Approval will send the email back to the approval sender and ask for a revision.

Example 1: Notification email for approval reply with incorrect keyword

> Your decision is in an incorrect format. Please reply to this email with one of the valid keywords or a numeric type value.
>
> Q1: [n,NO or y,YES]
>
> ----Your reply was----
>
> Q1: [maybe]

Example 2: Notification email for approval reply with keyword that requires a mandatory comment

> Your decision requires a mandatory COMMENT. Please reply to this email again with the valid keywords and a comment.
>
> Q1: [n,NO or y,YES]
> COMMENT: [your comment]
>
> ----Your message----
>
> Q1: [n]

This email will provide the possible keywords to remind the approval of which can be used for the answer. As well, the approver must reply to all of the questions again following the syntax (in normal approval mode), even if there was only one incorrect or missing answer.

Depending on the approver's WorkflowGen user profile default language preference, either an English or a French message will appear on the revision notification email. If the user has a preferred language other than English or French, English will be used by default.

Example of a French notification email

> Votre réponse est incorrecte, veuillez répondre avec un des mots-clés suivants :
>
> Q1: [n,NON ou o,OUI]
>
> ----Votre réponse était----
>
> Q1: [possible]

Email customization

A custom email notification must be defined in order to distribute Remote Approval emails to approvers.

How to build the email template

The creation of custom notifications follows the same rules as any other WorkflowGen custom notification; all WorkflowGen macros are supported (see the **Custom notification templates** chapter for more information)

Attachments

In WorkflowGen version 5.3 or later, file process data can be attached to a Remote Approval email so that the approver can have direct access to any file type data. A special macro can be used to add a file process data to the email:

<WF_PROCESS_INST_RELDATA_FILE.XXXXX>

Add this tag to the email body, and the file from the XXXXX process data will be appended to the email as an attachment. It will not be rendered as text in the body of the email. If multiple attachments are required, add this tag multiple times with the relevant process data name.

How to set up the overdue notification

In case an overdue notification must be sent, add an additional notification by specifying the event as "Overdue" and use the same Remote Approval email template.

Note: For additional notifications, only "To-do" and "Overdue" events will incorporate the email thread-index for email validation (see **Validating approval emails** on page 200 for more information).

Remote Approval web form design

Considerations

Remote Approval attempts to process an approval reply as if an approver has actually launched an approval action and submitted the web form. The form data and action parameter values are updated accordingly. This means that when the next action is launched, WorkflowGen already obtains the form data from Remote Approval and is able to display the result on the web form.

However, in order to reflect the approval result in the form archive, the approval field control must be visible by the time the action before the Remote Approval action is submitted. Remote Approval updates the form archive generated by the previous action by searching for the matching field control and assigning the value via JavaScript. It does not perform any re-rendering of the web form. For example, if a process has two actions, and the approval field in the first action is hidden by default in the web form, the form archive generated by the first action will not contain the approval field control.

Remote Approval will not be able to populate the approval result on the archive form even though WorkflowGen is still able to retrieve the latest form data and action parameter values.

Remote Approval fields only support the CheckboxList, RadiobuttonList, Listbox, and DropdownListBox controls. Remote Approval comment fields only support the TextBox and TextArea controls.

When considering the incorporation of Remote Approval in an action, we suggest the following:

- Set the relevant approval field as always visible but read-only in the previous action.
- Set the approval field as visible only after SubmitToWorkflow() is called in the previous action, in order to add the approval field to the archive page only.
- Use CSS to hide the approval field in the previous action.

Error logging

Log file

Remote Approval will automatically generate basic event log information in the Windows Event Viewer as well as detailed log files within the WorkflowGen **\App_Data** folder. By default, the log is located in the WorkflowGen web folder **DRIVE:\wwwroot\wfgen\App_Data\LogFiles\RemoteApproval**.

If WorkflowGen has been configured to use a different ApplicationDataPath (defined in web.config), the log files will be within the path specified in the config file. For example, if ApplicationDataPath is set to **\\SERVER_B\App_Data**, then the Remote Approval log files will be created in **\\SERVER_B\App_Data\LogFiles\RemoteApproval**.

The log folder has the structure **year** → **month** → **log files**.

The log file will contain a summary of activity, including details of technical issues, and information on the WorkflowGen actions closed via the Remote Approval application. There are five levels of details:

- **Level 0:** None (no log file will be created)
- **Level 1:** Execution summary message only
- **Level 2:** Exception error message only
- **Level 3:** Execution summary messages and exception error messages
- **Level 4:** Execution summary messages and full detail exception messages (including event viewer information logs)

Level 3 is recommended, because its file size and details are well balanced.

The log file level is set on the **Remote Approval** tab of the **Configuration Panel** (see **Remote Approval** on page 38).

Note: The number and size of these log files may grow according to the selected log level and the number of WorkflowGen actions handled by the application. It is recommended that you back up and clean up archived log files periodically.

Error messages

The following table provides brief explanations of some possible error messages found in the Remote Approval log.

Error message	Description
Socket Error: No such host is known.	The application was not able to connect to the incoming email server. Check the collector email address settings.
Server Respond: ERR access denied.	There is an error in the username used for the incoming email server. Check the spellings of the incoming email address and password.

Socket Error: A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond [server address]:[port number].	The email server is not responding and timed out. Possible reasons: • Email server is not online • Incorrect port number: Check the incoming mail server port • Incorrect email server type: Check the incoming mail server type
System Error: The token supplied to the function is invalid.	Possible incorrect email server security. Check the incoming mail server security.
Server Respond: ERR maildrop already locked.	The response email is being locked by the email server.
wfgResponse Error: Remote reply for action (Req #xxxx) cannot be accepted. Action may have already been expired/opened/completed by webform.	The application cannot complete the action, possibly due to an error connecting to WorkflowGen, or the action may have already expired or been closed or completed within the WorkflowGen User Portal.
Cannot clean up temp file ([FILENAME]) yet. It may be still in use.	The application has tried to clean up temporary files in the tmp folder, but the files might still be in use; in this case, the application will skip the removal of this file.
The response for Request #xxxx is in an incorrect format ([YOUR ANSWER]). An email has been sent.	The response is improperly formatted, no keyword has been detected in the email contents, or the keyword is invalid. Check also if Quick mode is enabled.
Email subject does not indicate it is a Remote Approval reply; email has been removed from mailbox.	An email received by the email server does not contain the required prefix "RE:" that indicates it is a reply to a remote approval request. This email will be automatically removed from the server.
Error parsing request information or reading email header/content before processing reply.	An email received by the email server does not contain all the necessary information such as thread index or the request/action IDs in the subject line that are needed to identify the associated WorkflowGen request action. Check the email server settings if the thread index was discarded, or you can add the request to action IDs in the email notification subject.
The response for Request #XXXX is missing a mandatory comment for answer ([YOUR ANSWER]). An email has been sent.	The response provided requires a mandatory comment. The approver must add COMMENT: [YYYYYY] (or YYYYY if Quick mode is enabled) in the email reply. The email will be automatically removed from the server.
Client found response content type of ‘text/html; charset=utf-8’, but expected ‘text/xml’	The WorkflowGen API web service is not returning a proper XML data. Make sure the **\ws** folder is enabled as an IIS application.

Applicative error + detail (level 4)	This refers to the exception detail to determine the source of the error. Check the following settings that can cause the application to throw an applicative error: • Connection string toward the WorkflowGen database: Ensure that the connection string is well defined, that the server and the database name are correct and available from the web server, and that the given user has sufficient rights to connect, read and write data into the database. • SMTP server information: Check that the SMTP server address is correct and can be resolved by the web server. Ensure that the sender email address is allowed to send messages from your SMTP server. As well, make sure that the given server can relay the message correctly.

EFORMASPX workflow application

Overview

The **EFORMASPX** WorkflowGen application lets you display and fill out the different fields of your electronic forms through a WebForm. A WebForm is the ASP.NET equivalent of an MS Windows Form and has similar programming characteristics.

Required parameters

The EFORMASPX application uses two required parameters: one is data of type FILE called "FORM_DATA"; the other is data of type "TEXT" called "FORM_URL". FORM_URL is used to display the ASP.NET form, which the users complete during the process execution or whose fields are populated with default values defined during the process development.

FORM_URL (IN direction data)

- This should contain the path/location of the blank form which may be stored in the process data or associated directly to this parameter and can be an absolute or relative path.

FORM_DATA (INOUT direction data)

- This contains the data of the form: the dataset in .NET to store the data to/from the WorkflowGen XML file (see below for an example of this file).
- WorkflowGen generates this file at every form submit and no default value is needed to be defined. WorkflowGen will create and update this file automatically.

Example of an empty FORM_DATA file:

An XML file formData.xml containing:

```
<?xml version="1.0" encoding="UTF-8" ?>
    <NewDataSet>
        <Table1 />
    </NewDataSet>
```

Example of a FORM_URL:

```
"/wfgen/WfApps/WebForms/MyFirstWebForm/v1/Form.aspx"
```

Using additional parameters

Field initialization

You can pre-populate the fields of the WebForm form by specifying which values are to populate which form fields. This is done by providing the field name to an action parameter as an IN (or INOUT) parameter and by

sending the value of a freeform text, a WorkflowGen macro, or a process data.

Example:

Rule: Display the requester's name in the WebForm form field called "REQ_NAME" when the form loads.
Method: Associate the form field name with the macro "Requester.Name"

Retrieving field values

You can store the various WebForm form field values in the process data by specifying which field values are to be stored to which process data. This is done by providing a field name to an action parameter as an OUT (or INOUT) parameter and by retrieving that field value to a specified process data.

Notes:

- Process data may only be used to store one and only one field value per action.
- Process data of type TEXT may only contain a maximum of 4,000 characters.

Example:

Rule: Retrieve the Manager's answer/decision in process data called "MGR_DECISION"
Method: Associate the form field name with pre-defined process data

Additional parameters to change the form field properties

Overview

You can control the required, read-only, and hidden ASPX form field properties through the action parameters without developing any .NET code. The value of the parameter has to be set to a list of fields to set (or not) separated by a comma or a semicolon. This list supports the generic wildcard character " ***** " (asterisk) and the exclusion character " **^** " (caret). With a standardized field name naming convention, it will be easy to set the various field properties per action.

List of available parameters

- List of read-only fields (IN): FORM_FIELDS_READONLY
- List of required fields (IN): FORM_FIELDS_REQUIRED
- List of hidden fields (IN): FORM_FIELDS_HIDDEN

Examples of use

Rule: The fields "EMP_NAME" and "EMP_DATE" are required
Method: FORM_FIELDS_REQUIRED = EMP_NAME, EMP_DATE

Rule: All the fields are set to read-only except the fields with a name that begins by "EMP_"
Method: FORM_FIELDS_READONLY = *, ^EMP_*

Rule: All the fields are set to visible except the field DATE and the fields with a name that begins by "SUP_" and ends by "_APP"
Method: FORM_FIELDS_HIDDEN = ^*, DATE, SUP_*_APP

The FORM_ARCHIVE additional parameter

Overview

This is a way to have a static copy of the form, so that the copy can be viewed, printed, or sent by email without having to create any additional WebForm code.

Parameter

HTML static copy of the ASP.NET form (OUT): FORM_ARCHIVE

The value of the filename has to be set in the initial XML file:

<FORM_ARCHIVE>form_archive.htm</FORM_ARCHIVE>

As well, the dataset must have a field named FORM_ARCHIVE.

WorkflowGen handles this, so no extra work by the process or form developers is needed.

How it works

When the WebForm is submitted by the end-user, the EFORMASPX application will create a static copy of the form and store it within the WorkflowGen directory. WorkflowGen will then be able to link this static copy to the FORM_ARCHIVE parameter.

The only things that the process developer needs to do are:

- Create a process data to store the static form (generated by WorkflowGen).
- Associate it to the actions parameter "FORM_ARCHIVE".

XMLTODATABASE workflow application

Overview

The **XMLTODATABASE** WorkflowGen application lets you export data from any XML document to one or several databases. It is a synchronous system application that does not require the user to take action. The configuration of the SQL transaction is done via an XML document that enables SQL queries to be performed on ODBC, OLEDB, or other custom data sources.

How it works

The WorkflowGen engine calls the XMLTODATABASE application with the context and the parameters. XMLTODATABASE uses the context and the parameters to get the following:

- The XML data document to export
- The transaction document, which contains:
  - Information on how to connect to the database
  - Information on where the data should be taken in the XML data document (using XPaths)

After XMLTODATABASE has gathered all of the above information, it is ready to perform the export. Once the export is complete, it returns the context to WorkflowGen so that the workflow may continue.

Description of the XML transactions document

Overview

The XML transactions document specifies the SQL commands that will be executed on the databases. It is used for two main functions: connecting to the database, and mapping the fields of the query to the fields of the XML data document. Remember that the XML data document (generally named FORM_DATA) can be constructed in many ways. For this reason, XPaths are used to map the DB fields to the XML fields.

Structure

Any one XMLTODATABASE activity can have an unlimited number of databases and an unlimited number of commands per database. This means that the export can be done to several databases, and each database can have more than one command.

The following is an example of an XML transactions document:

```
<transactions>
     <transaction name="">
          <databases>
               <database name="" connectionstring="" provider=""
               transaction="">
                    <command type="" loop="" xpath="">
                    [QUERY HERE]
                    </command>
               </database>
          </databases>
     </transaction>
</transactions>
```

Location of the XML transactions document

There are four ways to define an XML transaction for an XMLTODATABASE action. In all of the following cases, the transaction document is defined as follows:

```
<transactions>
     <transaction name="MY_TRANSACTION">
                …
     </transaction>
</transactions>
```

1. XMLTODATABASE first looks for a TRANSACTIONS_TEXT parameter.
2. If this parameter is not found, it then looks for a TRANSACTIONS_FILE parameter.
3. If this parameter is not found either, it then looks for a file with your transaction's name.
4. If this file is not not found either, it then parses the Transactions.xml file to find a node with your transaction's name.

The priority order, then, is as follows:

1. TRANSACTIONS_TEXT parameter.
2. TRANSACTIONS_FILE parameter.
3. MyTransaction.xml file.
4. Transactions.xml file.

In the common file

In this case, the transaction file is located in the **\wfgen\App_Data\Files\XmlToDatabase** folder, and named "Transactions.xml". The XMLTODATABASE application parses this file to find your transaction.

The XMLTODATABASE action contains the following parameters:

Edit action

Information | Parameters | Next actions | Notifications

Required parameter list

Parameter	Direction	Value
TRANSACTION	IN	MY_TRANSACTION
XML	IN	FORM_DATA

Additional parameter list

Parameter	Direction	Value
Add parameter		

In a specific file

If your transaction is not found inside the "Transactions.xml" file, the XMLTODATABASE application looks for an .xml file with the same name as your transaction. The transaction document should be created in the "MY_TRANSACTION.xml" file.

The XMLTODATABASE action contains the following parameters:

Edit action

Information | Parameters | Next actions | Notifications

Required parameter list

Parameter	Direction	Value
TRANSACTION	IN	MY_TRANSACTION
XML	IN	FORM_DATA

Additional parameter list

Parameter	Direction	Value
Add parameter		

Note: You can change from the common transaction file to a specific transaction file without updating your process definition by removing the transaction from the "Transactions.xml" file and adding it in a file named with your transaction's name.

In a process file data type

If you can't access the "App_Data" folder of the web server, or if you want to include your transaction in your process definition (to be exported and shared by an XPDL file), you can upload your transaction file in a process file data type.

First, create a process file data type and upload your "MY_TRANSACTION.xml" file:

Edit data - Internet Explorer

Edit data

Name: MY_TRANSACTION_DATA

Description: My transaction (file)

Data type: File

Format: Custom

Custom:

Precision: 0

Culture: User's culture

TimeZone: User's time zone

Default value: MY_TRANSACTI... (21.37 KB) - 11/21/2014 9:54 AM [Delete]

New file: Browse...

Security: All participants

No access

Visibility: Show the data in the follow-up forms

Search criteria by default

Display in column in the lists

Display in column in Home page

Column size (in pixels):

Read-only: Data is read-only

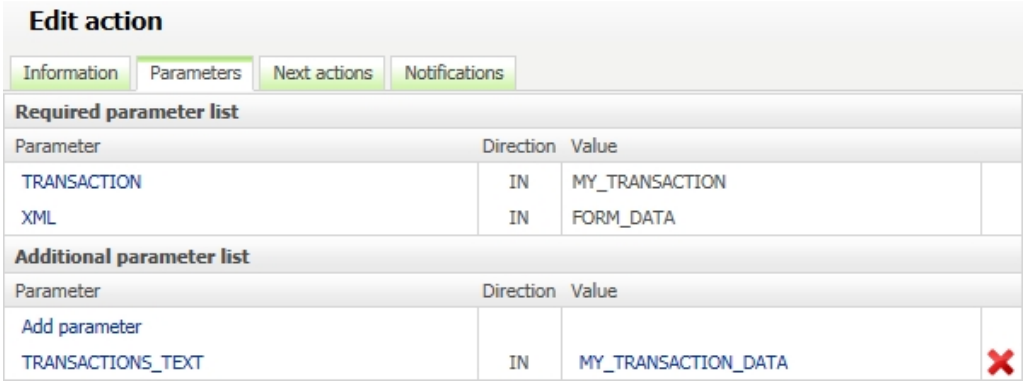
Save | Save and close | Delete | Close

5 data found

New data | Refresh

Order	Name	Description	Data type
	FORM_HTML	Form	File
	FORM_DATA	Form data	File
	FORM_ARCHIVE	Form archive	File
	FORM_DRAFT	Form draft	Text
	MY_TRANSACTION_DATA	My transaction (file)	File

Then, edit your XMLTODATABASE action, add a new parameter named "TRANSACTIONS_FILE", and send the value of your process data:

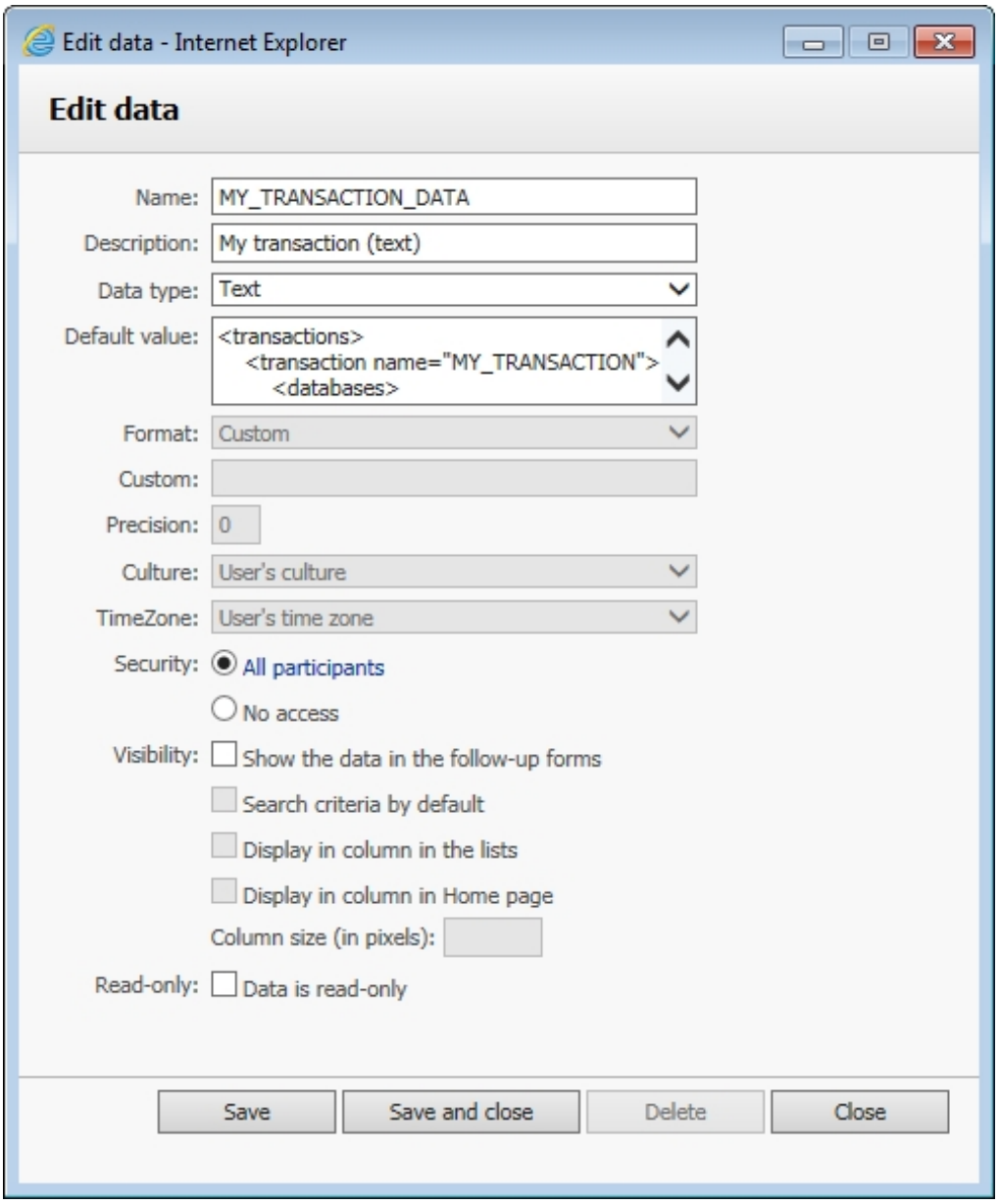


In a process text data type

If you can't access the "App_Data" folder of the web server, or if you want to include your transaction in your process definition (to be exported and shared by an XPDL file), you can write your transaction within a process text data type.

Note: In this case your XML transaction cannot exceed 4000 characters.

First, create a process text data type and write your transaction as a default value:

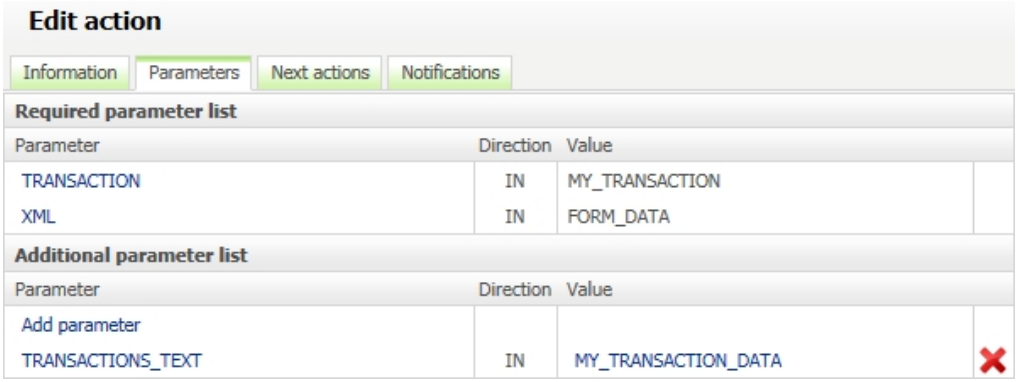


5 data found

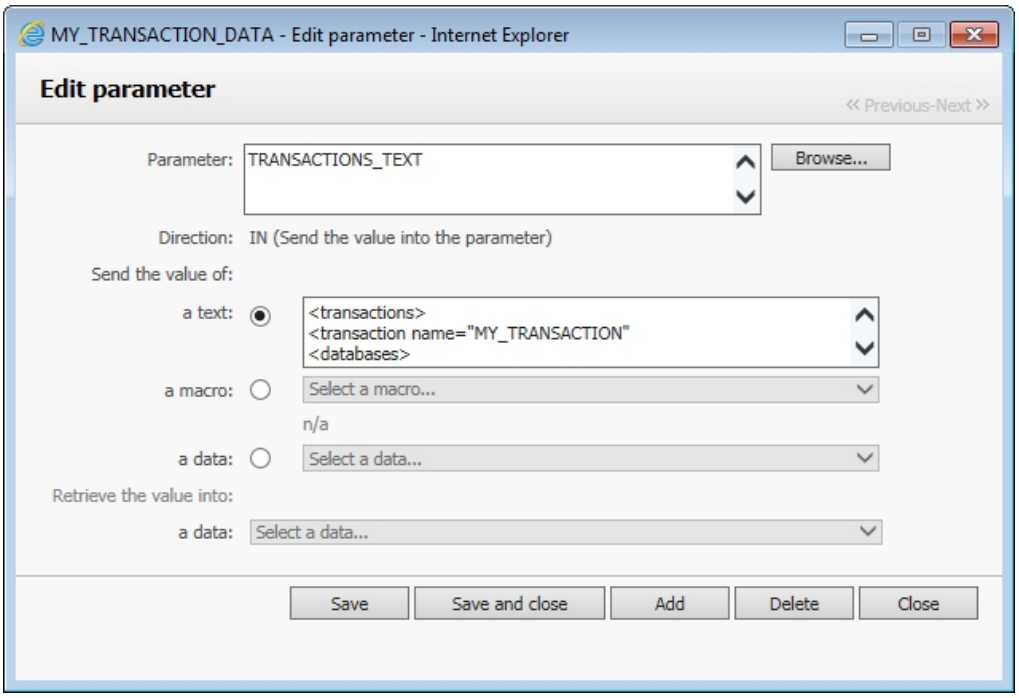
New data | Refresh

Order	Name	Description	Data type
	FORM_HTML	Form	File
	FORM_DATA	Form data	File
	FORM_ARCHIVE	Form archive	File
	FORM_DRAFT	Form draft	Text
	MY_TRANSACTION_DATA	My transaction (text)	Text

Then, edit your XMLTODATABASE action, add a new parameter named "TRANSACTIONS_TEXT", and send the value of your process data:



Note: It is not necessary to create process data. You can send the value of your XML transaction within the TRANSACTION_TEXT parameter.



Attributes

- The "**name**" attribute of the transaction node is used to map the transaction to the XMLTODATABASE activity/action. In WorkflowGen, a TRANSACTION parameter (TEXT type data) must be defined for every XMLTODATABASE activity/action. The text entered in the parameter must match the transaction name attribute in order to use the right transaction for the right activity.
- The "**name**" attribute of the database node is the name of the database used for the transaction.

- The "**connectionstring**" attribute of the database node should contain the ConnectionString to connect to the database.
- The "**provider**" attribute of the database node is used to inform XMLTODATABASE which namespace should be used to create the access to the database(System.Data.OleDb or System.Data.Odbc).
- The "**transaction**" attribute of the database node is used to inform XMLTODATABASE whether to use a DB transaction for the exportation (values: "yes" or "no").
- The "**type**" attribute of the command node is used to inform XMLTODATABASE what kind of command is being performed; the possible values can be any valid SQL command, except if it is calling a stored procedure. In this case, the type must be "PROCEDURE".
- The "**loop**" attribute of the command node can have the values can have the values "yes" or "no". It is used to perform a batch of commands using all of the values returned by the Xpath in the "**xpath**" attribute of the command node. For example, if the loop attibute is set to "yes", and the Xpath returns 10 results, the Xpath contained in the command query will be executed 10 times (once for each result). If the loop attribute is set to "no", the command will be executed only once with the first node returned by the Xpath contained in the query.
- The "**xpath**" attribute of the command node will be used to specify a part of the xpaths used in the query.
- The "**connectionstringname**" attribute is used in the XMLTODATABASE transaction file to specify the connection string name to use to define the "**database**" node.

  XMLTODATABASE Transaction file:

  ```
  ...
  <database name="MYDB" connectionstringname="MYDBSOURCE">
  ..
  ```

  web.config:

  ```
  ..
  <connectionStrings>
       <add name="MYDBSOURCE" connectionString="Data Source="Data
       Source=MYSQLSERVER;Initial Catalog=MYDB;User
       ID=user;password=pwd;" providerName="System.Data.SqlClient"/>
  <connectionString>
  ...
  ```

Date and numeric field formatting

You can specify which fields must be formatted as date or numeric values using the following parameters:

- XML_FIELDS_DATE: list of date type fields
- XML_FIELDS_NUMERIC: list of numeric type fields
- XML_LOCALE: culture code to use to format the date and numeric values (e.g. en-GB or en-US)

The two parameters XML_FIELDS_DATE and XML_FIELDS_NUMERIC must contain a list of xpath expressions separated by " **,** " (comma) characters.

Date format generated into the SQL queries

Fields of type DATE are formatted as follows: yyyy-mm-dd hh:MM:ss

Numerical format generated into the SQL queries

Numeric fields are formatted as follows: XXXX.XX

Example:

> Rule: All the nodes found in the XML document with the name "REQUEST_DATE" and the specific node situated at /MyData/MyExample/Date_Field will be formatted as date
> Method: XML_FIELDS_DATE = //*/REQUEST_DATE, /MyData/MyExample/Date_Field

Details of the transaction execution

The SQL commands can be launched as transactions. If errors occur, a rollback is launched and the initial state of the database is restored. The value of the transaction attribute of the database node must be set to "yes".

If the transaction handles many databases, the execution of the commands will be multi-transactional, meaning if an error occurs in a command in one of the databases, a rollback on all database transactions performed will be launched.

Test mode

The transactions can be tested before being executed on the database. The value of the constant XmlToDatabaseTestMode in the configuration file must be set to "Y".

Note: If this constant is set to ‘yes’ and you have specified using transactions on the database nodes, the transactions will not be committed at the end of the execution.

Description of the log file

If the XmlToDatabaseEnableTrace parameter in the configuration file of the web service is set to "Y", a log file will be created in the **\wfgen\App_Data\LogFiles\XmlToDatabase** directory.

The log entries are in the following format:

> "Date; [Database name;] Transaction name; SQL query; Execution result"

"Execution result" values are:

- If the query was run successfully: "OK".
- If an error occurred: "ERROR: Error code - Error description".

Examples:

> 12/14/2005 4:51:23 PM; ACCESS; TEST_TRANS; INSERT INTO DATA …; OK

12/14/2005 4:51:24 PM; ACCESS; TEST_TRANS; DELETE FROM DATA2; ERROR: 1234-Table was not found

Possible execution errors

The following errors can occur during the execution of the transactions:

Error	Cause
The XML file parameter is missing	The required XML parameter has a null value or is not completed.
The XML context cannot be empty	XmlToDatabase application must receive a context from WorkflowGen; it cannot be used without being part of a WorkflowGen process.
XML parsing error (1)	The XML parameter is pointing to an invalid XML file.
XML parsing error (2)	The XML transaction file is an invalid XML file.
XML parsing error. The provider attribute is required	The provider attribute of the database node is not present in the transaction.
Unable to commit transactions	The commit operation has not succeeded.
Error while opening log file	The log file cannot be opened.
The TRANSACTION parameter is missing	The required TRANSACTION parameter has a null value or is not completed.
The definition of the transaction has not been found	The transactions.xml file has no transaction with the name attribute corresponding to the value of the TRANSACTION parameter.
SQL Instruction not valid: the parameter has not been found	The PARAM {parameter name} has not been found.
XML parsing error. The *connectionstring* attribute is required	The *connectionstring* attribute has not been specified in the database node.
The XML field was expected to be date, but its value is not valid	One of the Xpaths in the XML_FIELDS_DATE that was passed refers to a field that is not a date field.
The XML field was expected to be numeric, but its value is not valid	One of the Xpaths in the XML_FIELDS_NUMERIC that was passed refers to a field that is not a numeric field.
The Xpath is not a valid xpath expression	One of the Xpaths in your transaction file is not a valid Xpath expression.
The XPath passed as a parameter is not a valid xpath expression	One of the Xpaths in your XML_FIELDS_DATE or XML_FIELDS_NUMERIC parameters is not a valid Xpath expression.
Error while loading the XML file: File was not found	The XML parameter is not pointing to an XML file.
Database connection error	The connection to the data base cannot be established. Check the validity of the connection string contained in the *connectionstring* attribute of the *database* node.
Error during the execution of the SQL command	The execution of the SQL command failed. Check the syntax of the related SQL command.
Error during the execution of the SQL loop command	The execution of the SQL command failed. Check the syntax of the related SQL command.

SQL instruction not valid: the XML field has not been found.	One of the Xpath expressions you have used in your parameters of the command returned no fields. Check the syntax of your Xpath expressions.
The culture code for the XML file in the param XML_LOCALE is not valid.	Check that the XML_LOCALE parameter is in the right format (e.g. "en-US" or "fr-CA").

Export examples

Example 1:

XML file structure:

```
<data>
     <request_number>1</request_number>
     <request_first_name>John</request_first_name>
     <request_last_name>Smith</request_last_name>
</data>
```

The command node could look like this:

```
<command type="INSERT" loop="no" xpath="/data/">
     INSERT INTO EXAMPLE (request_number, request_first_name, request_last_
     name, request_date)
     VALUES (
          {XPATH:request_number},
          '{XPATH:request_first_name}',
          '{XPATH:request_last_name}',
          '{PARAM:REQUEST_DATE}')
</command>
```

The "XPATH:" tag in the query will all be replaced by "/data/", which is the Xpath attribute value.

The "PARAM:" tag is used to identify a WorkflowGen parameter instead of using an XML field.

Warning: XPaths that return no nodes will use "null" values.

Note: It is NOT possible to use the qualified Xpath by using "**XPATH::**" instead of "**XPATH:**".

Example 2:

The following is a more complex example using the loop property:

XML file structure:

```
<Library>
     <publishers>
          <publisher>Grasset</publisher>
     </publishers>
     <AUTHORS>
          <author id="100">
               <name>Stephen King</name>
               <description>Horror novel author</description>
```

```
            <birth_date>1947-09-21</birth_date>
        </author>
        <author id="200">
            <name>John Smith</name>
            <description>Description of the author</description>
            <birth_date>1972-06-06</birth_date>
        </author>
    </AUTHORS>
    <BOOKS>
        <book id="38">
            <title>Title of book #38</title>
            <description>Description of the book #38</description>
            <author id="100"/>
        </book>
        <book id="39">
            <title>Title of book #39</title>
            <description>Description of the book #39</description>
            <author id="200"/>
        </book>
        <book id="40">
            <title>Title of book #40</title>
            <description />    // Will insert a NULL value automatically
            <author id=""/>  // Will insert a NULL value automatically
        </book>
      </BOOKS>
</Library>
```

The command nodes could look like this:

```
<command loop="yes" type="INSERT" xpath="/Library/AUTHORS/">
    INSERT INTO AUTHORS
        ([AUTHOR_ID],[AUTHOR_NAME],[AUTHOR_DESC],[AUTHOR_PUBLISHER])
    VALUES ({XPATH:author/@id},
        '{XPATH:author/name}',
        '{XPATH:author/description}',
        '{XPATH::/Library/publishers/publisher}' )
</command>
<command loop="yes" type="INSERT" xpath="/Library/BOOKS/">
    INSERT INTO BOOKS
        ([BOOK_ID],[BOOK_TITLE],[BOOK_DESCRIPTION],[BOOK_AUTHOR_ID])
    VALUES ({XPATH:book/@id},
        '{XPATH:book/title}',
        '{XPATH:book/description}',
        '{XPATH:book/author/@id}')
</command>
```

Note: In the **XPATH::** shown in bold above, you must use two " **:** " (colon) characters when you don't want to use the qualified xpath in the command node.

GETUSERSFROMDIR workflow application

Overview

The **GETUSERSFROMDIR** WorkflowGen application lets you retrieve a username list, a user email list, or a user ID list. These lists are obtained from a WorkflowGen automatic system action that executes SQL queries on the WorkflowGen database. They can either be used for automatic notifications or to define the users of an action in a WorkflowGen process (by storing the output of GETUSERSFROM DIR as a data element and using the resulting data element to specify the users in the notification or action assignment).

Definitions

- **The "x" character:** The "**x**" character in some parameter names means that there can be more than one instance of the parameter. For example, QUERYx_CMD means there can be QUERY1_CMD, QUERY2_CMD, QUERY3_CMD, etc.
- **Action:** You must create a GETUSERSFROMDIR type WorkflowGen action to use this application.

List of available fields and macros for queries

Listed below are the fields and macros available for the queries created in the QUERYx_CMD parameters. They can be used in the conditions for these queries to filter their results.

Examples:

This example returns a username list of the users in the province of Quebec:

```
QUERY1_CMD: STATE = 'QC'
RESULT_LIST
```

This example returns a username list of users that have email addresses ending with "advantys.com":

```
QUERY1_CMD: EMAIL LIKE '%ADVANTYS.COM'
RESULT_LIST
```

This example returns a username list of users in my group:

```
QUERY1_CMD: {ISMEMBER(MYGROUPNAME)}
RESULT_LIST
```

Available fields definition	
LASTNAME	Last name
FIRSTNAME	First name

EMAIL	Email
PHONE	Telephone
MOBILE	Mobile
PAGER	Pager
FAX	Fax
OFFICE	Office
DEPARTMENT	Department
COMPANY	Company
JOBTITLE	Job Title
PERSONALTITLE	Title
EMPLOYEENUMBER	Employee number
EMPLOYEETYPE	Employee type
POSTALADDRESS	Postal address
POSTALCODE	Zip code
CITY	City
STATE	State/Area
COUNTRY	Country
EXTATT_1	Extended attribute 1
EXTATT_2	Extended attribute 2
EXTATT_3	Extended attribute 3
EXTATT_4	Extended attribute 4
EXTATT_5	Extended attribute 5
Available macros definition	
{ISMEMBER(groupname)}	Get the group's members

Using additional parameters

QUERY1_CMD: Executing an SQL query

Description

To execute an SQL query, you must add the IN parameter QUERY1_CMD to the action. If the parameter is empty or nonexistent then no operation will be performed.

Example:

This example returns the Montreal username list in the RESULT_LIST parameter:

```
QUERY1_CMD: CITY = 'MONTREAL'
RESULT_LIST
```

RESULT_LIST / QUERYx_RESULT_LIST: Retrieving queries results

Description

To get the result of all the queries (username list in string format), you must add the OUT parameter RESULT_LIST to the action. To retrieve the result by query, you have to add the OUT parameter QUERYx_RESULT_LIST for each query (associated to their process data).

Example:

This example returns the username list of Montreal, Toronto, and New York in the RESULT_LIST parameter. QUERY1_RESULT_LIST contains the username list of Montreal, QUERY2_RESULT_LIST contains the username list of Toronto, and QUERY3_RESULT_LIST contains the username list of New York. RESULT_LIST contains the usernames of all 3 QUERYx_CMDs.

QUERY1_CMD: CITY = ‘MONTREAL’
QUERY2_CMD: CITY = ‘TORONTO’
QUERY3_CMD: CITY = ‘NEW YORK’
QUERY1_RESULT_LIST
QUERY2_RESULT_LIST
QUERY3_RESULT_LIST
RESULT_LIST

Note: A maximum of 4000 characters can be stored as the result of a query.

QUERY1_DIR: Directory specification

Description

You can specify the user directory on which the query will be executed. You have to add the IN parameter QUERY1_DIR in the action. If this parameter has NULL value or does not exist, the default directory is WORKFLOWGEN (or the directory specified as the default by an administrator).

Example:

This example returns the username list of users in Montreal from the YourCompany directory into the RESULT_LIST parameter:

QUERY1_CMD: CITY = 'MONTREAL'
QUERY1_DIR: YourCompany
RESULT_LIST

Note: If you manage users in WorkflowGen with multiple directories, you must use this parameter to specify the directory to search, and may need to use more than one query of a similar nature to specify all possible directory users (one query per directory).

QUERYx_CMD: Using more than one query

Description

You can add queries in the same WorkflowGen action and retrieve all of the results in one complete list or in one list per query. You must add the IN parameters QUERYx_CMD, where ‘x’ is the number of the query. To get the result of each query, you have to add the OUT parameters QUERYx_RESULT_LIST.

Example:

This example returns the username list of users from Montreal in the WORKFLOWGEN directory into the QUERY1_RESULT_LIST parameter, the username list of users from Montreal in the INTRANET directory into the QUERY2_RESULT_LIST parameter, and the complete username list from the two queries into the RESULT_LIST parameter:

```
QUERY1_CMD: CITY = 'MONTREAL'
QUERY1_DIR: WORKFLOWGEN
QUERY2_CMD: CITY = 'MONTREAL'
QUERY2_DIR: INTRANET
QUERY1_RESULT_LIST
QUERY2_RESULT_LIST
RESULT_LIST
```

QUERYx_TOP: Specify results maximum

Description

You can specify the maximum number of records returned by your queries by adding the QUERYx_TOP as an IN parameter of the action. The query will not be able to return more results than the number specified in this parameter.

Examples:

This example returns only the first two usernames of the query:

```
QUERY1_CMD: CITY = 'MONTREAL'
QUERY1_TOP: 2
RESULT_LIST
```

This example returns all usernames from this query:

```
QUERY1_CMD: CITY = 'MONTREAL'
RESULT_LIST
```

QUERYx_DEFAULT_VALUE: Specify a default value

Description

You can specify a default value to be returned for queries that return no values. You must add the IN parameter QUERYx_DEFAULT_VALUE in the action.

Example:

In this example, the query returns no value because the company entered does not exist, so the RESULT_LIST parameter will contain "default1":

QUERY1_CMD: COMPANY = 'COMPANY_DOES_NOT_EXIST'
QUERY1_DEFAULT_VALUE = default1
RESULT_LIST

RESULT_SEPARATOR: Separator specification

Description

You can specify the character that will separate the result in the returned list by adding the IN parameter RESULT_SEPARATOR. The default separator is " **,** " (comma).

Example:

For this example, the RESULT_LIST parameter value is: name1***name2***name3:

QUERY1_CMD: CITY = 'MONTREAL'
RESULT_SEPARATOR: ***
RESULT_LIST

This example returns the value: name1, name2, name3:

QUERY1_CMD: CITY = 'MONTREAL'
RESULT_LIST

RESULT_COUNT / QUERYx_RESULT_COUNT: Number of records returned

Description

You can retrieve the number of records returned for each query or for all queries. For the total number of records returned for all queries, you must add the OUT parameter RESULT_COUNT to the action. For the number of records per query, you must add the OUT parameters QUERYx_RESULT_COUNT to the action.

Example:

The following example returns the total number of recordss in the RESULT_COUNT parameter and the number of records of each query (QUERY1 and QUERY2) in the parameters QUERY1_RESULT_COUNT and QUERY2_RESULT_COUNT:

QUERY1_CMD: CITY = 'NY'
QUERY1_DIR: WORKFLOWGEN
QUERY2_CMD: CITY = ‘NY’
QUERY2_DIR: INTRANET
RESULT_LIST
RESULT_COUNT
QUERY1_RESULT_COUNT
QUERY2_RESULT_COUNT

Using parameter conditions in SQL queries

Description

You can also use parameters in the SQL conditions contained in the QUERYx_CMD parameter. You must add IN parameters with different names for the following reserved parameters:

> QUERYx_CMD, QUERYx_DIR, QUERYx_TOP, QUERYx_RESULT_COUNT, QUERYx_RESULT_LIST, RESULT_LIST, RESULT_COUNT or RESULT_SEPARATOR.

You can then call these parameters in the condition by prefixing them with the " **@** " (at) character.

Example:

This example returns the username list from Montreal in the WORKFLOWGEN directory:

```
QUERY1_CMD: CITY = @PARAM1
PARAM1: MONTREAL
RESULT_LIST
```

Remember that the parameter name used in the condition must have the same name as the one defined in the WorkflowGen action.

Note: "PARAM1" is an arbitrary convention; any parameter name may be used.

QUERYx_CMD: Using macros in SQL query conditions

Description

You are also able to use macros in the SQL conditions contained in the QUERYx_CMD by adding an available macro in the condition.

Example:

The following example returns the username list of users which are members of the Dev group, members of the WORKFLOWGEN directory and come from Montreal:

```
QUERY1_CMD: CITY = 'MONTREAL' and {ISMEMBER(Dev)}
RESULT_LIST
```

Important: You must respect the syntax in the **Available macros** list.

RESULT_LIST_EMAIL / QUERYx_RESULT_LIST_EMAIL: Retrieving the queries result in an email list format

Description

If you want to retrieve the emails of the usernames returned by the queries, you must add the OUT parameter RESULT_LIST_EMAIL to the action. If you want to retrieve the emails by query, you must add the OUT parameter QUERYx_RESULT_LIST_EMAIL for each query.

Example:

This example returns the email list of Montreal and Toronto in the RESULT_LIST_EMAIL parameter. QUERY1_RESULT_LIST_EMAIL contains the email list of Montreal and QUERY2_RESULT_LIST_EMAIL contains the email list of Toronto:

QUERY1_CMD: CITY = 'MONTREAL'
QUERY2_CMD: CITY = 'TORONTO'
QUERY1_RESULT_LIST_EMAIL
QUERY2_RESULT_LIST_EMAIL
RESULT_LIST_EMAIL

Error management in WorkflowGen

To manage execution errors, you must add a corrective (debug) action linked to the GETUSERSFROMDIR action. This corrective action is a manual action and is executed upon an execution error. You must add this exception on the transition between the two actions. The following table lists the most frequent errors returned by the application.

Error message	Solution
This directory does not exist	Check if the directory typed in the query is valid.
XML context is empty or incorrect	Verify if the application has been launched by WorkflowGen.
Database connection error	Check if the database connection string in the config.inc file is valid.
Query error	Check if the fields or macros used in the QUERYx_CMD parameter are valid.
The queries return too many values	Add conditions in the QUERYx_CMD parameter to filter the results.
The parameter "*parameter name*" has the same name as a WFG reserved parameter. You must change the name.	Change the name of this parameter for a name other than the reserved parameters' names.
The queries return too many records	Add conditions in the QUERYx_CMD parameters to filter the results.
The parameter "*parameter name*" must have a value	Check in the WorkflowGen action if the parameter is empty.
"*Parameter name*" parameter is required	Add this parameter to the WFG action.

Maximum returned records number

The GetUsersFromDirMaxResultNb constant exists in the "web.config" file, which contains the maximum number of records that can be returned by a query.

This limit reduces the risk of a time limit expiration error that may occur when query results are too large. If the number of returned records is higher than this constant value, an error message stating "the queries returned too many records" will be displayed.

XMLTRANS workflow application

Overview

The **XMLTRANS** application transforms any XML document to any kind of other format using an XSLT sheet.

How it works

The WorkflowGen engine calls the XMLTRANSapplication with the context and the parameters. XMLTRANS uses the context and the parameters to get the following:

- An XML file to convert
- An XSLT file to convert the XML file to any kind of output
- A RESULT parameter to receive the output
- A RESULT_FILEEXT parameter to know the extension of the output
- A RESULT_MIMETYPE parameter to know the MIME type of the output

After XMLTRANS gathers this information, it's ready to make the transformation, and then returns the context to WorkflowGen so that the workflow can continue.

Possible execution errors

The following errors can occur during the execution of the transactions:

Code	Description
1	The required field XML is missing
2	The required field RESULT is missing
3	The required field XSLT is missing
4	The XML file was not a valid Xml document
5	The XSLT file has not been found
6	The XML file was not found
7	Can't write the output to the RESULT parameter. Verify that the folder security settings are correct.
8	Can't read the XML file. Verify that the folder security settings are correct.
9	The XSLT file is not a valid XSLT transformation style sheet
10	The received context was not valid
11	If RESULT_FILEEXT or RESULT_MIMETYPE is given, the other one must be given too

RAISEEXCEPTION workflow application

Overview

The **RAISEEXCEPTION** WorkflowGen application raises the cancel exceptions on specified actions, as controlled by the workflow exception "action cancellation" in the conditions definition panel. Thus, this workflow application can be called by an action to cancel one or several other actions in a running request. The application is converted as an assembly workflow to simplify the configuration and improve the performance.

Note: The RAISEEXCEPTION web app in IIS and the file system folder (**\wfgen\WfApps\WebServices\RaiseException**) can be disabled and removed. Authentication settings at the application level are not required.

This feature is useful when one or more actions need to be cancelled after a certain point in the workflow has been reached, even though those actions have already been activated. For example, if three parallel actions are ongoing, but one of the parallel actions is concluded ahead of the others and your workflow rules have determined that the two other actions are no longer required, you can activate RAISEEXCEPTION to cancel the other two actions and allow the workflow to move forward.

Additionally, you can:

- Use default parameters to cancel all open actions in a specific request.
- Use optional parameters to cancel a list of action instantiations in a list of requests or to cancel on behalf of a specific user.
- Use additional parameters to define multiple pairs of action references.

Using default parameters

Request identifier

This parameter indicates the ID of the request where the action will be cancelled.

Name: REQUEST_ID
Data type: Numeric
Direction: IN

Activity name

This parameter indicates the name of the action that will be cancelled.

Name: ACTIVITY_NAME
Data type: TEXT
Direction: IN

Example:

In this example, the application will cancel all instances of the PENDING_ACTION action in request #455:

REQUEST_ID = 455
ACTIVITY_NAME = "PENDING_ACTION"

Using optional parameters

List of request identifiers

This parameter indicates a list of request IDs where the action will be cancelled.

Name: REQUEST_ID_LIST
Data type: TEXT
Direction: IN

List of activity names

This parameter indicates a list of action names that will be cancelled.

Name: ACTIVITY_NAME_LIST
Data type: TEXT
Direction: IN

Username

This parameter is used to set the username used to cancel the action. The username used must be part of a participant of the process.

Name: USERNAME
Data type: TEXT
Direction: IN

Note: If this parameter is not specified then the account used is the account specified in the configuration file of the application using the following application setting's parameters:

```
<add key="DefaultIdentityUsername" value=""/>
<add key="DefaultIdentityPassword" value=""/>
<add key="DefaultIdentityUserDomain" value=""/>
```

Password

This parameter is used to set the password corresponding to the username used to cancel the action.

Name: PASSWORD
Data type: TEXT
Direction: IN

EXCEPTION_NAME

Possible values for this parameter are:

- CANCEL
- ERROR
- TIMEOUT
- ASSIGNMENT_ERROR

The corresponding exception will be triggered on the action.

EXCEPTION_MESSAGE

This parameter is used with the "ERROR" exception name to provide more details about the error in the follow-up action.

Examples:

In this example, the application will cancel all the instances of the actions PENDING_ACTION1 and PENDING_ACTION2 in each of requests #445, #446, and #447:

REQUEST_ID_LIST = "455, 456, 457"
ACTIVITY_NAME_LIST = "PENDING_ACTION1, PENDING_ACTION2"

In this example, the application will cancel all the instances of the action named PENDING_ACTION in request #445 on behalf of John DOE:

REQUEST_ID = "455"
ACTIVITY_NAME = "PENDING_ACTION"
USERNAME = "jdoe"
PASSWORD = "1234"

Using additional parameters

Request identifier

This parameter indicates the ID of the request where the action will be cancelled for the pair specified by the " **?** " (question mark).

Name: EX?_REQUEST_ID
Data type: Numeric
Direction: IN

Activity name

This parameter indicates the name of the action that will be cancelled for the pair specified by the " **?** " (question mark).

Name: EX?_ACTIVITY_NAME
Data type: TEXT
Direction: IN

Ignore "Nothing to do" error

By default, RAISE_EXCEPTION returns an error if you try to cancel an action that doesn't have any open instantiation. If you set this parameter value to "Y", the application will ignore this type of error.

Name: IGNORE_NOTHINGTODO_ERROR
Data type: TEXT
Direction: IN

Example:

In this example, the application will cancel all instances of the PENDING_ACTION1 action in request #455 and all instantiations of the PENDING_ACTION2 action in request #456. If actions 455 and 456 have no instance then no error is raised.

EX1_REQUEST_ID = 455
EX1_ACTIVITY_NAME = "PENDING_ACTION1"
EX2_REQUEST_ID = 456
EX2_ACTIVITY_NAME = "PENDING_ACTION2"
IGNORE_NOTHINGTODO_ERROR = "Y"

Possible execution errors

The following errors can occur during the execution of the transactions:

Error	Cause	Solution
WorkflowGen Context is empty	All the RAISE_EXCEPTION parameters are empty	Check the RAISE_EXCEPTION parameters.
Application parameters are not correctly entered	The RAISE_EXCEPTION parameters are not correctly filled	Check the RAISE_EXCEPTION parameters.
(WorkflowGen Web Exception) HTTP Status: … Response error: …or The FUNCTION_NAME parameter was not found	An error occurred while trying to send the HTTP request to WorkflowGen	Check the HTTP status: 401: security error Check your authenticating parameters. 404: unable to connect to the URL 500: internal server error Check for indications in the returned error message.

Error while trying to connect to WorkflowGen Database Error message : …	An error occurred while trying to connect to the WorkflowGen Database	Check your connection string in the configuration file. Check for indications in the returned error message
Parameters: <*Request Id parameter name*>/<*Activity Name parameter name*>, Error: WorkflowGen has raised a security exception.	The user defined by the IDENTITY parameters is not a participant of the process	Check IDENTITY_USERNAME and IDENTITY_PASSWORD parameters. Identify the request with parameters names returned in the error message.
Parameters <*Request Id parameter name*>/<*Activity Name parameter name*>, Error: The activity name <*Activity Name*> doesn't exist in the request <*Request Identifier*>.	One of the activity names defined in the RAISE_EXCEPTION parameters doesn't exist.	Check the RAISE_EXCEPTION parameters. Check for indications in the returned message.
Parameters <*Request Id parameter name*>/<*Activity Name parameter name*>, Error: The action <*Activity Name*> doesn't have any open instantiation in the request <*Request Identifier*>".	One of the actions to cancel is not open	Check the RAISE_EXCEPTION parameters. Check for indications in the returned message. To ignore this error, set IGNORE_NOTHINGTODO_ERROR parameter to "Y".

UPDATEPROCESSDATA workflow application

Overview

The **UPDATEPROCESSDATA** Workflowgen application allows you to update process data associated with a request. It provides a simple solution for inter-process communications.

Using default and other parameters

Request

The required parameter is REQUEST_ID: IN parameter, numeric value. This parameter must contain a valid request ID.

Activity

The optional parameters are the process data to update (the parameter name in the processing data name). You must define those parameters on the corresponding action parameters.

To create a workflow action using UPDATEPROCESSDATA, use the following parameters:

REQUEST_ID send value of: Data: REQUEST_ID _UPDATE

AMOUNT send value of: Data: AMOUNT_UPDATE

Note: You may have to add an exception management to handle possible errors (e.g. invalid request ID).

Example:

If you want to update the "AMOUNT" with the value of the process data "AMOUNT_UPDATE", the request ID to update is stored in a "REQUEST_ID_UPDATE" process data.

STARTPROCESS workflow application

Overview

The **STARTPROCESS** WorkflowGen application lets you launch a new request with the corresponding parameters. It provides a simple solution for inter-process communications.

Parameters

Process

There are three ways to use STARTPROCESS to launch a new request:

- **Process ID:** PROCESS_ID (IN parameter, numeric value)
- **Process name with process version:**
  - PROCESS_NAME (IN parameter, text value).
  - PROCESS_VERSION (IN parameter, numeric value).
- **Process name with test:**
  - PROCESS_NAME (IN parameter, text value).
  - TEST (IN parameter, text value). This value can be **Y**, which will launch a test version, or **N**, which will launch the active version.

The following parameters are optional:

- **Request ID:** REQUEST_ID (OUT parameter, numeric value). This will return the ID of the new request.
- **Impersonate user:** IMPERSONATE_USERNAME (IN parameter, text value).
- You can define other parameters as needed in the workflow process to launch; for example COMPANY (IN parameter, text value), e.g. ACME_COMPANY.

Examples:

PROCESS_ID: IN send value of Data: MY_PROCESS_ID (a numeric process data containing the ID of the process to start, e.g. 1320).

PROCESS_NAME: IN send value of Data: MY_PROCESS_NAME (a text process data containing the name of the process to start, e.g. LEAVE_APPLICATION), and PROCESS_VERSION: IN send value of: Data: MY_PROCESS_VERSION (a numeric process data containing the version number of the process to start, e.g. 2).

PROCESS_NAME: IN send value of: Data: MY_PROCESS_NAME (a text process data containing the name of the process to start, e.g. LEAVE_APPLICATION), and TEST: IN send value of: Data: MY_TEST (e.g. Y).

COMPLETEACTION workflow application

Overview

The **COMPLETEACTION** WorkflowGen application lets you complete an ongoing action with the corresponding parameters. It provides a simple solution for inter-process communications and synchronization.

Using default and other parameters

Request

The required parameter is REQUEST_ID (IN numeric value): the request ID of the action to be completed.

Activity

The other parameters are:

- Parameter name: ACTION_NAME (IN parameter, text value): the action name to be completed. The first instance found will be completed.
- Parameter name: ACTION_ID (IN parameter, numeric value): the action instance ID to be completed.
- Parameter name: IMPERSONATE_USERNAME

The optional parameters are the parameters of the action to be completed. You will have to define those parameters in the corresponding action parameters.

Example:

If you want to complete an ASYNCHRONOUS Web procedure action called "MYASYNCACTION", which has the following parameters:

> AMOUNT recieve the data into: Data: TOTAL (you have to create this process data).

then in your process, you have to add an action using COMPLETEACTION application with the following parameters:

> REQUEST_ID: IN send value of: Data: MY_REQUEST_ID (a numeric process data containing the request ID of the action to complete, e.g. 1320)
>
> ACTION_ID: IN send value of: Data: MY_ACTION_ID (a numeric process data containing the ID of the action to complete, e.g. 2)
>
> AMOUNT: IN send value of: Data: MY_AMOUNT (a numeric process data containing a value for the amount, e.g. 1234.56)

GETPROCESSDATA workflow application

Overview

The **GETPROCESSDATA** WorkflowGen application lets you retrieve process data values for a specified request. It is very useful for inter-process communications.

As an initial sub-process action, GETPROCESSDATA provides a flexible alternative to the sub-process parameters, since it involves no versioning management constraints with the parent process.

Using default and other parameters

Request

The required parameter request is REQUEST_ID (IN numeric): the request ID which contains the process data to retrieve.

Activity

The other parameters are defined in the workflow action according to your needs.

Parameter name: the name of the remote process data to retrieve.
Receive value into: the process data to update.

Example:

To retrieve the value of the process data COMPANY into the process data CUSTOMER_COMPANY:

Parameter name: COMPANY
Receive value into: CUSTOMER_COMPANY

The process data types must be the same. You can add an exception management to handle possible errors (e.g. invalid request ID).

GETFORMDATA workflow application

Overview

The **GETFORMDATA** WorkflowGen application lets you retrieve form field values for a specified request. It is useful when you need to retrieve form data which is not mapped to process data.

Using default and other parameters

Request

The required parameter request is REQUEST_ID (IN numeric), the request ID that contains the process data to retrieve.

Activity

The required parameter is REQUEST_ID (IN_numeric), the request ID that contains the process data to retrieve.

The optional parameter is FORM_DATA_NAME (IN text), the process data name that contains the form data to query. By default, GETFORMDATA uses the "FORM_DATA" process name.

The other parameters are defined in the workflow action according to your needs:

Parameter name: the form field full ID (e.g. REQUEST_AMOUNT)
Receive value into: the process data to update

Example:

To retrieve the value of the form field REQUEST_COMPANY into the process data CUSTOMER_COMPANY, the process data and the field data types must be the same. You may have to add an exception management to handle possible errors (e.g. invalid request ID).

CANCELREQUEST workflow application

Overview

The **CANCELREQUEST** WorkflowGen application lets you to cancel an ongoing request.

Using default and other parameters

Request

The required parameter request is REQUEST_ID (IN_numeric), the request ID to cancel.

The optional parameter is NOTIFY_PARTICIPANT (IN_text), with the possible values "Y" or "N" ("N" being the default). If the selected value is "Y", the participants of the request will be notified of the cancellation.

MERGEFORM workflow application

Overview

The **MERGEFORM** WorkflowGen application takes multiple form data files and merges them into one file. It can also merge form archives into a target form archive by merging the HTML sections from both files.

How it works

All parameters are optional, and parameter names can be set by the process designer. To copy a data from one to another, the only action required is to set the default value as the data to copy and set the data into which you want to retrieve it. The parameters' directions must be INOUT. There is no limit to the number of parameters.

Parameters

Required parameters

Parameter	Type	Direction	Description
FORM_DATA	File	INOUT	The merge target FORM_DATA. All FORM_DATA_SOURCE parameters will merge into this parameter's default value (IN) and will update the specified data (OUT) with the result.
FORM_DATA_SOURCE1	File	IN	Specific form data to merge into the target form data.
FORM_FIELDS_MERGE1	Text	IN	The fields to merge from FORM_DATA_SOURCE1 to FORM_DATA, separated by commas. It supports the asterisk (*) wildcard character to select all fields starting with the prefix. **Note:** If you don't specify a FORM_FIELDS_MERGE[N] parameter, all of the fields in FORM_DATA_SOURCE[N] will be merged.

Optional parameters

Parameter	Type	Direction	Description
FORM_DATA_SOURCE[2..N]	File	IN	Specific form data to merge into the target form data.

FORM_FIELDS_MERGE[2..N]	Text	IN	The fields to merge from FORM_DATA_ SOURCE[2..N] to FORM_DATA. It also supports the wildcard character.
FORM_ARCHIVE	File	INOUT	The merge target FORM_ARCHIVE. All FORM_ARCHIVE_SOURCE parameters will merge into this parameter's default value (IN) and will update the specified data (OUT) with the result.
FORM_ARCHIVE_SOURCE[1..N]	File	IN	Specific form archive to merge into the target form archive.
FORM_FIELDS_ARCHIVE[1..N]	Text	IN	Section IDs to merge from FORM_ ARCHIVE_SOURCE[1..N] to FORM_ ARCHIVE, separated by commas. It does not support the asterisk wildcard parameter; instead, you must specify the exact IDs of each section to merge.

Examples of parameters

Parameter	Type	Direction	Description
FORM_DATA	File	INOUT	Send value of FORM_DATA Receive value into FORM_DATA
FORM_DATA_SOURCE1	File	IN	Send value of FORM_DATA_ VALIDATES_ACCOUNTING
FORM_FIELDS_MERGE1	Text	IN	Send value of ACCOUNT_*
FORM_DATA_SOURCE2	File	IN	Send value of FORM_DATA_ VALIDATES_SALES
FORM_FIELDS_MERGE2	Text	IN	Send value of SALES_ DECISION,SALES_COMMENT
FORM_ARCHIVE	File	INOUT	Send value of FORM_ARCHIVE Retrieve value into FORM_ARCHIVE
FORM_ARCHIVE_SOURCE1	File	IN	Send value of FORM_DATA_ VALIDATES_ACCOUNTING
FORM_FIELDS_ARCHIVE1	Text	IN	Send value of ACCOUNT
FORM_ARCHIVE_SOURCE2	File	IN	Send value of FORM_ARCHIVE_ VALIDATES_SALES
FORM_FIELDS_ARCHIVE2	File	IN	Send value of SALES

COPYDATA workflow application

Overview

The **COPYDATA** WorkflowGen application is used to copy data from a parameter to a different data.

How it works

All parameters are optional, and parameter names can be set by the process designer. To copy a data from one to another, the only action required is to set the default value as the data to copy and set the data into which you want to retrieve it (as long as the data type is compatible). The parameters' directions must be INOUT. There is no limit to the number of parameters.

Parameters

Optional parameters

Parameter	Type	Direction	Description
DATA_DATETIME1	Date/Time	INOUT	DATETIME type data to copy
DATA_FILE1	File	INOUT	FILE type data to copy
DATA_NUMERIC1	Numeric	INOUT	NUMERIC type data to copy
DATA_TEXT1	Text	INOUT	TEXT type data to copy

Examples of parameters

Parameter	Type	Direction	Description
DATA_FILE1	File	INOUT	Send value of FORM_DATA Retrieve value into FORM_ACTION_ ACTION1
MY_PARAMETER_NAME	Text	INOUT	Send value of TEXT_DATA Retrieve value into OTHER_TEXT_DATA

SENDMESSAGE workflow application

Overview

The SENDMESSAGE WorkflowGen application lets users send SMS notifications using the Twilio SMS platform; to use this application, you'll need to set up an account on the Twilio website at https://www.twilio.com/sms.

How it works

The SENDMESSAGE application requires two parameters (BODY and TO) and associating these with their corresponding IDs.

The values that correspond to the ACCOUNT_SID, AUTH_TOKEN, and FROM parameters are required to connect to Twilio, but these are generally configured in the **Instant messaging** section on the **General** tab in the **Configuration panel**. However, if they have been configured in the SENDMESSAGE action in the process, these values will override any corresponding values set in the **Configuration panel**.

Parameters

Required parameters

Parameter	Type	Direction	Description
BODY	Text	IN	Message text
TO	Text	IN	Recipient's phone number, which must contain the country code (using a **+** before the country code is optional, e.g. +15551234567)

Optional parameters

Parameter	Type	Direction	Description
ACCOUNT_SID	Text	IN	Account security identifier *
AUTH_TOKEN	Text	IN	Account authentication token *
FROM	Text	IN	Sender's phone number, which must contain the country code (using a **+** before the country code is optional, e.g. +15551234567) *

MESSAGE_SID	Text	OUT	Alphanumeric code returned to identify successfuly sent messages; for more information, see https://support.twilio.com/hc/en-us/articles/223134387-What-is-a-Message-SID-
ERROR_MESSAGE	Text	OUT	Message returned in case of error; for a list of Twilio error messages and codes, see https://www.twilio.com/docs/api/errors/reference
ERROR_CODE	Text	OUT	Error code returned in case of error; for a list of Twilio error messages and codes, see https://www.twilio.com/docs/api/errors/reference

* These parameters must be associated to a Twilio account.

SENDHTTPPOST workflow application

Overview

The SENDHTTPPOST workflow application lets you create outgoing webhooks to external systems. Webhooks allow an API to exhange information with other applications through HTTP post requests, and can be used to build integrations with extendable applications such as Slack, GitHub, and Dropbox. For example, they can be used for notifications when an expected event (as previously configured by the user) has occurred. Since they allow real-time communication, webhooks are efficient and performant.

The SENDHTTPPOST workflow application sends outgoing webhooks to external applications using JSON or URLENCODED payloads. SENDHTTPPOST will then receive and process the response from the external API. For more information, see the Using webhooks with WorkflowGen topic on the WorkflowGen Forum & Knowledge Base.

For an example of how you can use SENDHTTPPOST to send messages to Slack channels from WorkflowGen, see Workflow Application: Using SENDHTTPPOST to send messages to Slack. As well, samples of APIs that use SENDHTTPPOST are available in the SENDHTTPPOST Workflow Application repository on GitHub.

How it works

- The default payload content type (APP_CONTENT_TYPE) is JSON; URLENCODED is also supported.
- Since the application parameters are case-sensitive, parameters must use the API's accepted notation.
- The SENDHTTPPOST application requires the APP_URL parameter, which corresponds to the external API URL.
- The TOKEN parameter is available for authentication for external APIs where the token is not included in the URL. In these cases, the token will be sent in the payload using the TOKEN parameter.
- The response can contain an optional payload mapped to user-defined OUT parameters.
- In case of error when then APP_RESPONSE_STATUS OUT parameter is not defined, an exception will be triggered.
- Besides the optional parameters listed below, you can also add additional custom IN and OUT parameters (specific to the external API) to send and receive custom user-defined data to and from the external API. For example, in a Slack integration, you can add a parameter to include an emoji in a Slack message, and map this to Slack's "icon_emoji" parameter (this is the Slack API's accepted notation for this particular parameter).
- The default timeout (APP_TIMEOUT) is 3000 milliseconds; the maximum timeout is 60,000 milliseconds.

- Application logs are available; these can be specified by setting the **SendHttpPostLogLevel** parameter value in the "web.config" file to **0** to disable logging, **1** for simple logs, or **2** for debug logs.

Parameters

Required parameters

Parameter	Type	Direction	Description
APP_URL	Text	IN	External API URL

Optional parameters

Parameter	Type	Direction	Description
TOKEN	Text	IN	API authorization token (use this parameter to specify a token for external APIs that don't include the token in the URL)
APP_TIMEOUT	Numeric	IN	Maximum time interval between the request sending and the response reception (default: 3000 milliseconds; maximum 60,000 milliseconds)
APP_CONTENT_TYPE	Text	IN	Request content type supported by the external API (SENDHTTPPOST supports JSON and URLENCODED; the default is JSON)
APP_RESPONSE_CONTENT	Text	OUT	Returned optional payload or error message
APP_RESPONSE_STATUS	Text	OUT	Returned HTTP request status code

Macros

The following macros can be used in transition conditions or in the additional parameters of application type actions. They will be replaced by their associated value during process execution.

Macro	Tag	Value
Current user.field	<WF_USER_field> *	User information
Assigned user.field *	<WF_ASSIGNEE_field> *	Assignee user information
Requester.field *	<WF_REQUESTER_field> *	Requester information
Action initiator.field *	<WF_INITIATOR_field> *	Action initiator information
Process.Id	<WF_PROCESS_ID>	Process identifier
Process.Name	<WF_PROCESS_NAME>	Process name
Process.Description	<WF_PROCESS_DESC>	Process description
Process.Status	<WF_PROCESS_STATUS>	Process status
Process.FormUrl	<WF_PROCESS_FORM_URL>	Process form URL
Process.Version	<WF_PROCESS_VERSION>	Process version
Action.Id	<WF_ACTIVITY_ID>	Action identifier
Action.Name	<WF_ACTIVITY_NAME>	Action name
Action.Description	<WF_ACTIVITY_DESC>	Action description
Current action.Id	<WF_ACTIVITY_INST_ID>	Action instance identifier
Current action.Name	<WF_ACTIVITY_INST_NAME>	Action instance name
Current action.Creation date	<WF_ACTIVITY_INST_ CREATION_DATETIME>	Action creation date
Current action.Deadline	<WF_ACTIVITY_INST_LIMIT_ DATETIME>	Action deadline
Current action.Pre-overdue days	<WF_ACTIVITY_INST_ PREOVERDUE_DAYS>	Number of days before the action becomes overdue, **rounded up** to the nearest day
Current action.Pre-overdue hours	<WF_ACTIVITY_INST_ PREOVERDUE_HOURS>	Number of hours before the action becomes overdue, **rounded up** to the nearest hour
Current action.Pre-overdue minutes	<WF_ACTIVITY_INST_ PREOVERDUE_MINUTES>	Number of minutes before the action becomes overdue, **rounded up** to the nearest minute
Current action.Pre-overdue seconds	<WF_ACTIVITY_INST_ PREOVERDUE_SECONDS>	Number of seconds before the action becomes overdue, **rounded up** to the nearest second
Current action.Overdue days	<WF_ACTIVITY_INST_ OVERDUE_DAYS>	Number of days that the action is overdue, **rounded down** to the nearest day

Current action.Overdue hours	<WF_ACTIVITY_INST_ OVERDUE_HOURS>	Number of hours that the action is overdue, **rounded down** to the nearest hour
Current action.Overdue minutes	<WF_ACTIVITY_INST_ OVERDUE_MINUTES>	Number of minutes that the action is overdue, **rounded down** to the nearest minute
Current action.Overdue seconds	<WF_ACTIVITY_INST_ OVERDUE_SECONDS>	Number of seconds that the action is overdue, **rounded down** to the nearest second
Current action.Count	<WF_ACTIVITY_INST_ COUNT>	Number of completed instances for the current action
Request.Id	<WF_PROCESS_INST_ID>	Request identifier (process instance)
Request.Relative Id	<WF_PROCESS_INST_ RELATIVE_ID>	Request relative identifier
Request.Month relative Id	<WF_PROCESS_INST_ MONTH_RELATIVE_ID>	Request month relative identifier
Request.Year relative Id	<WF_PROCESS_INST_YEAR_ RELATIVE_ID>	Request year relative identifier
Request.Name	<WF_PROCESS_INST_ NAME>	Request name (process instance)
Request.Creation date	<WF_PROCESS_INST_ CREATION_DATETIME>	Request creation date (process instance)
Request.Deadline	<WF_PROCESS_INST_LIMIT_ DATETIME>	Request deadline (process instance)
Action.Participant name	<WF_PARTICIPANT_NAME>	Action participant name
System.Date	<WF_SYSTEM_DATE>	System date
System.Date/time	<WF_SYSTEM_DATETIME>	System date/time
System.Time	<WF_SYSTEM_TIME>	System time
System.Language	<WF_SYSTEM_LANGUAGE>	User system language
System.Null	<WF_SYSTEM_NULL>	Enable process designer to reinitialize a PDF form field value to Null
System.ApplicationBaseUrl	<WF_SYSTEM_ APPLICATION_BASE_URL>	Returns the application root URL (e.g. http://[servername])
System.ApplicationUrl	<WF_SYSTEM_ APPLICATION_URL>	Returns the WorkflowGen application URL (e.g. http:// [servername]/wfgen)
System.ApplicationPortalScriptUrl	<WF_SYSTEM_ APPLICATION_PORTAL_ SCRIPT_URL>	Returns the WorkflowGen application portal page URL (e.g. http://[servername] /wfgen/show.aspx)
Parent.Process Name	<WF_PARENT_PROCESS_ NAME>	Returns the parent process name in a sub-process action

Parent.Process Version	<WF_PARENT_PROCESS_VERSION>	Returns the parent process version in a sub-process action
Parent.Request Id	<WF_PARENT_PROCESS_INST_ID>	Returns the parent request ID in a sub-process action
Parent.Current action Id	<WF_PARENT_ACTIVITY_INST_ID>	Returns the parent current action ID in a sub-process action

* Field: see the following table.

See **Examples of macros** on page 253 for examples of values for the macros listed above.

User macro suffixes

Field	Description
LASTNAME	Last name
FIRSTNAME	First name
USERNAME	Name of the user
MANAGER	Manager name
EMAIL	Email address
PHONE	Telephone number
MOBILE	Mobile telephone number
PAGER	Pager number
FAX	Fax number
OFFICE	Office number
DEPARTMENT	Department number
COMPANY	Company
JOBTITLE	Title
INITIALS	Initials
TITLE	Civic status
EMPLOYEENUMBER	Employee number
EMPLOYEETYPE	Type of employee
POSTALADDRESS	Postal address
ZIPCODE	Zip code
CITY	City
STATE	State
COUNTRY	Country
OBJECTSID	SID
EXTATT1	Extended attribute 1
EXTATT2	Extended attribute 2
EXTATT3	Extended attribute 3
EXTATT4	Extended attribute 4

EXTATT5	Extended attribute 5

Using macros

You can use macros in the transitions and additional notification conditions or in the actions parameters to send the value of the macro to the parameter value by choosing one macro from the list or by concatenating several macro codes as a text value.

Example 1:

If you want to send the username of the requester in the field REQUESTER_USERNAME of the action, you have to add an additional parameter with the following settings:

Parameter name: REQUESTER_USERNAME
Send the value of a macro: Requester.Username

Example 2:

If you want to send the first name and the last name of the requester in the field REQUESTER_NAME of the action with a space in between the two, you have to add an additional parameter wh the following settings:

Parameter name: REQUESTER_NAME
Send the value of a text: <WF_REQUESTER_FIRSTNAME> <WF_REQUESTER_LASTNAME>

File data macros

Access to the file properties

In the transition or notification conditions, you can use the following macros on the file type process data access the file properties.

Field	Description	Data type
FILENAME	File name	Text
SIZE	File size in KB	Number
CONTENTTYPE	File content type	Text
DESCRIPTION	File description	Text
DATELASTMODIFIED	Date of last modification of the file	Date/Time

Syntax examples

The following examples assume you have data called MY_FILE of data type FILE.

Example 1:

Rule: Check if the file name contains the keyword "report":
Method: InStr(1,<MY_FILE.FILENAME>,"report",1) <> 0

Example 2:

Rule: Check if the file size is lower than 1MB:
Method: <MY_FILE.SIZE> < 1024

Example 3:

Rule: Check if the file is a Microsoft Word document:
Method: <MY_FILE.CONTENTTYPE> = "application/msword"

Example 4:

Rule: Check if the file was modified today:
Method: <MY_FILE.DATELASTMODIFIED> > [Date]

Check if a file exists

You can also use the name of the data to check if the file exists in the process by using the IsNull() function.

Example:

If you have FILE type data called MY_FILE, you can use the syntax below in a condition to check if the file exists:

IsNull(<MY_FILE>)

Examples of macros

The following table shows examples of the macros listed above.

Macro	Example
Current user.field	<WF_USER_FIRSTNAME> = "John" <WF_USER_DEPARTMENT> = "Accounting"
Assigned user.field	<WF_ASSIGNEE_EMPLOYEENUMBER> = 11225 <WF_ASSIGNEE_EMPLOYEETYPE> = "Permanent"
Requester.field	<WF_REQUESTER_COMPANY> = "My company" <WF_REQUESTER_LASTNAME> = "Smith"
Action initiator.field	<WF_INITIATOR_FIRSTNAME> = "John" <WF_INITIATOR_LASTNAME> = "Smith"
Process.Id	12
Process.Name	"2_LEVELS_APPROVAL"
Process.Description	"2 levels approval"
Process.Status	<WF_PROCESS_STATUS> = "ACTIVE"
Process.FormUrl	"http://mycompany.com/wfgen/wfapps/webforms/MACRO_TEST_2/V1/Default.aspx"
Process.Version	1
Action.Id	2
Action.Name	"INITIATES"

Action.Description	"The Requester initiates the request"
Current action.Id	2
Current action.Name	"2-VALIDATES"
Current action.Creation date	2015-07-22T20:23:07Z
Current action.Deadline	2015-07-25-T20:25:25:46Z
Current action.Count	2
Request.Id	1701
Request.Relative Id	12
Request.Month relative Id	12
Request.Year relative Id	12
Request.Name	"2_LEVELS_APPROVAL #1795"
Request.Creation date	2015-07-22T20:35:00Z
Request.Deadline	2015-09-24T09:00:00Z
Action.Participant name	"John"
System.Date	7/26/2015
System.Date/time	7/27/2015 2:44 PM
System.Time	1:44 PM
System.Language	"en-US"
System.Null	<NULL>
Application.BaseUrl	http://myserver.com

Custom notification templates

Overview

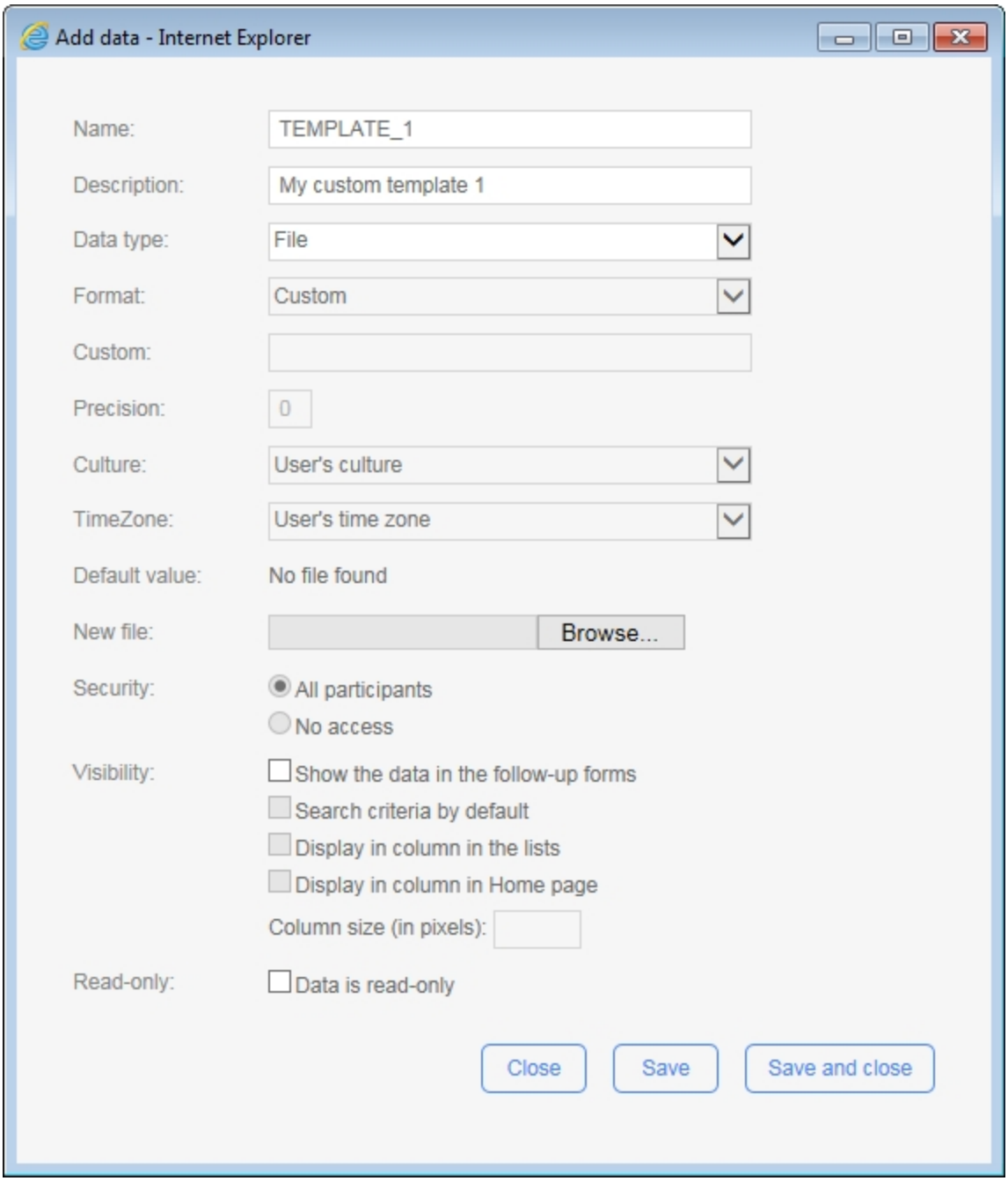
Custom notification templates may be used instead of the default WorkflowGen notification templates. These templates can be created in HTML or as plain text and can also use many regular WorkflowGen macros to display process-specific information.

Process

Process data

For WorkflowGen to use the custom notifications, they must be added to the process data as type FILE.

To do this, first create new process data for each template to be used, then browse to and attach the custom template to be used.



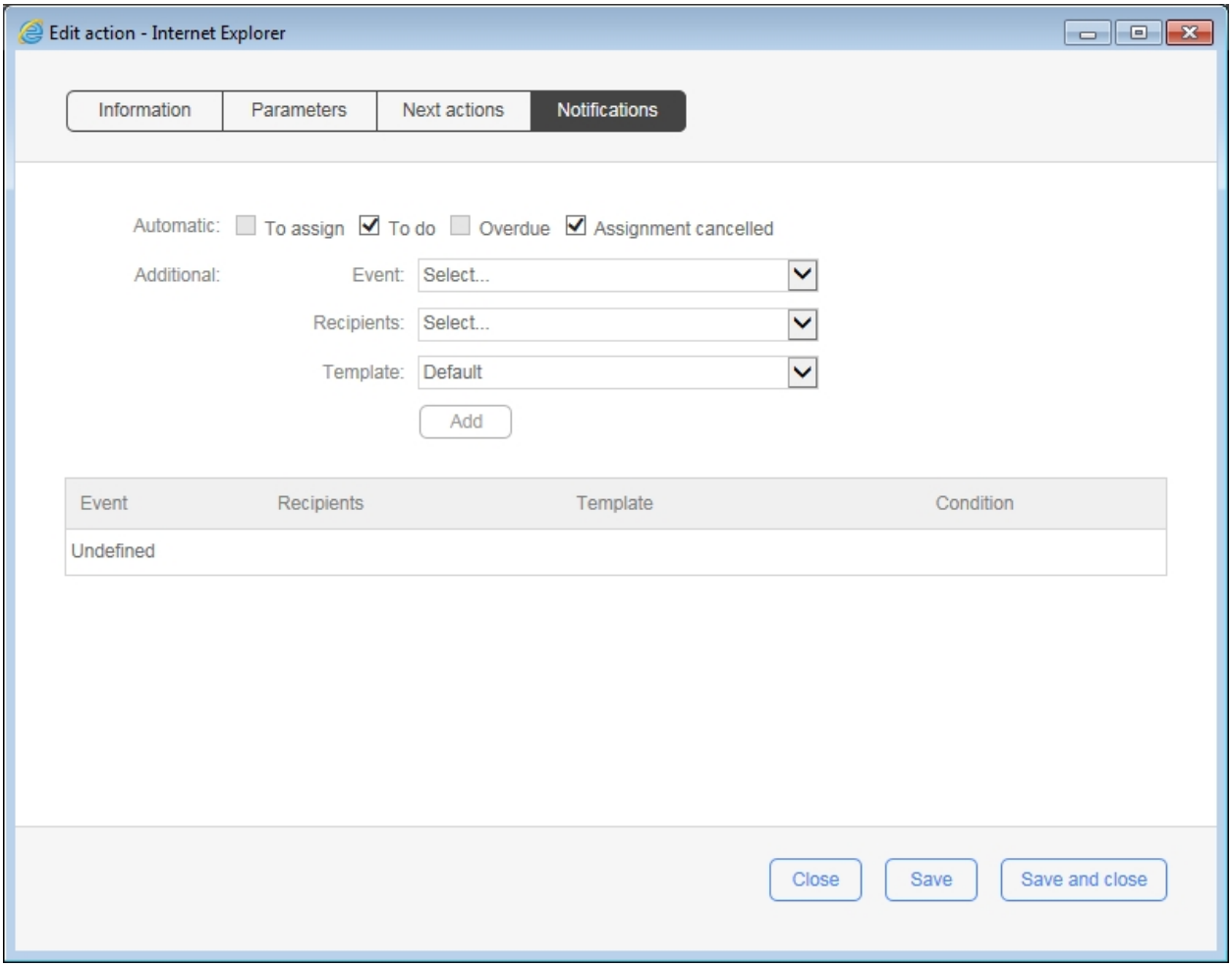
Action notifications

WorkflowGen can use an unlimited number of custom notifications per action. To add a custom notification, follow the steps below.

On the **Notifications** tab, in the **Additional** section:

1. Select the event that will cause the notification.
2. Select the recipient of the notification.

3. Select the process data that contains the attached notification template. You can choose the custom template created or use the default WorkflowGen template.



Templates

To create a template, use a text editor to create a file as follows:

Subject

To create a custom subject line for the templates, the first line in the HTML template must be "SUBJECT:" followed by the subject line to display. Macros may also be used here.

HTML

Create an HTML page that will act as a template for the email. In order to support Unicode, we recommend saving the file using UTF-8 encoding and adding a UTF-8 character set in the header of the HTML page, as shown below. CSS styles can also be applied within the HTML page.

Embedded images

Add images to standard notification templates (custom or built-in e.g. \wfgen\App_Data\Templates\Emails). Image tags whose source (src="") begin with "Http" are not included in the email and simply related. Image tags whose source begins with a drive letter (e.g. "C:\") will be included in the email and result in a larger size email. However a connection to the server is not required.

Examples:

The image is included in the message:

```
<img src="C:\inetpub\wwwroot\wfgen\App_
Themes\Default\portal\images\activity_s.gif">
```

The image is not included in the message:

```
<img src="http://localhost/wfgen/App_
Themes/Default/portal/images/activity_s.gif">
```

Sample HTML template

SUBJECT: My Custom Subject line

```
<html>
<head>
     <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
     <title>My Title</title>
     <style type="text/css">
          body
          {
               font-family:Arial;
          }
     </style>
</head>
<body>
     <table width="90%">
     <tr>
          <td>
               <img src="C:\inetpub\wwwroot\wfgen\App_
               Themes\Default\portal\images\activity_s.gif"> <WF_PROCESS_
               INST_NAME>
          </td>
     </tr>
     <tr>
          <td>
               Manager Decision
          </td>
          <td>
               <WF_PROCESS_INST_RELDATA_VALUE.MGR_DEC>
          </td>
     </tr>
     <tr>
          <td>
               Date
```

```
        </td>
        <td>
            <WF_SYSTEM_DATE>
        </td>
    </tr>
    <tr>
        <td>
            Launch the Action
        </td>
        <td>
            <a href="<WF_LINK_ACTIVITY_INST_LAUNCH>">link 1</a>
        </td>
    </tr>
    <tr>
        <td>
            Go To Action Follow-Up Form
        </td>
        <td>
            <a href="<WF_LINK_ACTIVITY_INST_FORM>">link 2</a>
        </td>
    </tr>
    <tr>
        <td>
            Go To Request Follow-Up Form</td>
        <td>
            <a href=" <WF_LINK_ACTIVITY_INST_FORM> ">link 2</a>
        </td>
    </tr>
    <tr>
        <td>
            Go To Request Follow Up Form
        </td>
        <td>
            <a href="http://YOURSITE/wfgen/Show.aspx?QUERY=PROCESS_INSTANCE_
            FORM&ID_PROCESS_INST=<WF_PROCESS_INST_ID>">Request Link</a>
        </td>
    </tr>
    </table>
</body>
</html>
```

Text

A non-Unicode text notification template can be created using a text editor such as Notepad and must be saved as a *.txt file.

Sample text template

SUBJECT: My Custom Subject line

Manager Decision: <WF_PROCESS_INST_RELDATA_VALUE.MGR_DEC>

Date: <WF_SYSTEM_DATE>

Launch the Action: <WF_LINK_ACTIVITY_INST_LAUNCH>

Go To Action Follow-Up Form: <WF_LINK_ACTIVITY_INST_FORM>

Go To Request Follow Up Form: http://YOURSITE/wfgen/Show.aspx?QUERY=PROCESS_INSTANCE_FORM&ID_PROCESS_INST=<WF_PROCESS_INST_ID>

Macros

In addition to the regular macros that are available, the following macros may also be used in the custom notification templates.

Macro	Remarks
<WF_PROCESS_INST_RELDATA_VALUE.DATANAME>	A process data value where DATANAME is the name of the data whose value you want to display
<WF_PROCESS_INST_RELDATA_DESCRIPTION.DATANAME>	Retrieves the description of a process data
<WF_PROCESS_INST_RELDATA_FILE.DATANAME>	A process data value where DATANAME is the name of the data whose value you want to add as an attachment to the email
<WF_LINK_ACTIVITY_INST_LAUNCH>	A link will be displayed to launch the action directly from the notification
<WF_LINK_ACTIVITY_INST_FORM>	A link will be displayed to view the action follow-up form directly from the notification

WorkflowGen URLs

Overview

The main modules of WorkflowGen can be accessed directly from the address bar of your browser by providing the URLs for each.

User portal

If the website is configured to use a default document, specifying the name of the document is not required:

http://YOURSITE/wfgen/default.aspx

Administration Module

If the website is configured to use a default document, specifying the name of the document is not required:

http://YOURSITE/wfgen/admin/default.aspx

Configuration panel

To access the configuration panel directly, use the following URL:

http://YOURSITE/wfgen/admin/Config.aspx

Integration using WorkflowGen URLs

Overview

Integrations to external systems using WorkflowGen are possible through the use of WorkflowGen applications, RSS feeds, and the WorkflowGen Web Service API. Furthermore, integrations with WorkflowGen can be performed through the use of URLs to perform the following types of functions:

- Request and action launches from any external site, with or without WorkflowGen frames and menus.
- Launching an action in a non-WorkflowGen window and redirecting to another (non-WorkflowGen) website.
- Viewing a follow-up form disconnected from the WorkflowGen portal.
- Viewing a graphical follow-up disconnected from the WorkflowGen portal.

Use cases would include permitting the integration of WorkflowGen seamlessly into an external portal, such as Microsoft SharePoint, SAP Portal, DotNetNuke, or other web-based portals. Filling out and submitting web forms as well as following up activities could then be performed without the use of the default WorkflowGen web portal if so desired.

To enforce the appropriate security in WorkflowGen, these URL launches require users to authenticate themselves and therefore work best with Integrated Authentication.

Launching a process from a URL

- This starts a new request and launches the first action.
- Participant security is enforced.
- WorkflowGen menus and banners are visible.

To launch a process directly from a link or URL, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed
QUERY	The task WorkflowGen will attempt to run e.g. START
P	The process name that WorkflowGen will attempt to run e.g. CLUB_CS_LEAVE

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=START&P=CLUB_CS_LEAVE

Launching the first action of a process from another website

- This starts a new request and launches the first action.
- Participant security is enforced.
- WorkflowGen menus and banners are visible.
- Redirection will be performed upon form submit.

To launch a process directly from a link or URL and redirect back to a website other than WorkflowGen, use the following example:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed
QUERY	The task WorkflowGen will attempt to run e.g. START
P	The process name that WorkflowGen will attempt to run e.g. CLUB_CS_LEAVE
BACKURL_SUBMIT	The URL that the user will be returned to when submitting the completed form e.g. http://www.advantys.fr
BACKURL_CANCEL	The URL that the user will be returned to when selecting the "Back" link generated on the top left of the form page e.g. http://www.workflowgen.com
FORM_BGCOLOR	The background color to use when displaying the forms border e.g. white

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=START&P=CLUB_CS_LEAVE&BACKURL_SUBMIT=http://www.advantys.fr&BACKURL_CANCEL=http://www.workflowgen.com&FORM_BGCOLOR=white

Start an action without the WorkflowGen portal

- This launches an action that is the second or later action of a workflow.
- Participant security is enforced.
- WorkflowGen menus and banner are hidden.

To launch an action (second or later) directly from a link or URL, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed

QUERY	The task WorkflowGen will attempt to run e.g. APPLICATION_START
ID_PROCESS_INST	The process instance id that WorkflowGen will attempt to run e.g. 192
ID_ACTIVITY_INST	The activity ID that WorkflowGen will attempt to run e.g. 2
ID_APPLICATION	The WorkflowGen Application used by the activity to run (note that EFORMASPX represents ID_APPLICATION 1) e.g. 1
BACKURL_SUBMIT	The URL that the user will be returned to when submitting the completed form e.g. http://www.advantys.fr **Note:** If no BACKURL_SUBMIT is defined, WorkflowGen will use the selected redirection behavior from the Configuration panel (e.g. return to home page, show follow-up form, etc.).

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=APPLICATION_START&ID_PROCESS_INST=192&ID_ACTIVITY_INST=2&ID_APPLICATION=1&BACKURL_SUBMIT=http://www.advantys.fr

Start an action within the WorkflowGen portal

- This launches an action that is the second or later action of a workflow.
- Participant security is enforced.
- WorkflowGen menus, banner, and action follow-up form are visible.

To launch an action (second or later) directly from a link or URL with visible menus, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed
QUERY	The task WorkflowGen will attempt to run e.g. CONTEXT
NO_REDIR	Ensure no redirection after form submit e.g. Y
ID_PROCESS_INST	The process instance id that WorkflowGen will attempt to run e.g. 192
ID_ACTIVITY_INST	The activity id that WorkflowGen will attempt to run e.g. 2
ID_APPLICATION	The WorkflowGen Application used by the activity to run (note that EFORMASPX represents ID_APPLICATION 1) e.g. 1

REQUEST_QUERY	The parameter to control the request method, in this case to start the application e.g. APPLICATION_START

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=CONTEXT&NO_REDIR=Y&ID_PROCESS_INST=192&ID_ACTIVITY_INST=2&ID_APPLICATION=1&REQUEST_QUERY=APPLICATION_START

Launch a request follow-up form without the WorkflowGen portal

- This launches the request follow-up form disconnected from the WorkflowGen portal.
- Participant security is enforced.
- WorkflowGen menus and banner are hidden.

To launch the disconnected request follow-up form, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed.
QUERY	The task WorkflowGen will attempt to run. e.g. PROCESS_INSTANCE_FORM
ID_PROCESS_INST	The process instance id that WorkflowGen will attempt to run. e.g. 192
SUPERUSER	The security mode for accessing the follow-up form. • USER mode (Omit SUPERUSER parameter): reserved for active participants in a request • ADMIN mode (SUPERUSER=Y): reserved for supervisor, process manager and administrator access

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=PROCESS_INSTANCE_FORM&ID_PROCESS_INST=192&SUPERUSER=Y

Launch an action follow-up form without the WorkflowGen portal

- This launches the action follow-up form disconnected from the WorkflowGen portal.
- Participant security is enforced.

- WorkflowGen menus and banner are hidden.

To launch the disconnected action follow-up form, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed
QUERY	The task WorkflowGen will attempt to run e.g. ACTIVITY_INSTANCE_FORM
ID_PROCESS_INST	The process instance ID that WorkflowGen will attempt to run e.g. 192
ID_ACTIVITY_INST	The activity id that WorkflowGen will attempt to run e.g. 2

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=ACTIVITY_INSTANCE_FORM&ID_PROCESS_INST=192&ID_ACTIVITY_INST=2

Launch a graphical follow-up form without the WorkflowGen portal

- This launches the graphical follow-up form disconnected from the WorkflowGen portal.
- Participant security is enforced.
- WorkflowGen menus and banner are hidden.
- Drill-down to activities is disabled.

To launch the disconnected graphical follow-up form, use the example below. The parameters the URL uses are as follows:

Parameter	Description
YOURSITE	The site where WorkflowGen is installed
QUERY	The task WorkflowGen will attempt to run e.g. WFCANVAS_PROCESS_INSTANCE
ID_PROCESS_INST	The process instance id that WorkflowGen will attempt to run e.g. 192

Example:

http://YOURSITE/wfgen/show.aspx?QUERY=WFCANVAS_PROCESS_INSTANCE&ID_PROCESS_INST=192

Possible errors

Title	Description
Invalid request: Process NAME or ID is required	The name or the identifier of the process (ID_PROCESS or PROCESS parameter) was not found.
DbConnect	The database is not available.
GetUserInfos	Unable to retrieve the information about the user specified by the REQUESTER_USERNAME parameter.
Invalid user: user not found	The username passed through the REQUESTER_ USERNAME parameter does not correspond to a WorkflowGen user.
Incorrect request: The request cannot be found	The specified process was not found or its status does not allow the system to instantiate it.
Incorrect request: The action cannot be found	The specified action was not found of its status does not allow the system to instantiate it.
This process cannot be launched by an external application	The process was not declared as a public sub-process.
Security: You are not authorized to launch this request	The specified requester is not associated to the requester participant of the process.
CONTEXT Invalid XML	The XML content is not a valid XML string.
CONTEXT Invalid recordset	The XML content does not represent a valid ADODB recordset object.

Custom menus

Administration Module

Overview

To create custom menus in the **Administration Module**, you must create and modify an XML called "admin.xml" file in the **CustomMenu** folder located in the **\wwwroot\wfgen\App_Data\customMenus** folder.

These custom menus will then be available as extra menu options in the **Administration Module**. WorkflowGen supports two levels of custom menu items.

Menu items can be secured by user profile.

XML content

Menu item/node properties

Title: Specify the title of node. The title of the "menuItem" node will be the name used for the menu item on the **Administration Module** home page.

Profile: Specify if the link will be visible to users with an "administrator" or "user" profile. If "user" is specified, it does not grant access to all users but only to those that have access to the Administration Module (for example, folder managers).

Parameter values: user | admin

URL: Specify the URL to add as a custom link. Example: http://www.workflowgen.com/

Description: Specify a description for the custom link. Example: Visit the WorkflowGen website!

Target: Specify if the custom link will be opened within the WorkflowGen page (default) or in a new browser.

Parameter values: _new | "" (two double-quotes)

showInHomepage: Specify if the custom link will be displayed in the new menu item or also on the **Administration Module** home page (default).

Parameter values: true | false

Icon: Specify the path to a custom icon to be displayed instead of the default circle-arrow icon.

You can also use images in a custom theme. To do this, create a new Theme package for WorkflowGen and direct the icon path to its location in the **\wfgen\App_Themes\MYTHEME\admin\images** folder.

The default path is **\wfgen\App_Themes\Default\admin\images**. You can also add your custom images to this folder and use them from the Default theme folder (see the example below).

Sample admin.xml file

```
<?xml version="1.0" encoding="utf-8" ?>
<menu>
     <menuItem title="My links..." profile="user">
          <menuItem title="Advantys" url="http://www.advantys.com/" target="_
          new" description="Advantys Web Site" profile="user"
          showInHomepage="true"  />
          <menuItem title="WorkflowGen" url="http://www.workflowgen.com/"
          target="" description="WorkflowGen Web Site" profile="admin"
          icon="myicon.gif" showInHomepage="false"  />
     </menuItem>
</menu>
```

User portal

Overview

To create custom menus in the **User portal**, you must create and modify an XML file called "portal.xml" in the **CustomMenu** folder located in the **\wwwroot\wfgen\App_Data\customMenus** folder.

These custom menus will then be available as extra **Menu** options on the **User portal** home page.

Menu items can be secured by user profile.

XML content

Menu item/node properties

Title: Specify the title of node. The title of the "menuItem" node will be the name used for the menu item on the **User module** home page.

Profile: Specify if the link will be visible to users with a "user", "supervisor", "manager", or "admin" profile.

Parameter values: user | supervisor | manager | admin

URL: Specify the URL to add as a custom link. Example: http://www.workflowgen.com/

Description: Specify a description for the custom link. Example: Visit the WorkflowGen web site!

Target: Specify if the custom link will be opened within the WorkflowGen page (default) or in a new browser.

Parameter values: _new | "" (two double-quotes)

Icon: Specify the path to a custom icon to be displayed instead of the default "Earth" icon.

You can also use images in a custom theme. To do this, create a new Theme package for WorkflowGen and direct the icon path to its location in the **\wfgen\App_Themes\MYTHEME\portal\images** folder .

The default path is **\wfgen\App_Themes\Default\portal\images**. You can also add your custom images to this folder and use them from the Default theme folder (see the example below).

Sample portal.xml file

```
<?xml version="1.0" encoding="utf-8" ?>
<menu>
     <menuItem title="WorkflowGen Resource Center" profile="user"
     url="http://www.workflowgen.com/resources" description="Open the
     WorkflowGen Resource Center web site" target="_new" icon="" />
     <menuItem title="WorkflowGen" profile="supervisor"
     url="http://www.workflowgen.com/" description="Open the WorkflowGen
     website" target="_blank" icon="" />
     <menuItem title="Advantys" profile="manager"
     url="http://www.advantys.com/" description="Open the Advantys web site"
     target="_self" icon="" />
     <menuItem title="Google Search" profile="admin"
     url="http://www.google.com/" description="Open Google Search" target="_
     parent" icon="search_l.gif" />
     <menuItem title="Yahoo!" profile="user" url="http://www.yahoo.com/"
     description="Open the Yahoo! website" target="_top" icon="" />
     <menuItem title="New Leave Application" profile="user"
     url="/wfgen/show.aspx?QUERY=START&amp;P=LEAVE_APPLICATION"
     description="Launch a new leave application" target="_new"
     icon="http://dev4/wfgen/App_Themes/Default/portal/images/request_
     followup_form_l.gif" />
</menu>
```

Portlet

Overview

The portlet allows you to retrieve information from the WorkflowGen portal homepage of the user module.

The results received from HTTP are stored into XML RSS format and classified by category. This format allows the processing and the presentation of the data with any language able to read and parse XML content.

URL and HTTP parameters

URL

You can reach the content generated by the portlet module with the following URL:
http://yoursite/wfgen/show.aspx?QUERY=SHOW_RSS

Parameters

Parameter	Description	Example
USERNAME	Retrieve data for this user. The current login is assumed if this parameter is missing.	wfgen_admin
CATEGORY	List of categories to retrieve separated by " **;** " (semicolon). If this parameter is missing, all the available categories are returned.	REQUEST_RUNNING_NB;ACTION_TODO_NB
PROCESS	Allows content to be filtered by some specific processes. Specify the names of the processes separated by " **;** " (semicolon).	LEAVE_APPLICATION
PROCESS_CATEGORY	Allows content to be filtered by some specific process categories. Specify the names of the categories separated by " **;** " (semicolon).	HR
SHOW_NEW_REQUEST	Retrieve the list of processes that the current user can launch.	Y
XSL	Path of the XSL sheet used to transform the RSS content.	http://yoursite/portlet.xsl

Examples:

Retrieve all categories for the user whose username is "johnd":

http://yoursite/wfgen/show.aspx?QUERY=SHOW_RSS&USERNAME=johnd

Retrieve the actions to do (normal and overdue) for the user whose username is "johnd":

http://yoursite/wfgen/show.aspx?QUERY=SHOW_RSS&USERNAME=johnd&CATEGORY=ACTION_TODO_NB;ACTION_TODO_OVERDUE_NB

Retrieve information relative to the HR category for the current user:

http://yoursite/wfgen/show.aspx?QUERY=SHOW_RSS&PROCESS_CATEGORY=HR

Security

Authentication

To connect to the portlet module, you have to use an account that has access to the WorkflowGen User portal (e.g. wfgen_admin).

Username with or without a domain name

You must remove the domain name from the username when calling the portlet module if the usernames are prefixed by the name of the domain in the user's management module.

RSS format specification

Official specification

Official information about the RSS 2.0 standard is available at http://blogs.law.harvard.edu/tech/rss.

Content example

```
<?xml version="1.0" encoding="UTF-8" ?>
<rss version="2.0">
     <channel>
          <title>WorkFlowGen</title>
          <description>WorkFlowGen</description>
          <pubdate>Fri, 24 Oct 2011 15:19:42 GMT</pubdate>
          <language>en-US</language>
          <item>
               <title>Ongoing requests</title>
               <link>http://yoursite/wfgen/...</link>
               <description>15</description>
               <category>REQUEST_RUNNING_NB</category>
          </item>
          <item>
               <title>Actions to do</title>
               <link>http://yoursite/wfgen/...</link>
               <description>10</description>
               <category>ACTION_TODO_NB</category>
          </item>
     </channel>
</rss>
```

XML RSS nodes description

Name	Path	Description	Example

channel	rss	Root node	
title	rss/channel	Channel title	WorkflowGen
description	rss/channel	Channel description	WorkflowGen
pubdate	rss/channel		
language	rss/channel		
item	rss/channel	Categories container node	
title	rss/channel/item	Category title	
link	rss/channel/item	Contextual link of the category in WorkflowGen	
description	rss/channel/item	Category value	
category	rss/channel/item	Category name	

List of available categories

The available categories are as follows:

Name	Description
REQUEST_RUNNING_NB	Number of ongoing requests
REQUEST_RUNNING_OVERDUE_NB	Number of overdue ongoing requests
ACTION_TODO_NB	Number of actions to do
ACTION_TODO_OVERDUE_NB	Number of overdue actions to do
ACTION_TEAM_NB	Number of team actions to do
ACTION_TEAM_OVERDUE_NB	Number of overdue team actions to do
ACTION_TOASSIGN_NB	Number of actions to assign
ACTION_TOASSIGN_OVERDUE_NB	Number of overdue actions to assign
REQUEST_CLOSED_NB	Number of requests closed since my last visit
REQUEST_CLOSED_OVERDUE_NB	Number of overdue requests closed since my last visit
REQUEST_TOFOLLOW_NB	Number of requests to follow
REQUEST_TOFOLLOW_OVERDUE_NB	Number of overdue requests to follow
ACTION_TOFOLLOW_NB	Number of actions to follow
ACTION_TOFOLLOW_OVERDUE_NB	Number of overdue actions to follow
NEW_REQUEST	List of available processes that the user can launch

Note: If a category is empty at runtime, it is not added to the RSS content.

Possible errors

When an error occurs, the HTTP status of the page is modified and a runtime error will be displayed with a custom number.

The following errors can occur during the execution of the script:

Title	Description	Number	HTTP status
Unable to connect to the database	The database is unavailable.	100	500
Unknown user	The username passed through the USERNAME parameter does not correspond to an existing user of WorkflowGen.	101	500
Error during the execution of the request <CATEGORY>	An error occurred during the execution of the SQL request corresponding to the category <CATEGORY>.	102	500

Error messages

License

Error	Cause
Your license has expired	Your trial period has expired. You must enter a valid serial number to activate your version.
A valid license cannot be found	The license file doesn't match your serial number.
License error	This operation is not allowed with your license.

Security

Error	Cause
You are not authorized to view this page.	The user must be a WorkflowGen user or administrator to access the application.
You are not authorized to access this file.	If downloading is secured, only an administrator, a process manager, or a participant with sufficient read rights may access the request files.