

# Digitize business processes successfully

Accelerate digital transformation with the X4 BPMS low code platform

## X4 Release Notes

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# 1 Release Notes 7.1

## 1.1 Installation packages

### 1.1.1 X4 artifacts

ZIP files are provided for installing X4 artifacts. Upgrading X4 BPMS with .rpm, .deb, and .msi files is no longer possible. The tools for migration and installation of services are included in the ZIP files.

### 1.1.2 Server

#### 1.1.2.1 MS Windows

Keycloak was added to the installation package.

#### 1.1.2.2 Ubuntu/Debian Linux

Keycloak was added to the installation package.

#### 1.1.2.3 Red Hat Enterprise Linux

Keycloak was added to the installation package.

#### 1.1.2.4 SuSe Linux Enterprise Server

Keycloak was added to the installation package.

#### 1.1.2.5 Docker

Keycloak was added to the installation package.

## 1.2 New functions and changes

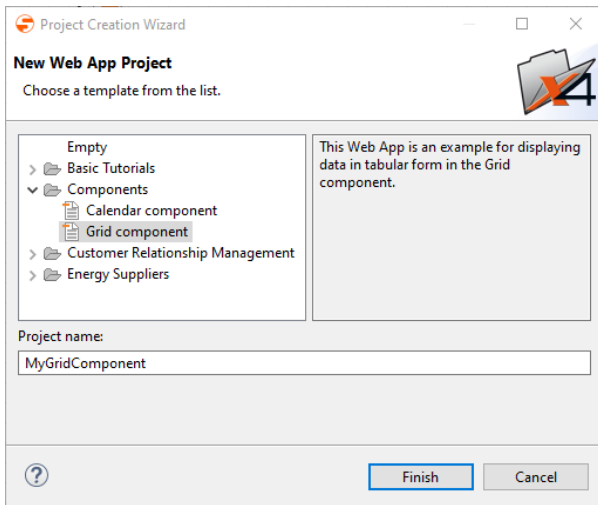
### 1.2.1 X4 Designer

#### 1.2.1.1 New functions

##### New templates

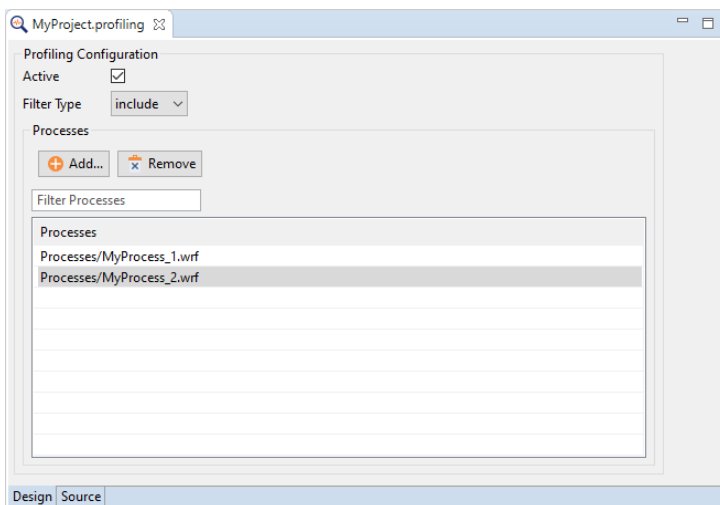
We have integrated new templates in X4 Designer. With the new templates, we would like to support you in the best possible way when implementing your use cases in X4 Designer.

When creating **ESB Projects**, new templates are available in the **Database** category. When creating **Web App Projects**, new templates are available in the **Components** category.



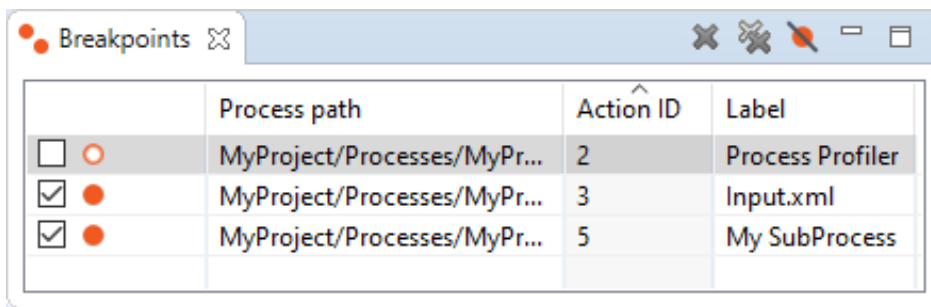
### Graphical editor

The `.profiling` file is opened in a graphical editor. The graphical editor enables low-code developers to use the profiling feature. When you open a `.profiling` file, you can still use the XML editor in the **Source** tab.



### Breakpoints

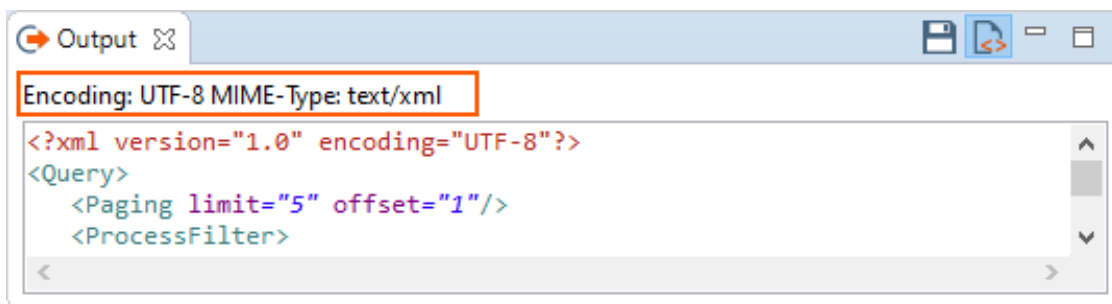
In the Breakpoints view, all set breakpoints are listed. In the Breakpoints view, breakpoints can be activated, deactivated and deleted. Additionally, all breakpoints can be skipped without deleting the breakpoints.



|                                     | Process path                | Action ID | Label            |
|-------------------------------------|-----------------------------|-----------|------------------|
| <input type="checkbox"/>            | MyProject/Processes/MyPr... | 2         | Process Profiler |
| <input checked="" type="checkbox"/> | MyProject/Processes/MyPr... | 3         | Input.xml        |
| <input checked="" type="checkbox"/> | MyProject/Processes/MyPr... | 5         | My SubProcess    |

### Output view

The encoding and MIME type of a document in the data stream is displayed in the **Output** view.



## 1.2.1.2 Changes

### Breakpoints

In the past, breakpoints were stored in the process files. We have changed this mechanism, the breakpoints are now stored in the workspace. Due to the change, breakpoints can be set and removed without having to save the process.

### Human Task

We have optimized the error message when inserting a second process.

## 1.2.2 X4 Adapter

### 1.2.2.1 New adapters

#### Keycloak Management

With the new Keycloak Management adapter, you can manage users, groups, and roles in Keycloak with modeled, technical processes. In combination with X4 Web Apps, for example, you can create a custom user management application.



### 1.2.2.2 Modified adapters

#### Apache Kafka Subscriber

User name and password fields have been added to the Apache Kafka Subscriber adapter parameters. These fields are used to authenticate the adapter to the broker without Keycloak.

#### Apache Kafka Publisher

User name and password fields have been added to the Apache Kafka Publisher adapter parameters. These fields are used to authenticate the adapter to the broker without Keycloak.

#### OPC UA Subscriber

In the input XML of the OPC UA Subscriber adapter you can configure the cycle time that the OPC UA connection uses to detect changes when a process is subscribed.

The configuration is done in the `Subscription` element using the `samplingInterval` and `publishingInterval` attributes.

- `samplingInterval`: Value in milliseconds with which the OPC UA server samples the data source (PLC).
- `publishingInterval` Value in milliseconds with which the OPC UA Server sends the data to the client (e.g. X4).

#### OPC UA Publisher

The OPC UA Subscriber Adapter adapter can now write arrays. You can define the separator character to separate the values in the adapter parameters.

#### User Identity Adapter

The output structure of the User Identity Adapter has been customized. The `SessionID` and `Claims` contained in the JSON Web Token are included in the output XML of the User Identity Adapter.



For more information, see section User Identity Adapter.

#### AMQP Subscriber

The AMQP Subscriber adapter has been optimized. You can enable SSL encryption in the parameters of the adapter.

#### AMQP Publisher

The AMQP Publisher adapter has been optimized. You can enable SSL encryption in the parameters of the adapter.

#### Process Profiler

The Process Profiler adapter can sort the output of the operation `List Process Executions` according to certain criteria, either in ascending or descending order.

#### MQTT Subscriber

The MQTT Subscriber adapter enables unsubscribing from a topic in an MQTT broker with the `Unsubscribe` operation.

#### MQTT Publisher

The MQTT Publisher adapter has been optimized. The new `retained` attribute can be used to define whether the published message for the specific topic is kept and stored in the broker. Any client subscribing to this topic will receive the retained message immediately after subscribing

#### 1.2.2.3 Removed adapter

- MSG Converter

### 1.2.3 X4 Server

#### 1.2.3.1 New functions

##### Logging

The X4 Server can write data to be logged to a `.log` file in the server directory. To activate the `.log` file, the `standalone.xml` of the X4 server must be adapted.

✓ For more information, see section [Activating .log file](#).

#### 1.2.3.2 Changes

##### Keycloak

The path to the keycloak configuration has been adjusted from **<path to server installation>/configuration** to **<path to server installation>/configurations**.

✓ For more information, see the section [Connecting your own Keycloak installation](#).

## Breakpoints

In the past, breakpoints were stored in the process files. We have changed this mechanism, the breakpoints are now stored in the workspace. Due to the change, breakpoints can be set and removed without having to save the process.

## XSLT

The **xs:dateTime**, **xs:time** and **xs:duration** data types now process values with an accuracy of nanoseconds. Previously, the values were processed with an accuracy of microseconds. The XSL mappings must be modified accordingly.

## Logging

The BAM adapter no longer has any function.

## 1.2.4 X4 Web Apps

### 1.2.4.1 New functions

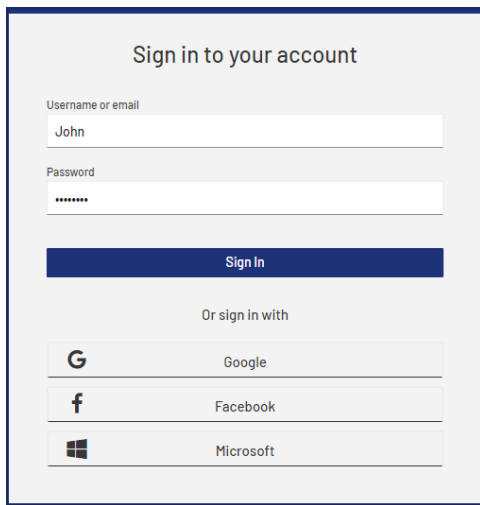
#### Single-Sign on with Keycloak

Log in to one X4 Web App and use the other X4 Web Apps without logging in again? With X4 Web Apps in combination with Keycloak, you can do this in just a few steps.

In Keycloak, use the Authorization Code Flow. Configure your X4 Web App in the revised **Configuration** file (.wac).

In the **Configuration** file, you can set a different realm or client from Keycloak for each Web App. Customize the Configuration at runtime using the **Configuration** Adapter.

You can choose the login screen theme in the Keycloak Administration Console and customize it if needed.



- ✓ For more information, see the section
- Keycloak
  - Configuration

### Grid Component

The paging of the Grid Component has been optimized. As soon as the `size` attribute is set in the `okList` element in the input XML of the grid component, paging is performed on the server side. This way you can prevent the performance of the client from decreasing due to a high amount of data.

Additionally, hyperlinks in Grid Components can be used for navigation. For this purpose we have introduced a new data type `URL` with the attributes `target`, `type` and `displayName`.

To enable editing of content in a column, the new `editable` attribute has been introduced in the `GridColumn` element. The changed data has to be saved using a process. The process can be called, for example, with the "Save" action.

The setting options of the Grid Component have been extended. You can now define that the first line is automatically selected when the Grid Component is called.

To give you the possibility to colorize the Grid Component, we have extended the attributes of the `<GridComponent>` element.

The screenshot displays the X4 GridComponent interface. At the top, there are buttons for 'CREATE EMPLOYEE', 'SAVE', 'DELETE', 'DISCARD CHANGES', and 'RESET DATABASE'. Below these, a text box states: 'This demo shows an example of how data from a database can be displayed and edited using different features of the GridComponent.' The main area contains a table with columns: Id, Name, Birthday, and Is Vaccinated. The table has 10 rows of data. A sidebar on the left lists various features: Overview, Multiselect, Filtering, Sorting, Editing, Hyperlinks, Reorder Columns, Styling, Autoselect, and Column Visibility. At the bottom of the table, there is a pagination control showing '1-10 of 23 items' and a 'Items per page' dropdown set to 10.

| Id | Name             | Birthday   | Is Vaccinated                       |
|----|------------------|------------|-------------------------------------|
| 1  | Thomas Hardy     | 17.11.1982 | <input checked="" type="checkbox"/> |
| 2  | Elvira Jackson   | 18.6.1995  | <input checked="" type="checkbox"/> |
| 3  | Camille Hart     | 5.6.1996   | <input checked="" type="checkbox"/> |
| 4  | Hayden Daves     | 1.11.1992  | <input checked="" type="checkbox"/> |
| 5  | Hanley Mallin    | 1.3.1993   | <input type="checkbox"/>            |
| 6  | Jeremy Freeman   | 2.3.1983   | <input checked="" type="checkbox"/> |
| 7  | Taylor Marrow    | 14.1.1973  | <input type="checkbox"/>            |
| 8  | Vanessa Garraway | 23.12.1977 | <input type="checkbox"/>            |
| 9  | Walter Burns     | 6.5.1997   | <input type="checkbox"/>            |
| 10 | Darlene Dennis   | 6.5.1991   | <input type="checkbox"/>            |

✓ For more information, see section Grid Component.

#### Authorization flows and single sign-on

The X4 Web Apps support the **Authorization Code Flow** and **Resource Owner Password Flow** authorization flows. The authorization flow can be defined in the **Configuration .wac** in the **<Access>** element.

To use the single sign-on procedure for X4 Web Apps, the **Authorization Code Flow** has to be used.

The screenshot shows the configuration interface for the X4 Web Apps. The 'Access' section is expanded, showing the 'Authorization Flow' dropdown menu. The 'Authorization Code Flow' is selected. Other options visible are 'Public Access' and 'Resource Owner Password Flow'. Below the dropdown, there are fields for 'Client', 'Client Credential', 'Keycloak ReST-API User', 'User', and 'Password'. The 'Design' tab is selected at the bottom.

### Unique session identifier

A **SessionID** is a unique session identifier. The SessionID can be used to uniquely associate the user and the session. This allows data to be placed in the session or the session data to be accessed.

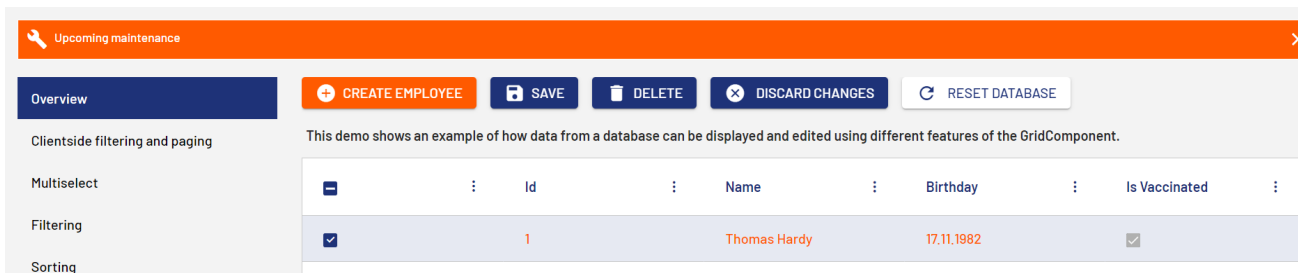
The SessionID of a Web App is contained in the so-called **JSON Web Token**. Within a Web App project, the JSON Web Token can be retrieved via the placeholder `AUTH_CUSTOM_TOKEN`.



For more information, see section [Extracting the SessionID of a Web App](#).

### Info banner

The X4 Web Apps can display info banners. The process that provides the data to be displayed must be specified in the Configuration (`.wac`). The expected data structure is described in [<Notifications>](#) section.



### ComboBoxAutocomplete Control

To optimize the user experience of our Web Apps, we have introduced the new ComboBoxAutocomplete Control. With the new ComboBoxAutocomplete Control, you create selection lists with an auto-complete feature.

## 1.2.4.2 Changes

### Authorization and single sign-on

The X4 BPMS supports various authorization flows and the single sign-on authentication procedure. To apply the authorization flows for X4 Web Apps, you need to enter the path to the Web App in **Valid Redirect URIs** in the **Client** section of the Keycloak administration console.

### HTML controls with JavaScript support

You can include your JavaScript snippets in your Web Apps using the HTML Control. You can enable the option in the attributes of the HTML control.

### Master/Detail component

The default position of the separator can be defined in the Master/Detail component with the new `defaultSeparatorPosition` attribute.



✔ For more information, see section Master/Detail component.

#### Data formats

Processes in the X4 BPMS can output data in various formats. In order to use the data in X4 Web Apps, the data format in which the data is output by the process must be defined in the Web App Configuration.

The data format used is defined in the `dataFormatVersion` attribute.

The attribute `simpleDataTransport` has been replaced in the `.wac` by the attribute `dataFormatVersion` in the `<Status>` element.

#### Configuration

The value of the `redirectUrl` attribute in the `<Logout>` element in the `.wac` file can be changed at runtime using the Web App Configurationadapter.

#### Cookie notice

The cookie notice of X4 Web Apps has been updated and now not only looks nice, but is also legally compliant.

#### "Download" action

All properties of a process can be downloaded with the action "Download".

#### "Select" Action

Properties of the URL type can be used in the "Select" action.

#### Grid Component

The `outputMode` attribute of the `Filtering` element has been removed.

#### Custom action

Properties of the URL type can be used in the Custom action.

## 1.2.5 X4 ReST API

### 1.2.5.1 New functions

#### Swagger UI Integration

Previously, we referred you to the Swagger UI tool web page to access and interact with the ReST API documentation. We would like to spare you this extra step and have therefore integrated the Swagger UI tool into the X4 BPMS.

### X4 ReST API

[/X4/services/rest/openapi.json](#)

API to access and work with X4.

Authorization:

- Go to POST method 'rest/login' in the Login Service Section.
- Execute with user credentials.
- Copy the returned Access Token.
- Click the 'Authorize' Button at the top and paste the Access Token.

Now you are authorized and can use all secured methods.

[SoftProject GmbH - Website](#)  
[Send email to SoftProject GmbH](#)

Servers

/X4/services

Authorize

**Keycloak Management** Manage Users, Groups and Roles in Keycloak.

▼

**Login Service** Authenticate against a realm.

▼

**User Service** User specific functions.

▼

**Profiling Management** Update or list Profilings which are located in the X4 Repository or in a Project.

▲

GET /rest/profilings/{id} Returns the project profiling for the given id.

▼

PUT /rest/profilings/{id} Updates the project profiling for the given id.

▼

GET /rest/profilings Returns a list of project profile

▼

**Process Runtime Management** Stop and list running Processes.

▲

GET /rest/engine/processes Returns a list of all running process instances

▼

DELETE /rest/engine/processes/{id} Stops the running process for the given process instance id

▼

For documentation on the ReST interface, see <http://localhost:8080/X4/X4Api/>.

#### Keycloak

With the X4 ReST API you can manage users, groups and roles in Keycloak.

## 1.3 Security and platform updates

### 1.3.1 Java

Azul Zulu has been updated to version 11.54.23 (Java 11.0.14).

### 1.3.2 Keycloak

Keycloak has been updated to version 16.1.0.

### 1.3.3 WildFly

WildFly has been updated to version 25.0.1.



Passwords encrypted with PicketBox cannot be adopted.

### 1.3.4 Angular

Angular has been updated to version 12.2.12.

## 1.4 Bug fixes

In this version we have fixed 39 reported bugs.

### 1.4.1 X4 Designer

- When opening the connection settings, empty text boxes are displayed until an entry is selected.
- When renaming a project, an error message appears in the server log.
- The icons of the adapters are not displayed correctly in the creation dialog.
- An empty folder is hidden as soon as a file is inserted.
- The Project Clean-up Wizard lists required files.
- When importing an adapter project, the adapter definition cannot be found on the server.
- Renaming an XML file generates an error in the Mapping Editor if the XML file was referenced in a mapping.
- When pressing the F1 key, the product help does not open.
- In the XLST Introduction Template, the Project Access adapter uses an invalid operation.
- An error in the Advanced CRM template has been fixed.

## 1.4.2 X4 Adapter

- The `messageDataTyp` parameter of the **Apache Kafka Publisher** adapter contains duplicate values.
- The **Web App Configuration** adapter displays Web App projects that have already been deleted.
- The **OPC UA Subscriber** adapter does not return an error message when an invalid event is subscribed.
- The **OPC UA Publisher** adapter establishes a new session for each request.
- The `Update Schedule` operation of the **Schedule Management** adapter returns an error when executed, even if the input XML is correct.
- The **User Identity** adapter does not work in combination with the "Download" action.
- Savepoints in a process do not work when using the **Abas ERP Connector** adapter.
- The `Find Process Execution Detail` operation of the **Process Profiler** adapter outputs a wrong name within the `ProcessStep` elements for all `TechnicalName` elements.
- For adapters created with ADK, the parameters are not filled correctly by technical processes.
- For adapters created with ADK, the operation is not updated when the linked process is renamed.

## 1.4.3 X4 Server

- A query with Elasticsearch that returns more than 10,000 documents is limited to the first 10,000 documents, resulting in an incomplete response.
- A query with Elasticsearch executes a maximum of 2 queries per query.
- Loops within processes are not retrieved correctly when retrieving profiling information with Elasticsearch.
- Date filter for profiling information query with Elasticsearch does not include processes that are still running during the filter period.
- The TaskManagement API for human tasks in subprocesses does not work correctly.
- ReST streams with large amounts of data require enormous amounts of memory and lead to `OutOfMemory` errors.
- A SOAP service defined with the HTTP `MetaXml` input mode is no longer executable.
- The Docker version 6.3.1 image contains an old Ubuntu distribution with known vulnerabilities.

## 1.4.4 X4 Web Apps

- When a disabled user logs in to a Web App, a message is displayed that the username/password is incorrect.
- When Properties are defined in a Master/Detail Component using a process, they are not visible when the Component is initially called.
- Paging in the Grid Component does not work when there is a correct connection to a database.
- The "items per page" selection list is not displayed as intended.

- When a data object is saved in a Detail Component with the data format 1.0, unneeded attributes are filled.
- Custom translations are written to the system properties during migration and the key order is changed.
- The Header control is not updated if the value of the Header control is set via an input.
- For line charts, the scale is not displayed correctly.
- The ComboBox control inside an overlay does not display the first entry when called.
- The `horizontalAlign` attribute in the `BoxLayout` element has no effect.
- When changing the password in "Change Password" dialog, the Web App does not display messages if Keycloak password policy is not followed.