asist

Technical Documentation

FINGO Team

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1. Introduction

asist system is an application used to prepare reports for the purpose of mandatory reporting. The scope and form of entered data are defined in taxonomy, which is a set of XML Schema and XML files compliant with XBRL 2.1, XBRL Dimension 1.0 and XBRL Formula standards. All reporting types have their own taxonomy, which defines the scope of reported data, presentation and data validation rules. Some of the taxonomy has been prepared based on visualizations provided by the supervisor as well as other normative documents and official electronic resources.

Data in asist system can be entered into the application manually or as a part of import from external files (CSV, Excel, XML, etc.) or by means of a flexible mapping module that allows for feeding with any tabular sets (CSV, Excel, SQL databases, etc.) as well as other e.g. hierarchical ones (for example XML files). Rules can be defined by a supervisor and delivered together with taxonomy as well as using rules module. The data reporting entity can define its own rules that will ensure that the entered data is correct in accordance with the expectations of the reporting institution.

The result of the report preparation work is the generation of a report in a format defined by the supervisor. Currently, asist application enables generation of output data in XBRL format as well as many other formats specific to a particular type of reporting. XBRL format reports can be created for any supported reporting type. A report in XBRL format can be processed by any XBRL tool capable of working with instance documents and XBRL taxonomies.

2. Glossary

- XBRL instance - the resulting financial report in XBRL format

- banking unit - definition of a single banking entity to which reporting data are assigned; the system contains two default entities - for individual and consolidated reports, an optional consolidation module enables creation of additional entities (banking units)

- calculations (XBRL calculations) - arithmetic rules specifying relations between values in a report; only summing (lists of values) with weights is supported

- report - a set of reporting data for a given reporting period, related to a single taxonomy (COREP, FINREP) and assigned to a specific banking unit

- XBRL (extensible business reporting language) - language based on XML, dedicated to description and preparation of financial reports

3. Technical Requirements

3.1. System requirements for a single workstation

	Minimum	Recommended	Including operating system, not including other applications.
Operating memory	8 GB	16 GB	
Disk space	approx. 35 GB		Including operating system, not including other applications. Disk usage depends on the number of taxonomies, reporting periods and archive copies - a single taxonomy requires about 25 MB, a single period (its archive) about 1 MB.
	Disk class SSD. Otherwise, application performance may be affected.		
Processor	Intel Core i3	Intel Core i7	or equivalent
Other hardware requirements	10 Mbps network card; 1280x720 resolution graphics	100 MB/s network card; 1920x1080 resolution graphics	The asist application should be on the same local network as the Oracle database.
Operating System	Windows 7 or later		The above systems are supported, but the application runs in any environment that supports Java 17. A 64-bit operating system is required.

Software	Java 17 jdk-17.0.5+8 or later	The environment distributed with the application is installed automatically to the application subdirectory.
Other requirements	Internet access	
	Recommended installation on a physical workstation. Use of other installation methods, such as remote desktop, may reduce application performance.	
	The Powershell command interpreter must be installed on the same computer where the application is.	

3.2. Requirements for a multi workstation

Operating memory	Minimum	Recommended	Including operating system, not including other applications.
	8 GB	16 GB	
Disk space	approx. 15 GB		Including the operating system, not including other applications. Disk occupancy depends on the number of taxonomies, reporting periods and archive copies - a single taxonomy requires about 25 MB, a single period (its archive) about 1 MB.
	Disk class SSD. Otherwise, application performance may be affected.		
Processor	Intel Core i3	Intel Core i7	or equivalent
Other hardware requirements	Network card 10 Mbps; Graphics with 1280x720 resolution	Network card 100 MB/s; Graphics with 1920x1080 resolution	The aSISt application should be on the same local network as the Oracle database.

Operating System	Windows 7 or later	The above systems are supported, but the application runs in any environment that supports Java 17. A 64-bit operating system is required.
Software	Java 17 jdk-17.0.5+8 or later	The environment distributed with the application is installed automatically to the application subdirectory.
Other requirements	Internet access	
	Recommended installation on a physical workstation. Use of other installation methods, such as remote desktop, may reduce application performance.	
	The Powershell command interpreter must be installed on the same computer where the application is.	

3.3. Database server requirements

Operating memory	Minimum	Recommended	Including operating system, not including other applications. The Oracle XE (eXpress Edition) version uses 1 GB of RAM.
	8 GB	16 GB	
Disk space	approx. 40 GB		Including the operating system, not including other applications. The disk occupancy depends on the number of taxonomies, reporting periods and archive copies - a single taxonomy requires about 25 MB, a single period (its archive) about 1 MB. Oracle XE (eXpress Edition) version uses 11 GB of disk space.
	SSD class disk. Otherwise, application performance may be affected.		

Processor	Intel Xeon E3	Intel Xeon E5	or equivalent. Oracle XE(eXpress Edidion) version uses 1 CPU.
Other hardware requirements	Network card 100 Mb/s	Network card 1 GB/s	—
Operating System	Linux x64 or Windows 7 or later		The above systems are supported, but the application runs in any environment that supports Java 17.
Database version	Oracle 12c Release 2		or later
Other requirements	The database must be on the same local network as the asist application.		
	The Powershell command interpreter must be installed on the server where the database is installed.		

3.4. Requirements for workstation in case of reporting taxonomies from BSP2 group

Due to the possible size of reports from BSP2 group, in particular taxonomies WIP2 and AR2, it is recommended to adapt operating memory according to number of reported facts:

- for number of reported facts below 500 thousand, minimum operating memory 8GB and recommended operating memory 16GB

- for number of reported facts over 500 thousand, minimum operating memory 16GB and recommended operating memory 32GB

3.5. System platform

The asist application runs on the following systems and components:

- environment: JAVA 17 (https://adoptium.net/temurin/releases/?version=17 or http://www.oracle.com/pl/technologies/java/index.html)

- presentation layer: SWING (https://docs.oracle.com/javase/tutorial/uiswing/)

- service layer: SPRING 5.3.12 (https://spring.io/projects/spring-framework)

- database access module: HIBERNATE 5.4.17.FINAL (http://hibernate.org), which is an implementation of JPA mechanisms (http://java.sun.com/javaee/overview/faq/persistence.jsp)

- database o single workstation version: Apache Derby o Multi-site version: Oracle 12g or newer

- implementation of JMS standard - ACTIVEMQ (http://activemq.apache.org/)

XBRL Processor (info.fingo.xbrl) is a FINGO library responsible for processing data at the XBRL level. It provides functionality related to XBRL taxonomy parsing, building and accessing the taxonomy object model.

The "Commons" library is also a FINGO library that contains a set of classes and mechanisms providing "universal" helper functions to facilitate the use of selected JAVA language structures.

4. Installation and configuration

4.1. Application installation

4.1.1. Downloading the application

The application, checksum and sql-generator are available for download at:

Application	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/asist-5.58.0.0.exe
Application	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/asist-5.58.0.0.nsisbin
SQL Generator	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/sql-generator-5.58.0.0.zip
Checksums	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/asist-5.58.0.0.exe.md5
Checksums	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/asist-5.58.0.0.nsisbin.md5
Checksums	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/sql-generator-5.58.0.0.zip.md5

Depending on the operating system on which the application is installed, download JDK17 from the official website of the open source software vendor https://adoptium.net/temurin/releases/

If you have Java support service from Oracle, download JDK17 from the software vendor's official website http://www.oracle.com/

Download the **exe** and **nsisbin** files to any location on your local disk or server infrastructure.

It is important that both files are stored in the same location.

Checksum check files are used only to verify the correctness of the download of the application installation files.

4.1.2. Specifics of single and multi-user installation

aSISt single-station version

The aSISt application in the single-station version can operate:

- on the built-in Derby database - the option most often chosen, or

- on an external Oracle database.

In order to be able to work on the **single-station version on the Derby** database, you need to:

- perform the installation procedure as described in Starting the application installation process,

- copy the license file `aSISt.license` License file,

- when starting the application for the first time, indicate the Derby database Database selection,

- complete with the required entries the `db.properties` file - concerning users sending reported data to the tranSIS system Communication with transis.

In order to work on the **single-station version on the Oracle** database, you must:

- follow the full installation procedure pertaining to aSISt multi-site version with the exception that here the aSISt application is installed on only one computer.

aSISt multiuser version

In order to work on the **multi-station version**, you need to:

- perform the installation procedure on all workstations where you want to work with aSISt application, as described in Starting the application installation process,

- copy the license file `aSISt.license` to all workstations License file,

- create a new Oracle database schema Oracle database installation with which all aSISt

applications installed on different stations will connect,

- select the Oracle database Database selection the first time the application is run on all stations,

- complete with the required entries the `db.properties` file - concerning users sending reported data to tranSIS Communication with transis. The operation should be performed on all stations.

4.1.3. Starting the application installation process

To install aSISt application, download the full installation version and run the downloaded exe file.

Regardless of which database, Derby or Oracle, the aSISt application will connect on and which single or multi-user version will be used. Installation of the application will follow the steps described below.

Application language selection

After launching the aSISt application installer, a window is displayed to select the language in which the application is to be installed.

The default language is English

Figure 1. Select the language of the asist application
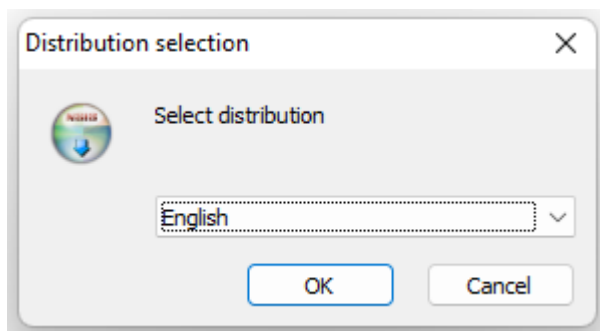
Welcome screen

In the second step of aSISt installation, a welcome screen is displayed to continue the process go on.

Figure 2. Installation wizard window
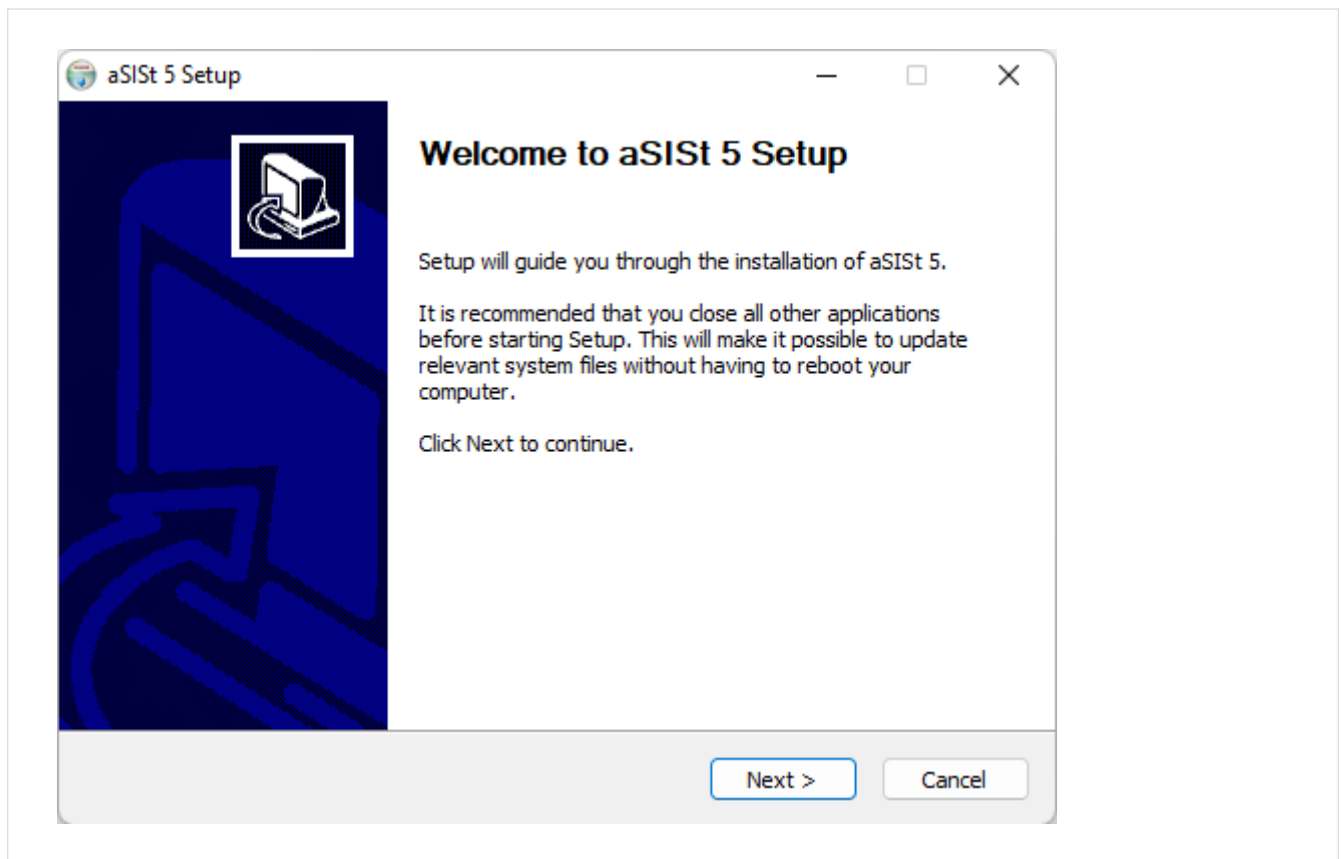
Selecting the reporting type

In the third step of asist installation, select from the drop-down list the type of reporting the application will be supported.

Figure 3. Selection of reporting type
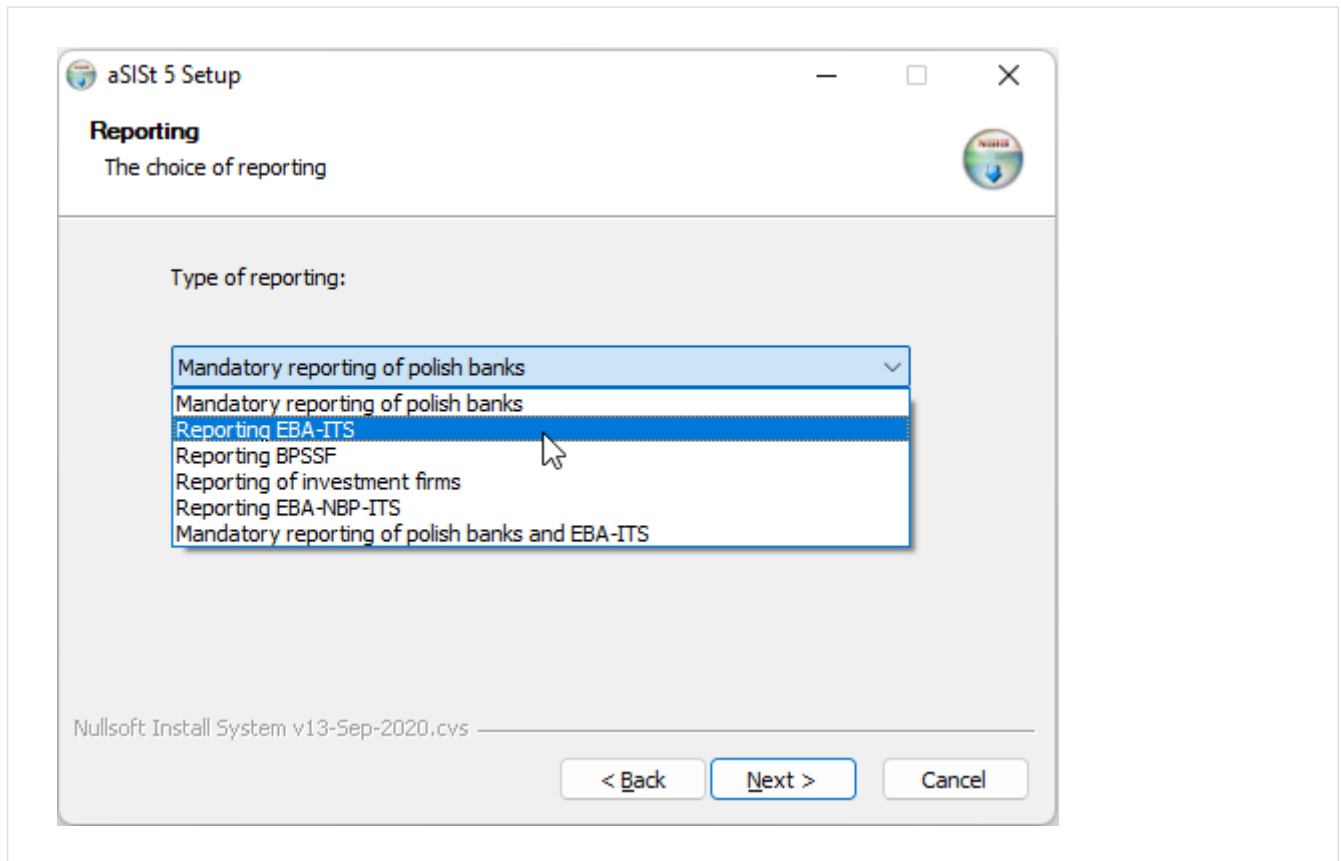
The type of reporting has to be in accordance with license file.

License Agreement

In the fourth step of the installation, a window with the license text is displayed, accept the terms of the license agreement, then proceed with the installation steps.

Figure 4. Acception the terms of the license agreement
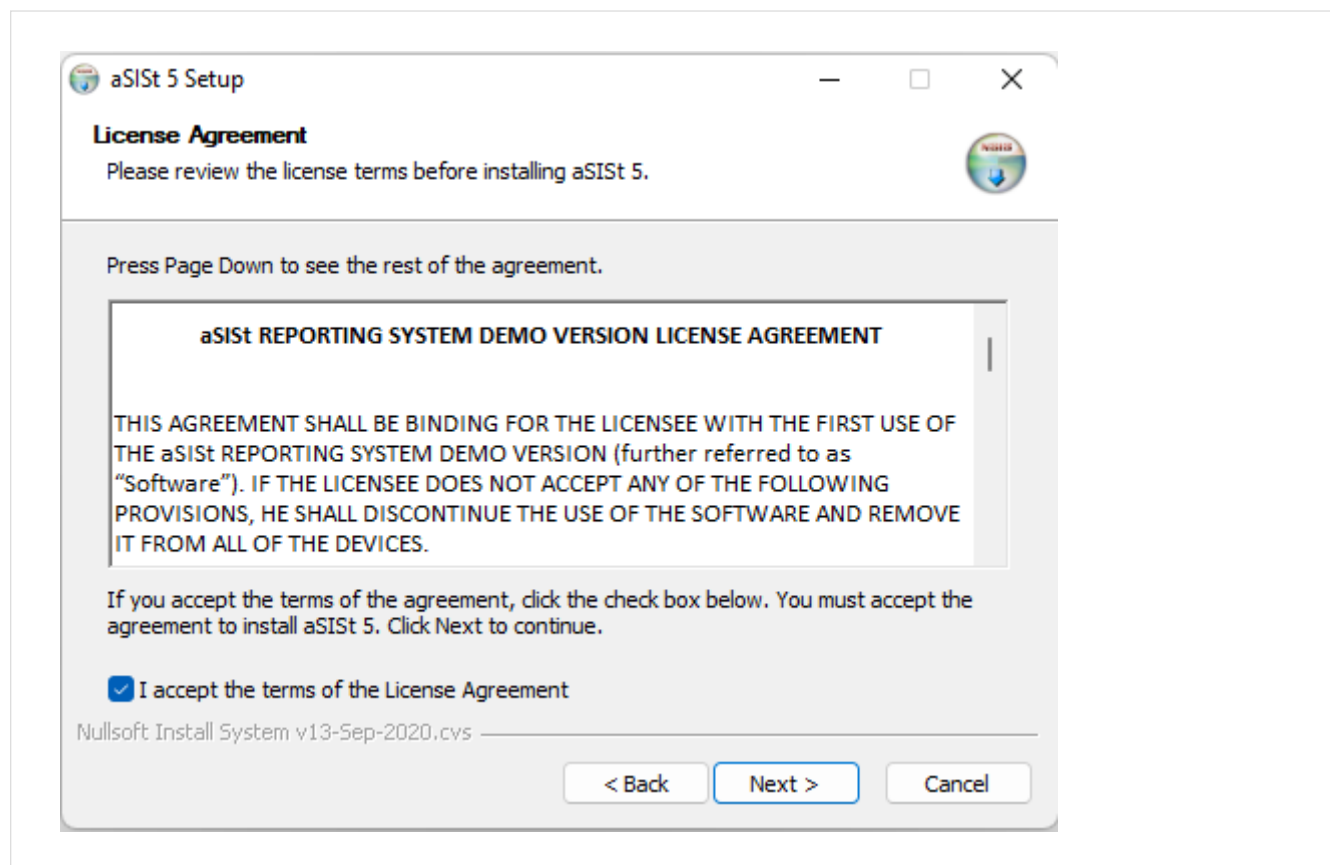
Selecting the destination folder

In the fifth installation step, select the folder where asist is to be installed.

⊕ Example directory location

```
C:aSISt5
```

Figure 5. Selection the destination folder for the application
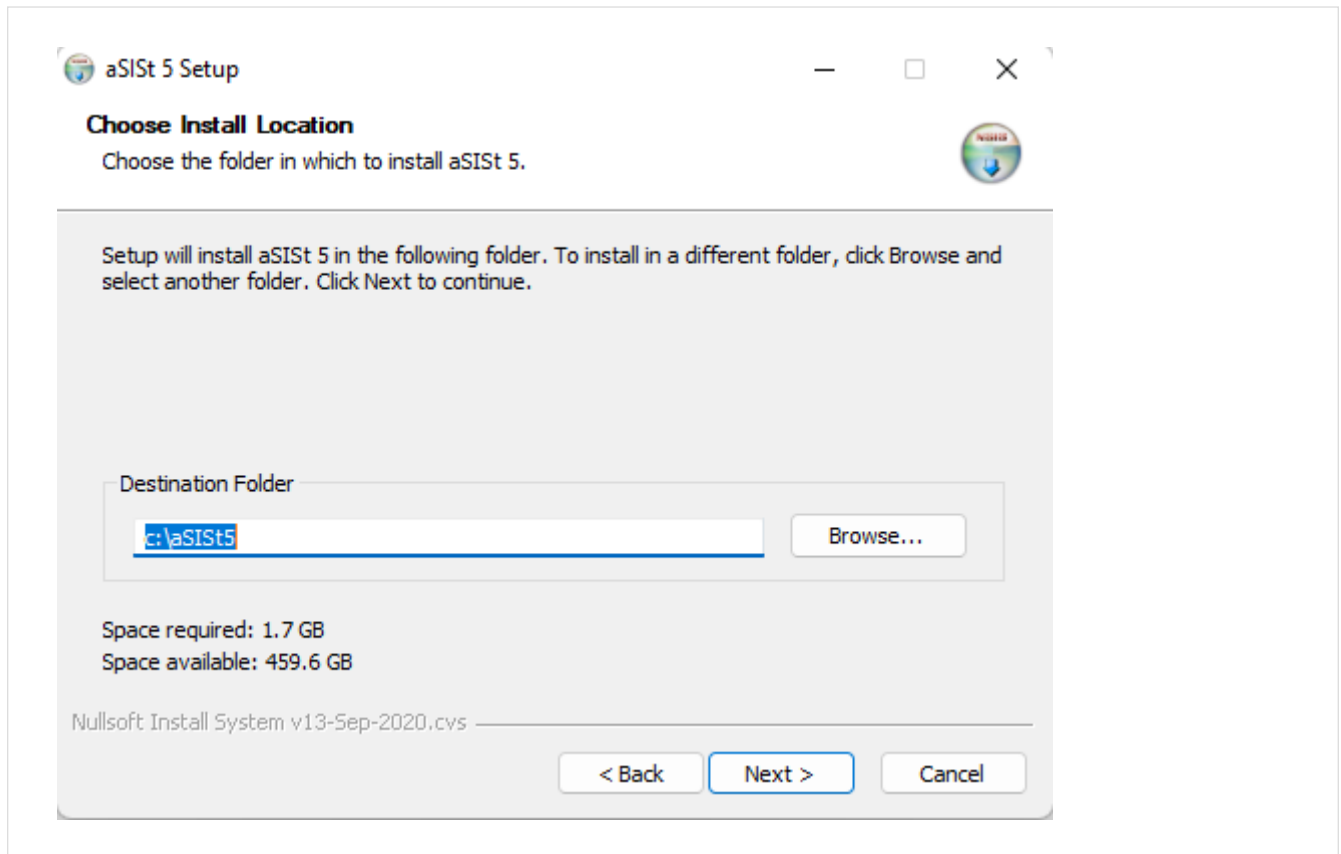
4.2. Application configuration

4.2.1. Directories and files

The home directory of the aSISt application (default: C:/aSISt5) contains the following.

files:.

- asistj.bat – program startup file.

- asist_verbose.bat – aSISt startup file with redirected output stream to logs/console.txt file and skipping the update startup process

- aSISt.license – license file

- db.properties – file with database access settings

- aSISt.ini – file allowing modification of application startup parameters.

- aSIStConfig.xml – file containing information about the version of the bulk package for a given distribution type and information about the application language.

- recovery. bat - a file that allows to repair the Derby database with a backup.

subdirectories:

- lib - contains application libraries

- resources - contains distributed taxonomy packages

- sql - contains SQL scripts for creating and initializing the database.

- jdk17 - subdirectory with JAVA 17 runtime environment.

- derbydb - Derby database (this directory occurs when aSISt application runs on Derby database).

- logs - logs from application operation.

- cache - the application cache is stored there.

- preferences - subdirectory where local application settings are stored (opened documents, table settings, print settings, etc.).

- external - external programs are contained there (an example would be the TeamViewer application).

- exports - by default there are files with reporting data created after running the export or generation function.

- backup - by default, this directory contains security copies of the Derby database (it is present when aSISt application works on Derby database).

4.2.2. License file

Before running the aSISt application for the first time, copy the `aSISt.license` file to the aSISt root directory (e.g. C:\aSISt5).

This file:

- for new users - it was delivered via e-mail,

- for banks already using the application in earlier versions - it should be copied from another workstation, as it is possible that the license file was modified in the meantime.

For a multi-station installation, the license file should be loaded on each station where the application is installed.

Without the license file, the aSISt application will not start.

This function:

- is used by banks with aSISt license extended with "Data Mapping" module,

- enables connection of aSISt application with aS-DataCalc application,

- allows the use of the "Data feed by mapping" function for aS-DataCalc data sources.

Using the TEST button, the user can check the correctness of the specified parameters.

If an incorrect address is entered or there are other problems with the connection to the aSDataCalc application:

- a message is displayed indicating that the test has failed, and

- it is not possible to feed the reports with data from the aS-DataCalc source.

If the aSISt application connects to the aS-DataCalc application via aSISt Server, you should additionally add the following in the application.properties file located in the main aSISt Server folder. parameters:

```
Host (without the beginning http as in the example below),
Port gRPC.
```

An example excerpt from the application.properties file, which includes entries for configuring aSISt Server with a aS-DataCalc could be of the form:

```
etl.host=etlstage.info
etl.grpcPort=30112
```
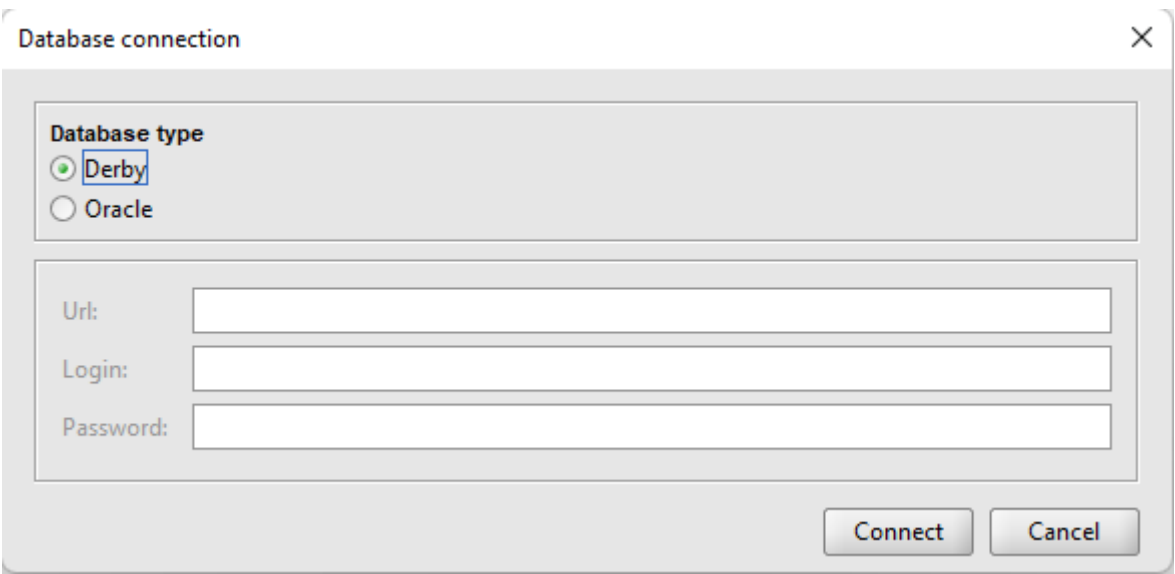
4.2.3. Database selection

The first time you launch the application, you need to indicate the type of database on which the application will work.

It can be:

- built-in Derby database or

- an external Oracle database

Figure 6. Database selection

Indicating the Derby database - will cause:

- creation of Derby database, to which all operations performed in the application will be saved,

- saving the created database in the directory where the application was installed.

⊕ Default location

```
C:\SISt5
```

- launching aSISt application.

Oracle database indication - will require:

- the URL to the previously created Oracle database

- login - that is, the name of the previously created Oracle database user with granted rights

- password.

An example of a database URL could be in the following form:

```
jdbc:oracle:thin:@127.0.0.1:1521/ASISTPDB
```

where: `127.0.0.1` - is the IP address of the database, `1521` - is the port Oracle Database listens on the port by default, and `1521` `ASISTPDB` - is the name of the plug-in database (PDB) containing the schema/user for aSISt.

Given the correct data, it will:

- connect to the indicated Oracle plug-in database, to which all operations performed in the application will be saved,

- launch of the aSISt application.

4.2.4. Oracle database

In order for aSISt application to use Oracle database, it is necessary to:

- Perform a full installation of a new Oracle database, or

- Use of an existing Oracle database, and

- Create aSISt5 user for aSISt application on Oracle database.

For a detailed description of schema creation, see Oracle database schema creation and configuration.

Problems with running an application on an Oracle database

When running aSISt application for the first time, it is required to select the database type Database selection , and in the case of an Oracle database, it is additionally necessary to specify the access parameters to this database database. Running the application on the first station at the multi-station version, creates all the necessary for network operation of the data schema tables. If you have difficulty running an application running on an Oracle database, check:

- whether the Oracle database engine is running on the specified server computer,

- whether the Internet connection is working properly and the network interfaces are enabled,

- whether the correct Oracle database connection parameters are given (check the entries in the db.properties file).

If the entries there are incorrect, make the appropriate changes, or delete the entire file db.properties file, and specify the correct parameters when restarting the application. In case of difficulties caused by SQL database errors or the inability to grant permissions to create database objects for the application account, the following procedure should be carried out (We recommend mostly in the case of a new installation on a clean database, because in case of any data present in the database - they will be irretrievably deleted with the drop command):

- Using the SQL server administration console, delete the cascaded database user created earlier database user then create it again e.g.:

'Oracle Database Server → "Start Menu" → "Programs" → "Oracle Database 12c Express Edition" → "Go To Database Home Page" → Home > Administration > Manage Database Users > User > Confirm Drop User → Home > Administration > Manage Database Users > Create Database User'.

- Execute through the SQL client of the Oracle database in question, a script generated using the tool: sql-generator.

To generate such a script, download and unzip the sql-generator-5.58.0.0.zip directory provided in Downloading application at any location specified by the administrator, and then: perform the procedure described in Manual creation of Oracle database structure.

4.2.5. Communication with transis

If **asist** application is to communicate with **transis**, use notepad to edit the **db.properties** file, writing there for the parameter: **"jms.brokerURL="** the appropriate address of the ActiveMQ server receiving data and messages from asist.

Parameter: **"jms.brokerURL="** should then have the form:

jms.brokerURL=tcp://hostname:port

where: `tcp://` is the required TCP communication protocol name, `hostname` is the DNS or IP domain name of the ActiveMQ server, `port` is the communication port number on which the ActiveMQ service listens.

✛ that is, for example:

```
"jms.brokerURL=tpc\://127.0.0.1\:61616",
```

where: `127.0.0.1` - is the IP address of the server, `61616` - is the port number.

The required address is provided by the unit to which the reported data is sent.

Leaving the parameter "jms.brokerURL=" (default setting) blank, allows the asist application to run without being able to communicate with the transis system.

4.2.6. Connections to integrated applications -asist Server, aS-DataCalc, aS- ConfigurationService, aS- EntityService

Configuration of connection of asist application together with asist Server, aS-DataCalc, aS-ConfigurationService and aS- EntityService applications is possible from the asist application level. To do this, start the asist application and then select:

- the cogwheel icon located in the upper right corner of the application,

- from the list, select: Settings,

- in the opened window, click on the side tab: Local, and then click on the corresponding top tab.

The ability to integrate the asist application with the aforementioned applications depends on the modules that have been purchased by the bank and provided in the license.

Connection of asist application with asist Server application

Using the asist Server application, mapping calculations and loading of tables from the "Snapshot Warehouse" are performed.

After activating the tab: "asist Server" (see figure below), the connection parameters to the asist Server application are presented:

- URL, and

- password

Figure 7. asist Server in local asist settings
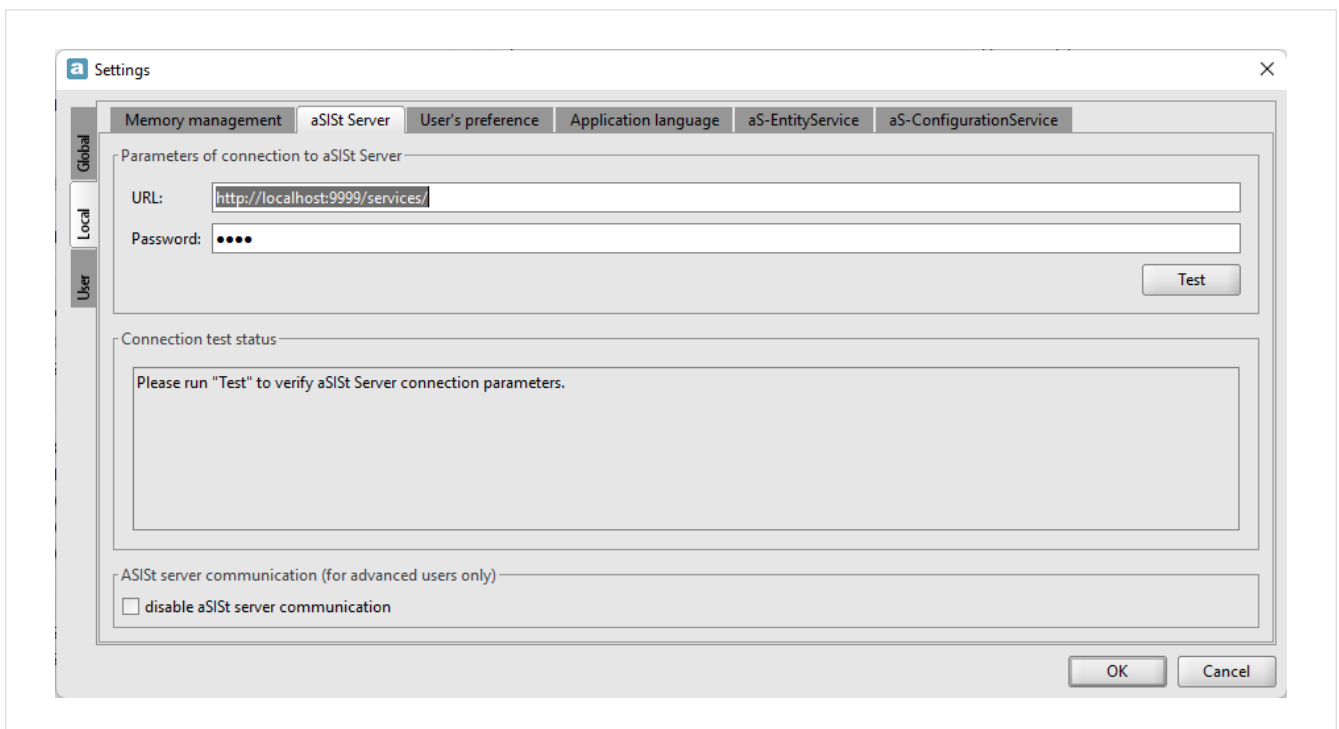
Using the TEST button , you can check the connection between asist and asist Server.

In case of an incorrect address or other connection problems, a message is displayed indicating that there is no connection to asist Server.

If the cause of the error is an incorrectly entered address or password, enter the correct password and access address in the form:

```
http://hostname:9999/services/
```

where:

```
hostname - is the DNS domain name or IP of the server on which asist Server is installed
9999 - is the port number
so for example: http://127.0.0.1:9999/services/
```

In addition, under the address of the location of the aSISt Server web console, add the units that will connect with aSISt Server.

```
http://hostname:9999/web/entities
```

Required fields:

```
Code - unit number (e.g. 8001, 8002, etc.).
Name - the name of the unit
Password - the password that the unit will enter in the asist application.
```

If, despite the correct access data, the message about no connection is still displayed, it may mean that asist Server has not been started yet.

Connecting asist application to aS-DataCalc application

After activating the tab: "aS-DataCalc" (see figure below), the connection parameters to the aS-DataCalc application are presented:

- Host

- Port gRPC

Figure 8. Settings of connection parameters with ETL server
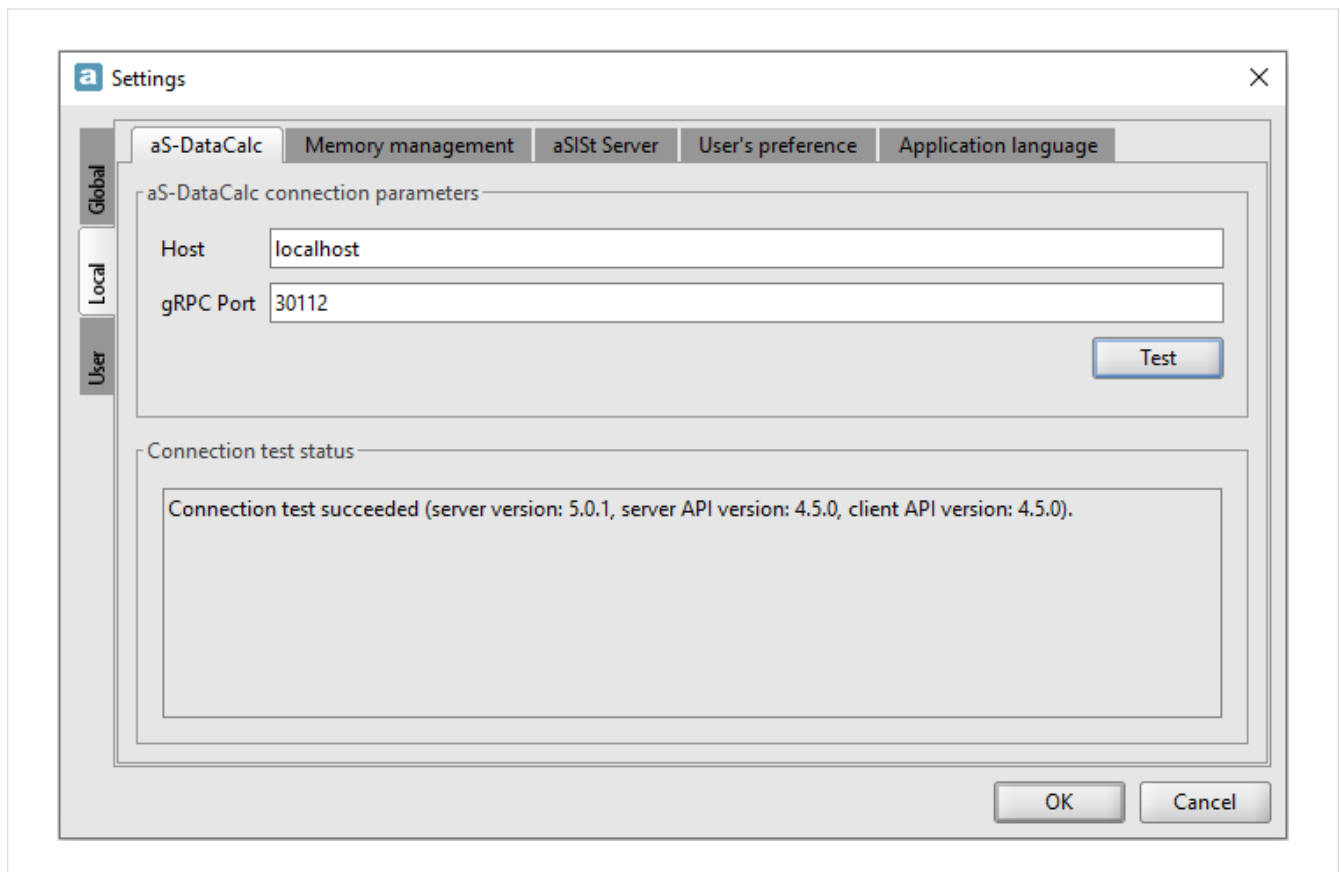
This function:

- is used by banks with asist license extended with "Data Mapping" module,

- enables connection of asist application with aS-DataCalc application,

- allows the use of the "Data feed by mapping" function for aS-DataCalc data sources.

Connecting asist application with aS-ConfigurationService application

When the aS-ConfigurationService tab is activated (see figure below), the connection parameters to the aS-ConfigurationService application are presented:

- Host

- Port gRPC

Figure 9. Settings of connection parameters with as-ConfigurationService application
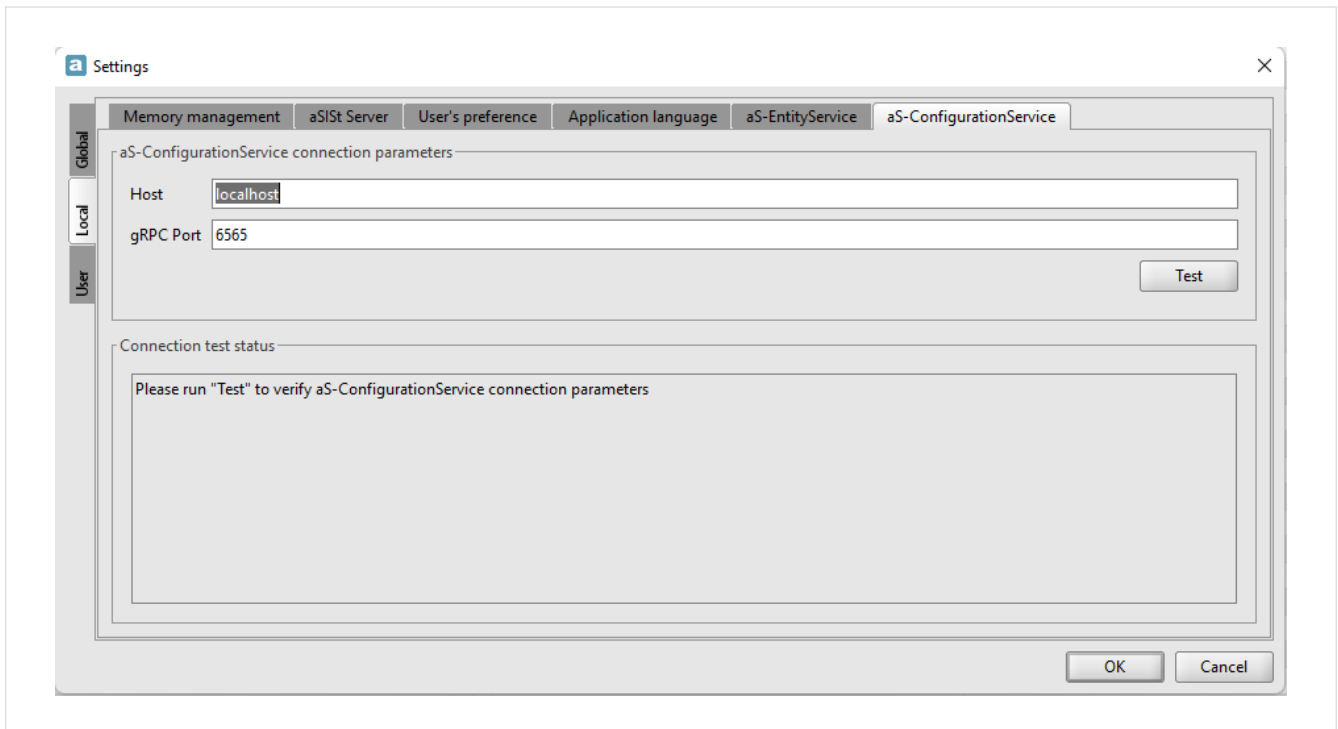
This function:

- is supported by a web browser,

- is available by typing in the browser bar the address of the server on which the administrator has configured the module's operating environment.

The administrator has the option to verify the connection to the server using the TEST button. If there is no connection, the application displays a message that the connection test was unsuccessful, in which case it should be verified that the connection parameters have been entered correctly and that the aS-ConfigurationService application has been started.

Connection of asist application with aS-EntityService application

After activating the aS-EntityService tab (see the figure below), the connection parameters to the aS-EntityService application are presented:

- Host

- Port gRPC

Figure 10. Settings of connection parameters with aS-EntityService application


This function allows you to manage bank units only in aS-EntityService application.

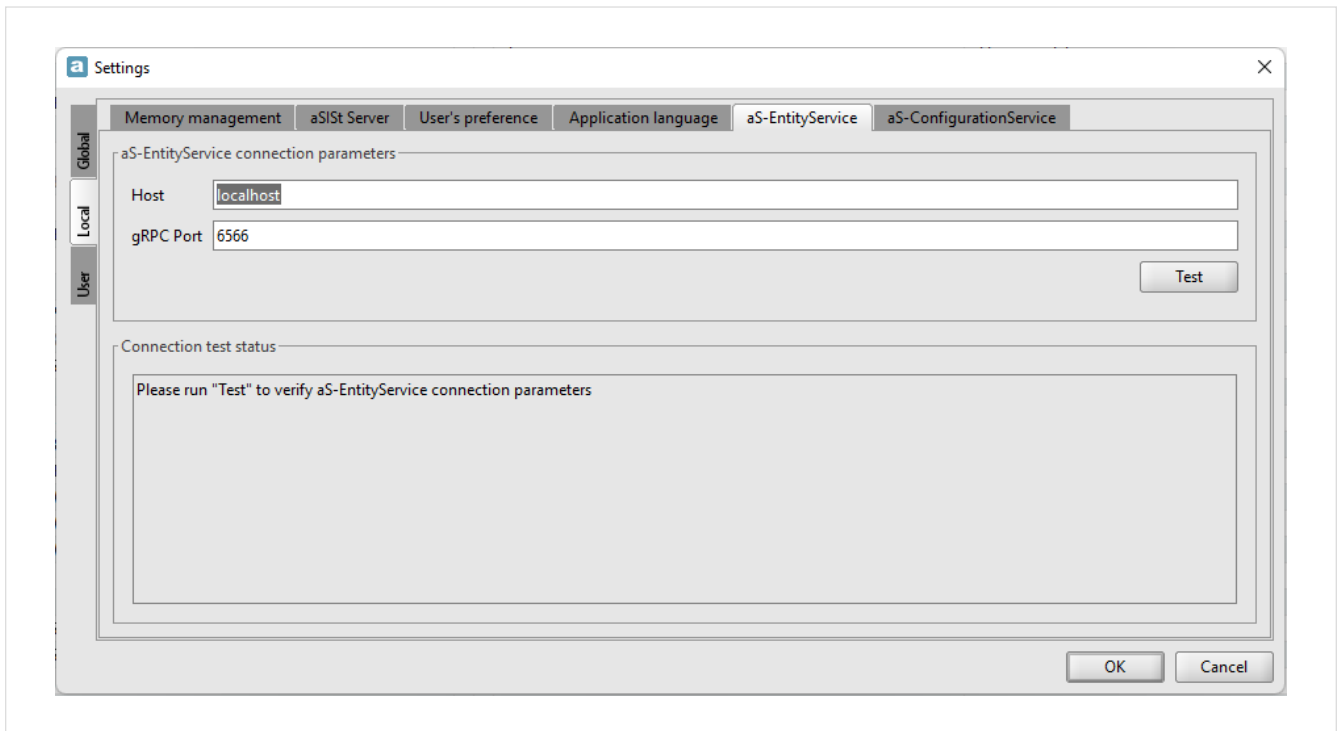If the bank has aS-EntityService module, it is not possible to use the "Bank Units" module.

The administrator has the option to verify the connection with the server using the TEST button. If there is no connection, the application displays a message that the connection test was unsuccessful, at which point it should be verified that the connection parameters have been entered correctly and that the aS-EntityService application has been started.

4.2.7. Configuration of remote update

Web server configuration description

Updates are described using an XML document that indicates the list of available updates and the URL to the directory where the update files are located. The configuration of the remote update is based on proper preparation of the configuration file and saving the update files. An example file of the update configuration looks as follows:

```
<updateConfig>.
<baseURL>http://host.com/katalog/katalog1/</baseURL>.
<updatesList>.
<updateDescr>.
```

```
<url>name_update_1.5.jar</url>.
<formVersion>1.4</formVersion>.
<toVersion>1.5</toVersion>.
</updateDescr>
<updateDescr>.
<url>name_update_1.6.jar</url>.
<formVersion>1.5</formVersion>.
<toVersion>1.6</toVersion>.
</updateDescr>
</updatesList>
</updateConfig>
```

The root of the XML document is the `<updateConfig>` element. This element aggregates `<baseUrl>` and `<updatesList>`. The `<baseURL>` element specifies the directory where the updates are located. In this example, all updates will be downloaded from:

```
http://host.com/katalog/katalog1/nazwa_pliku_aktualizacji
```

Another element aggregated in `<updateConfig>` is `<updateList>`. This element contains a list of updates. The order of occurrence of the update descriptions is arbitrary. The elements required when defining updates are:

`<url>` – the value of this element describes the name of the update file. Concatenation of the value of the element `<baseURL>` and `<url>` indicates the location of the update file. `<formVersion>` – the value of this element indicates the version of the asist application for which the update. `<toVersion>` – the value of this element indicates the version of the application to which it will be updated.

Two updates are described in the example:

- The first update:

```
<updateDescr>.
<url>name_update_1.5.jar</url>.
<formVersion>1.4</formVersion>.
<toVersion>1.5</toVersion>.
</updateDescr>.
```

The update is for version 1.4 of the asist application and will be updated to version 1.5. The address where the update file is located is as follows:

```
http://host.com/katalog/katalog1/nazwa_aktualizacji_1.5.jar
```

- Second update:

```
<updateDescr>.
<url>name_update_1.5.jar</url>.
```

```
<formVersion>1.4</formVersion>.
<toVersion>1.5</toVersion>.
</updateDescr>.
```

The update is for version 1.5 of the asist application and will be updated to version 1.6. The address where the update file is located is as follows:

```
http://host.com/katalog/katalog1/nazwa_aktualizacji_1.6.jar
```

In most cases, administrators of local computer networks will be able to download the published file update configuration from the address `http://support.asist-xbrl.eu/updates/update_config.xml`. and all the updates that are described in it, and then make a change to the base update address (element `<baseURL>`) to a URL pointing to the directory available on the local computer network where the update file will be downloaded to.

4.2.8. Changing the path for Java

To change the access path for Java, edit the asistj.bat file, located in the root directory of the aSISt application. The file should be backed up before editing.

Contents of the standard asistj.bat file:

```
@echo off

SET CUSTOM_ASIST_JAVA_PATH=
CMD /C START jdk17\bin\javaw.exe -Xmx200M -Xss1M -splash:splashscreen.png -cp lib/starter-exe.jar;
info.fingo.asiststart.AsistStart
```

In the second line, complete the entry defining the variable "SET CUSTOM_ASIST_JAVA_PATH". E.g: `SET CUSTOM_ASIST_JAVA_PATH="jdk17-custom\bin\javaw.exe"` Where "jdk17-custom" is the name of the Java directory, located in the root directory of the aSISt application.

In the third line, rename the directory "jdk17" to the name used in the second line: E.g: `CMD /C START jdk17-custom\bin\javaw.exe -Xmx200M -Xss1M -splash:splashscreen.png -cp lib/starter-exe.jar; info.fingo.asiststart.AsistStart`

Contents of asistj.bat file after changes:

```
@echo off
SET CUSTOM_ASIST_JAVA_PATH="jdk17-custom\bin\javaw.exe"
CMD /C START jdk17-custom\bin\javaw.exe -Xmx200M -Xss1M -splash:splashscreen.png -cp lib/starter-
exe.jar; info.fingo.asiststart.AsistStart
```

After saving the changes and restarting the aSISt application, it will use the Java directory we indicated

("jdk17-custom").

4.3. Application log configuration

Default logging location.

In order to check the logging path to the logs, run the "Settings" function:

select cogwheel → "Settings", and then activate one of the required tabs → i.e. "Local".

Local settings are divided into several tabs, select → "User Preferences".

After activating the "User Preferences" tab, it is possible to see to which directories logs are saved (and the preferences of users working on a given computer).

By default, logs are saved to the logs directory in the home folder of the aSISt application (for example, for an application installed on the C drive in the aSISt5 subdirectory, logs will be saved to: C:aSISt5 logs, other user preferences: C:aSISt5preferences)

The ability to configure logs.

The administrator can make the required changes to the logging settings. It is possible to indicate the system user directory as the logging location (for example, for the system user Anna and the application installed on the C drive in the aSISt5 subdirectory, it would be: C:aSISt5 users logs while for preferences it would be C:aSISt5 preferences).

Description of log files.

The following is a list of files in which information is logged, along with a brief description of what they contain:

- analytical_reports - a record of warnings returned by the application, in communication on the aSISt-asist line
- asist - the main application logs, regarding startup, database version and application, processes.
- asist_activemq - information about the connection to ActiveMQ
- asist_start - record of application startup
- aSIStUpdate - logs regarding the application version upgrade process
- hibernate - logs from the process of communicating with the database and the dialect used
- migration2 - records of the migration process (using the derby_2_oracle_migrator file in the aSISt home folder)

- possibleDeadlocks - information about occurring idleness in processes

Rules for archiving logs.

Logs are archived in logs → archives folder, in subfolders with zip extension, with names corresponding to log files, along with a date indicating when specific logs were created. Archiving occurs when the aSISt application is restarted. The archive stores logs from the last 30 days, if they have not been deleted manually.

5. Application Update

5.1. Files for update

The update, checksum and sql-generator are available for download at:

Update	https://fingocloud.fingo.info/distributions/aSISt/5.58.2.0/update-5-58-1-0-5-58-2-0.jar
SQL Generator	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/sql-generator-5.58.0.0.zip
Checksums	https://fingocloud.fingo.info/distributions/aSISt/5.58.2.0/update-5-58-1-0-5-58-2-0.jar.md5
Checksums	https://fingocloud.fingo.info/distributions/aSISt/5.58.0.0/sql-generator-5.58.0.0.zip.md5

Due to the type of database with which the asist application has been configured, the method of updating is different. The following sections describe how to actuate asist application on: a Derby database and on an Oracle database.

5.2. Updating asist application on Derby database.

Before updating the application, it is required to make a backup copy every time, because if the update process fails, we will be sure that the data will not be lost.

To start the "Backup" function, select:

- the cogwheel icon and then the "Backup" function, or

- ALT+A → then the "Backup" function.

The backup can also be created when closing the application.

To perform asist update, you need to:

- select the 'cogwheel' icon in the right main panel of the application window, then
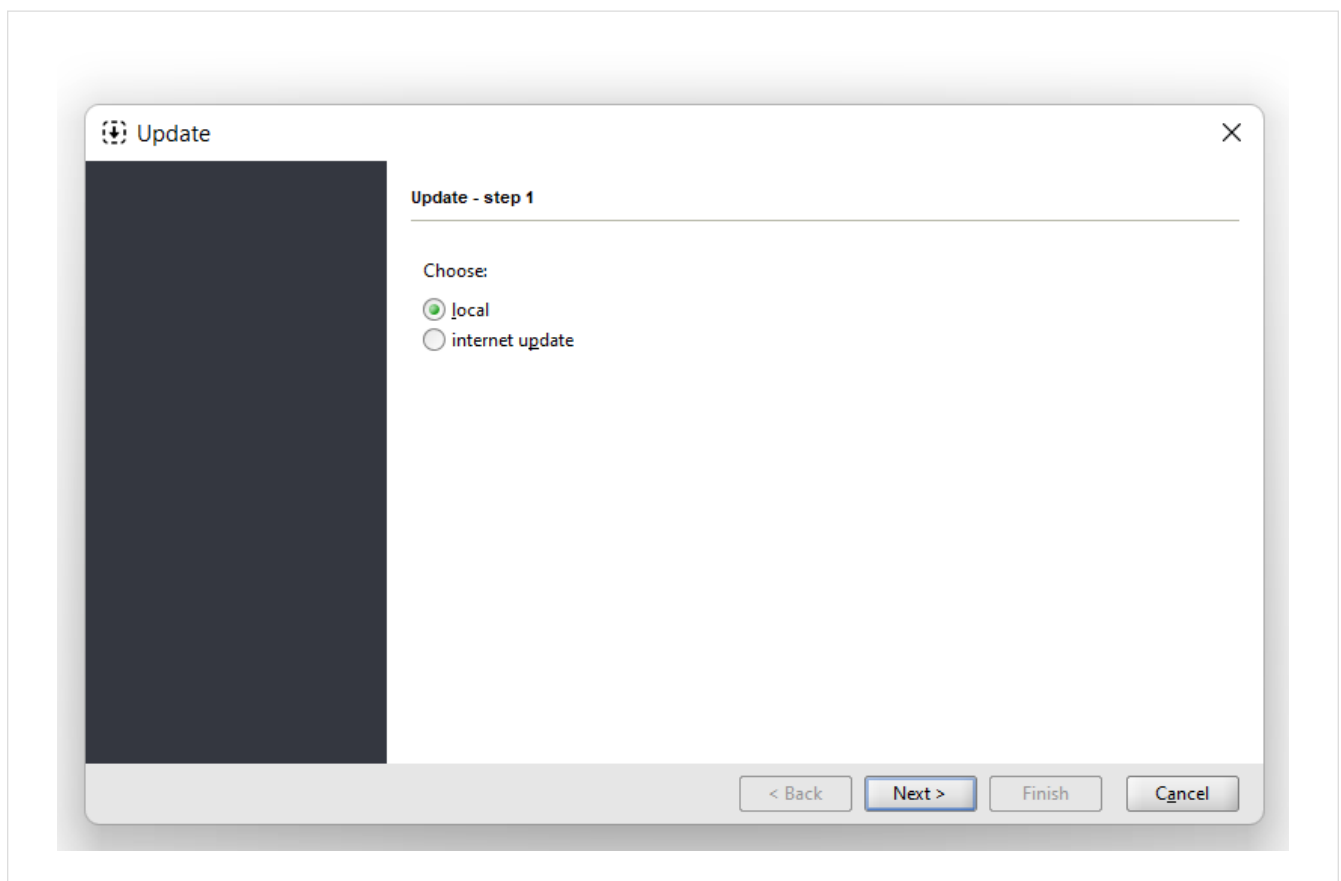
- click on the bar on "Update".

Updating asist application is done in four steps:

5.2.1. First step - Selecting the method of updating

Here it is necessary to select the method of updating :

- local or

- from the internet

Figure 11. Update asist application

If the update file has already been downloaded from https://support.asist-xbrl.eu/en, select "local update".

5.2.2. Step Two - Indicate the update file

With local update, a window is displayed in which you should indicate the file to update, previously downloaded from https://support.asist-xbrl.eu/en. The update file should have the extension: jar, example: update-5-43-2-0-5-44-0-0.jar

When updating from the Internet, a window like the following is presented:

Figure 12. Indication of the file to update

[align:center] | *Indication_file_to_update.png*

Here it is possible to choose how to download updates:

- without Proxy server - when there is a direct connection to the Internet, or when Internet connectivity is through a Proxy server:

- with automatic configuration of the Proxy server.

- with manual configuration of the Proxy server, specifying here additionally: o the address of the Proxy server and o port

In the "Address" field, the address for downloading the provided update is automatically displayed. Its form depends on the type of reporting prepared in asist a selected during the installation of the application, i.e.:

- https://support.asist-xbrl.eu/updates/update_config.xml - for mandatory reporting of Polish Banks,

- https://support.asist-xbrl.eu/eba_its/update_config.xml - for EBA ITS reporting.

Updates are available at these addresses, once the vendor has enabled automatic updates, which is usually available the day after the update is made available on: https://support.asist-xbrl.eu/pl

5.2.3. Step Three - Download the update file

Before the actual uploading of the files for updates, we are informed of the downloadable updates, as shown in the example image below:

Figure 13. Information about downloadable updates
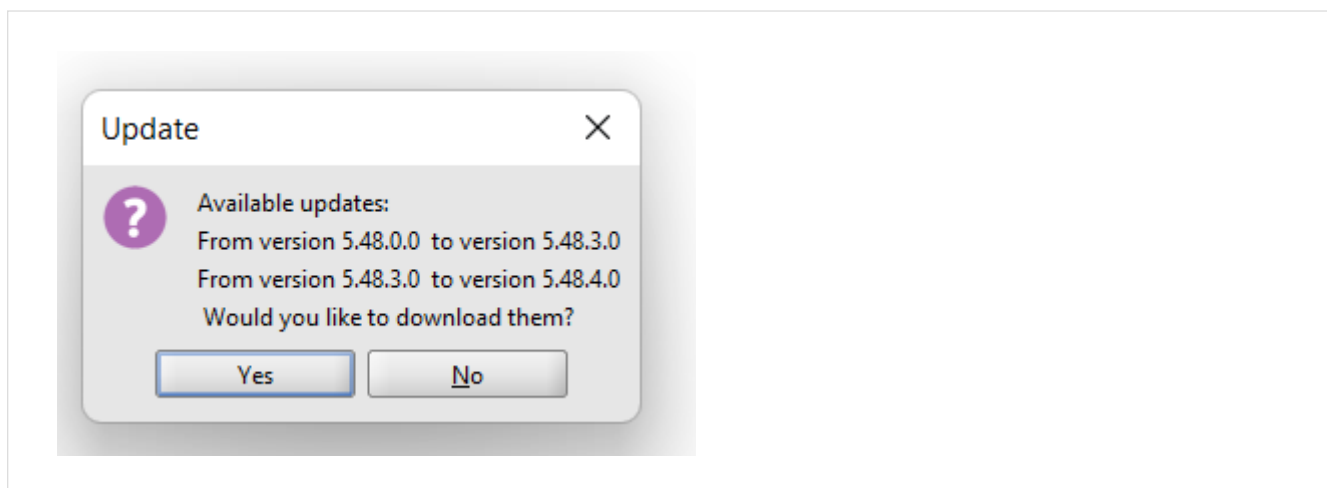
After positive approval of the displayed request, the indicated update files are downloaded and after downloading them, a screen like the following is displayed:

Figure 14. Information about uploading the update files
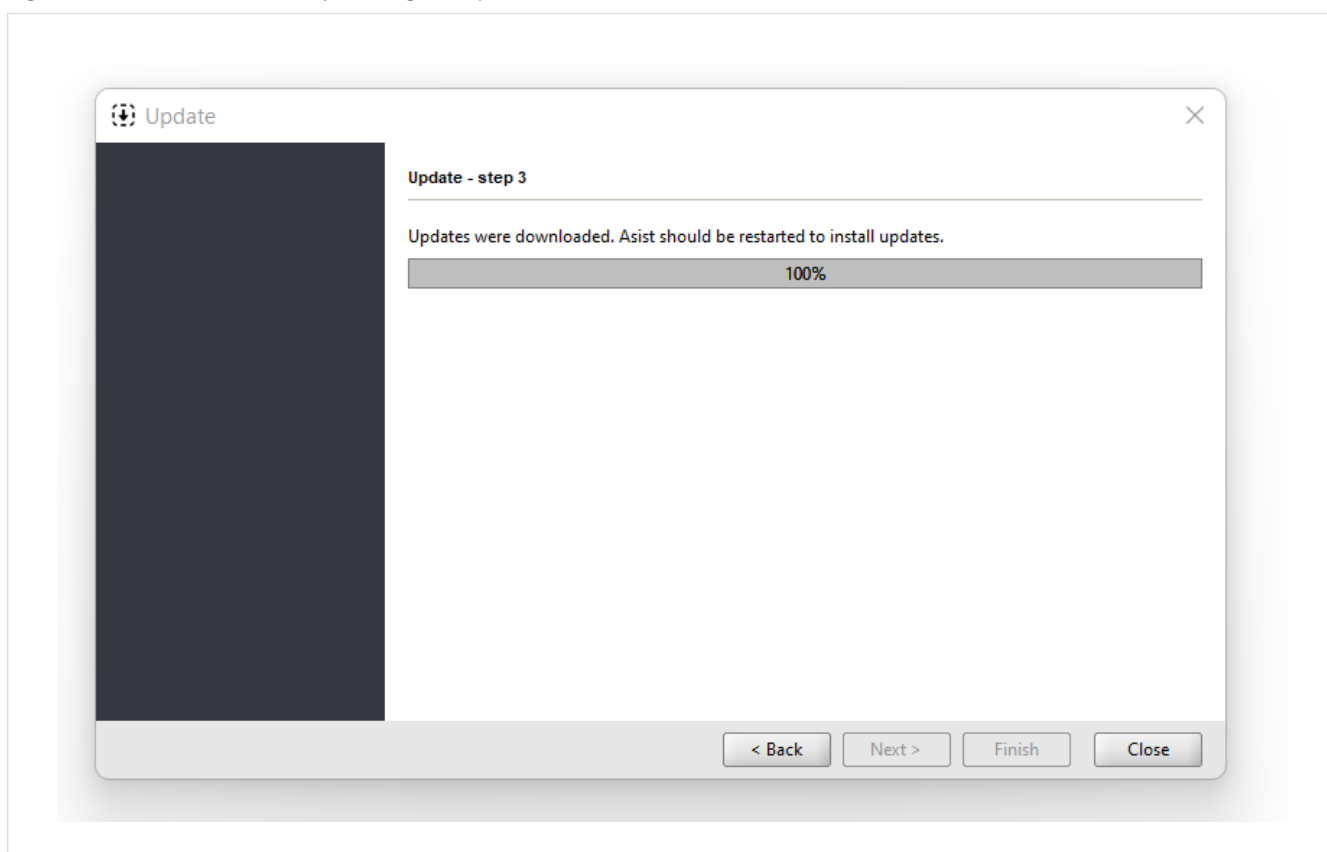
Completion of this function is done by selecting the "Close" button , which results in the display of query as below:

Figure 15. Request to restart the application for proper update
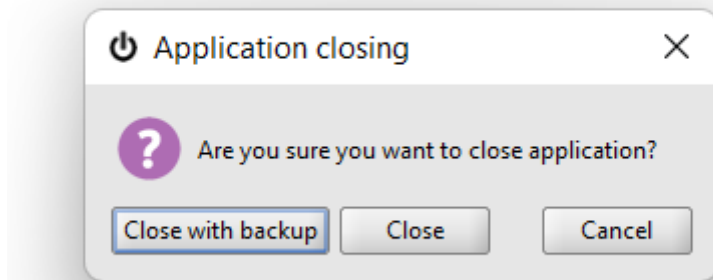
Answering "No":

- closes the "Update" function.

- interrupts the execution of the update.

- allows normal operation in asist application.

Answering "Yes" will:

- closes the application

- restart it

- display a query as shown in the image below:

Figure 16. Query to perform a proper update

If the answer given is negative and the "No" key is selected, then:

- the update will be not executed,

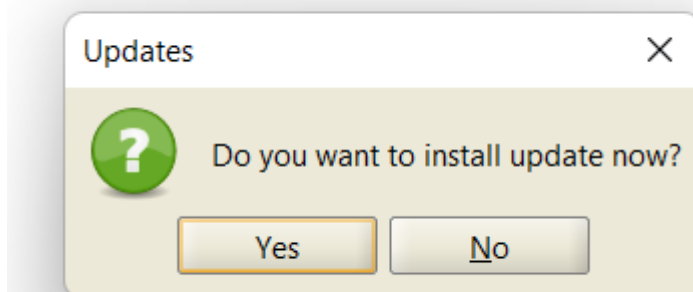- the application will start in the version used so far,

- on the next reboot, again a message will be displayed asking: "Do you want to install now updates?".

The message about the possibility of installing the update will be displayed every time the application restarts, until this update is executed. If this question is approved with the key, the actual update process will begin and a message will be displayed, which is illustrated in the following picture:

Figure 17. Proper update process
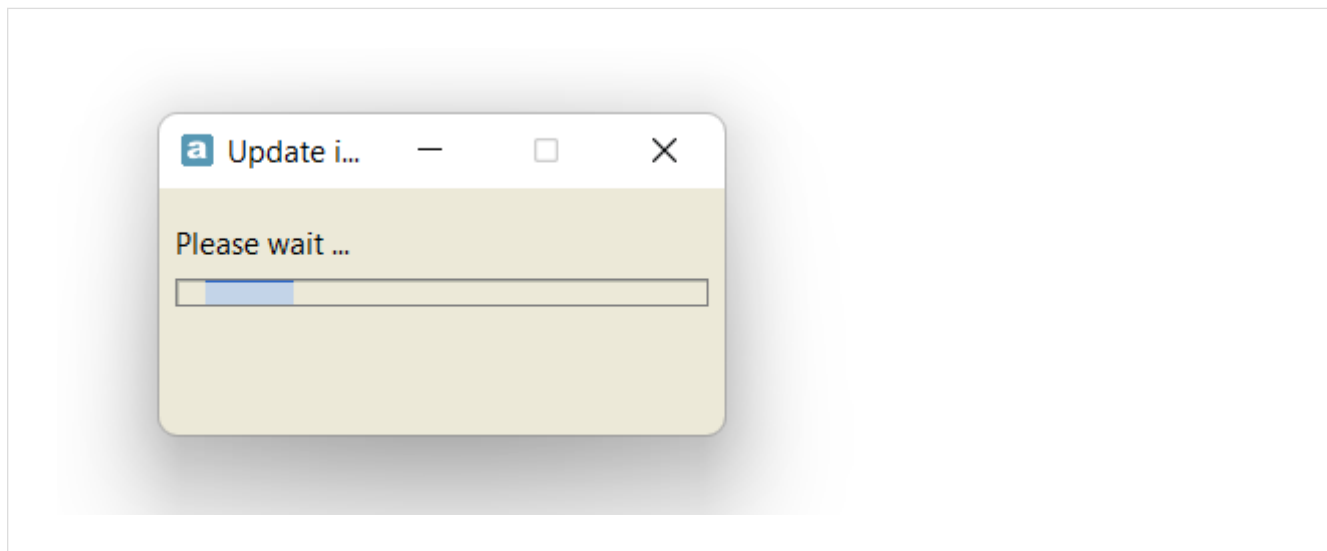
The process of proper update includes updating of:

- **database** using the sql-generator tool built into the application (when the application version changes in the second place, which is 5.x). The application updates the database on its own, no administrator intervention is needed here.

- **application**.

After the process is correctly completed, the message below is displayed:

Figure 18. Completion of the update process

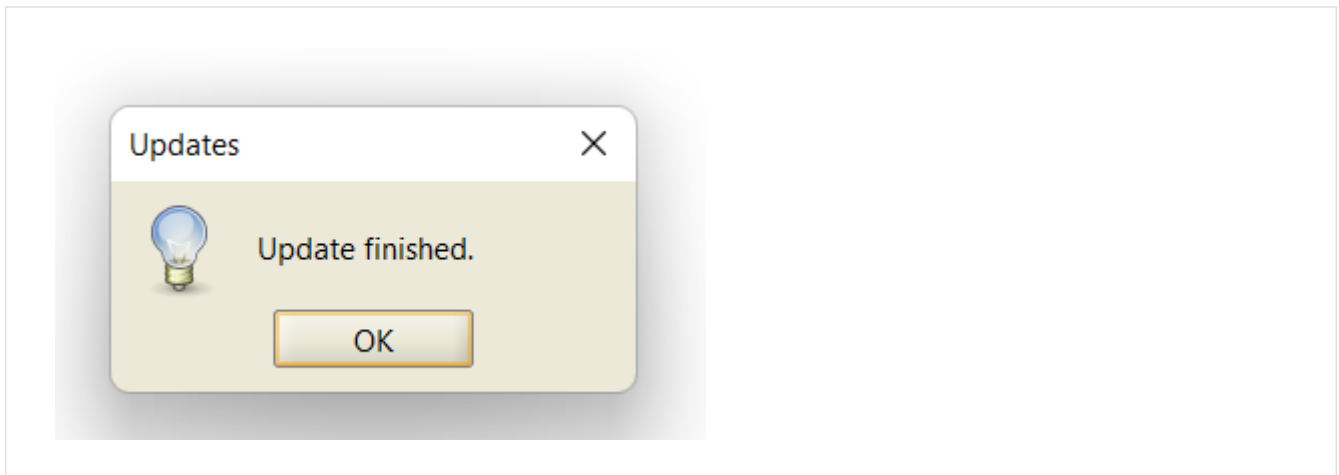## 5.2.4. Verification of the correctness of the performed update

After the update is completed, verify what version the application is in by selecting:

- cogwheel icon → asist information, or:

- asist application icon located in the upper left corner of the application window.

5.3. Updating asist application on Oracle database

Before updating the application, it is required to make a security copy every time, because if the update process fails, we will be sure that the data will not be lost. For the multiuser and single-user versions running on Oracle database, the backup is always done with Oracle tools, as these applications run on Oracle database.

To perform asist upgrade, you need to:

- select the 'cogwheel' icon located in the right main panel of the application window, and then.

- click on the bar on "Update".

Updating asist application is done in four steps:

5.3.1. First step - Selecting the method of updating

Here it is necessary to select the method of updating :

- local or

- from the internet

Figure 19. Update asist application
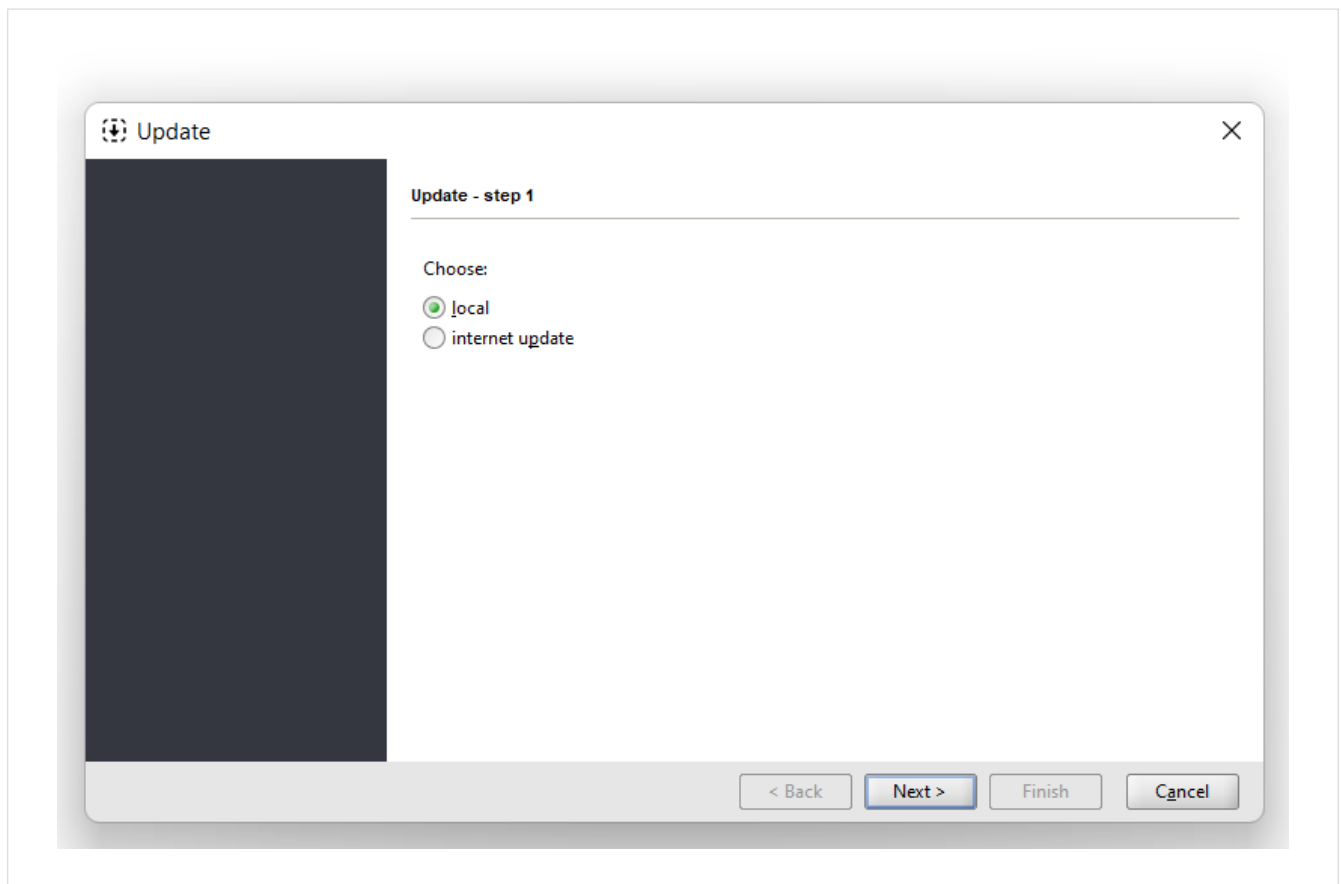
If the update file has already been downloaded from https://support.asist-xbrl.eu/pl, select "local update".

5.3.2. Step Two - Indicate the update file

With local update, a window is displayed in which you should indicate the file to update, previously downloaded from https://support.asist-xbrl.eu/pl. The update file should have the extension: jar, such as for example: update-5-43-2-0-5-44-0-0.jar

When updating from the Internet, a window like the following is presented:

Figure 20. Indicate the update file
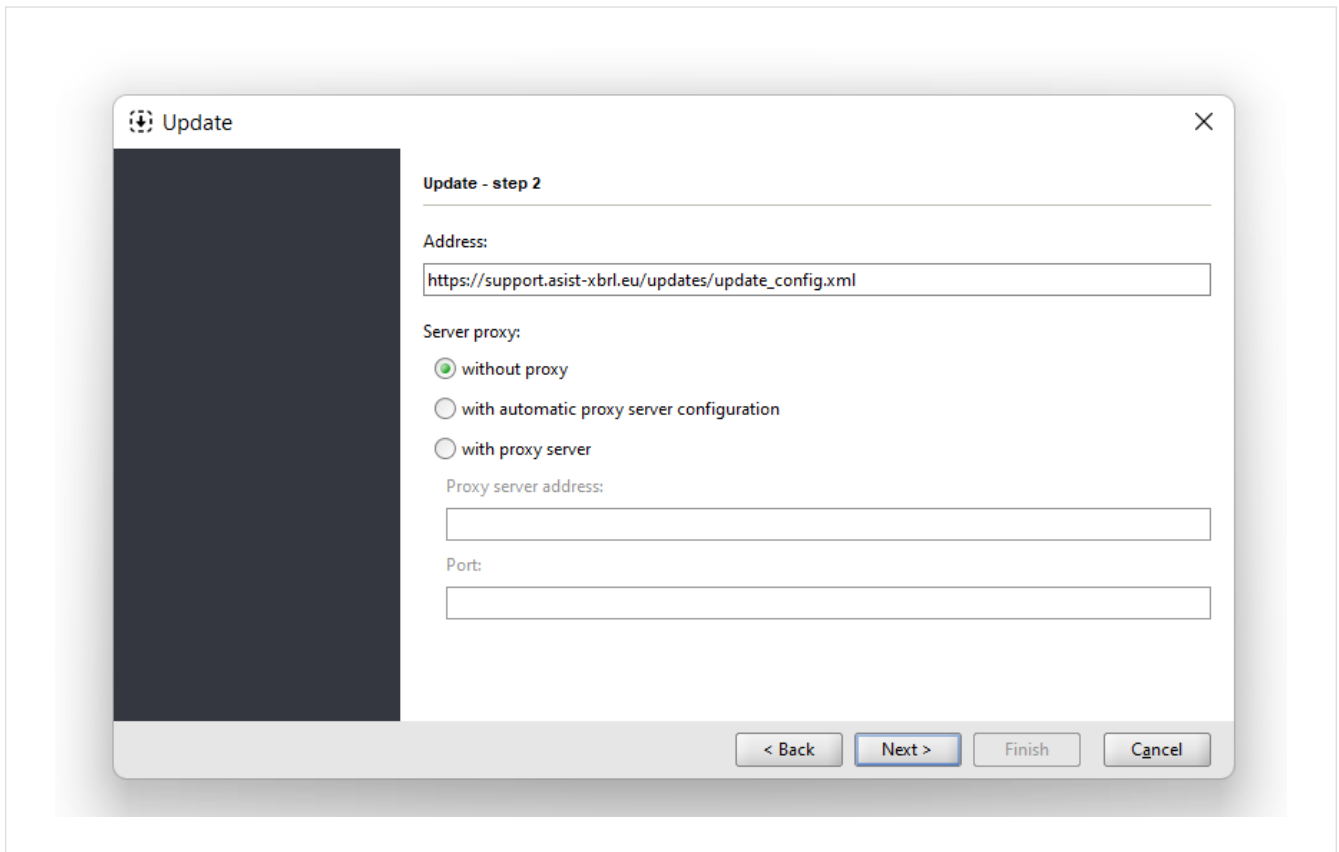
Here it is possible to choose how to download updates:

- without Proxy server - when there is a direct connection to the Internet, or when Internet connectivity is through a Proxy server:

- with automatic configuration of the Proxy server

- with manual configuration of the Proxy server, specifying here additionally:

- the address of the Proxy server and

- port

In the "Address" field, the address for downloading the provided update is automatically displayed. Its form depends on the type of reporting prepared in asist a selected during the installation of the application, i.e.:

- https://support.asist-xbrl.eu/updates/update_config.xml - for mandatory reporting of Polish Banks,

- https://support.asist-xbrl.eu/eba_its/update_config.xml - for EBA ITS reporting.

Updates are available at these addresses, once the vendor has enabled automatic updates, which is usually available the day after the update is made available on: https://support.asist-xbrl.eu/pl

5.3.3. Step Three - Downloading the update file

Before the actual uploading of the files for updates, we are informed of the downloadable updates, as shown in the example image below:

Figure 21. Information on downloadable updates
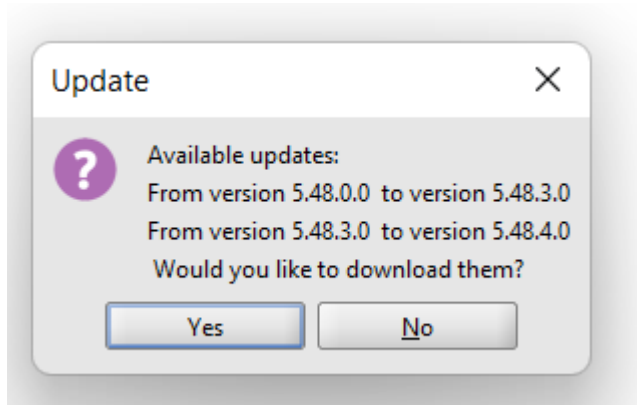
After positive approval of the displayed request, the indicated update files are downloaded and after downloading them, a screen like the following is displayed:

Figure 22. Information about uploading the update files
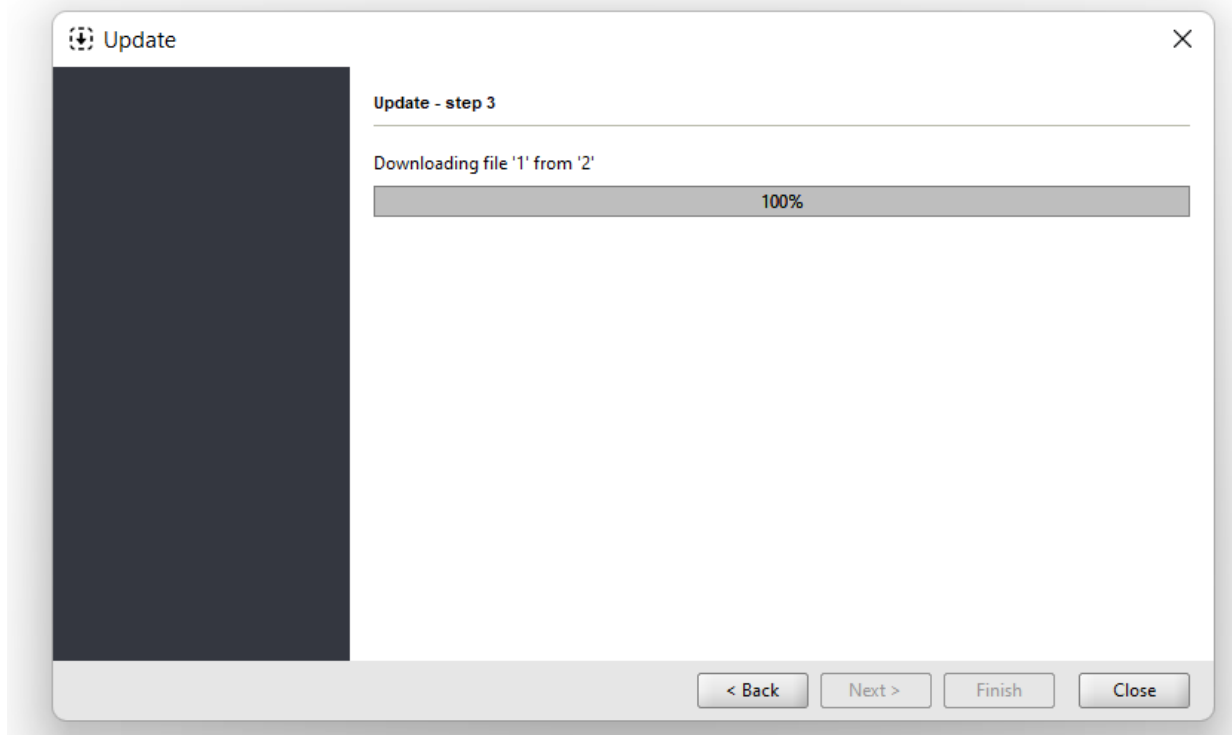
Completion of this function is done by selecting the "Close" button , which results in the display of query as below:

Figure 23. Request to restart the application for proper update
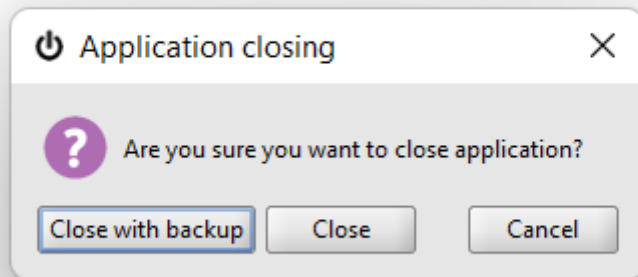
Answering "No":

- closes the "Update" function

- interrupts the execution of the update

- allows normal operation in asist application

Answering "Yes" will:

- closes the application

- restarting it

- display a query as shown in the image below:

Figure 24. Query to perform a proper update
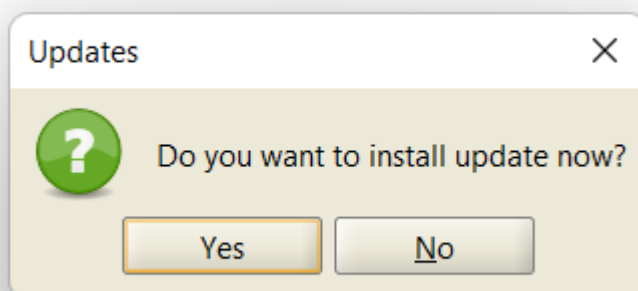
If the answer given is negative and the "No" key is selected, then:

- the update will not execute,

- the application will start in the version used so far,

- on the next reboot, again a message will be displayed asking: "Do you want to install now updates?".

The message about the possibility of installing the update will be displayed every time the application restarts, until this update is executed. If this question is approved with the key , the actual update process will begin and a message will be displayed, which is illustrated in the following picture:

Figure 25. Proper update process
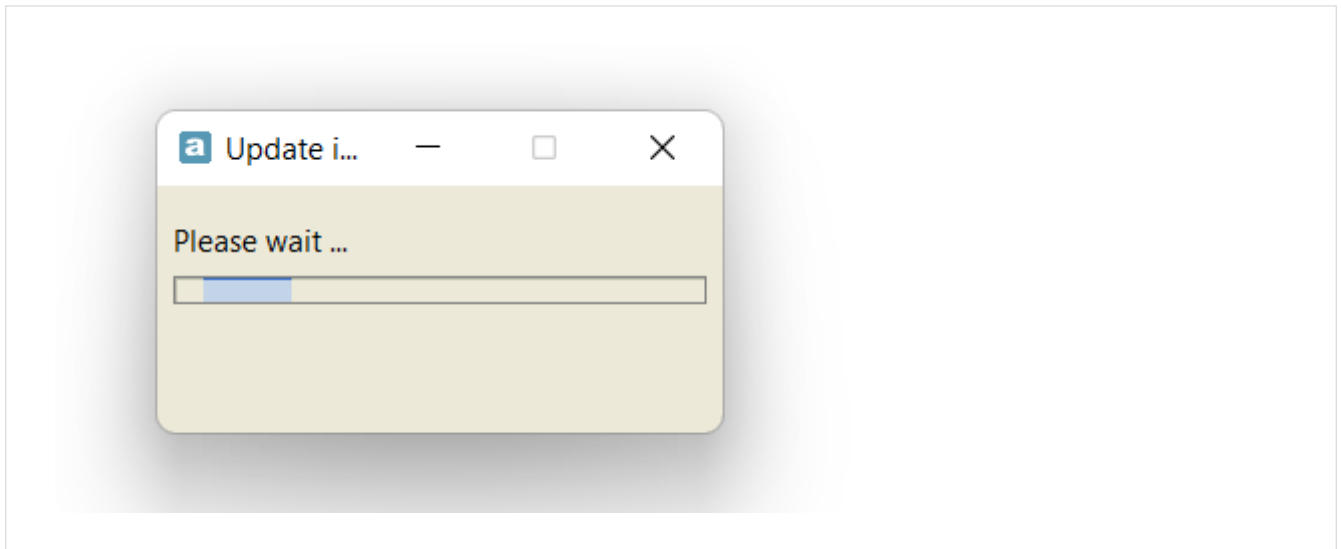
After the update is completed properly, the message below is displayed:

Figure 26. Completion of the update process
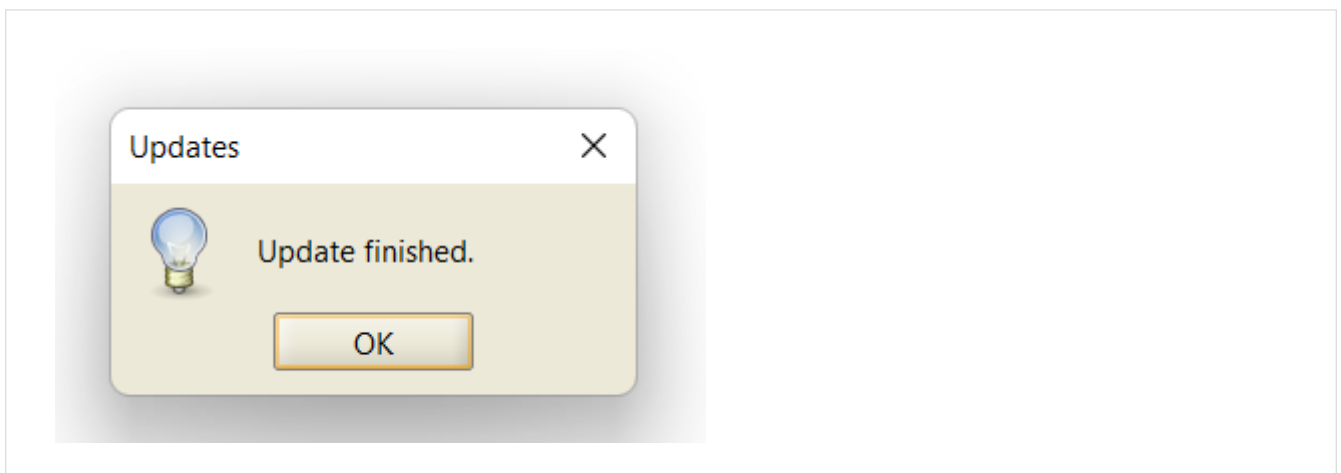
If, along with updating the asist application, the Oracle database is also updated, an additional query will appear here asking whether to update the database:

Figure 27. Oracle database update query
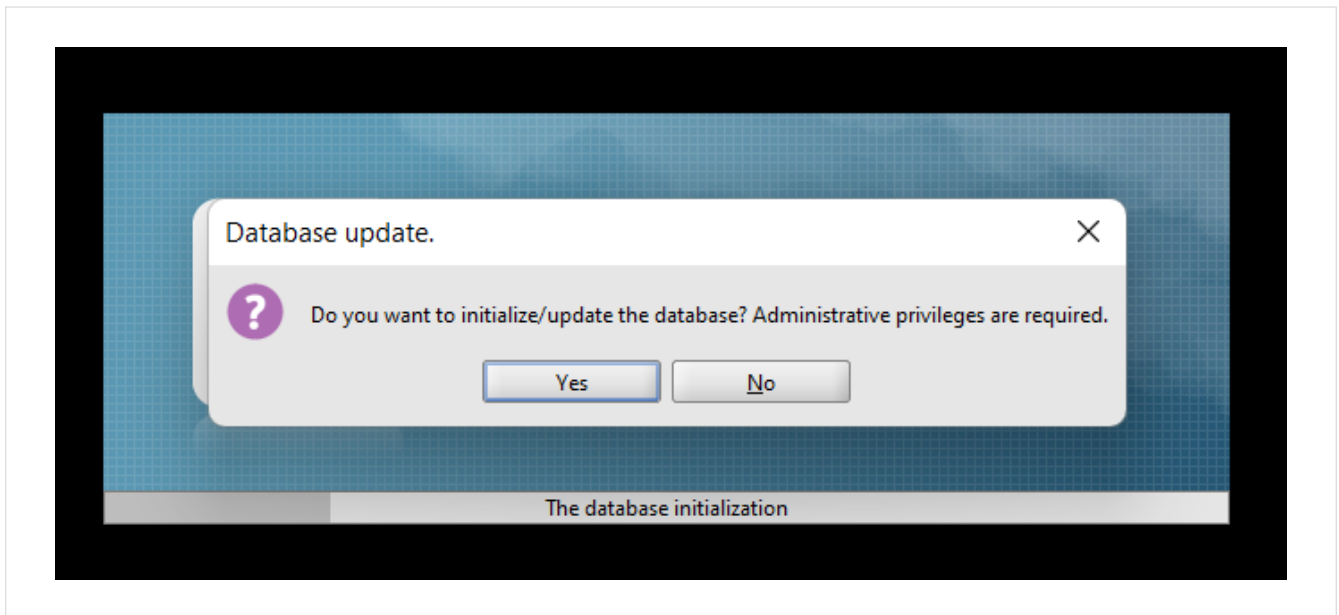
If "Yes" is selected:

- both the asist application and its schema on the Oracle database will be updated,

- when opening the application on the next workstation, you will see an infomation message stating that the schema is updated to the latest version and it is necessary to update the application itself,

If you select "No":

- it will be necessary to update the schema on the Oralce database for the asist application,

- it will not be possible to launch the asist application until the schema on the Oracle database is updated.

Updating the Oracle database schema if "No" is selected is possible in two ways:

- by updating the schema together with the asist application on the second workstation, or:

- by using a sql script generated manually by the administrator using the Sql-generator tool.

To generate the script for updating the application, you need to:

- go to the sql-generator-5.58.0.0.zip directory provided in Downloading the application,

- update the access data for the schema that was created for the application by opening the file: **RUN_FIRST_changelog.bat** using a text editor (e.g. notepad), and then enter the database access data at the items:

```
SET "URL=url"
SET "USERNAME=username"
```

```
SET "PASSWORD=password"
SET "DB_TYPE=oracle"
```

- run file: **RUN_FIRST_changelog.bat** in windows powershell console..

After running the **RUN_FIRST_changelog.bat** file, a SQL script named output.sql will be generated into the sql-generator directory, which should be executed directly on the database using Oracle database management software (e.g. SQL*Plus, Oracle SQL Developer). The changes made to the database should be commuted.

After performing a manual database update for the first time using the script generated by the sql-generator tool, it is necessary to add the missing changelogs once by:

- opening with a text editor the file: **RUN_SECOND_mark_run.bat** , which is located in the previously downloaded directory: sql-generator, and entering the database access data at the items:

```
SET "URL=url"
SET "USERNAME=username"
SET "PASSWORD=password"
SET "DB_TYPE=oracle"
```

- run file: **RUN_SECOND_mark_run.bat** in windows powershell console..

In case the administrator wants to update an application that has not been updated for some time and the database version is outdated, then the sql-generator tool will create a single script containing all the necessary changes.

5.3.4. Verify the correctness of the update performed

After the update is completed, you should check what version the application is in by selecting:

- cogwheel icon → asist information, or:

- asist application icon located in the upper left corner of the application window.

6. Security

6.1. Security

The aSISt application manages two types of access data:

- aSISt user access data.

- application access data to the database (Oracle or Derby DB).

6.1.1. Authentication methods and measures

Each user logging into aSISt application should have their own login and password. Therefore, after launching aSISt, it is required to create new accounts for all people working in the application.

The person with the authority to create new and modify existing user accounts is the system administrator.

The predefined system administrator account has the following settings:

- login - admin

- password - admin

It is also possible to log into the aSISt application using the LDAP protocol. For this to be possible, it is necessary to:

- create in aSISt and in the service supporting the LDAP protocol a user with the same login and password,

- upload to the root directory of aSISt (by default C:aSISt5) a license that will enable login using the LDAP protocol (the appropriate license can be obtained from the aSISt service by sending a request to pomoc@asist-xbrl.eu),

- in the root directory of aSISt5 create a subdirectory 'certs' (default: C:C:aSISt5certs), into which you should upload the following certificate needed for login via SSL LDAP protocol. After performing the above steps, you will be able to log in to the application using only the LDAP protocol.

Then in the login window:

- enter the access credentials configured in the service that supports the LDAP protocol.

- the login and password must be identical to those previously configured in the aSISt application.

Currently, the LDAP environment we support is Active Directory.

It is possible to make changes to the default LDAP protocol settings in terms of:

- setting the aSISt application to run with SSL disabled, or:

- changing the server's domain name.

To run the aSISt application with the default SSL protocol disabled, in the ldap.properties file, located in the home directory of the aSISt application:

- remove the "#" before the entry "ldap.useSSL=false".

In order to change the name of the server defined during the first login, it is necessary in the ldap.properties file, located in the home directory of the aSISt application:

- at the item: ldap.server= enter the new name, or IP address e.g.. ldap.server= bank.com.pl

6.1.2. User accounts

Access data of aSISt users are stored in the database (passwords are stored in the form of a MD5 cryptographic). The user management panel is available from the application level only to the system administrator (a user with appropriate rights).

The user management panel allows:

- creation, deletion of user accounts.
- editing "basic data" of users
- changing users' access passwords
- assigning appropriate roles to users (suspending privileges of selected users).
- viewing the history of operations performed by users

6.1.3. Roles and rights

The administrator assigns to each user appropriate roles consisting of rights defining access to system functions.

The availability of possible operations is verified on the basis of the user's possessed atomic rights. Each user is assigned appropriate roles defining sets of atomic rights.

The aSISt application records all operations performed by users (users with appropriate rights have access to the "history" of selected users from within the application). "Operation histories" of aSISt users are stored in the database and cannot be deleted from the application level.

The authorization mechanism is based on roles. Each user can be assigned any set of roles. A role is a set of rights defining access to system functions.

Roles in aSISt application

By default, 5 roles are available in the application:

- System Administrator - has all rights.

- Administrator – has the following rights: 'CreatePeriod', 'SwitchPeriod', 'GenerateInstance', 'CreateArchive', 'RemoveArchive', 'RollbackArchive', 'ChangePeriodStatus', 'ImportTaxonomySet', 'ChangeGlobalSettings', 'ModifyOwnAccount', 'ModifyData', 'ExportData', 'ImportData', 'BackupDatabase'(not available for Oracle database),0 'RestoreDatabase'(not available for Oracle database), 'ModifyPeriodContext', 'RoundingData', 'ViewActivity', 'RuleManagement', 'UpdateApp', 'ModifyAuditLevelSupervision', 'ManageBankUnits', 'ManageAnalyticalReports', 'AnalyticalReportAdmin', 'MappingsManage', 'MappingsRead', 'EditCorrections', 'EditExclusions', 'ExclusionsAdmin', 'BlockReport', 'EditKeyStore', 'RemoveReport'.

- Operator – has the following rights: 'SwitchPeriod', 'GenerateInstance', 'CreateArchive', 'RemoveArchive', 'RollbackArchive', 'ImportTaxonomySet', 'ModifyOwnAccount', 'ModifyData', 'ExportData', 'ImportData', 'MappingsRead', 'BackupDatabase', 'RoundingData', 'ViewActivity', 'ModifyAuditLevelSupervision', 'ManageAnalyticalReports', 'MappingsManage', 'EditExclusions', '. GenerateConsolidatedReport"

- Analytical module operator - has the following rights: 'SwitchPeriod', 'ExportData', 'BackupDatabase', 'ModifyOwnAccount', 'ManageAnalyticalReports', 'AnalyticalReportAdmin'.

- Reader - has the following rights: 'SwitchPeriod', 'ExportData', 'BackupDatabase', 'ModifyOwnAccount'.

The name and type of the role are stored in the 'Roles' table. The set of rights creating roles is stored in the 'Permission' table. Management of roles is available from the application. Both creating the role itself and assigning it to a user.

Roles can be modified by a user with the 'ModifyUserRoles' right. To narrow down specific rights for selected:

- taxonomy should be used: TaxonomyScope

- bank units use: BankUnitScope

Rights in aSISt application

List of rights available in aSISt application:

- create periods (CreatePeriod) - Generally available right, for the entire range.

- change the current period (SwitchPeriod) - Generally available right, for the entire range.

- generating instances (GenerateInstance) - Generally available right, for the entire scope.

- creating an archive (CreateArchive) - Right available only for aSISt, for the entire scope.

- restoring a period from an archive (RollbackArchive) - Right available only to aSISt, for the entire scope.

- removing archive (RemoveArchive) - Right available only for aSISt, for the whole range.

- change period status and switch to correction mode (ChangePeriodStatus) - Generally available right, for the whole range. the entire scope

- import taxonomy (ImportTaxonomySet) - Generally available right, for the entire scope.

- modifying global settings (ChangeGlobalSettings) - Generally available right, for the range of units. banking

- managing users: add, delete, edit (ManageUsers) - Generally available right, for the range of banking units

- modify own user data (ModifyOwnAccount) - Generally available right, without scopes.

- modify user roles (ModifyUserRoles) - Generally available right, for a range of banking units. banking

- modify data (ModifyData) - Generally available right, for the whole range.

- export data (ExportData) - Generally available right, for the whole range.

- import data (ImportData) - Generally available right, for the entire range. The right occurs in conjunction with right (ModifyData)

- database backup (BackupDatabase) - A right available only for aSISt and database single-user, without scopes

- restore database from backup (RestoreDatabase) - Right available only for aSISt and single-user database. single-station database, without scopes modifying period settings (ModifyPeriodContext) - Generally available right, for all scopes.

- rounding data (RoundingData) - Generally available right, for the entire range. The right occurs in combination with the right (ModifyData)

- access to activity list (ViewActivity) - Generally available right, for the whole range.

- access to updates (UpdateApp) - Right available only for aSISt and for the entire scope.

- modify data in internal correction mode (ModifyAuditLevelInternal) - Generally available right, for the the entire range

- modify data in transis correction mode (ModifyAuditLevelTransis) - Generally available right, for the entire range. range

- modification of data in supervisory correction mode (ModifyAuditLevelSupervision) - Generally available right, for the entire range The level of corrections is hierarchical:

    ◦ ModifyAuditLevelSupervision

    ◦ ModifyAuditLevelTransis

     ◦ ModifyAuditLevelInternal

- rule management, rule module (RuleManagement) - Generally available law, for the entire scope.

- bank unit management (ManageBankUnits) - Generally available right, for the range of bank units. banking

- management of analytical reports module (ManageAnalyticalReports) - Generally available right, for the entire scope. the entire scope

- management of analytical reports that belongs to another user (AnalyticalReportAdmin) - Generally available right, for the entire scope. available right, for the entire scope

- management of the brochure module (ProspectusAdmin) - Generally available right, for the entire scope.

- brochure module management (MappingsManage) - Right available only for aSISt and for the entire scope.

- reading/importing mappings (MappingsRead) - Right available only for aSISt and for the whole scope.

- editing corrections (EditCorrections) - Right available only for aSISt and for the whole scope.

- edit exclusions (EditExclusions) - Right available only for aSISt and for the entire scope.

- exclusion administrator (ExclusionsAdmin) - Right available only for aSISt and for the entire scope. The right occurs in conjunction with the right (EditExclusions)

- report blocking (BlockReport) - Right available only for aSISt and for the entire scope.

- editing password and keys module (EditKeyStore) - Right available only for aSISt and for the entire scope.

- snapshot management (DataRepositoryDefinition) - Generally available right, for the entire scope.

- aggregated report generation (GenerateConsolidatedReport) - Right available only for tranSIS, for a range of banking units

- remove report (RemoveReport) - Right available only for aSISt, for the entire scope.

Application database access data

The database access data is stored in an external configuration file. The aSISt application communicates with the database via JPA (Hibernate) mechanisms. Communication between individual aSISt modules takes place exclusively on the bank's local network. Both in the case of Oracle database and JavaDB (cooperation with the application in "embedded" mode) aSISt communicates with a dedicated standalone schema with independently defined permissions.

6.1.4. Security event logging

The asist.log file contains information about the operation of the aSISt application since its startup. Subsequent log lines are built as shown below as an example:

2021-12-20 07:48:34 [asist] [DESKTOP-81H93E1] [] [31588] [main] INFO i.f.a.Asist: Login user

Where,

- 2021-12-20 07:48:34 - date and time of operation,

- [asist] - application name,

- [DESKTOP-81H93E1] - device name,

- INFO - type of logged message,

- Login user - logged application activity.

In terms of security, the logged information is:

Scope of information	Presentation in logs
Authorized access	INFO i.f.c.l.LoggingUtil: Worker [info.fingo.commons.gui.progress.ProgressUtil$BackgroundProgressFactorySwingWorker@258547edinfo.fingo.asistrans.gui.dialogs.LoginDlg$$Lambda$575/966069072@39d3fb52] finished: 63 [ms].
Failed logging	INFO i.f.c.l.LoggingUtil: Worker [info.fingo.commons.gui.progress.ProgressUtil$BackgroundProgressFactorySwingWorker@47189434info.fingo.asistrans.gui.dialogs.LoginDlg$$Lambda$575/1104499681@46690cbd] finished: 0 [ms].
Change security parameters	INFO i.f.a.g.u.a.UserEditAction: ACTION [EditUser] started
	INFO i.f.a.l.i.DefaultTransisLocksService: LocksService: locking module of type 'ModuleUserManagementLock' (fingerprint: 192.168.0.5[DESKTOP-81H93E1]_c28739a7a296bb5cc2c97d9fada7e57c)
Privileged operations	Controlling roles and permissions from the application, no additional information in the logs
Database connection error - wrong user or password	ERROR i.f.c.d.DatabaseUtil: CheckConnection java.sql.SQLException: ORA-01017: invalid username/password; login denied

Database connection error - database or listener unavailable, change IP for VPN or Internet connection	ERROR i.f.c.d.DatabaseUtil: CheckConnection java.sql.SQLRecoverableException: I/O error: The Network Adapter could not establish the connection

6.1.5. Password encryption with Zencrypter

Zencrypter is a tool (library) used to encrypt access data - passwords and other sensitive data used as application configuration parameters. The "Zencrypter" application for encrypting data is available at: https://fingocloud.fingo.info/distributions/Zencrypter/2.2.2/zencrypter-2.2.2.zip

In addition to the database password, Zencrypter can also be used to encrypt additional configuration parameters (e.g. `jms.password`).
For additional parameters, you can use the password configured as the "environment variable" `ZENCRYPTER_PASSWORD` or use the default password of the AST application (without defining an environment variable) - when encrypting with Zencrypter, you must then provide an "empty" password ("ENTER").

⚙ Example of encrypted `jms.password` parameter in `db.properties` file

```
...
jms.password=ZENCRYPTED(ls6qjqpLJ/mibC6Ko3xtEFLQWDYXeuvb/NdjOrssFWk=)
...
```

A description of encryption using Zencrypter is available in a dedicated manual available at: https://fingocloud.fingo.info/distributions/Zencrypter/2.2.2/Zencrypter-user-manual.pdf

7. aSISt application working with Oracle database

ASISt can work on databases:

- Derby - local built-in database - used for the single-user version, or

- Oracle - an external Oracle database - always used with a multi-station or single-user version.

7.1. Database migration

The full process of transferring data from Derby to Oracle or Oracle to Derby is:

- creating a backup of the existing database,

- installing the target database,

- carrying out the migration procedure using the tool: as-migration-gui provided with the procedure by the asist technical support.

7.2. Installation of the Oracle database

Before performing a database migration or installation, it is necessary each time:

- complete installation of a new Oracle database, or

- use of the existing Oracle database and

- creating a schema for the asist5 user based on the Oracle database with the rights: `CONNECT`,` `RESOURCE`, `CREATE VIEW`

In order to make it easier for you to perform the necessary activities related to the creation of the required application asist user of the Oracle database, below we present an example of creating such asist5 user.

Oracle version 12c introduced a new multi-access architecture (multitenant). For the asist application we recommend creating a new PDB, as using the Oracle database in non-CDB mode is determined from version 12.1.0.2 is as deprecated. You can create a new PDB during the Oracle installation or follow the instructions below:

```
<SQL> CREATE PLUGGABLE DATABASE asistpdb ADMIN USER asistdba identified by "asist"
DEFAULT TABLESPACE USERS DATAFILE '/u01/app/oracle/oradata/asist/users01.dbf'
SIZE 1G AUTOEXTEND ON FILE_NAME_CONVERT = ('/ u01 / app / oracle / oradata / asist / pdbseed /',
'/ u01 / app / oracle / oradata / asist / asist /');

<SQL> ALTER PLUGGABLE DATABASE asistpdb open read write;

<SQL> ALTER PLUGGABLE DATABASE asistpdb SAVE STATE;
```

Then connect to the newly created asistpdb database and create the user:

```
<SQL> alter session set container = asistpdb;
<SQL> create user asist identified by asist default tablespace users temporary tablespace temp;
<SQL> grant connect, resource, create view to asist;
<SQL> GRANT UNLIMITED TABLESPACE TO asist;
```

It is also important to change the way of connecting to the database. To be able to connect to of the correct PDB container, the application must use the service identifier instead of the SID. To do this, make sure that the db.url line in the db.properties file has the correct format.

- jdbc: oracle: thin: @host: 1521 / SERVICE_NAME

Creating a database structure for asist application working on an Oracle database using sql-generator is possible in two ways:

- automatically, or

- manually.

Automatic creation of the structure of the Oracle database

There is no need to execute any scripts on the user created in the previous step. After entering the access data to the Oracle database, when you start the application for the first time, you will be asked whether to create a database structure:
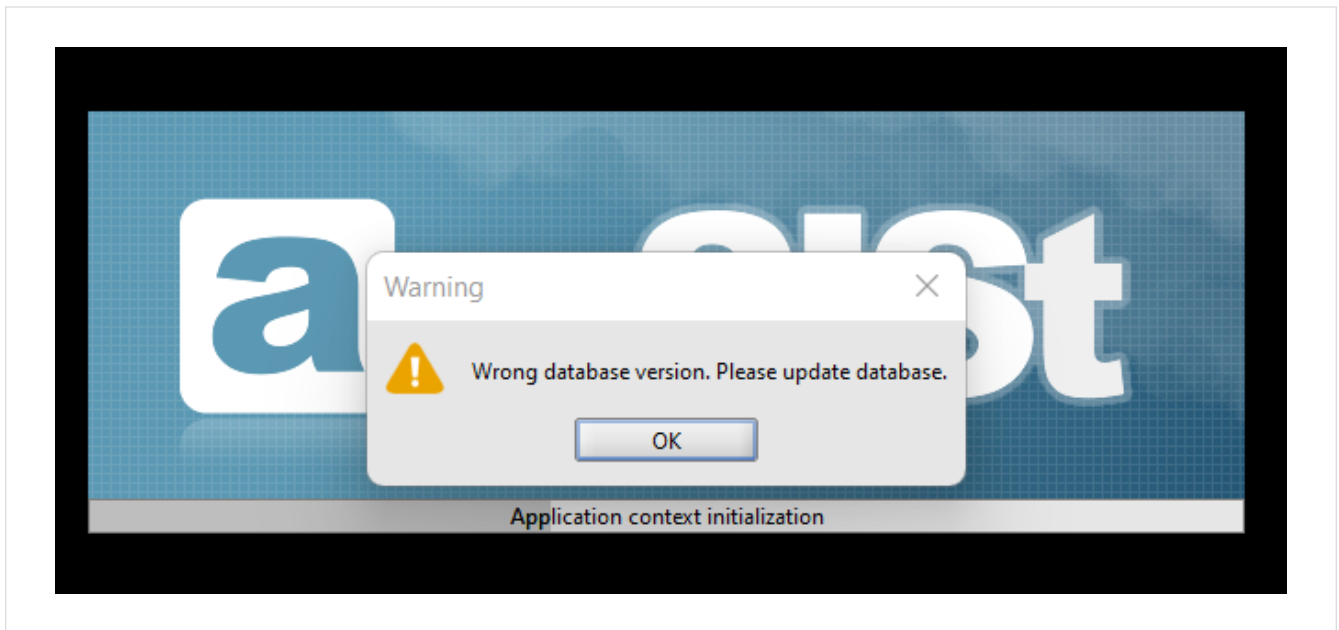
Figure 28. The question about establishing the base structure
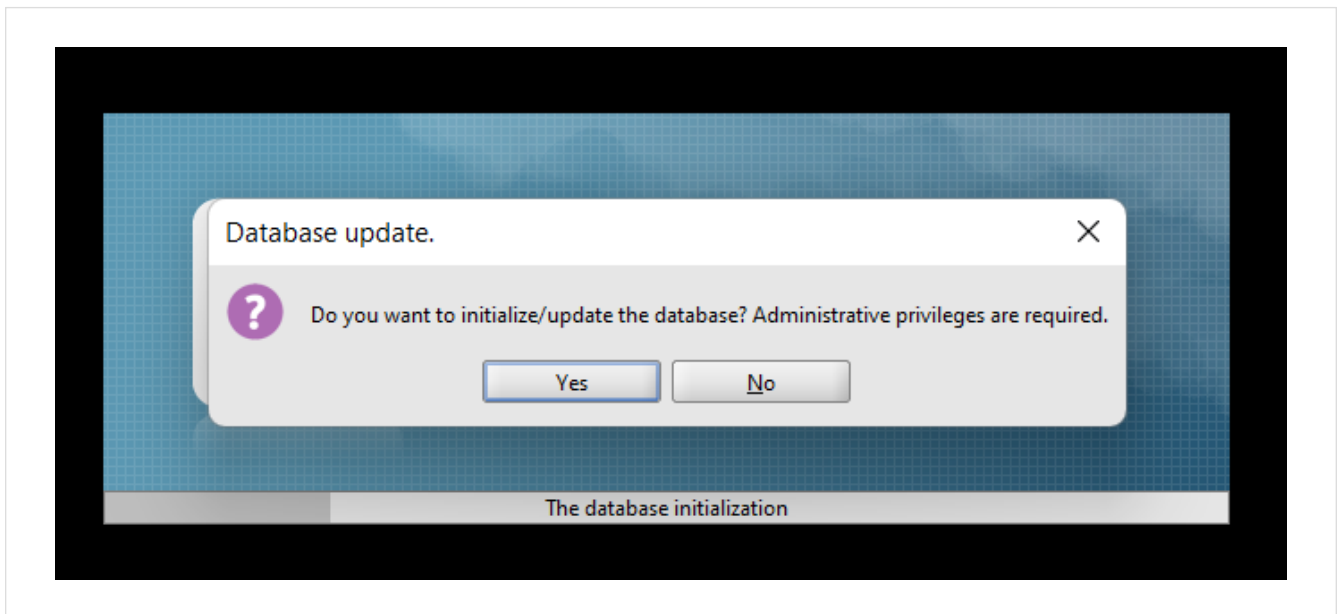
If the user answers "YES", the asist application will be started and the database structure will be created.

If the "NO" button is selected, the user will receive a message informing that the database structure has not been set up as follows:

Figure 29. Message about the inconsistency of the base

In this case, the administrator can create the database structure by restarting the application using the file: asistj.bat. You will then be asked to initialize the database again. After selecting the "YES" button, the application will create the base structure.

Manual creation of Oracle database structure

The administrator also has the option to independently generate a script containing the database structure. To do this, before starting the application for the first time:

- go to the sql-generator-5.58.0.0 .zip directory available in the chapter Filles for update,

- update the access data for the scheme that was created for the application by opening the file: RUN_FIRST_changelog.bat with a text editor (e.g. notepad), and then entering the access data to the database at the following items:

```
SET "URL = url"
SET "USERNAME = username"
SET "PASSWORD = password"
SET "DB_TYPE = oracle"
```

- run the file: RUN_FIRST_changelog.bat in windows powershell console.

After running the RUN_FIRST_changelog.bat file, a SQL script named output.sql will be generated into the liquibase directory, which must be run directly on the database using Oracle database management software (eg SQL * Plus, Oracle SQL Developer). The changes introduced to the database should be commited.

7.3. Backup and restore of the Oracle database schema

The Oracle database can be used in both the multi-user and single-user versions, depending on the bank's policy.

Any work related to the Oracle database or its schemas requires appropriate administrator privileges.

It is not possible to back up the Oracle database schema from the asist application level.

A copy of the Oracle database schema used by the asist application should be made at least:

- before starting the database schema backup the application should be closed by all users,

- before updating the database schema, while updating the asist application with the version change in second place: 5.x.0.0 - mandatory copy,

- in the case of work related to data migration, transfer of the Oracle database to a new server - mandatory copy,

- before each update of the asist application - a copy is recommended,

- in the daily cycle, especially in the case of increased work on reporting, in order to protect against data loss - recommended copy.

7.3.1. Export the database schema

In order to export the database, you should:

1. After running `cmd`, enter:

   ```
   <CMD> sqlplus / nolog
   <SQL> connect system / password as sysdba;
   ```

2. Switch to the plug-in database that contains the `asist` schema (default plug-in database is` asistpdb`):

   ```
   <SQL> alter session set container = asistpdb;
   ```

3. Create a new directory in the Oracle database to which the export will be performed and grant it the required permissions:

   ```
   <SQL> CREATE DIRECTORY asistdmpdir AS 'C: \ asistdmpdir';
   <SQL> grant read, write on directory asistdmpdir to system;
   ```

4. Check if the directory for the ORA engine has been created correctly:

```
<SQL> SELECT directory_name, directory_path FROM dba_directories;
```

5. Perform the database export:

```
expdp system / password DIRECTORY = asistdmpdir DUMPFILE = asist.dmp
LOGFILE = asist_export.log SCHEMAS = asist5
```

The exported file with a copy of the asist.dmp database schema and the asist_export.log export log file should be in the location specified when creating the DIRECTORY.

7.3.2. Import database schema

If the import is to be made to an already existing plug-in database, steps 4 and 6 should be performed.

To perform a database import in the case of a new instance of the Oracle database, proceed as follows:

1. Create a new PDB into which the scheme will be imported:

```
<SQL> create pluggable database asistpdb admin user asistdba
identified by asist file_name_convert =
('D: \ app \ oracle \ oradata \ orcl \ pdbseed ',' D: \ app \ oracle \ oradata \ orcl \
asistpdb ');
<SQL> alter pluggable database asistpdb open read write;
<SQL> alter session set container = asistpdb;
<SQL> alter pluggable database asistpdb save state instances = all;
```

2. Create a new directory for import and give it the required permissions:

```
<SQL> CREATE DIRECTORY asistdmpdir AS 'C: \ asistdmpdir';
<SQL> grant read, write on directory asistdmpdir to system;
```

3. Create a tablespace:

```
 <SQL> create tablespace users datafile
 'D: \ app \ oracle \ oradata \ orcl \ asistpdb / asist01.dbf 'size 1G autoextend on;
```

4. Create a user:

```
 <SQL> create user asist5 identified by asist5 default tablespace users;
 <SQL> grant connect, resource, create any view, unlimited tablespace to asist5;
```

5. In the tnsnames.ora file, add an entry about the plug-in database:

```
ASISTPDB =

 (DESCRIPTION =

   (ADDRESS_LIST =

     (ADDRESS = (PROTOCOL = TCP) (HOST = server) (PORT = 1521))

   )

   (CONNECT_DATA =

     (SERVICE_NAME = asistpdb)

   )

  )
```

An example file location is: `D: \ app \ oracle \ product \ 12.2.0 \ dbhome_1 \ network \ admin`. To make changes to the `tnsnames.ora` file, it is recommended to use the` Net Manager` program.

6. Perform the import from the system user:

```
impdp system / system @ asistpdb directory = asistdmpdir logfile = imp.log
dumpfile = asist.dmp
```

ADDITIONAL NOTES:

Additional parameters for the import command:

- remap_schema * :: to be used when changing the target schema, syntax: oldUser: newUser e.g. remap_schema = asist5: asis

- remap_tablespace * :: to be used when changing target user space, syntax: oldTablespace_newTablespace e.g. remap_tablespace = users: asistdata

Link to a helpful article (import syntax a bit simpler):

`http: // orafaq.com / wiki / Datapump`

For the asist application to connect to the new Oracle database, change the database address in the db.properties file by entering:

```
db.url = jdbc \: oracle \: thin \: @ server \: 1521 / asistpdb
```

7.4. Answers to common questions about working with Oracle

How do I unlock my account (error ORA-28000)

The appearing error ORA-28000 indicates that the account is blocked.

In order to unblock the account, please run the command line start→ run→ cmd on the computer with the Oracle database

And then do:

```
<CMD> sqlplus / nolog
<SQL> connect / as sysdba
<SQL> ALTER SESSION SET CONTAINER = plug-in database_name;
(the name of the plug-in database can be found in the db.properties file, db.url line)
<SQL> ALTER USER username ACCOUNT UNLOCK;
```

If you need to set a new password, enter:

```
<SQL> ALTER USER username IDENTIFIED BY newpassword;
```

How do I reset my Oracle password (error ORA-28001)

If the error ORA-28001 appears, it indicates that the password has expired.

In order to reset the password, on the computer with the Oracle database, run the command line start→ run→ cmd

And then do:

```
<CMD> sqlplus / nolog
<SQL> connect / as sysdba
<SQL> ALTER SESSION SET CONTAINER = plug-in database_name;
(the name of the plug-in database can be found in the db.properties file, db.url line)
<SQL> ALTER USER username IDENTIFIED BY newpassword;
```

What steps should be taken to transfer the asist application with Oracle database to a new computer?

When moving the asist application with the Oracle database to a new computer, we must distinguish between:

Moving the Oracle database to a new database server:

- You can then use standard Oracle database export and import tools (described above)

- Please note that this action is only possible if:

```
the target Oracle version is> = the source Oracle version
```

To check what version of the ORACLE database the asist application is running on, follow the steps below:

- run the command line as administrator on the database server

- enter:

```
<CMD> sqlplus / as sysdba
```

After logging in, we will receive information about the version of the Oracle database

Figure 30. Checking the database version

Transferring the asist application from client workstations to a new computer, then:

- From the "DOWNLOAD" section: https://support.asist-xbrl.eu/en/downloads download and install the full version of the asist application on a new computer

- Copy and paste from the asist5 directory of the old computer to the main directory C: \ asist5 on the new computer:

  - ° file: asist.licence,

  - ° subdirectory: preferences (application settings are stored there, including, among others, settings for printing parameters),

  - ° file: db.properties (this file contains information enabling connection of the application with the Oracle database and the tranSIS system - applies to cooperative banks).

- In the db.properties file, check and, if necessary, modify entries that reference the Oracle database by entering:

  - ° the correct URL of the Oracle database

  - ° correct password to access the Oracle database

- From https://support.asist-xbrl.eu/en/downloads download and perform all necessary asist updates so that the asist application version on the old and new computer is the same

- In asist Settings, it is recommended to increase the amount of memory allocated to the application (by setting max 3/4 of the possible memory to be allocated)

```
ALT_A -> Settings -> Local -> Memory management
```

What does the error "ORA-12519: TNS: no appropriate service handler found" mean when trying to run the application?

In case of the database error "ORA-12519: TNS: no appropriate service handler found", when the next user cannot log in to the aSISt application, despite having an appropriate multi-user license, perform the following actions:

1. Verify the current database settings according to the following steps:

   - ° Log in via sqlplus as asist database sysdba:

     - ▪ Run the command line as administrator

     - ▪ Enter the command sqlplus / nolog

     - ▪ Enter / as sysdba for the username

     - ▪ Run command

° Make an inquiry:

```
<SQL> select current_utilization, max_utilization, limit_value
from v $ resource_limit where resource_name = 'processes';
```

If the obtained current_utilization is close to the database parameter set "processes" defined by the limit_value value from the above query, it may be the reason why it is not possible to connect another user to the aSISt application. Logging in by one user does not create only one process / session on the Oracle database. It entails the launch of other internal database processes running in the background, as well as database server processes, the operation of which is written to trace_file files, thanks to which, in the event of internal database errors, we have a stack of their creation, which makes it easier to diagnose the cause of problems.

2. Change the value of the parameter processes Therefore, we suggest increasing the parameter from the limit value to 120 for 5 users logging in to the asist application (and also to the Oracle database). This can be done with a command executed on the user with the sysdba role (the login method is presented above).

```
<SQL> ALTER SYSTEM SET processes = 120 SCOPE = SPFILE;
```

The session value associated with the parameter processes will be determined automatically by the oracle server using a special algorithm.

3. Since the change is saved in the spfile (server parameters file), the database must be restarted for the changes to take effect. You can reboot by logging into sqlplus as sysdba.

   ° Log in as sysdba to the database

   ° Save changes to asist and log out of the application

   ° Close database - shutdown immediate

   ° Assemble and open the database - startup

4. If the parameter value is insufficient, you can increase its level again (point 2), and then restart it again (point 3).

How should the Oracle database be configured so that the Polish characters entered in asist are properly presented?

ASISt application works with Oracle databases in version 12c, 18 XE (Express Edition).

Regardless of the Oracle database version, for the correct presentation of Polish characters in the asist application, the Oracle database must have Multi-byte Unicode, which should be selected at the database configuration stage.

For:

- Oracle XE free version, you must:

  ° download the universal XE installer with AL32UTF8 encoding from the Oracle website
    http://www.oracle.com/technetwork/database/express-edition/downloads/102xewinsoft-090667.html - OracleXEUniv.exe for Windows systems,

  ° http://www.oracle.com/technetwork/database/express-edition/downloads/102xelinsoft-102048.html - package suitable for Linux distributions with the annotation UNIV.

- Oracle version 12c - create a database:

  ° with AL32UTF8 character set encoding and

  ° with the default national character encoding AL16UTF16

For example: - run the (Oracle) Database Configuration Assistant and - to choose: Create a database →… → select the database name and SID, eg ASIST →… → Character Sets tab: Database Character set: Use Unicode: AL32UTF8 and National Character Set: AL16UTF16.

How can I check what encoding is used by the installed Oracle database?

The encoding of the Oracle database instance can be checked by sending appropriate queries from the asist application level or after logging into the Oracle database

- To check the encoding of the installed Oracle database from the level of the asist application, select:
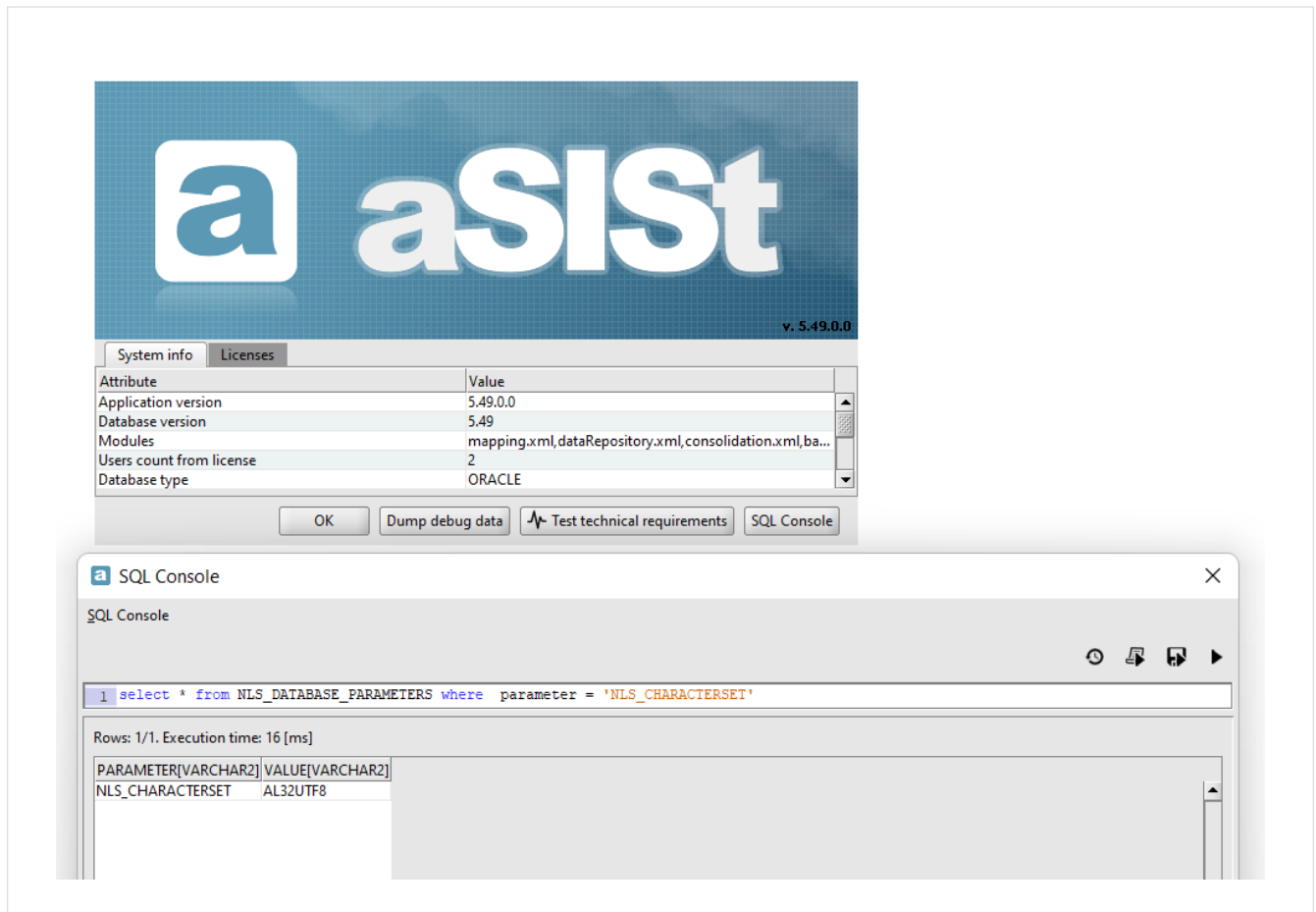
ALT + A → asist information → button: 'SQL Console'

At the top of the window that appears:

- enter the query:

```
select * from NLS_DATABASE_PARAMETERS
where parameter = 'NLS_CHARACTERSET'
```

- select the button:>

Figure 31. Reading encoding in asist

- To check the set encoding after logging in to the Oracle database, add a semicolon at the end to the query above, so that it looks like:

```
select * from NLS_DATABASE_PARAMETERS
where parameter = 'NLS_CHARACTERSET';
```

Figure 32. Reading the coding in the database

- The ORACLE database instance encoding correctly supported by asist is: AL32UTF8. *

How can I backup / restore Oracle Database 12c or 18XE?

To back up and restore an Oracle Database 12c or 18XE database, use the export and import functions described in "How can I export and import an Oracle database with aSISt schema to another server?" in this document.

How to set ORACLE password non-expiration for the profile to which the user belongs?

To disable the password expiration option for the Oracle database with which the asist application connects, you should:

- Run the command line with administrator privileges and execute the commands:

```
<CMD> sqlplus / nolog
<SQL> connect / as sysdba
```

- Check profile for asist5 user with command:

```
<SQL> select profile from DBA_USERS where username = 'asist5';
```

The query returns to us the name of the profile to which the user belongs. Usually it is a profile named DEFAULT, otherwise you should rename this profile by:

```
ALTER USER ASIST5 PROFILE DEFAULT;
```

- Set password non-expiration for the profile to which user 'asist5' belongs with the command:

```
alter profile DEFAULT limit PASSWORD_LIFE_TIME unlimited;
```

- To check if the password expiration option has been disabled for the 'asist5' user, execute the command:
  - ° in sqldeveloper:

```
select username, account_status, EXPIRY_DATE from dba_users where username = 'asist5';
```

- sqlplus also works with the command:

```
select username, account_status, nvl (expiry_date, 'null') from dba_users where username = 'asist5
';
```

If (null) appears in the 'Expiry_Date' column, it means that the password will not expire for the given user

Figure 33. Password expiracy policy

How can I export and import an Oracle database containing asist schema to another server?

To export the database, run the command prompt:

```
<CMD> sqlplus / nolog
<SQL> connect system / pass as sysdba;
```

Create a new directory in the Oracle database to which the export will be performed and grant it the required privileges

```
<SQL> CREATE DIRECTORY asistdmpdir AS 'C: \ asistdmpdir';
SQL> grant read, write on directory asistdmpdir to asist5;
```

Check if the directory for the ORA engine has been created correctly:

```
<SQL> SELECT directory_name, directory_path FROM dba_directories;
```

Perform database export:

```
expdp asist5 / user_password DIRECTORY = asistdmpdir DUMPFILE = asist.dmp LOGFILE = asist_export.log
```

In order to import the database, you should: Create a new PDB into which the scheme will be imported:

```
SQL> create pluggable database asistpdb admin user asistdba identified by asist file_name_convert =
('D: \ app \ oracle \ oradata \ orcl \ pdbseed ',' D: \ app \ oracle \ oradata \ orcl \ asistpdb ');
SQL> alter pluggable database asistpdb open read write;
SQL> alter session set container = asistpdb;
SQL> alter pluggable database asistpdb save state instances = all;
```

Create a new directory for import and grant it the required permissions:

```
CREATE DIRECTORY asistdmpdir AS 'C: \ asistdmpdir';
SQL> grant read, write on directory asistdmpdir to system;
```

Create a user and tablespace:

```
SQL> create tablespace users datafile 'D: \ app \ oracle \ oradata \ orcl \ asistpdb / asist01.dbf
'size 1G autoextend on;
SQL> create user asist5 identified by asist5 default tablespace users;
SQL> grant connect, resource, create any view, unlimited tablespace to asist5;
```

In the tnsnames.ora file, add an entry about the plug-in database:

```
ASISTPDB =

  (DESCRIPTION =

    (ADDRESS_LIST =

      (ADDRESS = (PROTOCOL = TCP) (HOST = server) (PORT = 1521))

    )

    (CONNECT_DATA =

      (SERVICE_NAME = asistpdb)

    )

  )
```

An example file location is: D: \ app \ oracle \ product \ 12.2.0 \ dbhome_1 \ network \ admin

Perform an import from the system user:

```
impdp system / system @ asistpdb directory = asistdmpdir logfile = imp.log dumpfile = asist.dmp
```

ADDITIONAL NOTES:

Additional parameters for the import command:

```
remap_schema - to be used when changing the target schema, syntax: oldUser: newUser e.g.
remap_schema = asist5: asis
```

```
remap_tablespace - to be used when changing target user space, syntax: oldTablespace_newTablespace
e.g. remap_tablespace = users: asistdata
```

For the asist application to connect to the new Oracle database, change the database address in the db.properties file by entering: * db.url = jdbc \: oracle \: thin \: @ server \: 1521 / asistpdb *

Polish diacritics written by asist disappear after reopening the form. How can this problem be solved?

The problem is that the installation or configuration of the Oracle database engine is inconsistent with the asist technical documentation and its solution is not supported by FINGO.

If you have an Oracle database with an incorrectly configured character set, the saved national characters are automatically converted to the database character set that do not support Polish letters and, consequently, the Polish characters entered in the aSISt application will not be displayed correctly.

Below you can find information on available solutions to this issue.

For the original, recommended by Oracle support procedure to solve this problem, see the online documentation from Oracle at:

http://download.oracle.com/docs/cd/B10501_01/server.920/a96529/ch10.htm#1009904

http://download.oracle.com/docs/cd/B10501_01/server.920/a96529/ch11.htm#1005392

How can I enable ARCHIVELOG mode for an Oracle database and define FRA realm settings?

To turn on the ARCHIVELOG mode:

- run the SQL command interpreter, e.g. sqlplus.exe: issue a command → Start menu → Run → "sqlplus.exe / nolog"
- use the "connect SYS / password as SYSDBA" command to connect the interpreter to the default

Oracle database instance (in the Express Edition it is "XE") as a full SYS user

- create a target directory for the FRA area and issue the command string:

```
SHUTDOWN IMMEDIATE
STARTUP MOUNT
ALTER DATABASE ARCHIVELOG;
ALTER SYSTEM SET DB_RECOVERY_FILE_DEST = 'partition_name: directory';
ALTER SYSTEM SET DB_RECOVERY_FILE_DEST_SIZE = 15G;
ALTER DATABASE OPEN;
Exit
```

The database will be stopped and then started with the new settings.

What does the error "I / O error: The Network Adapter could not establish the connection" mean when trying to start the application?

When, after installing the application on a new seat, an error appears when you try to run it:

"I / O error: The Network Adapter could not establish the connection",

it means that there is no network connection to the server.

In this case, you should:

- check if there are correct server address, port and instance name entries in the asist db.properites subdirectory,

- with the telnet command check whether it is possible to establish a connection from the client's system shell, e.g.

```
<CMD> telnet 192.108.0.131 1591.
```

A blinking cursor (established connection) or connection timeout should appear, if:

- the port or service is blocked on the ORA server firewall,

- there is no network communication to the server.

In this case, you must allow connections from the client to the ORA server on port 1591 and to the ORA engine (e.g. C: \ oracle \ product \ 10.1.0 \ db_1 \ BIN \ ORACLE.EXE)

Then retry the test via telnet or network scanner, or troubleshoot packet routing.

8. Procedures for dealing with application failures

The following are scenarios for dealing with problems with the aSISt application.

Problem	Diagnosis	Cause	Solution	Comments
Application does not start, message No license for aSISt. Application will be closed	Verify if correct aSISt.license file is present in aSISt5 home directory	Missing or invalid license file	Add correct aSISt.license file	The license is provided by the software vendor; if in doubt, contact aSISt service.
The application does not start, the message Windows system cannot find the file "jdk17\bin\javaw.exe". Make sure the name you typed is correct and try again	Verification whether jdk17 directory is present in aSISt5 home subdirectory	Missing or incorrect Java	Adding jdk17 subdirectory containing Java 17	Java17 environment is distributed with the application and installed automatically to the application subdirectory.
Derby – the application does not start, the message Another instance of the application is already running. Close the previously started application and try again	Verification whether aSISt has already been started or crashed in processes	aSISt has already been started	Closing the already started aSISt instance or using it	It is possible to start aSISt once within a given Derby-based installation.
Derby – the application does not start, the message There was an error during communication with the database	Verification of the logs (c:aSISt5logsasist.log)	The Derby database has been damaged	Attempt to repair the damaged parts of the database with the tool c:aSISt5recovery.bat, using the backup created with the aSISt tools in the same version of the database	The recovery.bat tool is provided with the aSISt application.

Oracle – the application does not start, the message `Internet error: The Network Adapter could not establish the connection`	Verification whether the Oracle database and listener have been started; check in Net Manager whether the IP addresses are consistent with the current ones	Oracle database is not available	Start the database and listener, enter the correct IP addresses of the Internet connection, VPN, host to the database, restart the database	The Net Manager tool is provided with the Oracle database by the distributor.
Oracle – application does not start, message `ORA-01017: invalid username/password; login denied`	User and password verification	Incorrect login or password to the database schema	Administration of the correct login and password to the database user	It is worth verifying that the password has not been changed before the Oracle database administrator
After the update, the following message appears: `Error while importing "5.x.x_sob_en" package`	Verify that the checksum file for the downloaded update file matches the one provided on the service site	Missing taxonomy packages - corrupted update file	Overwrite the application files with the last installation file provided on the service site and update again to the latest version	Damage to the used update file may cause application errors.
Unable to find/launch the application	Verification whether aSISt files are available, whether logging in asist.log (aSISt5logs.log) occurs; verification according to internal procedures	Potential errors in the IT infrastructure	Diagnostic procedures are initiated	In order to determine whether the problem lies in the application or the environment, we encourage you to contact the service.
The application does not finish processing data	Verification of logs (aSISt5\logs.log)and the presence of the entry 'No free memory. Please close unused reports'	Lack of memory	Increase of memory allocated to the application	In order to verify the required memory resources, please refer to the document 'Description of hardware requirements for systems: aSISt, tranSIS' available on the website of the service.