requisis_MiX

User Manual for requisis_MiX 1.9

requisis_MiX

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1 Introduction

requisis_MiX is an extension for IBM Rational DOORS 9 (hereinafter referred to as DOORS) to migrate and synchronize modules between DOORS and IBM DOORS Next Generation (hereinafter referred to as DNG).

Currently the following Use Cases are supported:

- Initial transfer of a DOORS Module to DNG.
- Update transfer from DOORS to DNG.
- Transferring links from DOORS to DNG.

Support for further Use Cases like e.g. transfer from DNG to DOORS is currently in development.

IMPORTANT NOTE:
This manual is intended for users. Please consult the administrator manual for installation and configuration instructions for *requisis_MiX*.

2 The Migration Process from DOORS to DNG

The migration of a DOORS module consists of the following steps:

Planning

- Analyze your existing data and derive a target data model.

Preparation

- Setup the target data model in DNG (artifact types, attributes, types, link types etc.).
- Optional: Setup a mapping rule module for the automatic mapping of artifact types, attributes and enumeration literals. This step is strongly recommended, if there are many modules to migrate.
- Setup a project or a component in DNG that uses the target data model.
- Create an empty module in DNG that shall be used as the target module for each module that shall be migrated.
- Select an enumeration attribute in DOORS that shall be used to determine the artifact type of each object.
- Create or select a view in DOORS for each module to define the attributes and objects that shall be used for migration.

Mapping and Data Transfer

- Configure the mapping of artifact types, attributes and enumeration values using the *requisis_MiX* "DOORS-> DNG" GUI.
- Optional: Execute a Pre-Check.
- Start the migration.

Link Migration (optional)

- Select all link modules for a specific module or all link modules in a specific folder to transfer their link sets.
- Optional: Filter link sets between different sources and targets in DOORS.
- Configure the mapping of DOORS link sets to DNG link types.
- Start the link migration.

Post-Processing

- Check the migration results.
- Eventually repeat the migration.
- Eventually make the module in DOORS read-only.

2.1 Preparation

Before a migration can be started there are some conditions that have to be fulfilled in both databases (DOORS and DNG). Those conditions are described in this chapter.

2.1.1 Preparation of the Target DNG Module

requisis_MiX follows the general concept, that only objects and their attribute values and the existing module structure are transferred from DOORS to DNG. The data model in DNG (Artifact Types, Attributes, etc.) is never modified and modules will not be created automatically. This has the following implications for the preparation of a migration:

1. Prior to any migration the data model in the target DNG project or component must be created, i.e. artifact types and their attributes. The model needs not necessarily match the one in the source DOORS module. In the configuration process of the migration the transformation rules (named mapping rules here) can be specified in detail. Beside the names, also differences in the type or enumeration literals are tolerated within limits (e.g. mapping an enumeration attribute to a string value).
2. The target module in DNG must exist and the URL of the new module must be copied from the browser or the share link function. The URL is required in the configuration of the migration. It may be useful to create a new stream or change set for the migration.

IMPORTANT NOTE:

In DNG each artifact type is of a certain "base type". This can be e.g. "Text", "Diagram" or "Collection". For the transfer of DOORS objects to DNG only DNG artifacts that are of the base type "Text" are supported.

During a running migration it is possible to start another *requisis_MiX* instance on a second, local DOORS client to prepare another module for migration. For the migration of larger amounts of modules, we recommend the use of the Migration Manager.

2.1.2 Preparation of the DOORS Module

Unlike in DNG there are no types of objects in DOORS. All objects share the same set of attributes. For the migration process it is necessary to introduce and define "object types" in DOORS. This must be done by creating or using an existing enumeration attribute and setting a value for each object that will be transferred. By setting the value of this attribute the object will get its "object type". This value will be mapped to the artifact types in DNG during the type mapping process.

It is recommended to have at least two object types, namely "Heading" and "Requirement" to represent Headings and Text Objects in DOORS. An example is shown in the image below.

ID	Object Type	
1	Heading	**1 General Information**
2	Information	**The System Requirements module** **or on a portfolio of systems consi** **functional features as well as perf** system requirements defined in this m Subsystem/Component requirements.
3	Heading	**1.1 Content Description**
4	Information	The module includes system requirem
5	Heading	**1.2 Support and Module Re**
6	Heading	**1.2.1 Content**
7	Information	Responsible requirements engineer: Jo
8	Heading	**1.2.2 Structure**
9	Requirement	Responsible for the structure of the mo substitute: Jane Doe, Max Mustermann
10	Requirement	Changes of the chapter structure abov substitute: Jane Doe, Max Mustermann
11	Requirement	Module/System project manager for D substitute: Jane Doe, Max Mustermann

The "Object Type" is then used in the configuration dialog of *requisis_MiX* to decide which "Artifact Type" in DNG should be used for an object in DOORS. This assignment of DOORS object types to DNG artifact types is named "mapping" here and the procedure is described in detail in the text below.

HINT:
If you do not have an "Object Type" attribute, you can use the "Create Object Type Attribute" tool which can be launched from the menu (*REQUISIS* -> *requisis_MiX* -> *Tools* -> *Create Object Type Attribute).* The tool creates the enumeration attribute „Object Type" in the current module with the two values „Heading" and „Requirement" and set the values automatically for all objects.

2.1.3 Configuration of the Migration

This chapter gives an overview of how the migration is configured and what are the concepts behind. Detailed instructions about how this is done are given below in the chapter 2.2 "Step by Step Instruction".

Objects are stored as artifacts in DNG. A DNG artifact is the equivalent to an object in DOORS. Each artifact has to be of a certain type "Artifact Type". The artifact type defines, what attributes are available for the artifact and whether the artifact represents a heading or not. Within a DNG project or component there can be several user defined types of artifacts, each having a different set of attributes. E.g. "Heading", "Functional Requirement", "Quality Requirement", "Information".

In a DOORS module there is no object type. All objects share the same set of attributes. Although, there is the distinction between heading and text objects, realized by setting either the attribute "Object Heading" or "Object Text". In practice there is often the need for more "Object Types" e.g. to separate text that is purely used for informational text and the actual requirements. Therefore, it is common practice to define object types in DOORS via an enumeration attribute. As described above defining object types in DOORS is mandatory for the usage of *requisis_MiX*.

Since there is now a definition of object types in both DOORS and DNG the user must decide what object type in DOORS corresponds to which artifact type in DNG. This is called type mapping here. The object types in DOORS and DNG that are mapped to each other may or may not contain the same set of attributes. Therefore, the second configuration step called attribute mapping is required, where the user specifies which attribute in the DOORS type corresponds to which attribute in the DNG type. E.g. The DOORS attribute "Description" may be mapped to the DNG attribute "Further Explanation" for the object type "Requirement". It is possible to decide, that individual attributes shall not be transferred at all or to merge the content of several DOORS attributes into one DNG attribute.

Attributes do not necessarily have to be mapped to the same data type in DNG. This list shows an overview of the allowed data type conversions:

- Boolean → Boolean, String, Text
- Date → Date, Datetime, String, Text
- Enumeration (single value) → Enumeration (single and multi-value), String, Text
- Enumeration (multi value) → Enumeration (multi value), String, Text
- Integer → Integer, Float, String, Text
- Real → Float, String, Text
- String → String, Text
- Text → String, Text

The "Type Mapping" and the "Attribute Mapping" can be configured in two different ways (or with a combination of both):

1) Manually by using the *requisis_MiX* GUI. This process is described in detail in the chapter "Step by Step Instruction".
2) By defining a general set of rules for the mapping in a specific DOORS module. These rules can then be automatically applied to any module that will be migrated. This is called "Auto Mapping" and details about this procedure are described in chapter 2.4.6.

2.1.4 Important Configuration Settings

For modifying the default behavior, additional setting options are available. To set these settings, open the file "**settings.inc**" with an editor program of your choice. (e.g. Notepad++) This file is located in the subfolder "**config**" of your *requisis_MiX* installation. There are several further variables in the file for detailed configuration of *requisis_MiX*. A complete list of variables can be found in the administrator manual.

`ALLOW_OBJECTS_WITHOUT_TYPE = true` OR `false`
If set to "true" objects don't need to have a valid value for the selected object type attribute.
An extra value "*[[Object Type not set]]*" will be shown in the mapping dialog.

`LOGGING_MODULE ="<the DOORS path to the logging module>"`
Path to the Logging Module, set to `""` for no logging

`MAPPING_RULE_MODULE = "<the DOORS path to the auto mapping rule module>"`
Path to the Mapping Rule Module.

Set PHP Memorylimit for large migrations

To migrate modules with more than 15 thousand objects we recommend increasing the memory limit of PHP or to disable it completely. To do this, open the file *php.ini* with an editor, which can be found in the subfolder *php/bin* of your *requisis_MiX* installation. In the file look for the line *memory_limit = 4G* if you want to set the memory limit to 8GB adjust the value to *8G* right of the =. To turn off the memory limit change the value to *-1*. For more information see the php documentation at http://php.net/memory-limit .

IMORTANT NOTE:
Turning off the memory limit may cause your/the used machine to stop responding during a migration.

Module attributes used by requisis_MiX

The following module attributes are automatically created by *requisis_MiX* when starting the tool from the module. These attributes must not be deleted or edited; they are needed so that *requisis_MiX* can work properly.

MIX_Configuration: Stores the mapping information and settings in a machine-readable format.

MIX_MigrationStatus: Describes the status of the migration progress of the module. The following statuses are possible:

- *None:* The mapping of this module is incomplete. Migration is not possible yet.
- *Configured:* The mapping of this module is complete. Migration is possible.
- *Migrated:* The module has already been migrated and further migration processes are possible.
- *Finished:* Migration of this module has been marked as completed by the user. Further migration processes are not possible.

MIX_Module_Version: The version of the *requisis_MiX* module configuration. This determines how the configuration is stored in the other attributes used by *requisis_MiX*.

Object attributes used by requisis_MiX

The following object attributes are automatically created by *requisis_MiX*. These attributes must not be deleted or edited; they are needed so that *requisis_MiX* can work properly.

MIX_DNG_Artifact_URI: This attribute stores the artifact URI of this object in DNG. It is required identifying the artifact for later updates.

MIX_DNG_Artifact_Check_AbsNo: This attribute stores the information about the object's absolute number when this object was migrated the last time. It is used to detect if this object was copied from another object so the stored IDs and URIs are not valid any more.

MIX_DNG_Artifact_Structure_URI: This object attribute stores URI for the corresponding artifact in DNG in a module context. This is needed to identify the targets artifact in the module structure in order to create links or move the artifact within the module during updates.

MIX_DNG_Artifact_ID: After a migration, the artifact ID of the DNG target artifact is stored here. The user can find the target artifact in DNG using the search function and the value stored here and the value can be used to import data from DNG back to DOORS using the CSV-Import and setting this attribute as a key value.

2.2 Step by Step Instruction for one module

2.2.1 Settings

The configuration GUI for the migration of a module from DOORS to DNG can be started via the DOORS menu entry *REQUISIS* -> *requisis_MiX* -> *DOORS* -> *DNG*. After launching the *Settings* page is shown. Here the user must set up:

- The URI of the target DNG module.
- The DOORS view that is used to decide which attributes and objects should be migrated.
- The enumeration attribute that is used to distinguish object types in DOORS.

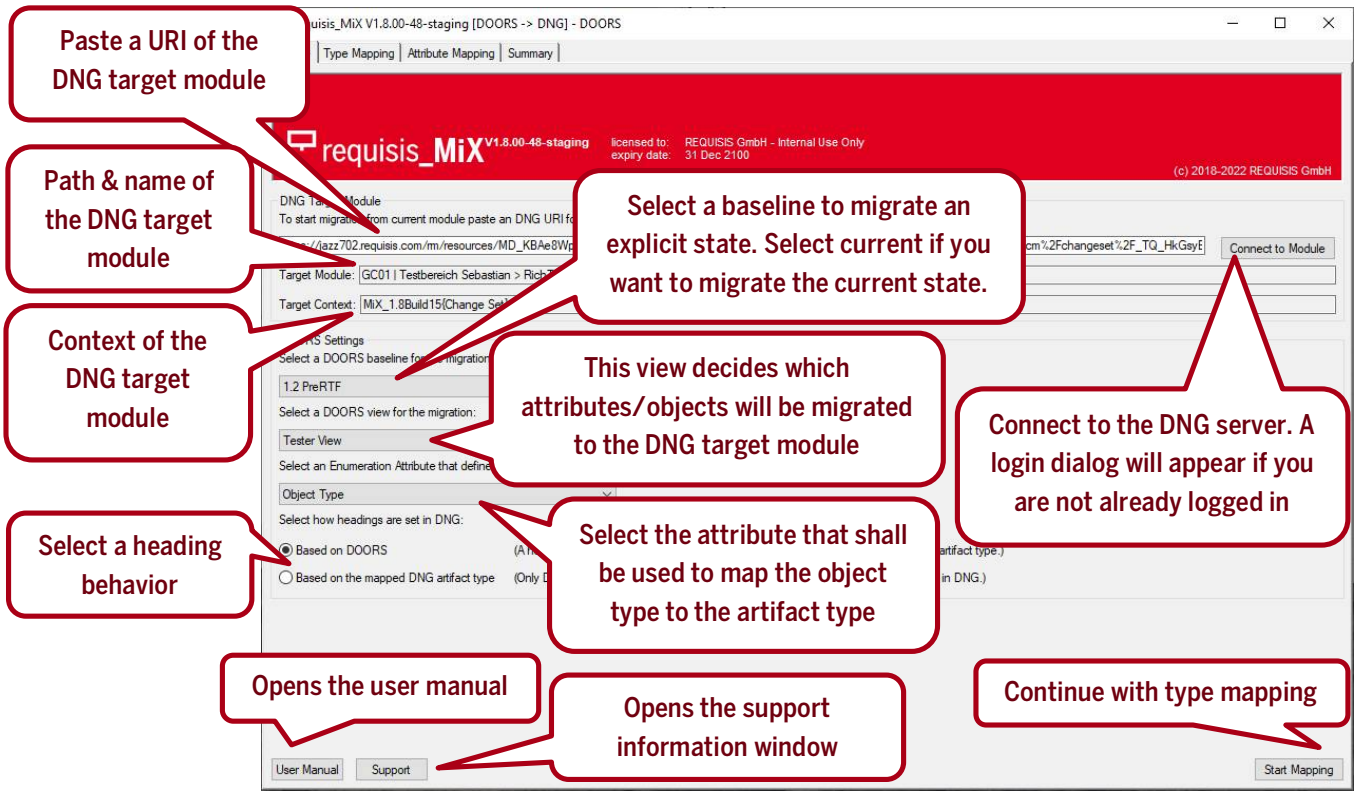
IMORTANT NOTE:

If the selected view contains a filter, the option *Show Ancestors* must be activated in the filter settings. Otherwise *requisis_MiX* will not perform the migration, as the document structure may contain gaps. Columns without titles in the selected view are ignored and not migrated!

Please also note that by activating the *Show Ancestors* checkbox, the number of migrated DOORS objects can be higher, than the number of counted objects in the filter settings, since ancestor objects will not be counted in the DOORS filter settings.

Please note that new objects are created as the first child object if there is only the parent object as a reference point in the source module due to the set filter.

Important if there are DOORS tables in your formal module:
Make sure that the *Show* -> *Table Cells* option is enabled in the view you are using for the migration.

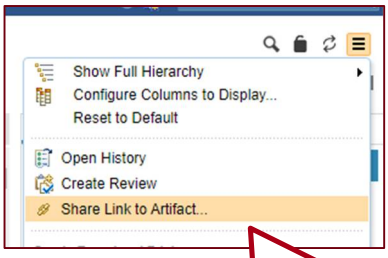


URI of the DNG target module

For requisis_MiX to connect to a DNG target module you need the URI of this module. Target modules in global (streams, personal streams) and requirements management contexts (streams, change sets) are supported. There are two ways to get the module URI in DNG, which we will show you now.

From the opened module

To do this, open the target module in DNG to which you want to migrate with requisis_MiX. In the *More actions* menu on the right of the screen, select the option *Share Link to Artifact.*

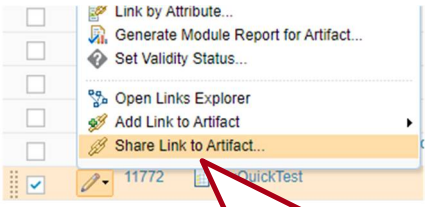


Option within the module artifact

A popup appears which contains the URI of the current module artifact Copy this URI to your clipboard and paste it into *requisis_MiX* to the left of the *Connect to Module* button. Then click the *Connect to Module* button to connect to the corresponding module. After a short moment you will find in the *Target Module*: field the module name of the target module from DNG and in the *Target Context*: field the name of the selected stream, change set or global configuration.

From the module artifact overview

The option *Share Link to Artifact* can also be found in the module artifact overview in the context menu of the module artifact that you would like to add to the ReqIF set.



Option in the module artifact overview

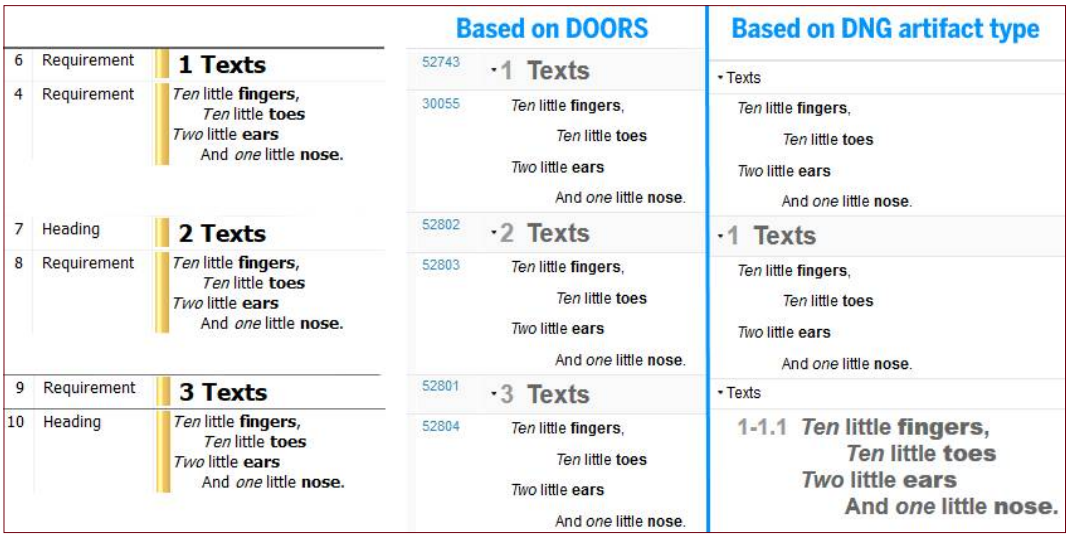
Heading Behavior

Based on DOORS:

If an object in DOORS is shown as heading it will also show as heading in DNG.

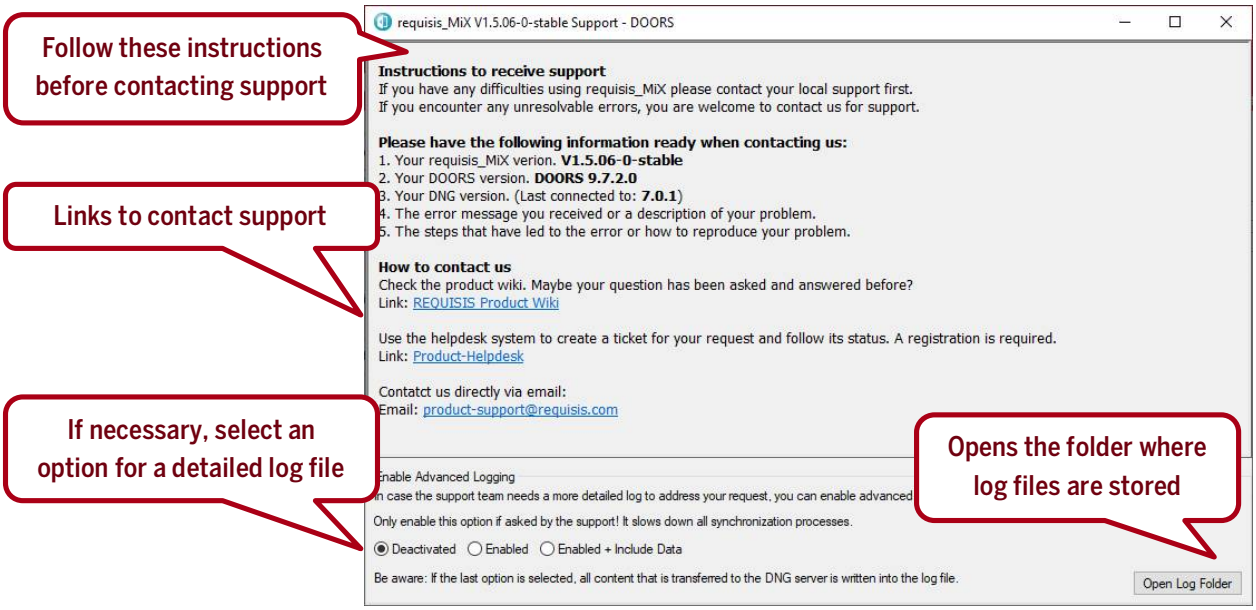
Based on the mapped DNG artifact type:

The decision about displaying an artifact as heading is based on the settings for the mapped artifact type. If the DNG artifact type has the artifact role *"In modules, display artifacts of this type as headings by default"*, the corresponding artifacts will be shown as headings. The image below shows three examples for both settings.



Contact the support

If you encounter any technical difficulties or bugs when using *requisis_MiX*, there is a button on the bottom left of each tab of the tool that opens the support window.



IMORTANT NOTE:

Only turn on the detailed log file when prompted by support. If you select the "*Enabled + Include Data*" option, ***all*** content transferred to the DNG server will also be written to this file. The created files contain additional information for the support to better analyze sources of error. Creating the files is more time-consuming and the performance of the tool decreases. The created data is automatically encrypted. If required, please send your non-disclosure agreement to our support, so it can get signed by our management.

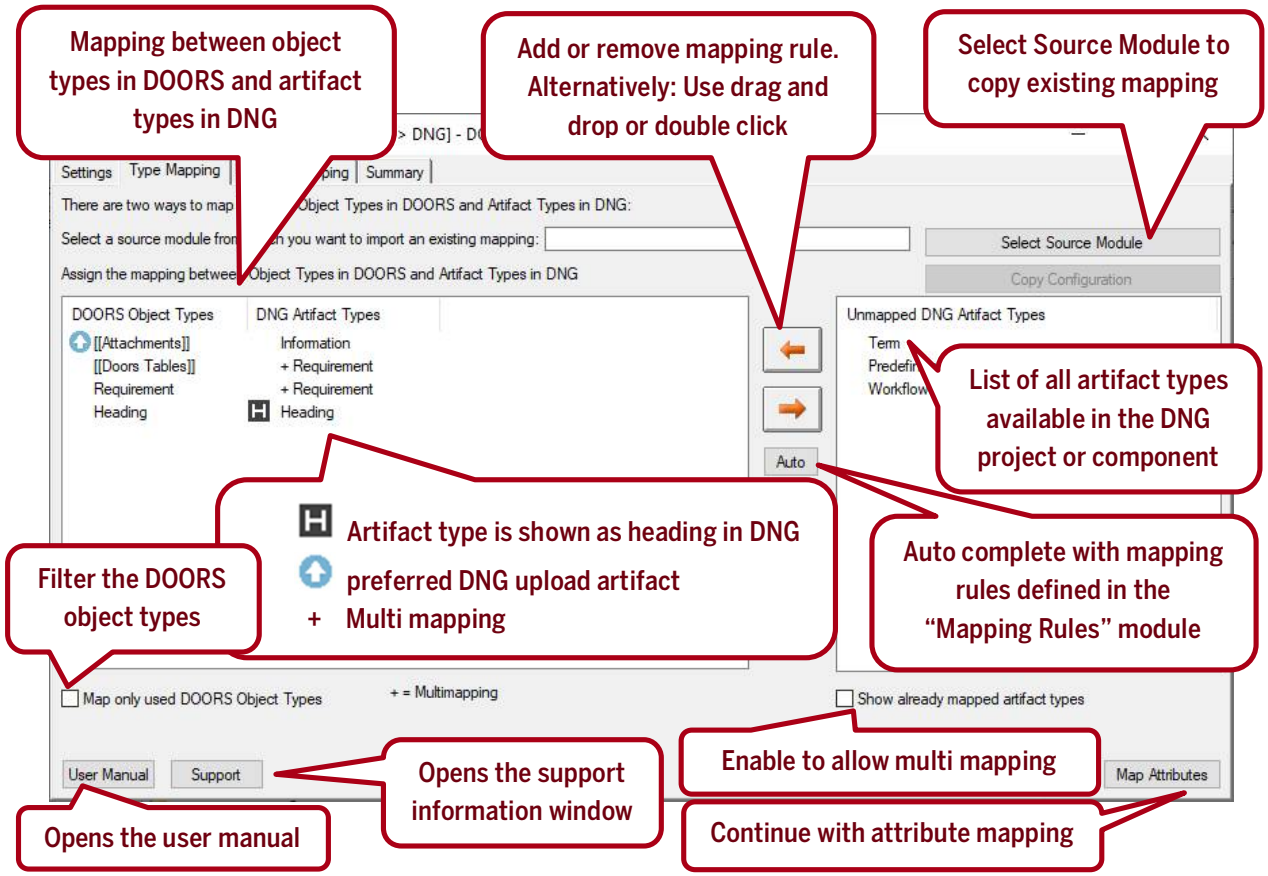
2.2.2 Type Mapping

In the second step each object type in DOORS must be mapped to a DNG artifact type. The column *DOORS object types* show all object types in DOORS (Values of the enumeration attribute selected as *object type* on the settings tab).

Additionally, the list may contain two entries named *[[Attachments]]* and *[[Doors Tables]]*. The DNG artifact type that is mapped to the *[[Attachments]]* entry will be used to upload files or OLE objects that are embedded in DOORS objects. DNG artifact types that have been configured as default type for file uploads (the corresponding artifact role is set in the component settings) are shown with an arrow-icon. The DNG artifact type that is mapped to the *[[Doors Tables]]* entry will be used for DOORS tables which are migrated as a single DNG artifact containing a HTML Table.

IMPORTANT NOTE:

A DNG artifact type can be assigned to several DOORS object types. In this case the same attribute mapping rules are used. That means that in the next step *Attribute Mapping* there will be only one tab shown for all of them.
To allow this, please check *Show already mapped artifact types*.



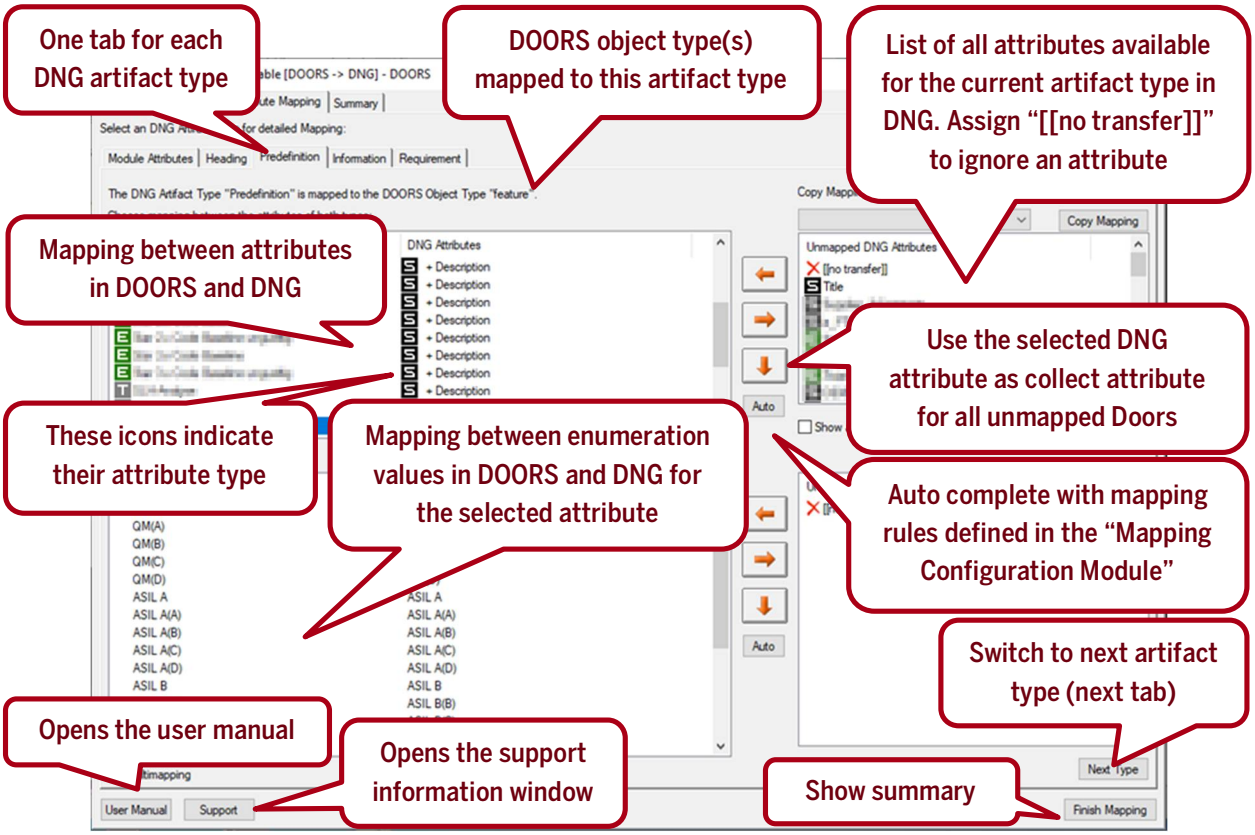
If you want to reuse existing mappings from another module, this is possible. To do this, click on the *Select Source Module* button and select the corresponding module in the window that opens. To copy the mapping from the selected module to the current module click on the *Copy Configuration* button.

IMPORTANT NOTE:
Note that when copying, the type and the attribute mapping will be copied.
Note that when copying mappings from Doors modules that have been migrated to other DNG projects, copying only works when using the same DNG artifact types across projects (indicated by the URI in the Artifact Types overview).

The copying takes a moment as soon as the copying is finished you get a hint which you confirm with OK. If there is already an existing mapping in the current module, it will be lost.

2.2.3 Attribute Mapping

In the third step the attribute mapping must be configured for each mapped DNG artifact type. This means that for each attribute of a DOORS object type an attribute of the corresponding DNG artifact type must be selected. However, there is also the possibility to copy an attribute mapping to one or all other artifact types.



List of Datatype Icons:

Icon	Datatype
B	Boolean
D	Date
E	Enumeration (Single
E+	Enumeration (Multi Value)
F	Float
I	Integer
R	Real
S	String
T	Text

List of Function Icons:

Icon	Function
✓	Enumeration value is already assigned
✗	Attribute will not be transferred

It is possible to ignore attributes (select *[[no transfer]]*) or to merge several DOORS attributes into a single DNG attribute.

If there is an attribute in the module that has no values, this is marked in the attribute mapping with *[[no values]]* after the corresponding attribute name. These empty attributes are automatically mapped to *[[no transfer]]*. If you want to migrate these attributes, anyway, adjust the mapping yourself.

To merge several DOORS attributes into a single DNG attribute the same DNG attribute can be assigned to several DOORS attributes. To allow this please check *Show already mapped values*. If a DNG attribute is mapped multiple times it will be marked with a "+" in the attribute mapping list.

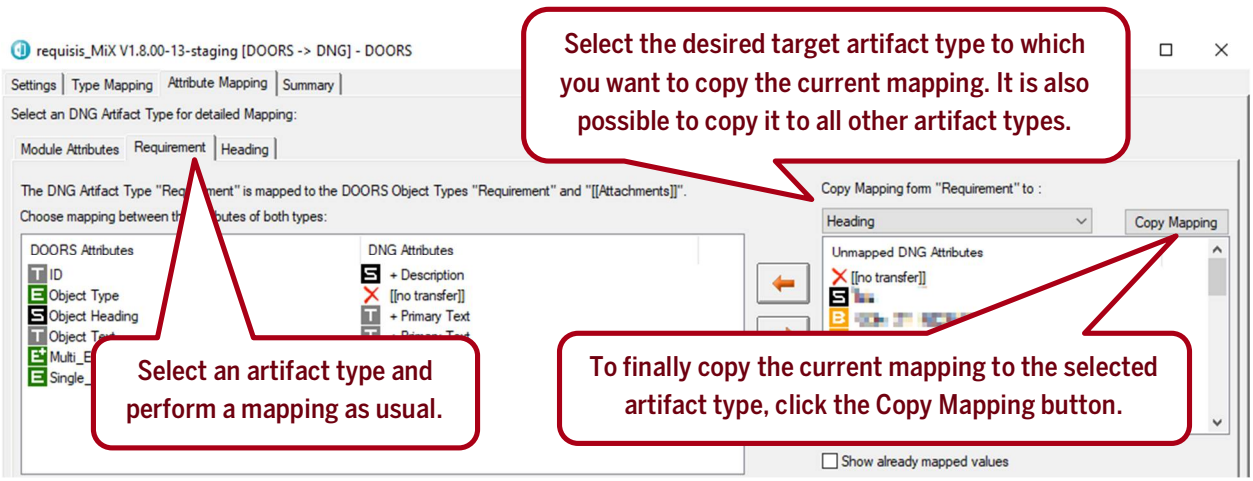
The button allows you to collect all previously unmapped Doors attributes into one DNG attribute. To do this, click the corresponding attribute name in the *Unmapped DNG Attributes* list and then click the button. Please also pay attention to the data type compatibility. Attributes with the String data type are particularly suitable for collecting attributes.

To calculate the completeness of mapping, please click on *Finish Mapping* or change to tab *Summary*.

This is also required to update the mapping progress that is used by the Migration Manager.

Copy Artifact Type Mappings

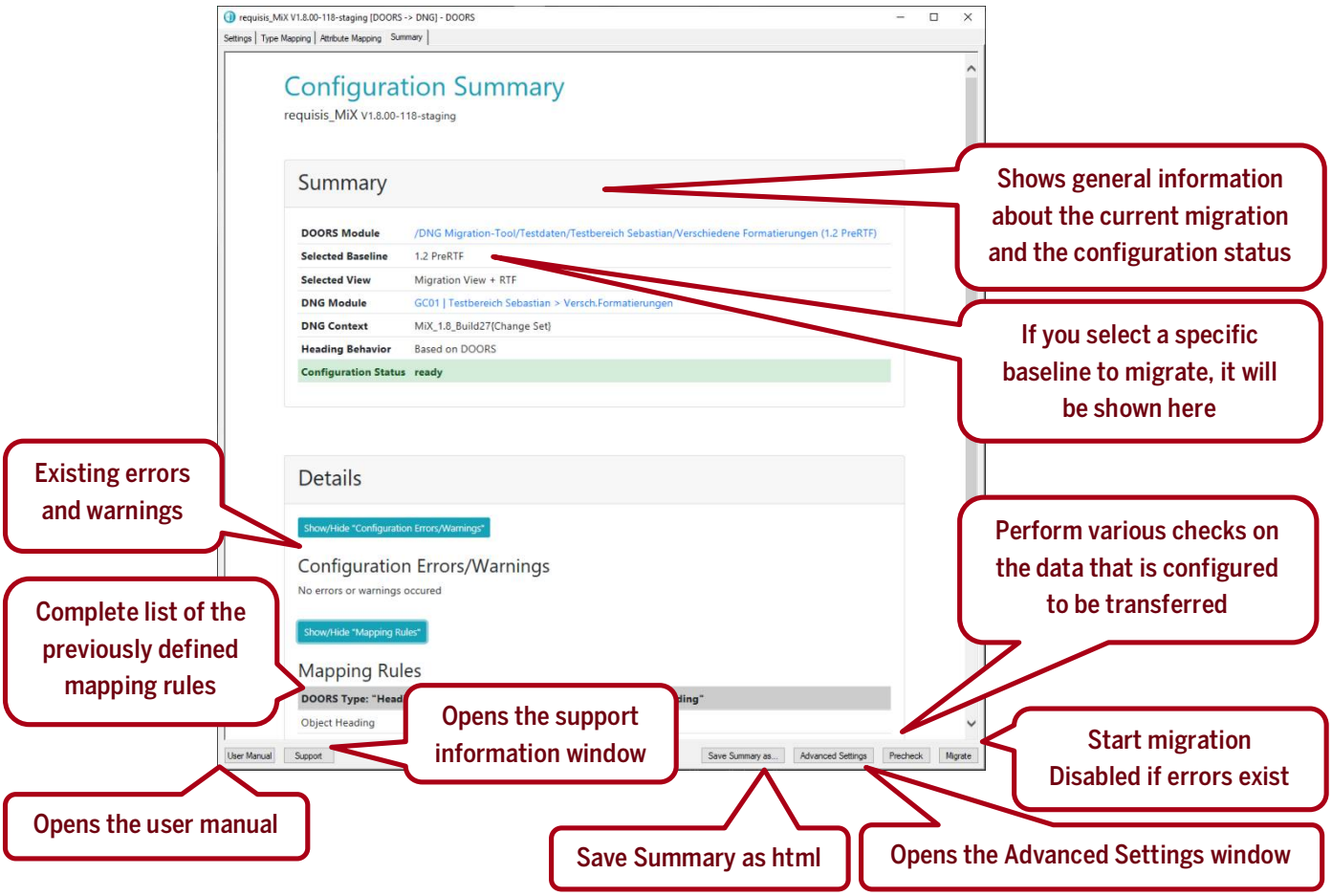
It is possible to copy a current attribute mapping of an artifact type to any other artifact type or even to all other artifact types. You can find this function in the upper right corner of the attribute mapping.



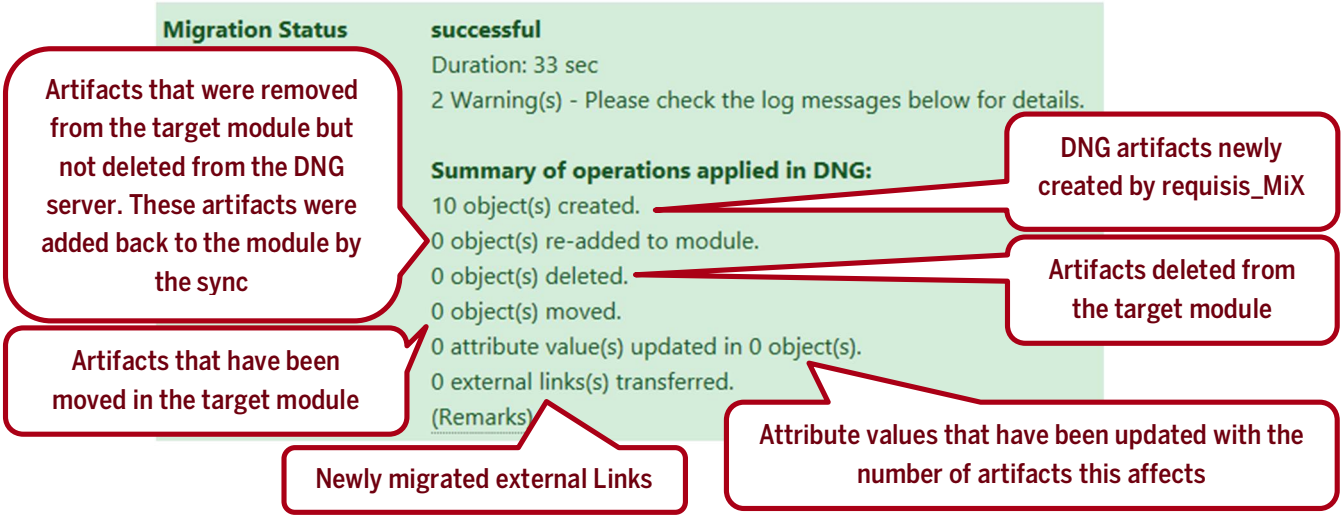
The mapping you want to copy does not have to be complete. The copy operation replaces all previously mapped attributes in the target artifact types. If there are attributes or enumeration values, they do not exist in the target artifact type, the mapping for these attributes or values remains empty.

2.2.4 Summary

After completing the *Type Mapping* and *Attribute Mapping* the *Summary* of the migration task and the relevant settings is shown. Also, further information, existing warnings or errors regarding the migration process are displayed. If no warnings/errors have been found by the tool, the user can start the migration process by clicking on the *Migrate* button.



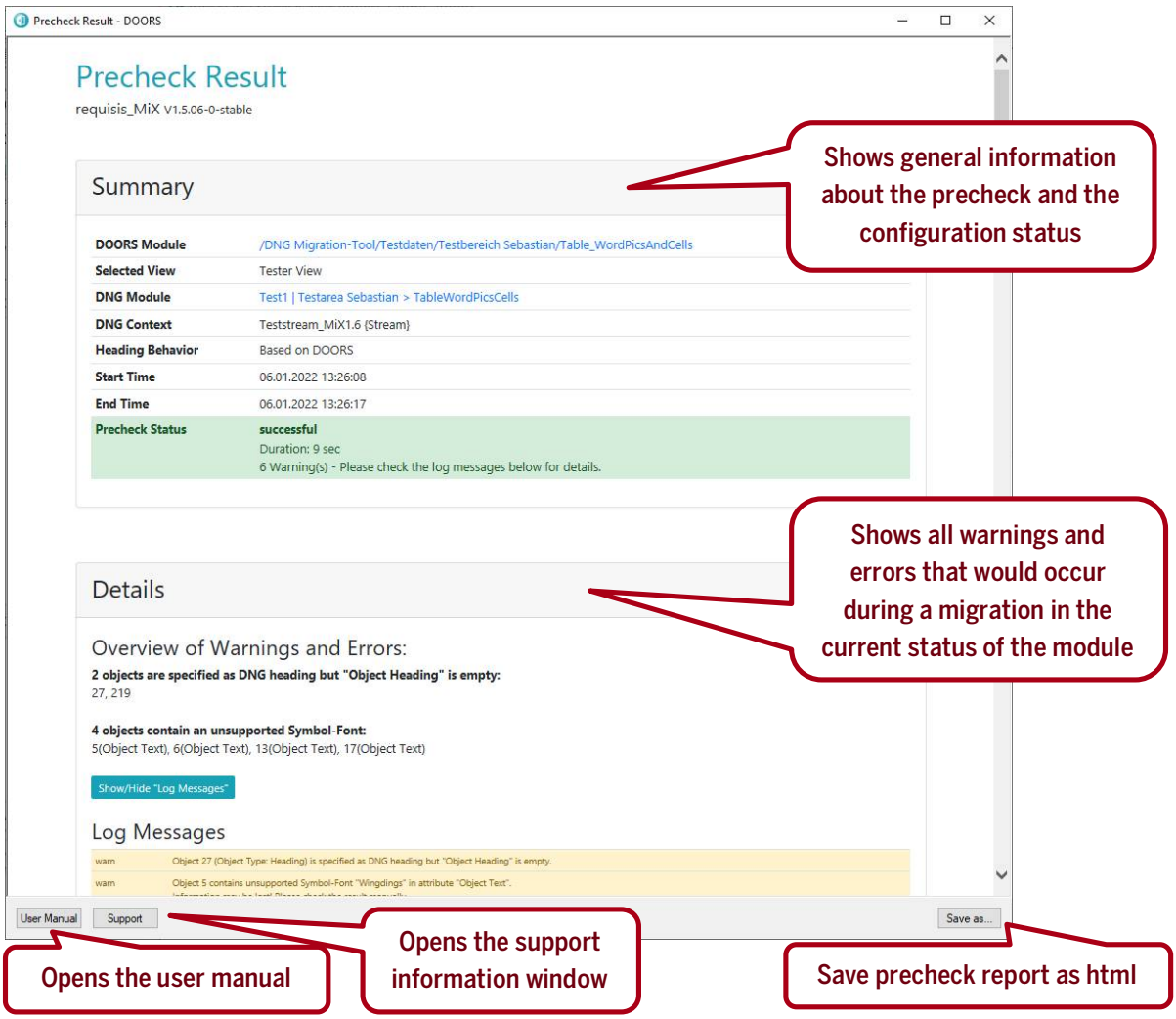
After a successful migration, you can view the *Summary of operations applied in DNG* in the Migration Status field. This lists the various operations performed by *requisis_MiX* in the DNG target module.



Re-add artifacts removed from the module is performed only in the update settings *Complete synchronization* and *Update attribute values and add new artifacts*.

2.2.5 Precheck

Before starting the migration, it is strongly recommended to run a precheck. The precheck runs various tests (like in the actual migration) and provides a summary of all detected warnings and errors. No data will be transferred or altered. The summary of the precheck can be saved to an HTML-file for documentation or communication with the support or the author.



Possible warnings after the precheck

When you map an empty DOORS attribute to the DNG title attribute, the following warning appears:

(Object Type: "doorsType") the attribute <yourEmptyAttribute> mapped to DNG title attribute has empty value but is not allowed to be empty.

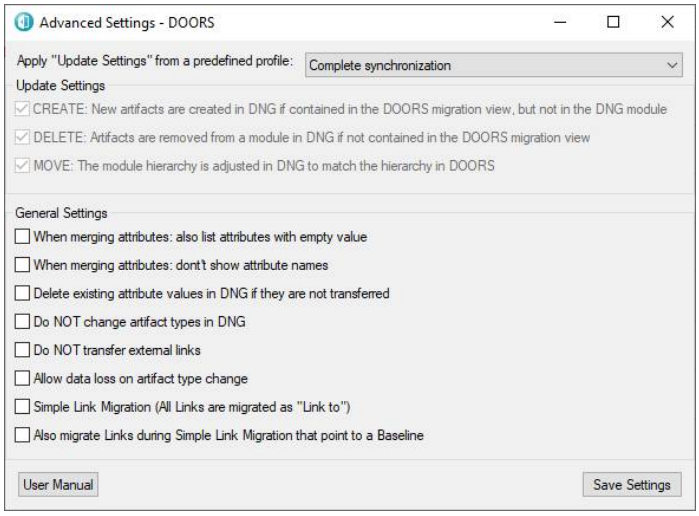
If you have mapped multiple DOORS attributes to the DNG Title attribute, just remove the mapping for the empty DOORS attribute mentioned in the warning. If you have only mapped one DOORS attribute to the DNG Title attribute, fill the DOORS attribute or adjust the mapping to a filled DOORS attribute.

2.2.6 Advanced Settings

In the *Advanced Settings* dialog, the behavior of *requisis_MiX* can be adapted to your own migration process. The menu is divided into the sections *Update Settings* and *General Settings*.

Update Settings

In this area there are options for the update mechanism. With the dropdown menu you can choose from predefined profiles for supported scenarios. The individual options are described below.



Predefined profiles:

- *Complete Synchronization:* *requisis_MiX* creates new artifacts in the target module and deletes artifacts in the target module that don't exist in the source module. The hierarchy in target module is adapted to the hierarchy of the source module. The attribute values of the source module are transferred to the target module.
- *Update attribute values only*: *requisis_MiX* does not create or delete artifacts. There are no changes made to the hierarchy. Only the attribute values of the source module are transferred to the target module.
- *Update attribute values and add new artifacts*: *requisis_MiX* creates new artifacts in the target module but does not delete artifacts in the target module if they do not exist in the source module. There are no other changes made to the hierarchy in DNG, that means that artifacts are neither deleted nor moved.
- *Update attribute values and structure and add new artifacts*: *requisis_MiX* creates new artifacts in the target module and updates all attribute values in existing artifacts in the target module. The hierarchy of the source module is transferred to the target module, but no artifacts that do not exist in the source module are deleted in the target module.

CREATE:

When **enabled**: New artifacts are created in the DNG module, if necessary.

If **disabled**: No new artifacts will be created in DNG.

DELETE:

When **enabled**: Artifacts are removed from the DNG module if they are not present in the DOORS module. The artifacts will not be deleted from the database.

If **disabled**: Artifacts created in DNG itself or transferred with a previous synchronization will not be deleted.

MOVE:

If **enabled**: If the hierarchy in the DNG module differs from that in the DOORS module, it is adjusted.

If **disabled**: The hierarchy in DNG will never be changed, even if there are differences between the DOORS and DNG module.

General Settings

The options in this section can be selected independently of the selected profile in the *Update Settings* section.

> *When merging attributes: also list attributes with empty value:*

If several DOORS attribute are mapped to the same DNG attribute, the values are merged: For each attribute value an entry "**<Attribute Name>**: **<Attribute Value>**" is added. This option decides what happens, if an object has no value for one of the DOORS attributes. By default, no entry at all is added in this case.

If the option is **enabled**, an entry "**<Attribute Name>**:" is added instead.

> *When merging attributes: don't show attribute names:*

If several DOORS attribute are mapped to the same DNG attribute, the values are merged: For each attribute value an entry "**<Attribute Name>**: **<Attribute Value>**" is added. When this option is active, no more Doors attribute names are displayed for merged attributes in the DNG attribute.

> *Delete attribute Values if they are not transferred:*

If **enabled**: If an attribute is either set to *[[no transfer]]* or not included in the migration view, the attribute value in DNG will be set to empty.

If **disabled**: If an attribute is either set to *[[no transfer]]* or not contained in the mapping rules, the attribute value in DNG is left unchanged.

> *Do NOT change artifact types in DNG:*

If **enabled**: The artifact type of DNG artifacts will not be changed if the corresponding type in DOORS is different. Only the attribute values for which a valid mapping exists are transferred.

If **disabled**: The artifact type of DNG artifacts will be changed to the corresponding type that is configured in the mapping if the DNG artifact type is different.

> *Do NOT transfer external links:*

If **enabled**: External Links will be ignored and not migrated.

When **disabled**: All external links will be migrated from DOORS to DNG. In DNG they will be handled as external links and automatically mapped with the link type that is set to the variable “MIX_EXTERNAL_LINK_TYPE_ALIAS” in the settings.inc file. Default setting is “Link to”. External links entering DOORS are converted to outgoing external links in DNG.

> *Allow data loss on artifact type change:*

If **enabled**: When changing the artifact type, you accept a possible loss of data in the artifact concerned. In such a case you will get a hint which attribute in the corresponding artifact is affected.

If **disabled**: When changing the artifact type, existing data can be lost. In such a case you will receive an error and the migration will stop. Undo type change or check this checkbox.

> *Simple Link Migration (All Links are migrated as “Link to”):*

Outgoing and incoming links of the module are migrated to the DNG link type "Link to".

> *Also migrate Links during Simple Link Migration that point to a Baseline:*

Option works only with Simple Link Migration active. Links are also migrated to baselines.

Things to keep in mind about the behavior when updating on subsequent synchronizations

> If an artifact in the DNG module was created by a previous migration, the artifact will be re-used, and the attribute values are updated if necessary. Attribute values that are not configured to be transferred remain in DNG as they are.
> If an artifact in the DNG module was created by a previous migration and then removed from the DNG module by the user, the base artifact (if still existing) will be re-added to the module.
> If you use a filtered view, check the *Show Ancestors* checkbox when you save the view in Doors. Please note that new objects are created as the first child object if there is only the parent object as a reference point in the source module due to the set filter.

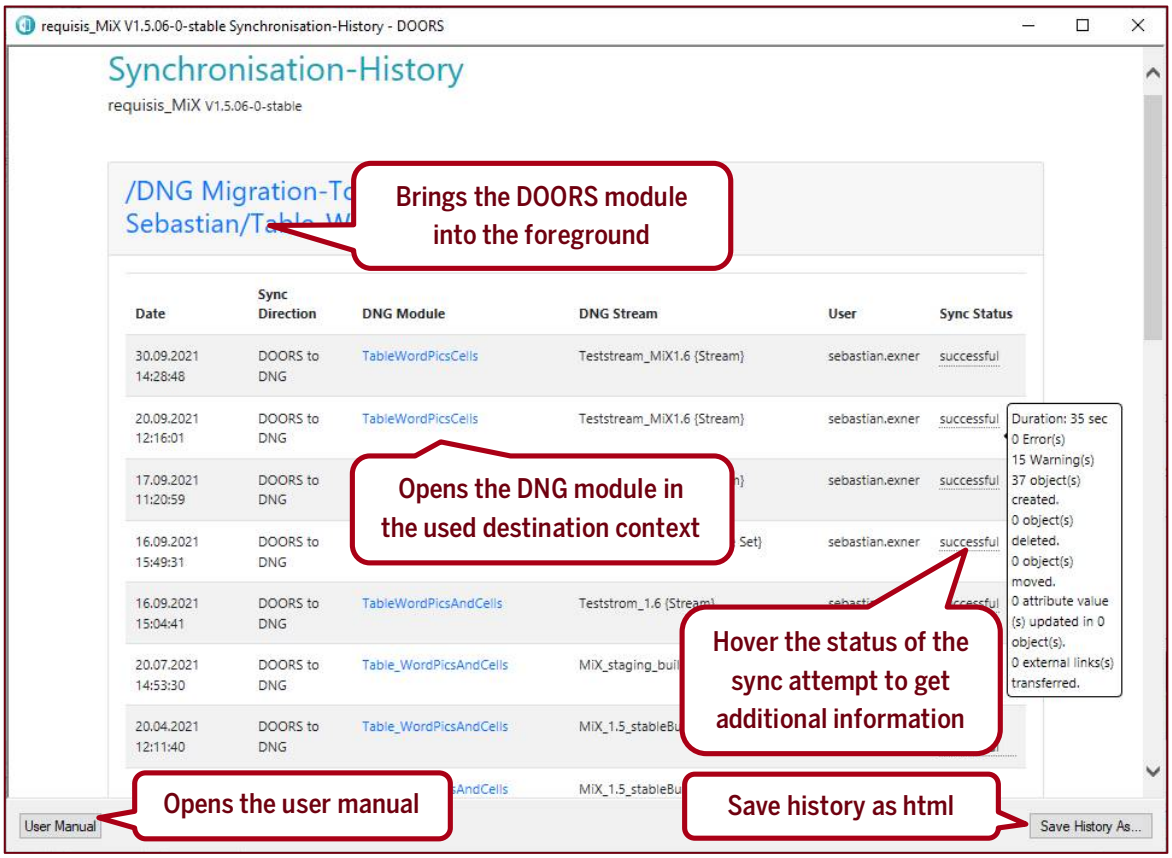
2.2.7 Documentation of the migration processes

When the logging module is configured, each migration attempt is documented in the logging module. One object in the module corresponds to a migration attempt. The following list shows all columns of the logging module and their functionality.

- Module ID: Module ID of the involved DOORS module
- Module Full Name: Path to the involved DOORS module
- DNG URL: URL of the DNG target module
- DNG Module Name: Name of the involved DNG module
- DNG Stream Name, Name of the involved DNG stream
- Start Time of Sync: Start time and date of the migration attempt
- End Time of Sync: Time and date the migration attempt was completed or canceled
- User: DOORS username
- Sync Direction: Direction of this migration attempt
- Sync Result: Result and a short statistic of this migration attempt
- Logfile: Summary of the migration attempt will be attached here as html file

To access this migration history, you can open the logging module directly and review the migration attempts there or you can use the *Synchronization History* function from the module where you only see the attempts for that specific module.

You can open the *Synchronization History* via the menu item: *REQUISIS -> requisis_MiX -> Synchronisation History*



Attributes used by requisis_MiX

Here you can find a list of attributes created and managed by requisis_MiX. You can find these attributes in every module in which requisis_MiX was started once. Do not edit these attributes manually requisis_MiX needs them to store various information and to function correctly.

- MIX_Configuration: the requisis_MiX settings (configuration) for this module
- MIX_DNG_Artifact_Check_AbsNo: Absolute number of the object in the DC module.
- MIX_DND_Artifact_ID: Artefact ID at the current connected DNG Server.
- MIX_DNG_Artifact_Structure_URI: URI to determine the position of the target artifact in a module.
- MIX_DNG_Artifact_URI: URI of the target artifact on the DNG server
- MiX_doorsUserID: Last migration of this module was performed by this DOORS user.
- MIX_Mapping: Information about the mapped data types from DNG.
- MIX_MigrationStatus: Migration status of this module, is also displayed in Migration Manager.
- MIX_Module_Version: Specifies which attributes are used to store information.

2.3 The Migration Manager

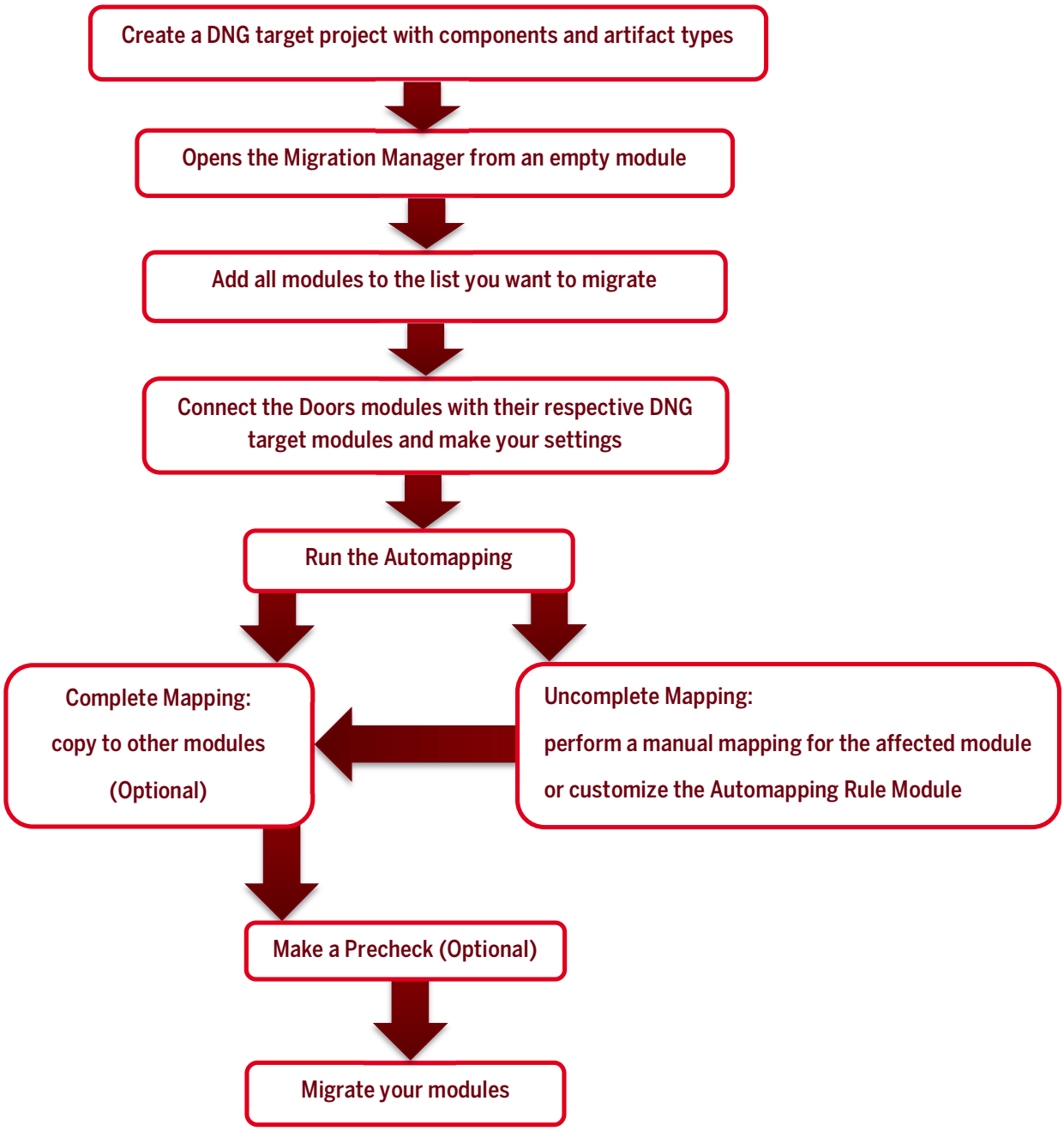
The Migration Manager allows you to prepare and migrate large amounts of modules. You can start the Migtation Manager via the DOORS menu entry *REQUISIS* -> *requisis_MiX* -> *Migration Manager* from an empty module. The tool creates new attributes needed to run requisis_MiX. A description of every attribute can be found in the chapter 2.1.4.

2.3.1 Before you start

These things should be done before you start migrating multiple modules with the migration manager.

- Create a DNG target project or component with all desired artifact types and attributes. See also chapter 2.1.1
- Create and adapt a requisis_MiX Mapping Rule Module for Automapping. See also chapter 3
- Create a log file folder for the documentation on your file system.
- Create a new, empty DOORS module from which you want to start the Migration Manager.

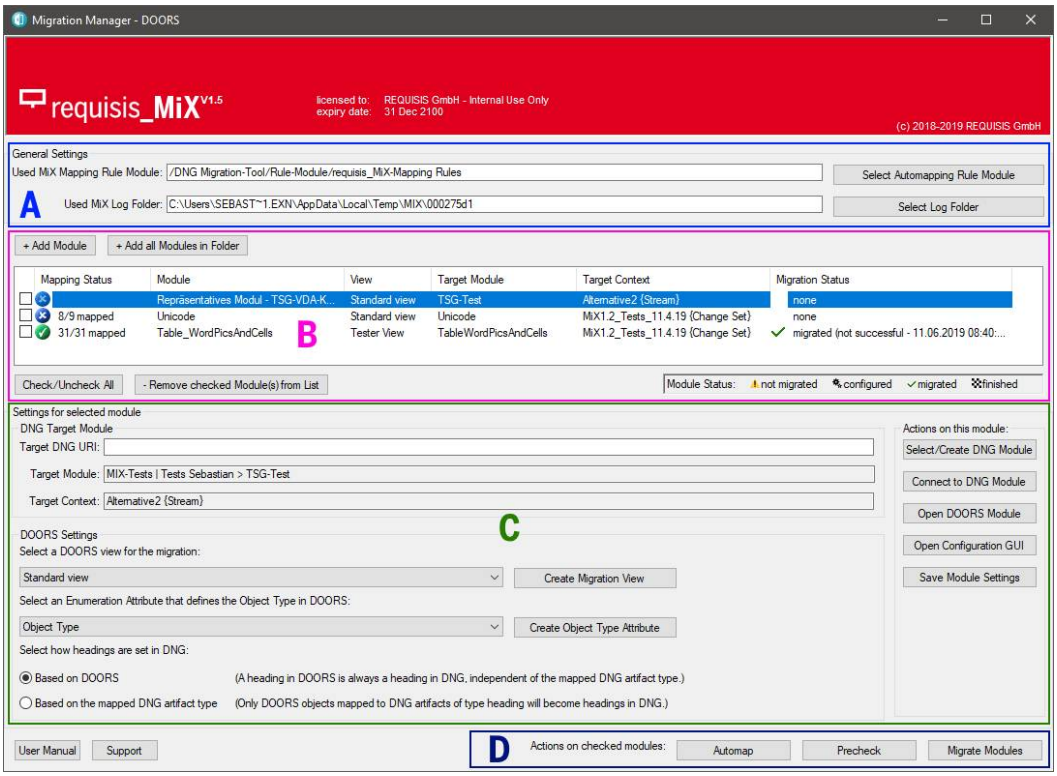
2.3.2 General Workflow



2.3.3 GUI overview

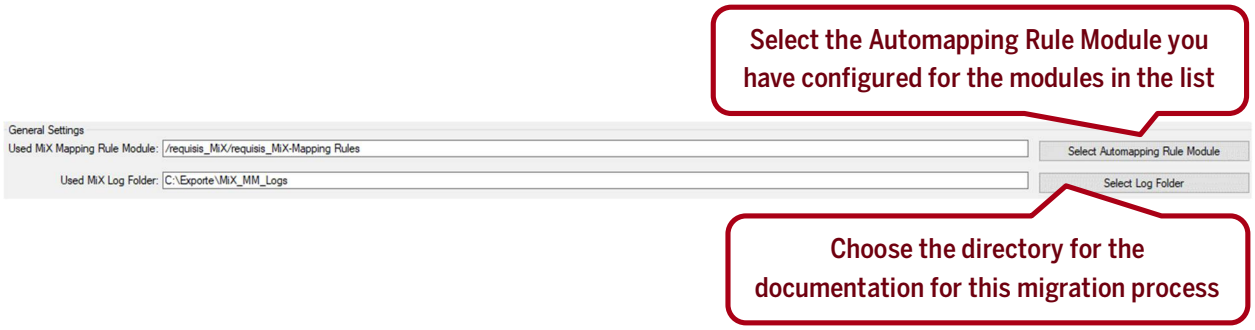
The GUI of the Migration Manager is divided into four sections:

- General Settings (A)
- Module list (B)
- Settings for the selected module (C)
- Actions for the selected module (C)
- Actions on checked modules (D)



2.3.4 General Settings (A)

These general settings apply to all modules in the list (B). The path to the Automapping Rule Module and the path to the folder for the log files need only be set once when setting up the migration manager for the corresponding module from which the Migration Manger was started.



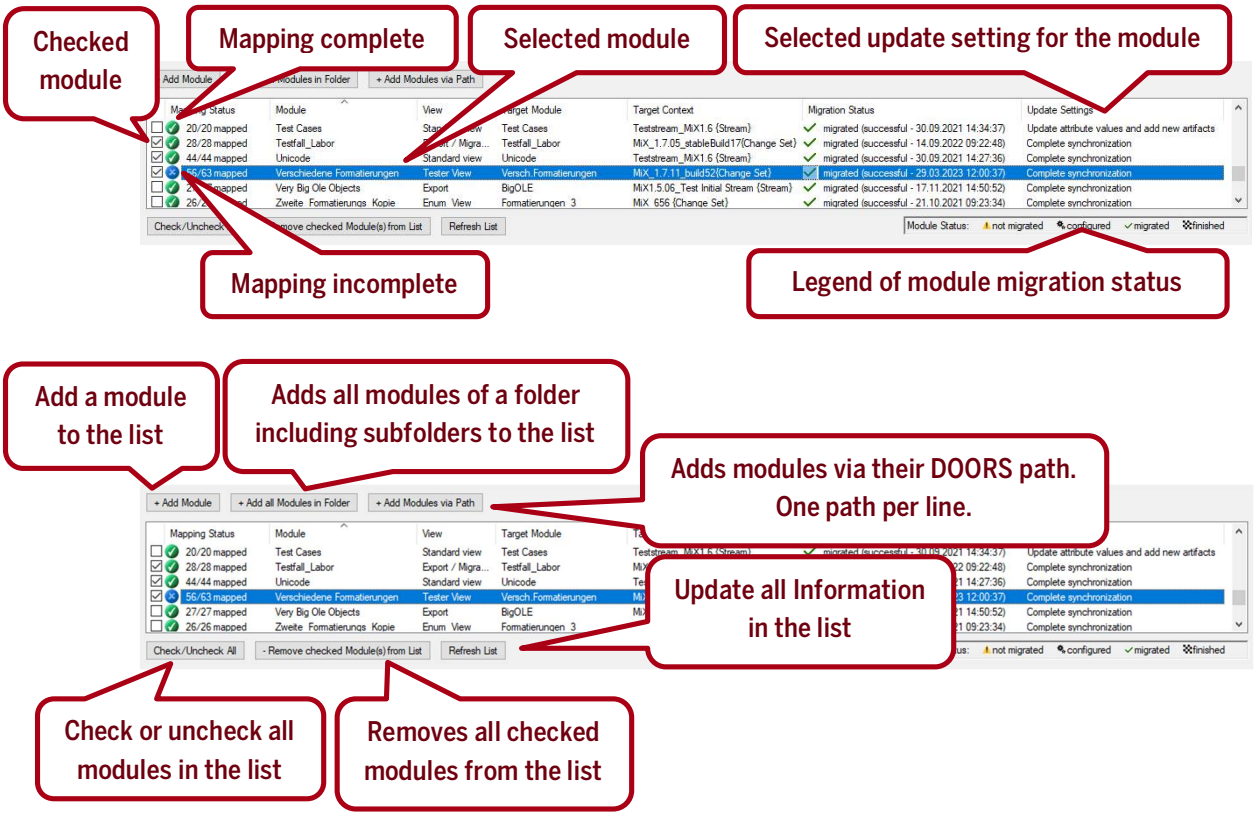
2.3.5 Module list (B)

In this list you see all modules that are added to Migration Manager. To make settings for a specific module, simply click on the appropriate line in the list and adjust the necessary settings for the module below the list and apply your changes by clicking the *Save Module Settings* button. The icons in the Mapping Status column indicate at which module the attribute and type mapping are already complete and where not yet.

IMPORTANT NOTE:

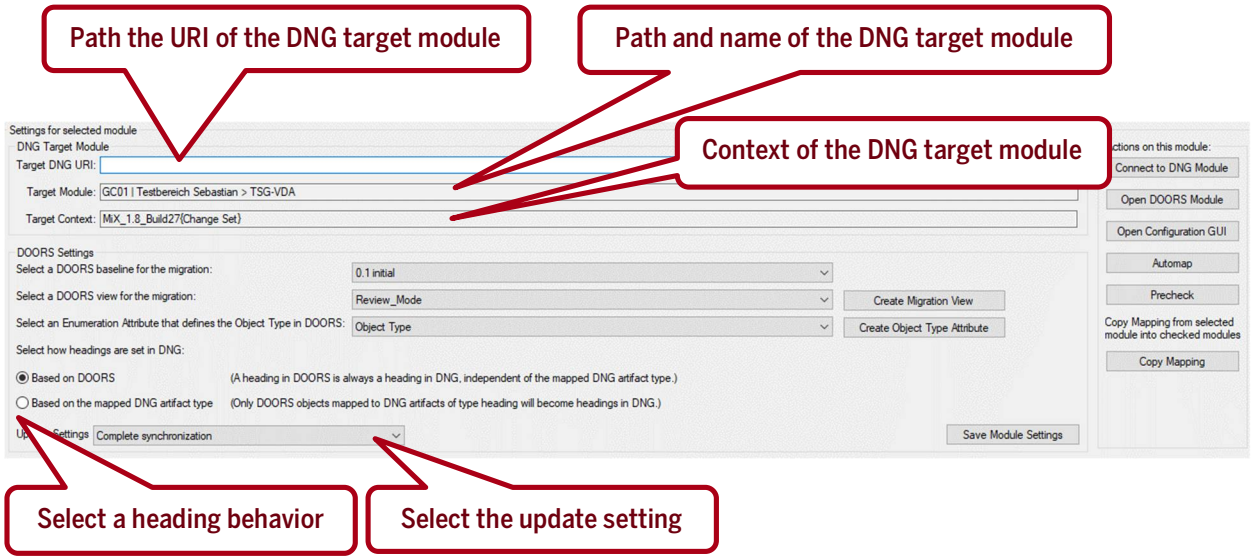
Modules without complete mapping cannot be migrated.

To update the mapping status, you can use *Refresh list*. This will collect the mapping status of all modules. But this will only work if you clicked on "Finish Mapping" in the mapping user interface after changing the mapping. If you are unsure you can use *Automap* which will then collect the current type system of DNG and recheck the mapping and for open mappings will try to automap.



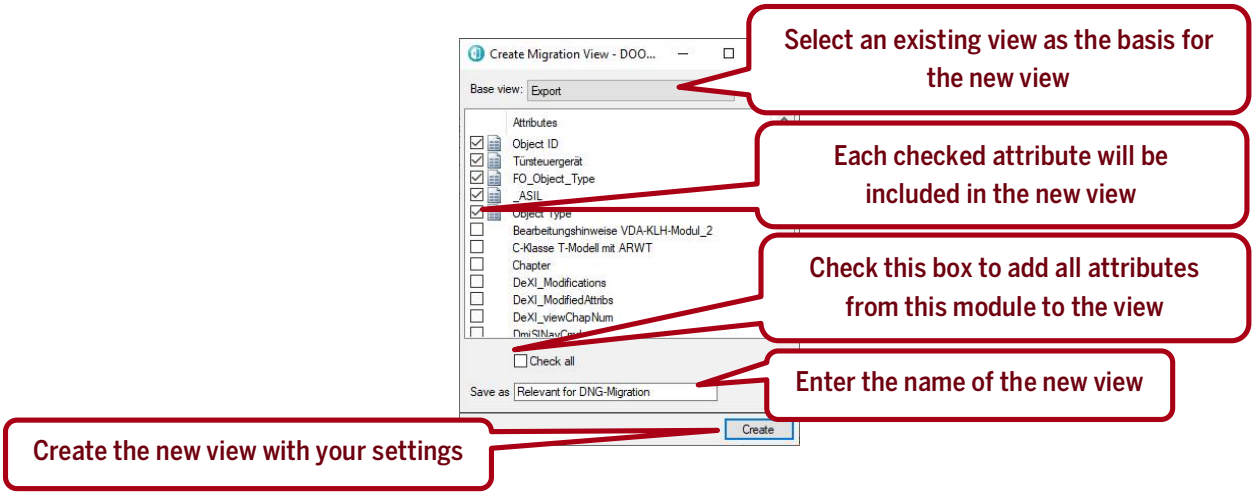
2.3.6 Settings for the selected module (C)

Make settings for the currently selected module in the list above which is necessary for the module to be migrated.



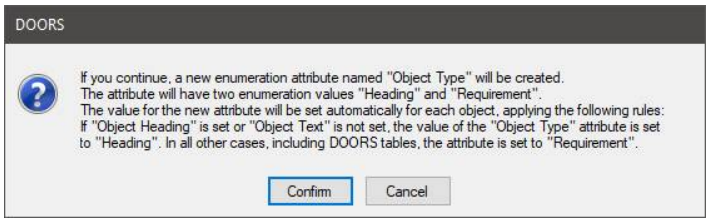
> First, you must assign the DOORS source module to a DNG target module. Paste the URI of your target DNG module (collected using "share link to artifact" function in DNG) to the *Target DNG URI* line and click on the *Connect to DNG Module* button. Check your target in the fields *Target Module* and *Target Context*. If the module or context changes a massage-box appears.

> Second, select a DOORS view that contains all the attributes to be migrated. If such a view does not exist in the module, you can create a corresponding view with the button *Create Migration View*.



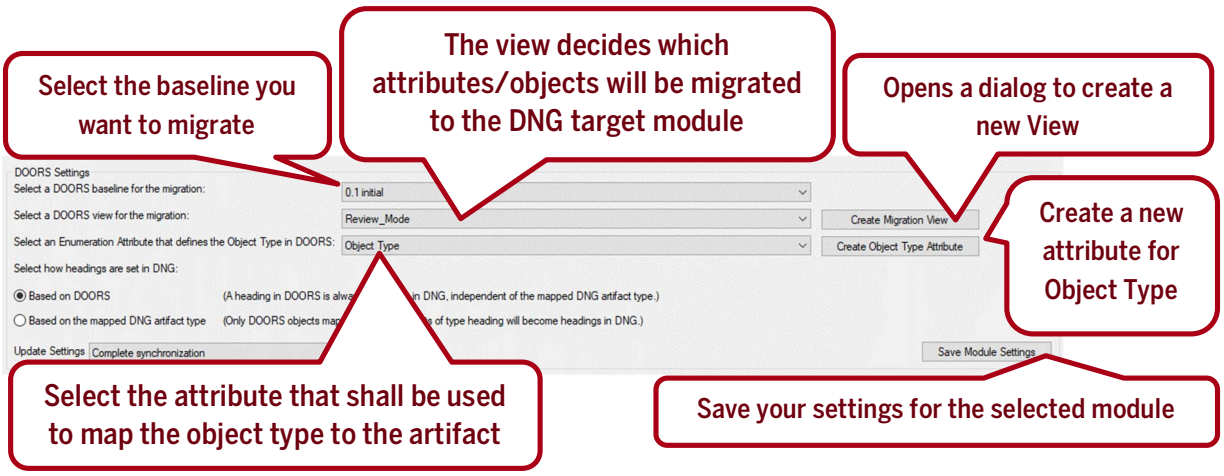
The dialog box for creating a new view in the selected module, a newly created view is automatically taken over as migration view for the module. To add a filter to the new view, open the module (button at the right side), create your filter and be sure to activate the *Show ancesters* checkbox and save the view.

> Third, select the enumeration attribute that distinguishes object types in DOORS. If no corresponding enumeration attribute exists in the module, you can use the button *Create Object Type Attribute* to create this attribute. If you decide to create a new attribute here, all heading objects will be set to heading and all others to requirement.



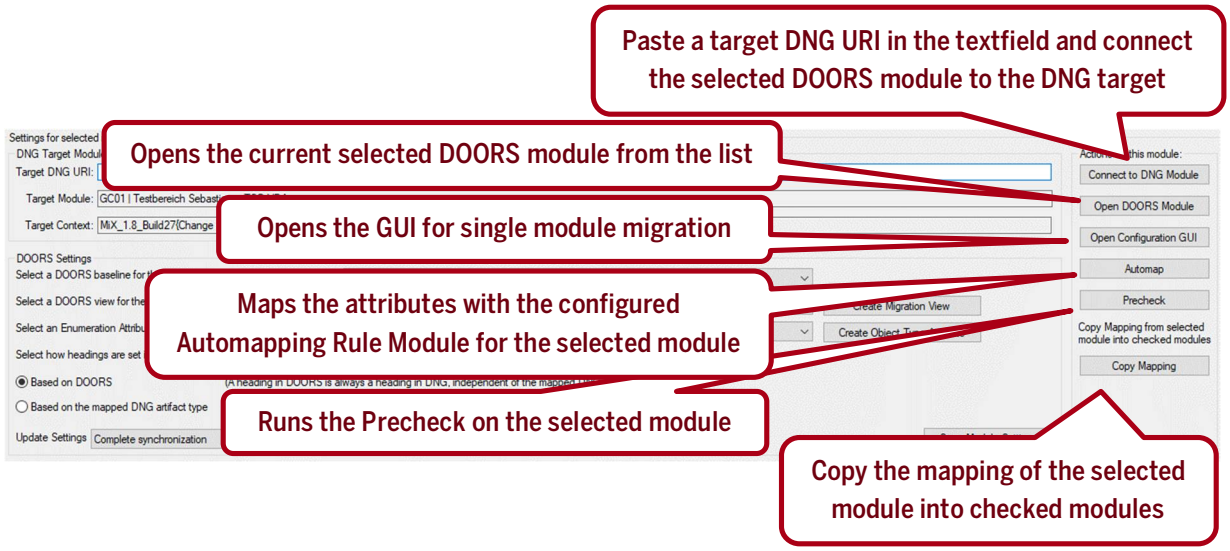
The dialog for creating an Object Type Attribute briefly explains how the two values of the attribute are set. If you need additional attribute values to distinguish your object in the module, you can customize the newly created attribute as usual in DOORS.

> Select the heading behavior and save the settings with the button *Save Module Settings* at the right side. For further information on the topic "Heading Behavior" please refer to chapter *2.1.1 Preparation of the Target DNG Module*.
> In the *Update Settings* drop-down menu, you can set the update behavior. The possible options correspond to the options in the advanced settings as described in chapter *2.2.6 Advanced Settings*. The currently selected option for each module can also be seen in the *Update Settings* column in the module list.



2.3.7 Actions for the selected module (C)

While you make the settings for the selected module, you can also open the DOORS module with the *Open DOORS Module* button if you want to work in it. It is also possible to check settings for the current selected module with the button *Open Configuation GUI*. This opens the GUI for single module migration and is possible to make or check individual Type or Attribute Mappings.



To update the *Mapping status* column, an Automapping must be carried out.

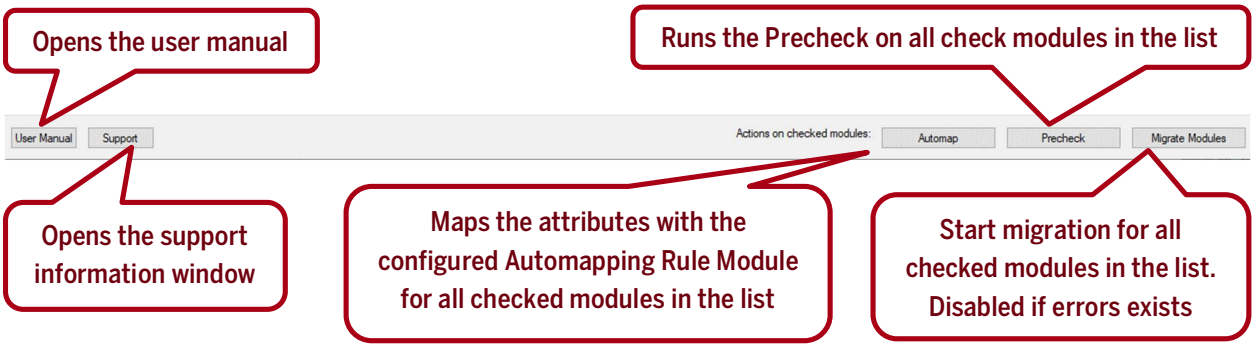
The *Copy Mapping* button copies the current mapping of the selected module to all modules marked with a checkbox in the module list. Already existing mappings in these modules will be overwritten. Note that it is possible to copy incomplete mappings. Copying the mapping is primarily useful for modules with the same DNG target component. After copying, *Automapping* is carried out automatically. For more information on copying the mapping, see chapter 2.2.2 Type Mapping.

2.3.8 Actions on checked modules (D)

The three buttons to the right in the footer of the Migration Manager refer to all the checked modules of the list. The button *Automap* starts the automapping feature and uses the Automapping Rule Module which is specified in the general settings of this Migration Manager.

The button *Precheck* runs the precheck for all checked modules in the list. At the end of the Precheck, a window opens with the results for each module tested. For further information on the Precheck please read chapter 2.2.5.

The *Migrate Modules* button starts the migration process for all checked modules in the list. It is greyed out until all checked modules have a complete mapping without any errors.



2.4 Link Migration from DOORS to DNG

The link migration is an optional step and can be carried out after a successful migration of a module. Only links whose sources and target objects has already been migrated to DNG can be migrated. The link migration GUI can be started via the DOORS menu entry *REQUISIS* -> *requisis_MiX* -> *Links* -> *DOORS->DNG*.

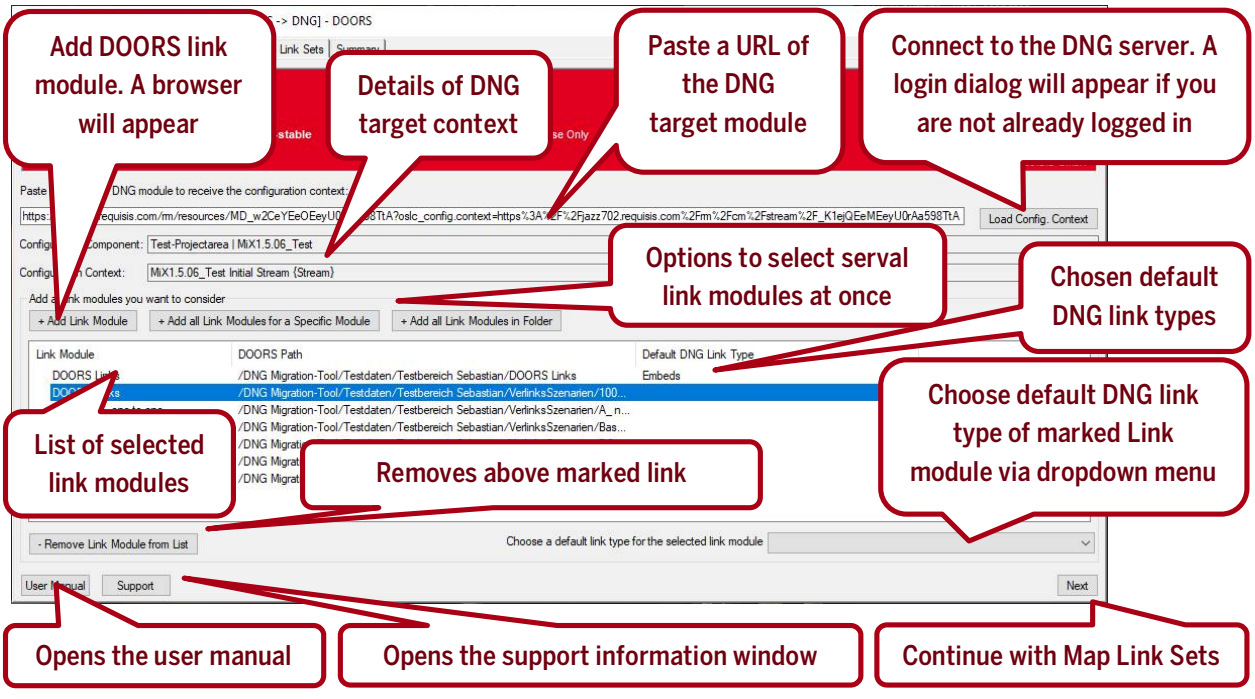
IMORTANT NOTE:

The *requisis_MiX* Link GUI can only be started from an empty Module or a formal Module that is already marked by *requisis_MiX* as "requisis_MiX Link Logging". If you start the requisis_MiX Link GUI from an empty module, it will automatically be converted to a "*requisis_MiX* Link Logging" module.

2.4.1 Select Link Modules and Global Configuration

After launching the *requisis_MiX* link GUI the *Select Configuration Context and Link Modules* page is shown. Here the user must set up:

- Paste a URL of a DNG module to select the linking context. If you have link targets in multiple components, the context must be a GC-Stream. Otherwise target artifacts will not found. Every module URL within the target DNG context can be used. It is not necessary to create a special link module in DNG.
- The DOORS link modules that includes the link sets that shall be transferred.
- Optional: Assigning a default DNG link type. The default link type is automatically set for each link set in the added link module. This can be changed individually in the "*Map link Sets*" tab for each link set.
- It is also possible to perform a multiple selection with shift or ctrl.



2.4.2 Simplify selection of link modules:

> The button *+Add all Link Modules for a Specific Module* opens a window where you can specify one or more paths to formal door modules. One path per line. *requisis_MiX* adds all link modules to the list used for links in this specified formal modules.

> The button *+Add all Link Modules in Folder* opens the DOORS database explorer to select an arbitrary folder. *requisis_MiX* will search this folder and all subfolders for link modules and add them to the list.

2.4.3 Map Link Sets

In the second step, each link set within the previous selected link modules can individually mapped to a DNG link type. If previously a default DNG link type was selected this default selection is visible but can be modified.

To increase the usability the following features are implemented:

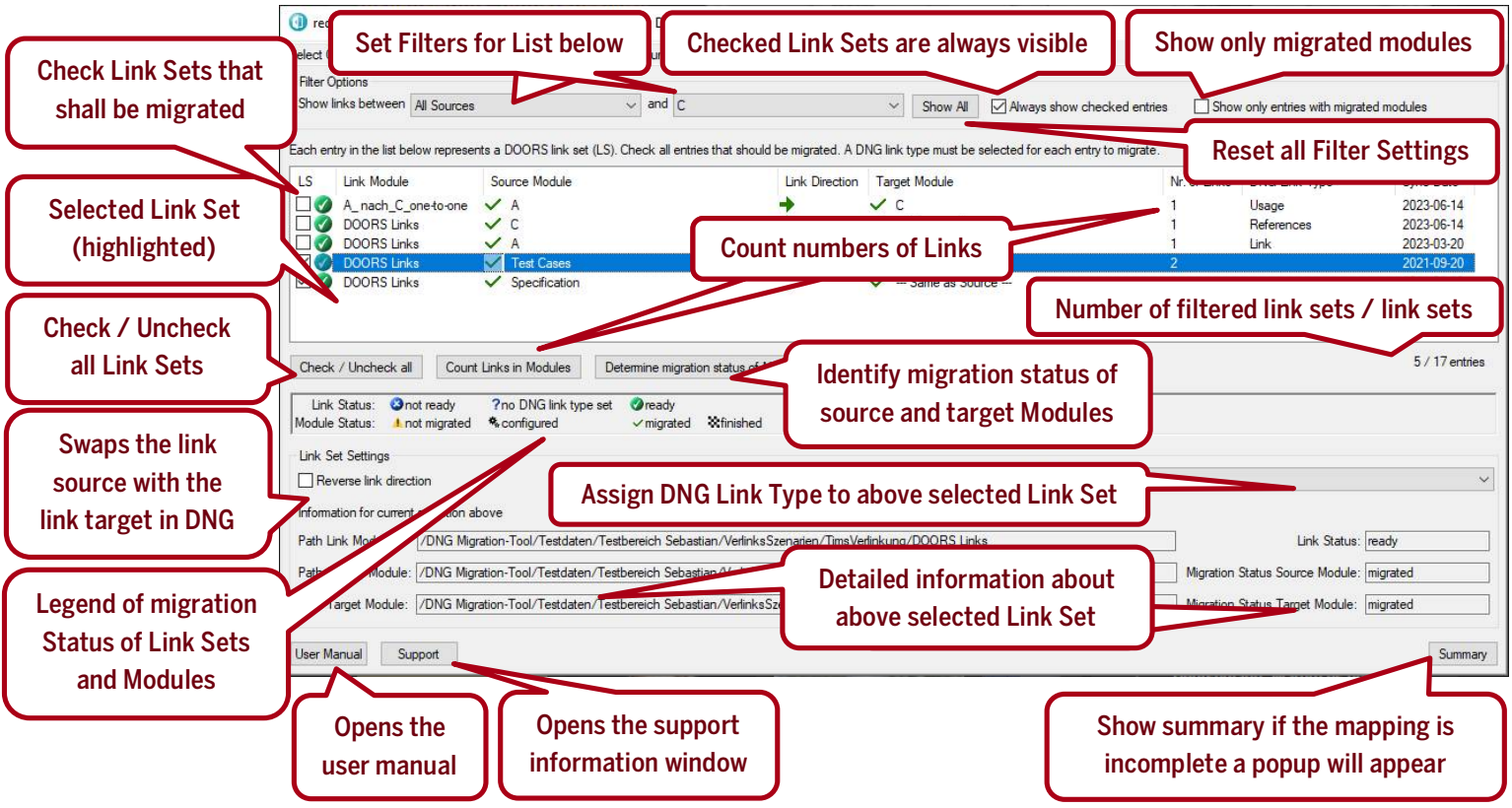
> Filter options.

> Each link set can be configured.

> Details of each link set are visible.

> Counting the links for each module will take a few minutes, depending on the size.

> Determine the migration status of source and target modules takes time according to the number of link modules.



Tip for migrating many link sets:

We recommend that you do not manage more than 50 link sets in one link migration module, otherwise the performance will drop massively.

If you want to migrate many link sets at once, we recommend the following procedure:

Deselect all entries
Define an appropriate filter
Check the filtered entries
Select the appropriate entries for migration.
Click the Summary button.

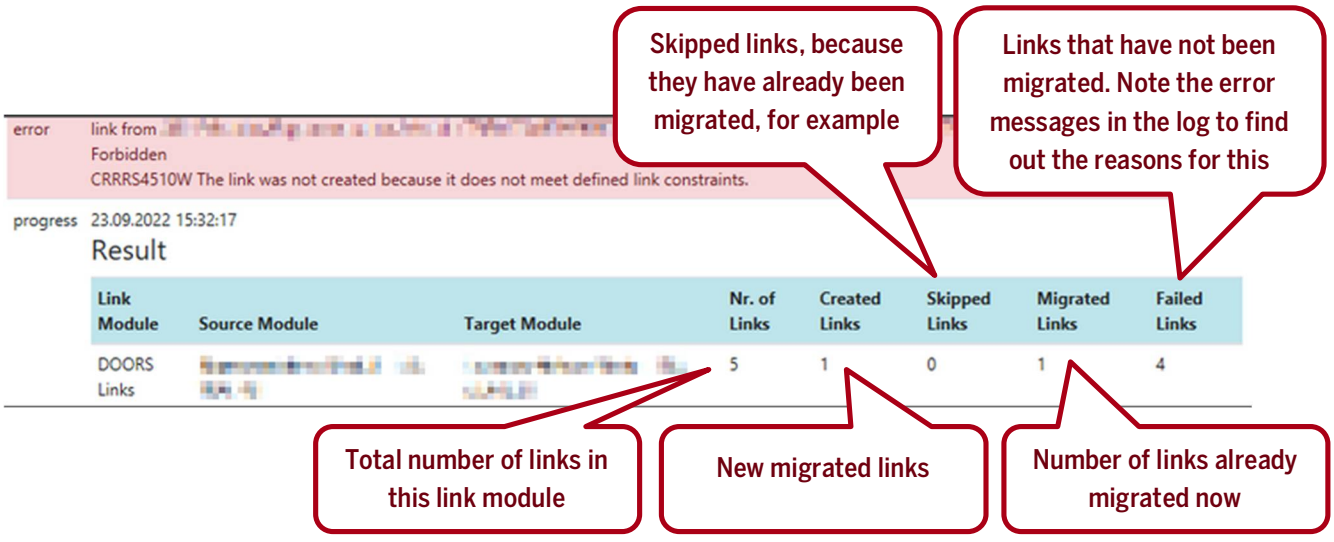
2.4.4 Summary

Within the third tab a summary of the configured link migration will be provided. For documentation purpose this summary can be exported as HTML.

Furthermore, the *Advanced Settings* dialog can be opened from here. The dialog is explained in the next chapter.

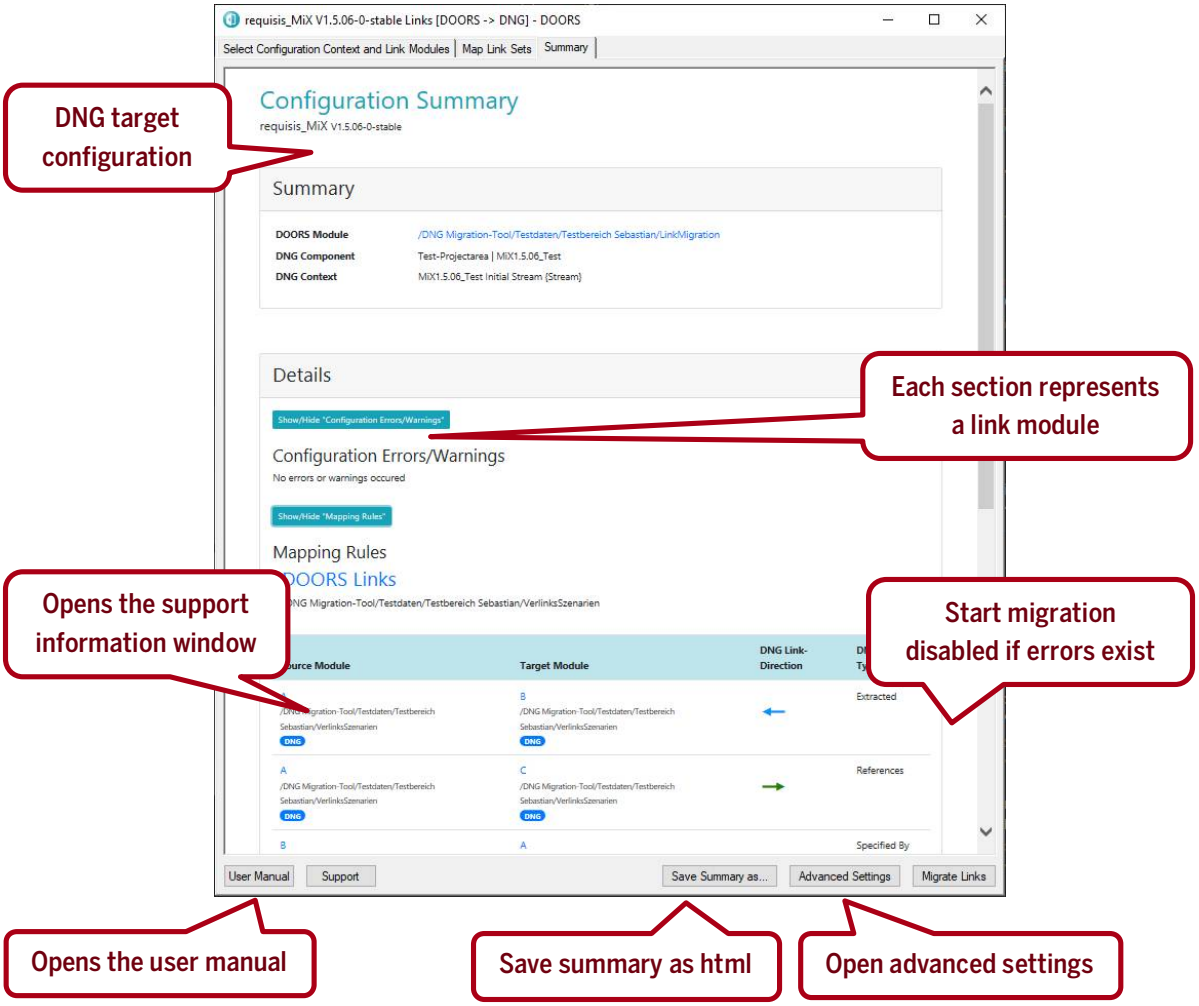
Log Messages

The *Log Messages* button shows you documentation of the steps performed by *requisis_MiX* during the link migration. The *Result* step shows you a detailed overview of the results of the link migration for every link module and the different statuses.



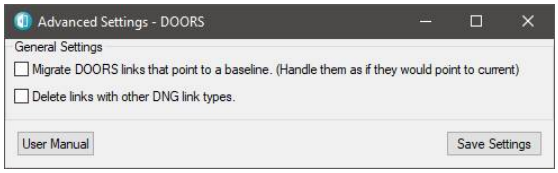
Mapping Rules

The *Mapping Rules* button shows you the mapping you configured for the DNG link types. You see a tabular representation for each Doors link module. In the columns you can see the source and target module of each mapped DNG link type. On the *DNG* button below the Doors path you will get to the corresponding migrated DNG module. You can also see the link direction. If you have changed the link direction, the arrow in the column shows from right to left and is blue instead of green.



2.4.5 Advanced Settings

The Advanced Settings can be open from the summary tab of the *requisis_MiX* link GUI.



> *Migrate DOORS links that point to a baseline.*

In DOORS it is possible to create links to baselines. This feature is not supported within DNG.

To handle this feature within the migration-process, these links can be migrated as normal links to the current Module. If this option is not chosen, links to baselines will be ignored.

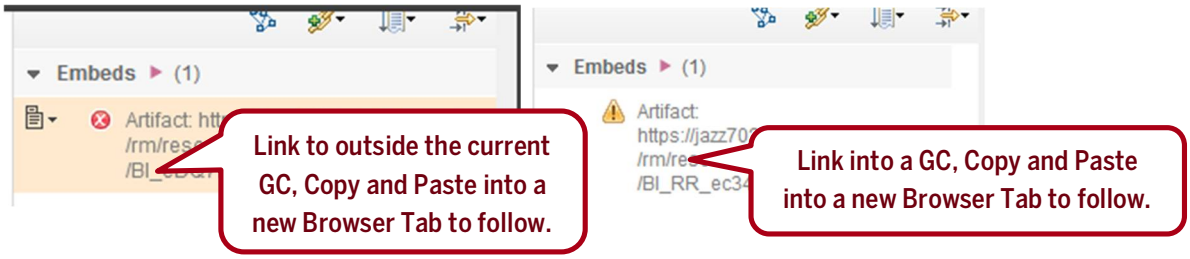
> *Delete existing links before creating new links.*

Existing links between source and destination artifacts are removed and replaced with a new link according to the current mapping configuration. Note, if you enable this option, the migration of the links will take significantly more time.

2.4.6 Link behavior in connection with Global Configuration

You can link within a Global Configuration in the same way as you are used to with *requisis_MiX*.

If you link a DNG project outside a Global Configuration to a DNG project, this is also possible with *requisis_MiX*, but the links created are not clickable. If you want to follow a link to the corresponding target project, copy the link to your clipboard and open a new browser tab.



If you add the configuration context of the project area to the Global Configuration, the link becomes clickable again.

2.4.7 List of possible warnings and errors in link migration summaries

Warnings

- *Could not find source artifact for link in DNG. Object has not been migrated <Object Identifier>*
  You must first migrate the source object of the link to DNG before you can migrate its links.
- *Target object with Absolute Number <Abs No> not found in module <Target Module>*
  You must first migrate the target object of the link to DNG before you can migrate its links.
- *No read access to target object < Object Identifier > in module <Target Module>*
  In order to be able to migrate the links of the specified artifact you need reading rights on this artifact.
- *Could not find target artifact for link in DNG. Object has not been migrated < Object Identifier > in module <Target Module>*
  The target artifact of the link has not yet been migrated to DNG.
- *No read access to source object < Object Identifier > in module <Source Module>*
  You need reading rights on the specified source module in DOORS to be able to migrate this link to DNG.

Errors

- *Could not resolve URI <Target URI>, please check module in DNG or contact your DNG support.*
  The specified URI can't be resolved. Please check the URI and if the corresponding DNG server is running.
- *Could not resolve artifact.*
  DOORS source module [ID]: '<Source Module>' [<Abs No>]
  The migrated artifact has been deleted in DNG.
- *Could not write link.*
  DOORS source module [ID]: 'Source Module>' [<Abs No>]
  DOORS target module [ID]: '<Target Module>' [<Abs No>]
  Error message: <DNG error message>
  The link between the two mentioned DOORS objects could not be transferred to DNG because of missing user rights.
- *Could not write link for '<Source Module>' [<Abs No>] due to invalid link constraints. Please make sure that '<DNG Link Type>' has 'ANY' as allowed target.*
  Link between these objects could not be created due to link constraints in DNG.
- *Could not resolve link type URI from server.*
  DOORS source module [ID]: '<Source Module>' [<Abs No>]
  DOORS target module [ID]: '<Target Module>' [<Abs No>]
  Link type URI: '<DNG Link Type URI>'
  DNG link type for this link could not be queried by the DNG server. The link type does not exist or the user rights to get this link type are missing.
- *Source module '<Source Module>' not found.*
  The specified Doors source module from which links were to be migrated could not be found. Check whether the source module still exists and undelete it if necessary.

2.5 Tools Menu

Here you will find a collection of DXL scripts that support you around the migration process with *requisis_MiX*. You can find the Tools menu in the *REQUISIS* menu item of the currently opened Doors module under *requisis_MiX* -> *Tools*.

2.5.1 Create Object Type Attribute

Created in Enumerations attribute with the name Object Type. This attribute has two values Heading and Requirement. The values for this attribute are set automatically during creation. The value Heading is set if the attribute Object Heading is set, or the attribute Object Text is not set. In all other cases, the value of the Object Type attribute is set to Requirement. To run the script, the module must be open in Exclusive Edit mode.

This attribute is used to later map the objects in the Doors module to corresponding artifact types in DNG.

2.5.2 Prepare Module Migration

Creates an enumeration attribute with the name defined in the *Object Type Attribute* field. This attribute has two values: Heading and Requirement. You can define the name of this enumeration data type in the *Object Type Attribute Type* field. The values for this attribute are set automatically during creation. The Heading value is set if the Object Heading attribute is set, or the Object Text attribute is not set. In all other cases the value of the attribute is set to Requirement.

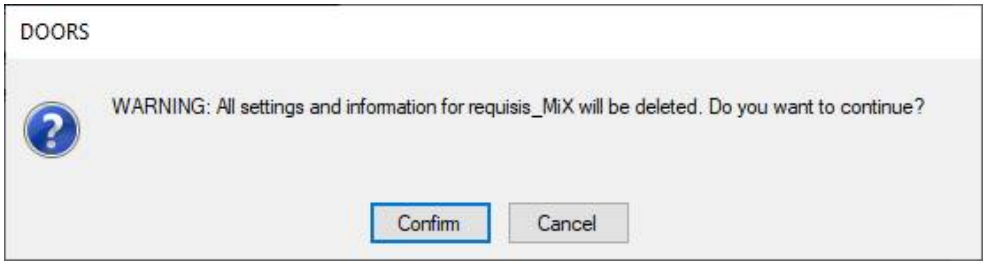
In addition, a view is created with all currently displayed columns and the new Object Type attribute. You can specify the name of the new view in the *Migration View* field.

To run the script, the module must be open in exclusive edit mode.

The attribute can be used to later assign the objects in the Doors module to the corresponding artifact types in DNG. You can use the view to define all the assigning attributes there.

2.5.3 Reset all requisis_MiX Settings in Module

This Option resets all *requisis_MiX* Settings you made in the current Module. After the reset, all information about the DNG destination, the mapping and the settings for the migration must be done again. This option can help to solve migration problems. Before deleting the settings, you will be asked if you really want to do this.



2.5.4 Remove MIX Trigger from Module

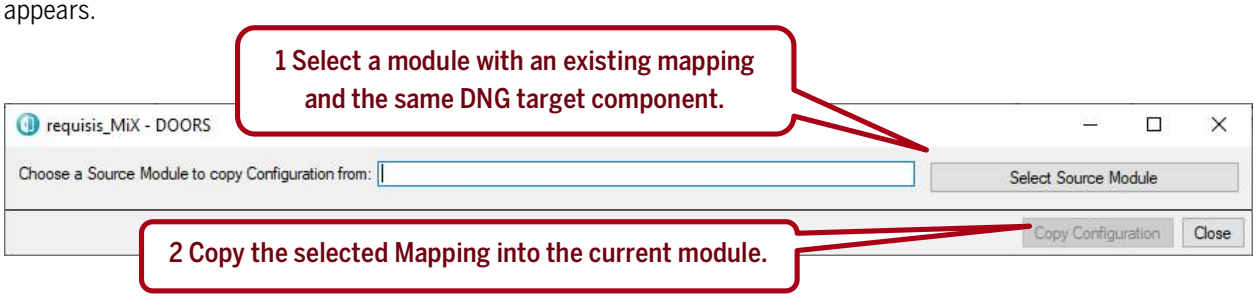
This script removes all DXL triggers on the current module. Due to DXL triggers it is possible that the current module cannot be closed. But this is necessary so that *requisis_MiX* can work. Execute this script if you want to remove DXL triggers on the current module.

2.5.5 Save Settings to File

Saves the current configuration (all settings) in a json file in the specified path. Saves also the currently configured mapping in a tsv file in the specified path. You can copy both paths and enter them in an explorer window to find the files quickly.

2.5.6 Copy Configuration from other module

Allows to import an existing mapping into the current module. After clicking on the menu item, the following window appears.



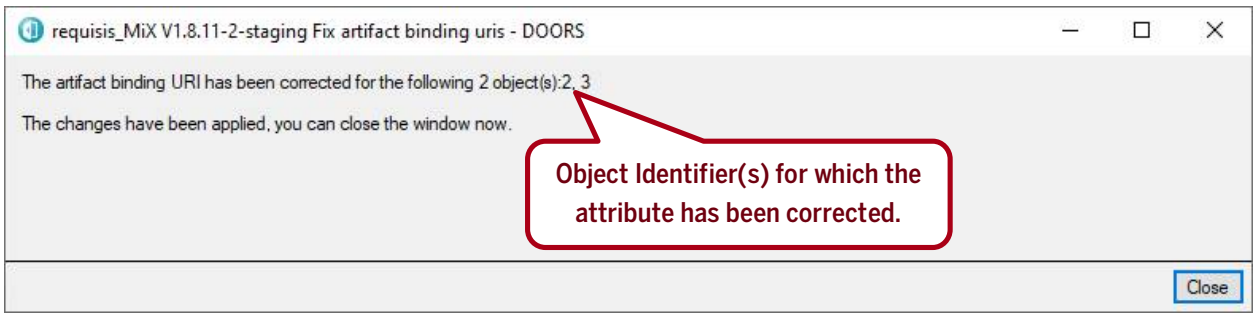
Click on the *Select Source Module* button and select a module with an existing mapping in the Module Browser that opens. To copy the mapping into the current module, click on the button *Copy Configuration* otherwise click on *Close* to close the window.

You can only copy mappings that have the same DNG target component. The mapping you want to copy does not have to be complete. A possibly already existing mapping in the current module will be overwritten.

2.5.7 Fix missing artefact binding uris

Due to a link migration to DNG version 7.0.3, the module attribute *MIX_DNG_Artifact_Structure_URI* was emptied in earlier versions of *requisis_MiX*. This resulted in successful migrations that did not process any links. In order for new links to be migrated, the already migrated Doors objects had to be migrated again in order to refill the attribute.

This is no longer necessary with this option. Click on the corresponding menu item and wait a short moment until this window appears:



2.5.8 Support for changing the DNG server domain

This option must be set up by your administrator before use.

When changing the DNG server domain, modules that have already been migrated cannot be updated. The script updates all *MIX_* attributes of the current DOORS module to the new DNG server domain. After running the script, the module can be updated again.

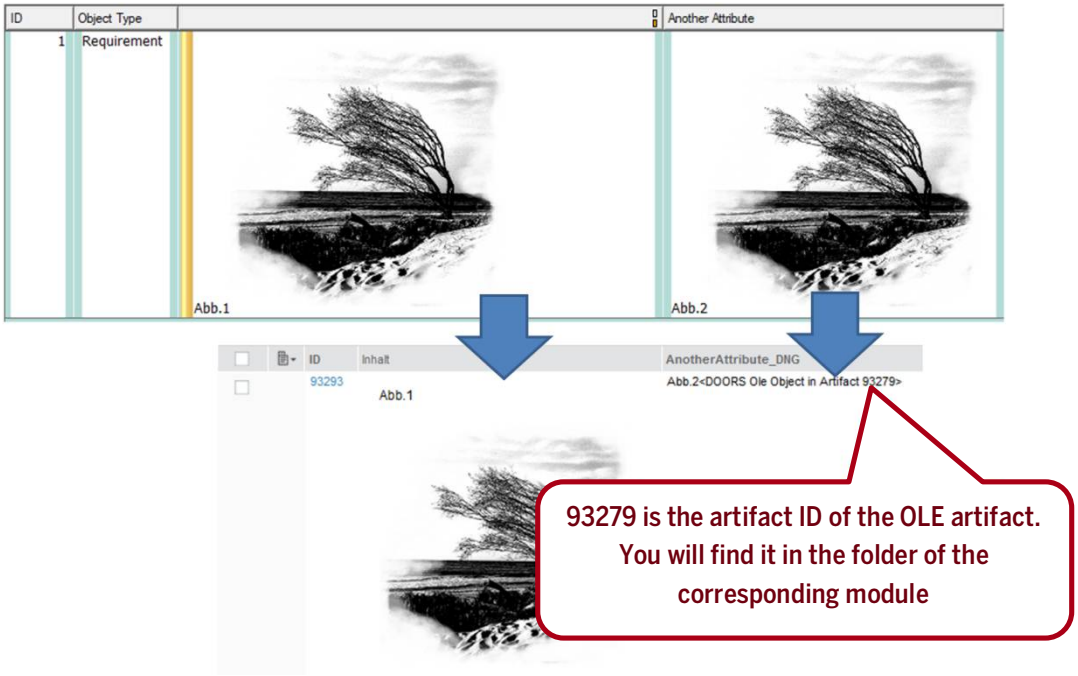
For details on how to set up the script, see the Admin Manual, Chapter 4.11 Support for changing the DNG server domain.

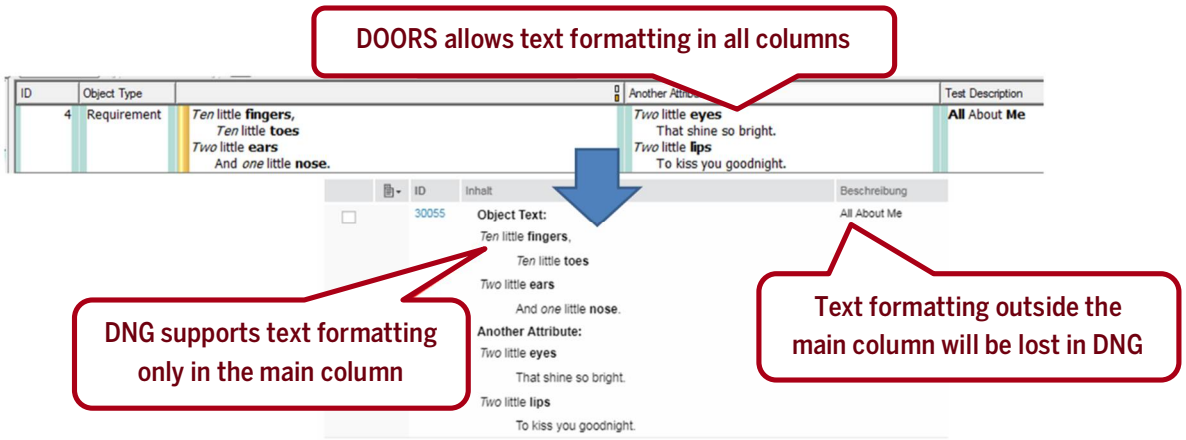
2.6 Migration Behavior and Known Limitations

2.6.1 Text Formatting in User Defined Text and String Attributes

In DOORS the user can create custom string and text attributes, and both may contain text formatting. A text attribute may even contain OLE-objects. In DNG on the other hand, only the main attribute may contain text formatting. This limitation can cause information loss, when migrating data to DNG.

Only the main attribute can contain OLE objects in DNG. If an OLE object is migrated into another attribute than the main attribute, the OLE object will be imported as base artefact within the folder of the corresponding module. In the text a hint appears with information where the OLE Object is stored including the DNG ID.





If the module to migrate contains formatted text or an OLE in a string or text attribute *requisis_MiX* offers the following two options.

> ***Map the attribute to unformatted text:*** If a DOORS string or text attribute is mapped to a DNG string attribute, the tool will remove all text formatting and OLE-objects before transferring the attribute value. If that happens, a warning message is written to the LOG. The precheck function can be used prior to the actual migration to find attribute values where information will be lost.

> ***Map the attribute to the DNG primary text attribute:*** To keep the text formatting the attribute can be mapped to the DNG main attribute (e.g. “Primary Text” or “Primärtext”). In this case the attribute value will be appended to the value of the main attribute.

2.6.2 Rich Text (RTF)

When migrating rich text, you should note the following:

> The line spacing may increase compared to artifacts without rich text content.
> Formatting like bold, italic, underline etc. can only be transferred to the main column as usual in DNG.
> Migration of rich text tables is not supported. Text in tables is migrated, but there is no guarantee of completeness. The formatting of the table and its margins is completely lost.

2.6.3 More formatting limitations

For attributes with data type real, only the first six decimal places are transferred.

2.6.4 Changing an artifact type

Due to a limitation of the DNG OSLC implementation the change of an artifact type can only be done when also content of the artifact is changed. Therefore, changes that only involve a change of the artifact type are not reflected during an update using *requisis_MiX*.

2.6.5 External Links

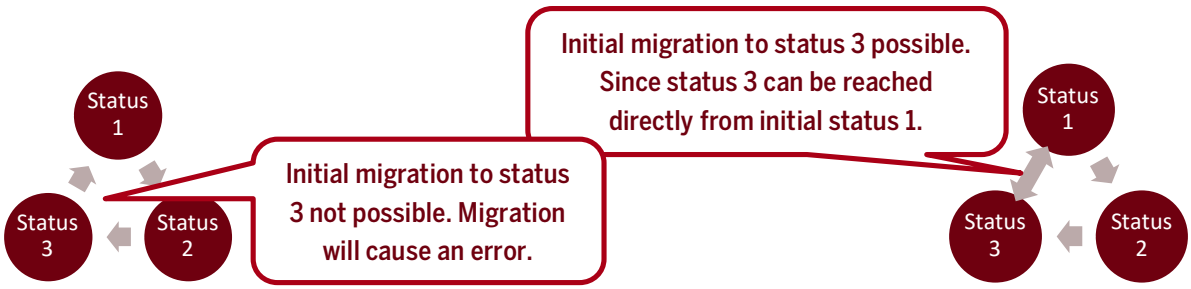
Links that you insert using the DOORS external links feature can be migrated to DNG. You can find the external link in DNG in the Artifact Links section by clicking on the corresponding artifact.

Links to a file system or to a specific file that you insert using the DOORS external link function cannot be migrated to DNG. The DNG link function cannot open links to files or file systems. To migrate corresponding links to DNG, copy the path into an attribute.

2.6.6 DNG Workflows

When migrating attributes to workflows, the following must be considered:

In case of an initial migration, the workflow in DNG must be configured in such a way that any other status can be reached from the initial status. Unfortunately, this is not possible otherwise for technical reasons. Various errors may occur. For clarification, here are two workflow examples:

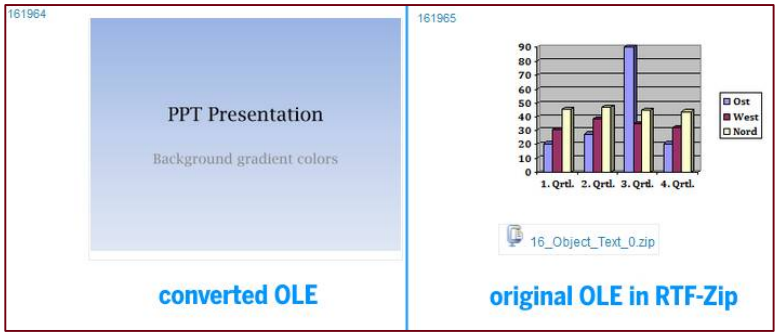


2.6.7 Storage of OLE-Objects in DNG

In DOORS all attachments are stored in OLE-objects, but DNG does not support them.

requisis_MiX tries to convert OLE objects so that they can be opened directly in DNG. For technical reasons, this is not always possible depending on the operating system, file format and application version used. To migrate the OLE objects in these unsupported cases, *requisis_MiX* will transfer a preview image and the original OLE wrapped in an RTF-file packed as a zip. The time stamp of this zip file changes with each migration attempt.
This behavior means that all files that are not supported by the system used are interpreted as new OLE objects due to the timestamp. It can therefore happen that significantly more artifacts are displayed as updated in the summary than expected by the user.

OLE-objects to be migrated are each packed into an RTF-file (Rich Text Format), which is then zipped. An RTF-file can be opened with Microsoft Word and the contained OLE-object can be accessed using the OLE-handling capability of Word. Additionally, a preview picture is created (if possible) that is shown in DNG at the position where the OLE-object is embedded in the text.

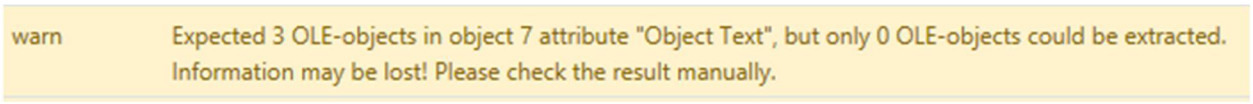


The OLE-conversion behavior can be changed in the "**settings.inc**" file as described in the administrator manual.

Large OLE-objects

Large OLE-objects cannot be migrated to DNG. This is due to a known technical limitation of DOORS. The actual size limit for an OLE-object depends on the file type and the operating system. If an OLE-object cannot be migrated the

message in the image below is written to the log. If this happens, please transfer the embedded file from DOORS into the corresponding object in DNG manually.



Alternatively, you can also make the following change to the registry to allow DOORS to access large OLE objects. You must perform the following steps on the DOORS client machine:

- Open registry editor (regedit.exe) and locate the following OLE key: HKEY_LOCAL_MACHINE \ SOFTWARE \ Microsoft \ Ole.
- Under the OLE key, insert a new key as a DWORD value (32-bit value) with the following name: *MaximumAllowedAllocationSize*.
- Right-click and change the new DWORD value (32-bit value).
- Set the value data to *4294967295* (decimal) or *FFFFFFFF* (hexadecimal).
- Restart the machine.

2.6.8 Representation of DOORS-Tables in DNG

When a DOORS table is migrated *requisis_MiX* converts the table into a HTML representation. This HTML table is then stored in the primary text attribute of a single artifact in DNG.

Therefore, only the layout and the text that is visible in DOORS are migrated. In DOORS a table is a matrix of individual objects. It is therefore possible that every table cell has values for other object attributes. These values are not transferred,

2.6.9 List of possible warnings and errors in object migration summaries

Warnings

- *Objects are specified as DNG heading but "Object Heading" is empty.*
  The object has been assigned the object type “heading” in the “mappingAttribute”. But the “Object Heading” is empty for this object.
- *Objects contain a value for an attribute that is configured to be not transferred.*
  Some existing values are not transferred because they were mapped to “no transfer”.
- *Objects contain an OLE-Object in attributes that are mapped to string attributes in DNG.*
  OLE objects outside the main column cannot be directly migrated to DNG. They are transferred as a base artifact and in the attribute; there will be a textual hint with the artifact id the base artifact.
- *Objects contain an unsupported symbol-font.*
  Only symbol fonts and characters added with DOORS are supported during migration. Wrong characters may be transferred.
- *Objects contain an unsupported text formatting.*
  Only text formatting added with DOORS is supported. Other text formatting may be lost.
- *Objects contain at least 1 OLE that could not be transferred. Information may be lost or changed.*
  The OLE object to be migrated is too large for this object.
- *Objects contain text formatting in attributes that are mapped to string attributes in DNG.*
  When mapping to string attributes, all formatting will be lost. Check whether the formatting contains important information.

- *An invalid workflow transition was attempted. Cannot change from state <X> to state <Y>.*
  The value of the DNG workflow attribute cannot be updated because the workflow does not allow this status change.

Errors

- *Objects contain a value that is out of the range defined in the mapped DNG attribute.*
  Different defined min-max values for attributes in DNG and DOORS.
- *Objects have no object type (Attribute "mappingAttribute" has no value).*
  The object must be assigned a value in DOORS for the "mappingAttribute" attribute.
- *Objects miss the permission be read.*
  No reading rights for this object.
- *Objects miss the permission to read an attribute.*
  No reading rights for an attribute.

3 Auto Mapping of Types and Attributes

If there are only a few modules to be transferred, the mapping rules can be quickly defined using the GUI dialog described above. If there are many modules this can become time consuming and rather repetitive. Therefore, it is possible to define mapping rules in advance in a so called "*requisis_MiX*-Mapping Rules".

If a "*requisis_MiX*-Mapping Rules"-Module is configured in the configuration parameters of *requisis_MiX*, the "Auto Mapping" functionality becomes available. To activate this function the path to a "*requisis_MiX*-Mapping Rules"-module must be specified in the settings.inc file as described in the "Administrator Manual". This functionality tries to automatically map as many types/attributes as possible, based on the rules set in the "*requisis_MiX*-Mapping Rules" module. The Auto Mapping function can used in two ways:

1. When *requisis_MiX* is started for the first time from a module, Auto Mapping is triggered on entering a mapping type or attribute mapping dialog.
2. For all mapping dialogs there is a button named "Auto". Clicking on this button starts the Auto Mapping.

3.1 Instructions to Set Up the requisis_MiX-Mapping Rules Module

The mapping rule module has a certain chapter structure that must not be renamed. The relevant view is named "Configuration View". There are four chapters;

i. "Instruction"
ii. "Rules for Artifact Types"
iii. "Rules for Attributes based on Artifact Type"
iv. "General Rules for Attributes"

The first chapter does not contain any configuration information like the other chapters. It is for informative purpose only and contains detailed usage instructions. The other three chapters have a special syntax each. When *requisis_MiX* is performing an auto-mapping for an object type/attribute it runs through the *requisis_MiX*-Mapping Rules module entries from top to bottom. It stops at the first entry that can be applied.

The "Configuration View" has five columns (plus ID) for configuration and testing the mapping rules. Their meanings are as follows;

Information / Name in DOORS: The meaning of this column depends on the chapter and hierarchy level of the object. For chapter 1 it is purely informative. In the other chapters it is the DOORS name of an object type, an attribute or an enumeration value. The value can be either a string matching the exact name or a regular expression. The structure in chapter 2-4 is as follows (The intends correspond to hierarchy levels in DOORS):

Chapter 2 - "**Rules for Artifact Types**": (Matches object types in DOORS to artifact types in DNG)
<Object Types>

Chapter 3 - "**Rules for Attributes based on Artifact Types**": (Matches attributes in dependence of the object type)
< Object Types>
<Attributes>
<Enumeration Attributes>
<Enumeration Values>

Chapter 4 - "**General Rules for Attributes**": (Matches attributes independent of the object type)
<Attributes>
<Enumeration Attributes>
<Enumeration Values>

Name in DNG: The DNG name of an artifact type, an attribute name or an enumeration value that should be auto mapped to the element in the previous column.

Comment: User comments about each rule can be found here. (Just informative)

Rule-Test: Enter an arbitrary test string here to test the mapping rule defined in this row. Can be useful to validate regular expression. (Just informative)

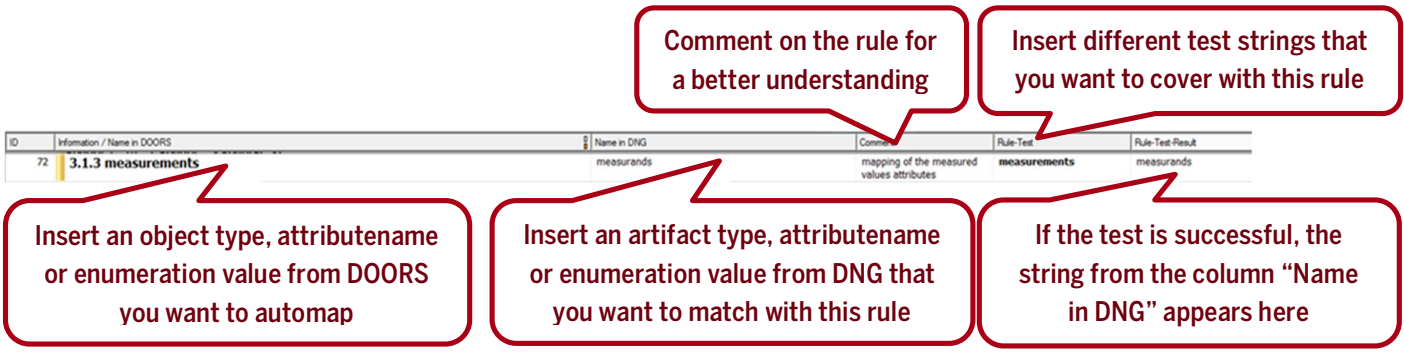
Rule-Test-Result: Shows the DNG element than would be auto-mapped to the value provided in the previous column. (Just informative)

3.2 Creating Mapping Rules

The Automapping Rule Module is run from top to bottom. When a rule has been successfully applied to a type, attribute or value, the next type etc. is applied.

3.2.1 Simple 1:1 mapping example

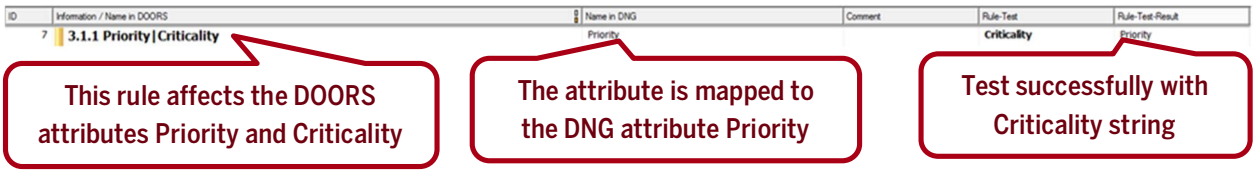
To create a new rule for automapping, create a new object. Make sure that you create the object in the correct chapter and in the correct level. The comment attribute helps you to find the right position in the mapping module.



In this example the DOORS attribute “measurements” is automatically mapped to the DNG attribute “measurands” with this rule.

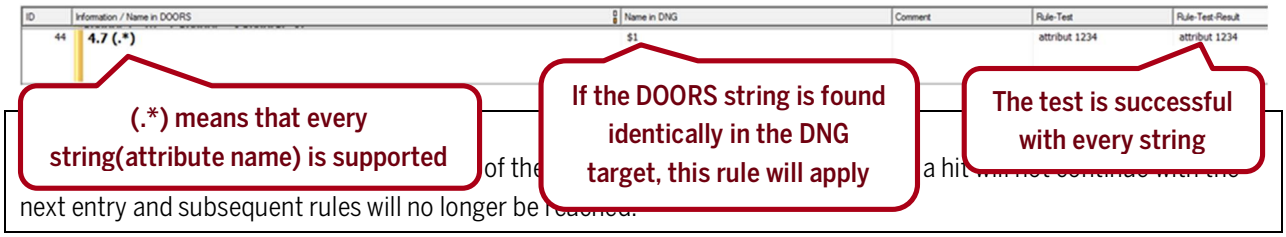
3.2.2 Map multiple DOORS attributes to one DNG attribute

In order to map several DOORS attributes to a DNG attribute, proceed as in 1:1 mapping. In the column "Name in DOORS" you add more attribute names which you separate with a | (pipe). This also works with enumeration values and artefact types. Alternative you could also add two objects with the same value in the column "Name in DNG".



3.2.3 Map identically named attributes

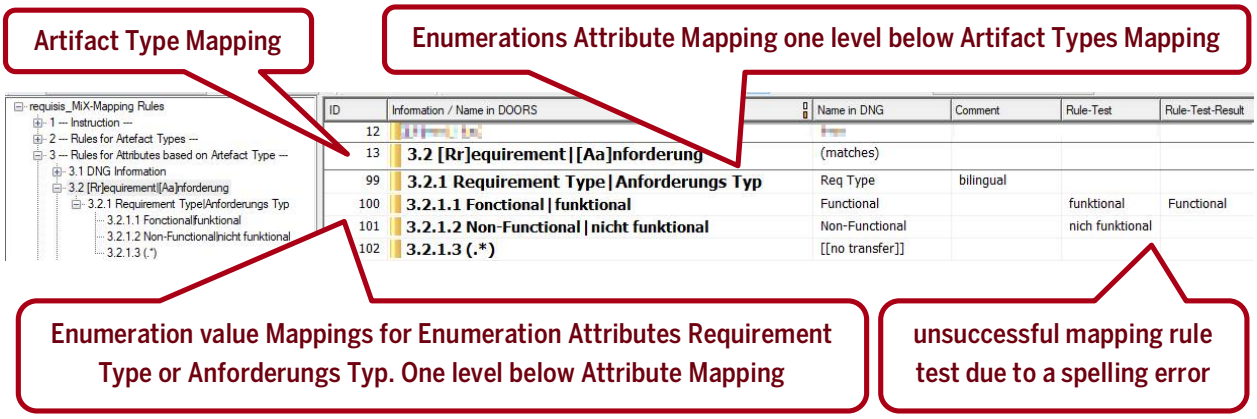
In order to map identical named attributes automatically, the string (.*) must stand alone as a wildcard in the column "Name in DOORS". In the "Name in DNG" column, the wildcard $1 is used and automatically replaced by the string found within the first brackets (in the “(.*)”) "Name in DOORS" column. You do not need to create a rule for identical enumeration values, they are mapped automatically.



of the … a hit … next entry and subsequent rules will no longer be reached.

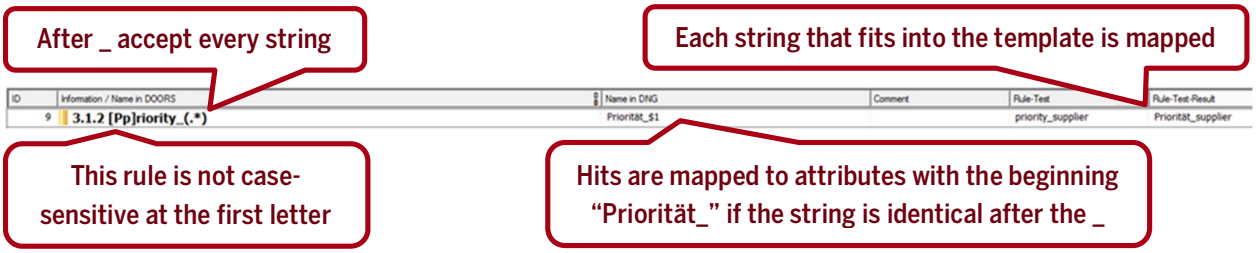
3.2.4 Enumeration mapping example

In this example, you can see how to automatically map an enumeration attribute and its enumeration values for a specific artifact type.



3.2.5 Advanced example

You can combine the different possibilities of regular expressions.



3.2.6 Examples for regular expressions

Character groups

[abc]	one of the characters a,b,c is accepted
[a-zA-Z]	any normal letter in lower and upper case is accepted
[0-9]	any number is accepted
[^0-9]	^ negation of character class: Anything, but numbers is accepted

Modifier for character groups

+	"at least one"
*	"none or more"

{n}	exactly n characters
{n,m}	at least n, maximum m characters
?	“none or one”

Combined Examples

[abc]+	at least one of the characters a,b,c is required
[abc]*	none or more of the characters a,b,c is required

Other Rule parts

Rule 1|Rule 2	The | (pipe) means “or” (splits to rules and only one rule must be matched)
()	Matcher. The first matcher can be referenced with $1 in the “Name in DNG” Column and is replaced by the content of the matcher

Some examples for regular expression rules

Abc(.*)	String must start with Abc, the rest is catched and can be referenced as $1
Abc|xyz(.*)	String must start with Abc or xyz, the rest is catched and can be referenced as $1
Abc[0-9]+(.*)	String must start with Abc followed by a group of Numbers, the rest is catched and can be referenced as $1
Abc[0-9]+([a-z]*)	String must start with Abc followed by a group of Numbers and then characters from a-z, which are catched and can be referenced as $1

For more information on regular expressions see the DOORS DXL Manual.

IMPORTANT NOTE:

There are no wildcards $2, $3, etc. as you may know from other regular expressions, only $1 can be used.

Brackets must be escaped with a preceding backslash \. For round brackets ( ) there is an additional idiosyncrasies : Names containing round brackets must be completely enclosed with a pair of round brackets. Ex: Value: Asil A (B) Rule for this value: (Asil A \(B\))

3.3 Testing new Mapping Rules

Testing a new mapping rule always works the same whether it is a type mapping, attribute mapping or enumeration value mapping.

After you have created your new mapping rule, navigate to the *Rule Test* column, and enter a string that you think should work for the newly created rule. Now click once on a free, empty space in the Mapping Rules module.

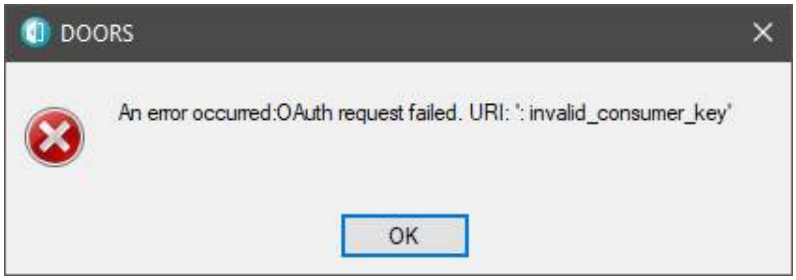
If the mapping is successful, the name of the desired DNG target type/attribute/value will appear in the *Rule-Test-Result* column. In case of an unsuccessful test, the *Rule-Test-Result* column remains empty. If this is the case, first check the spelling of the string used in the Rule-Test column.

If your new mapping rule works as desired, restart requisis_MiX and click the appropriate *Auto* button to apply the new rule.

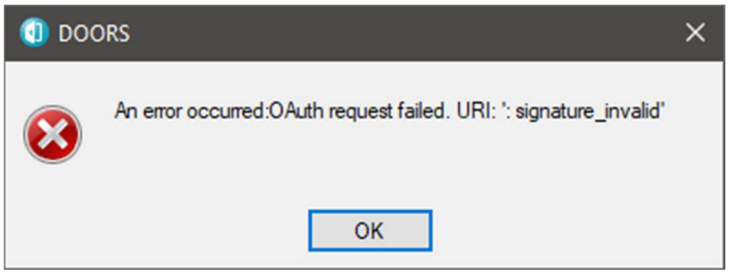
4 Error Messages

Errors that might occur during connection to the DNG server:

4.1 OAuth request failed. URI: ': Invalid_consumer_key'



This message means that the oAuth-Consumer Key, that is configured in **php/conf/configuration.json** does not match the oAuth Consumer Key that is configured. Please ask you administrator to configure the right oAuth Consumer Key in the **php/conf/configuration.json** file and in the JTS Application on the Jazz server. OAuth request failed. URI: ': Signature_invalid'



In most cases this message means that the oAuth-Consumer Secret, that is configured in **php/conf/configuration.json** does not match the oAuth Consumer Secret that is configured in JTS. Please ask your administrator to configure the right oAuth Consumer Secret in the **php/conf/configuration.json** file and in the JTS Application on the Jazz server. Choose a Secret from upper- and lower-case letters and numbers. Special characters are not supported. **Please do not configure any oAuth-Consumer-Key for mix in the RM application!**

4.2 GUI already open

If you receive this error when starting *requisis_MiX*, *requisis_MiX* is already open. Switch to the *requisis_MiX* window with the key combination Alt + Tab. If this did not work, start the script *Remove MiX Trigger from module* from the menu *REQUISIS* -> *requisis_MiX* -> *Tools*. Then *requisis_MiX* should be open again.

requisis_MiX

requisis *Outstanding in Engineering*

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