REQUISIS Tools for IBM DOORS and IBM ELM

Nikolai Stein, REQUISIS
Solution Architect, DOORS & IBM ELM Expert

- Active in the field of RE&M with DOORS in the automotive sector since 2002
- Senior Consultant & Managing Director of REQUISIS GmbH since 2007
- RE&M methods and concepts
- Data exchange with ReqIF and OSLC
- DNG interfaces, automation and migration scenarios
- Global Configuration Management with DNG
- DOORS security
- Kubernetes and ELM-SaaS
- Artificial Intelligence & IBM ELM

REQUISIS GmbH

- Internationally operating company with offices in Berlin and Stuttgart
- Specialist for tool-supported requirements management and individual pragmatic solutions
- Solutions for DOORS & DNG
  - ReqIF-Manager
  - DOORS-Next-API-Gateway
  - DOORS to DNG Migration
  - AI Copilot
- SaaS & managed service provider for IBM ELM products
- Consulting regarding ReqIF & IBM APIs (also for other tool vendors)
- Many satisfied customers
- Our customers are mainly from the automotive sector

Rhapsody SE Evaluation

> Request your personal Rapsody SE Environment:

sysml.app/eval

Products Overview

- **For IBM ELM**
  - requisis_MiX - Migration Tool
  - requisis_Toolbox – ReqIF-Manager
  - requisis_ELM.ng
  - requisis_ORCA – Ai Copilot for DNG
- **For IBM DOORS 9**
  - requisis_DoX – Document Generation
  - requisis_SproX – Synchronization Tool
  - requisis_ReX – ReqIF-Exchange Tool for DOORS 9
  - requisis_MiX - Migration Tool
  - requisis_MoRE – Review Tool
  - requisis_DSP – Security Proxy
  - DoorsBouncer – Auto-Logoff Idle Users
- **For ReqIF**
  - ReqIF-Libraries
  - requisis_Toolbox – ReqIF-Manager for DNG
  - requisis_ReX – ReqIF-Exchange Tool for DOORS 9

requisis_DSP

Securing the IBM DOORS 9.x Server incl. MFA

requisis_DSP: Overview

- **Function**
  - Additional Layer of Security to the DOORS Server
  - Access Control enforced on every Access
  - Based on personal Doors-Certificate-Files
  - Provides detailed logging for all Access

- **USPs**
  - No performance impact
  - 6 Years in the market
  - In production on DOORS Servers with 800+ concurrent users

requisis.com/en/dsp

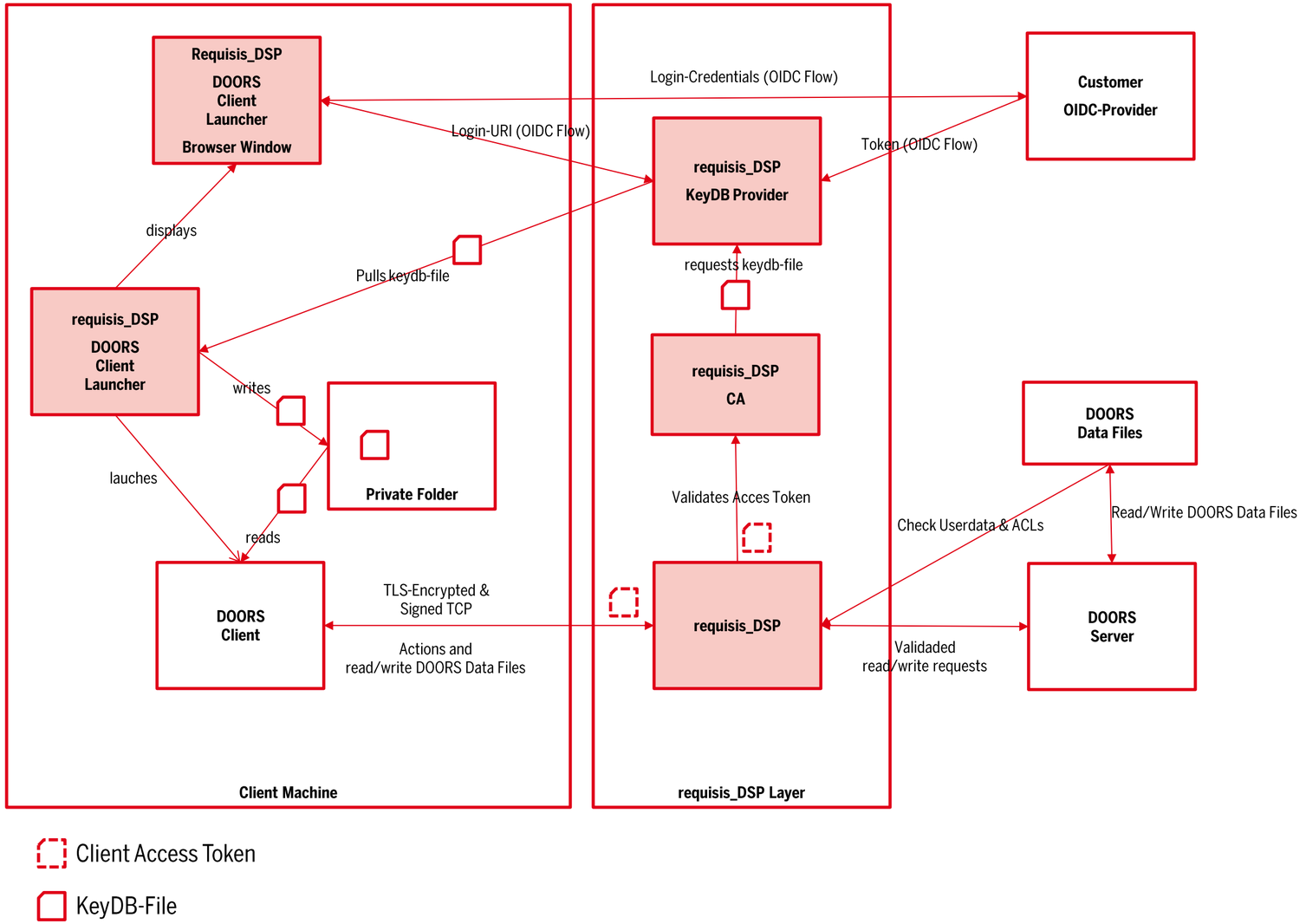
requisis_DSP: Background

- DOORS 9.X Server does not provide any Authentication or Authorization
- Requests are only checked inside DOORS-Client
- Manipulated DOORS-Clients or Programs talking to DOORS-Server can read and modify data

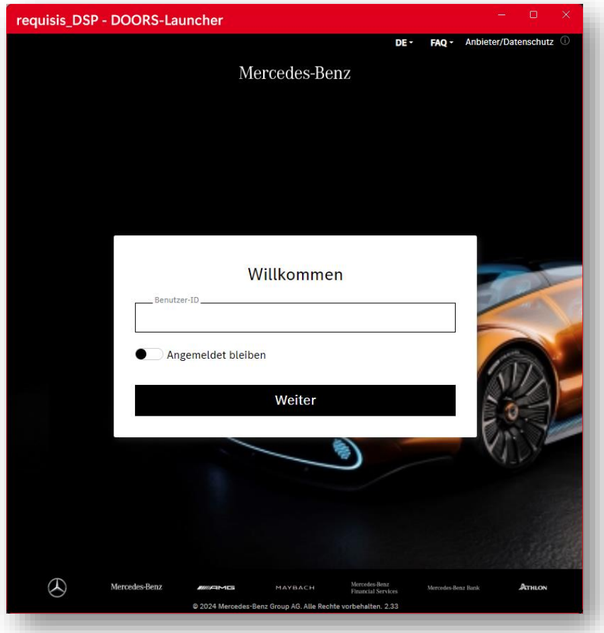
- Available POC upon request:
  - Resetting DOORS-Administrator-Password using a TCP-Client to connect to doors server port.

requisis_DSP: MFA für DOORS 9.x

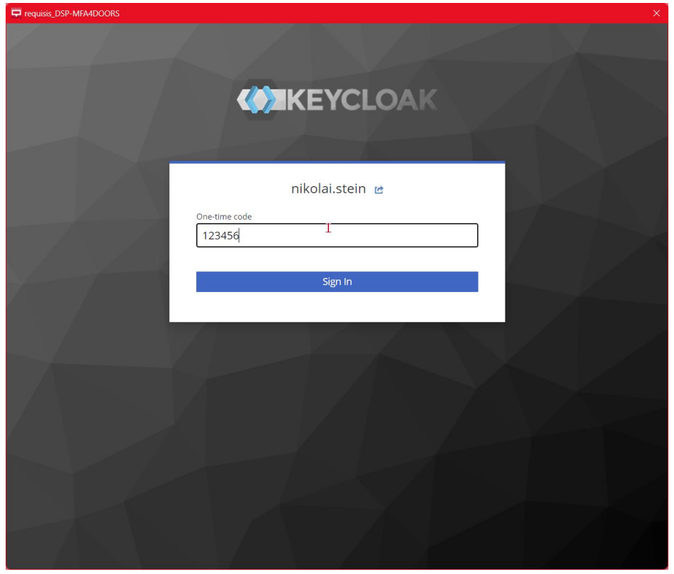
- Phase 1
  - OIDC Login in Browser Fenster
  - KeyDB Generation
- Phase 2
  - DOORS-Client started with KeyDB
  - DOORS-Client connects using KeyDB to requisis_DSP
  - requisis_DSP checks access token
  - requisis_DSP enforces ACLs
- Phase 3
  - All requests will be checked against DOORS ACL before beeing passed to the server



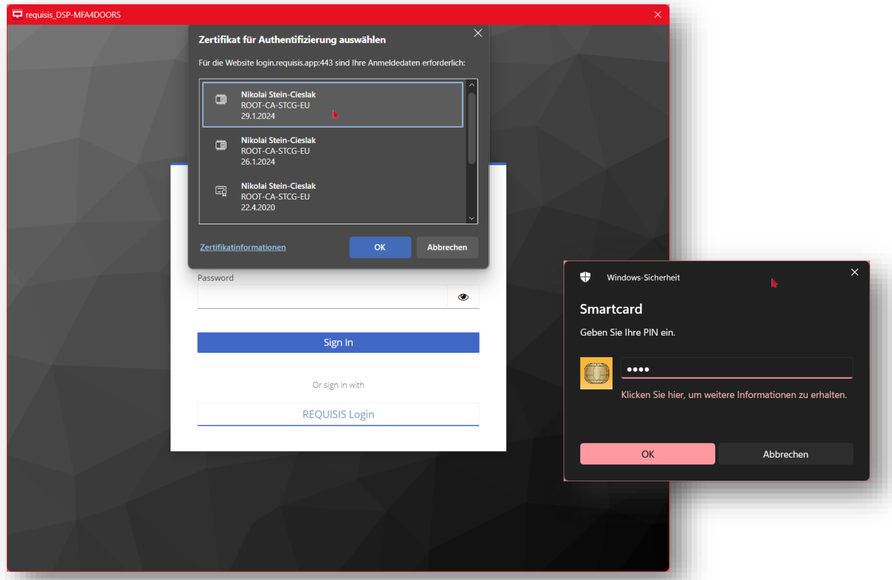
Impressions



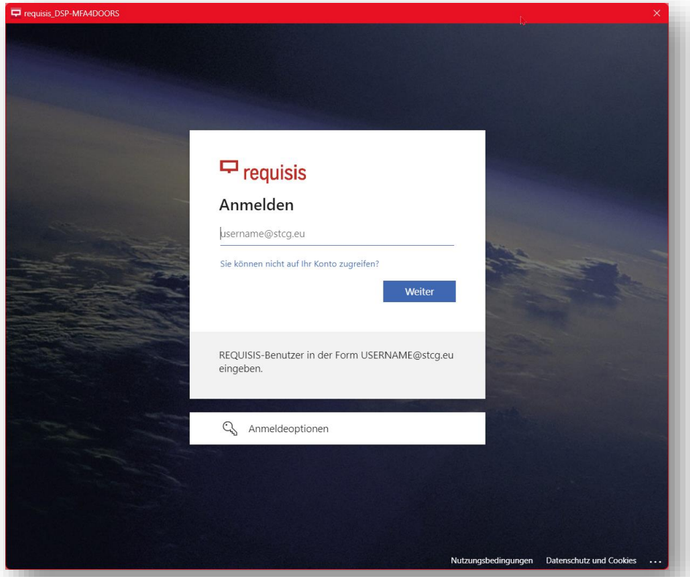
Customer Example



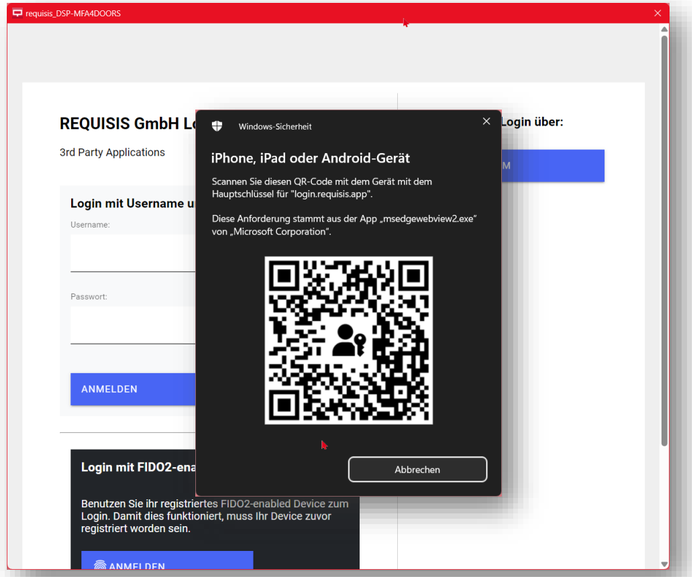
Google Authenticator



PKI Card / Smartcard



Azure ID



Passkey

Requisis_DSP MFA – Demo

requisis_MIX

Easy Migration from DOORS 9.x to DOORS Next

requisis_MiX: Overview

- **Function**
  - Migration and Synchronization from DOORS 9 to DNG
  - Uses UI and Rule-Based Mapping
    to Live Type System in DNG
    to harmonize the Type-System during Migration
  - Optimized Content for best Migrations Results
  - No Experts Needed: UI-Based Migration with automation

requisis.com/en/mix

requisis_MiX: Key Facts

- **Fully integrated in DOORS 9**
- **Mapping to live data in DNG**
  - Artifact types, Attributes, Enumeration values
  - Configure mapping rules to reduce needed manpower.
- **Automatic Pre-checks**
  - Find possible data losses and other issues
- **Direct data transfer using Rest API (OSLC)**
  - no export and import required
  - Most OLE-Objects are migrated as native file format
  - DOORS Tables are migrated as XHTML-Table
- **Process in 2 stages**
  - Configuration (Mapping&Prechecks) and Performing the Migration
  - Allowing to split the tasks between the author and the support team
- **Not only migrate: Synchronize**
  - Repeated migrations
  - Special update use cases
  - Later back synchronization to DOORS 9 (pull data from DNG)
- **Extraordinary Usability**
  - Every author and support user can use it

requisis_MiX' USPs

- **Best migration results**
- **Separation of type system and data**
  - "Keep-your-DNG-type-system"
  - Live mapping of type system between DOORS and DNG
- **No Experts needed**
  - do-it-yourself-migration
- **Efficient**
  - Scalable migration due to mapping rules
  - ~ 5 Minutes for Mapping
  - 2-3 Minutes per 1000 Artifacts for migration
- **Content optimization**
  - Migrating into compatible types
  - Merging into string attributes
  - DOORS tables as XHTML tables
  - Unwrapping of most OLE-Objects -> Migrating as native file format
- **Repeatable Migration and Synchronization**
  - Shadow-Migrations of content that is still managed in DOORS
- **Migration of attribute-controlled variants into Streams**
  - Migration of different views into different streams (by maintaining same artifact) for variant migration

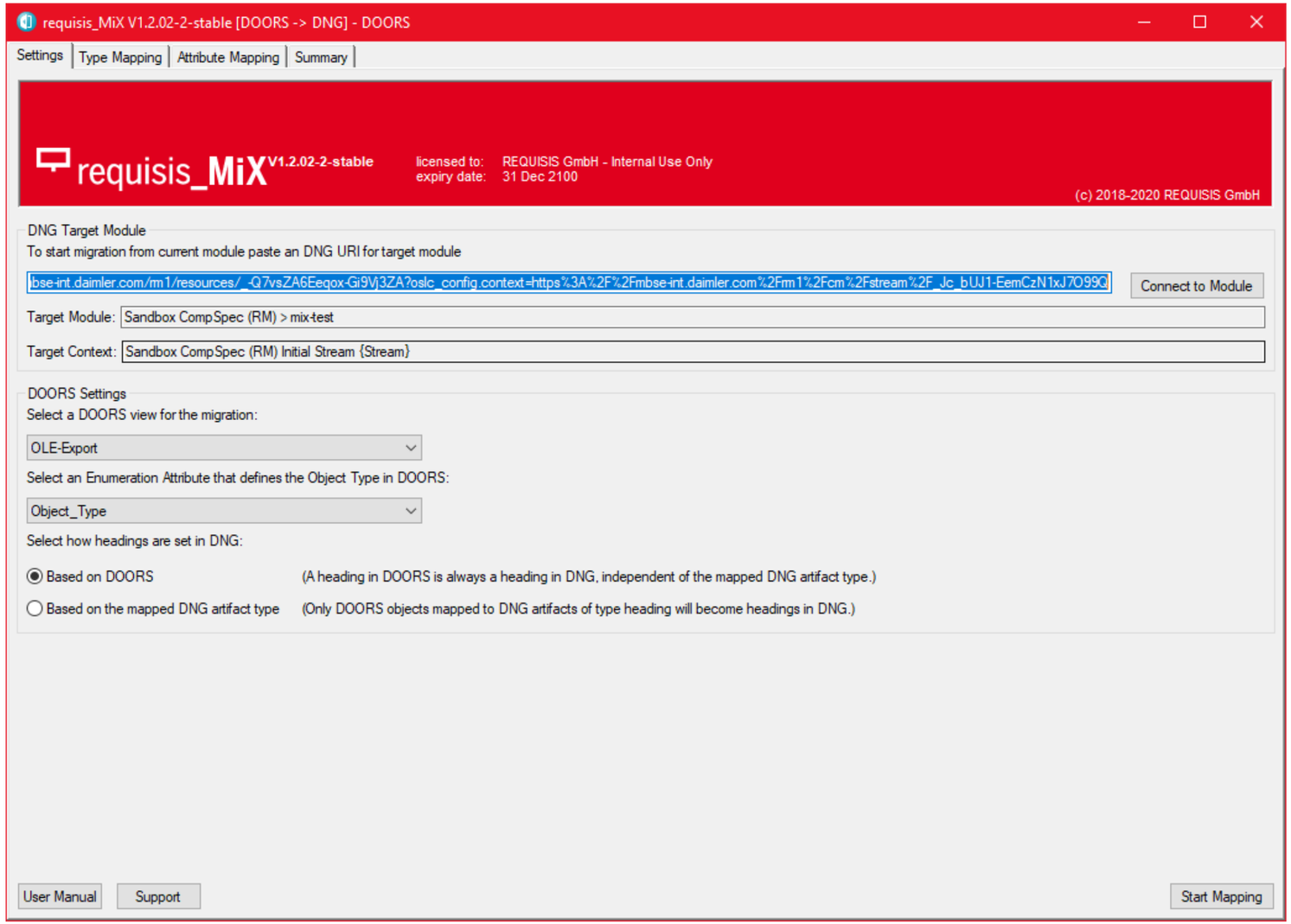
requisis_MiX – Demo

requisis_MiX

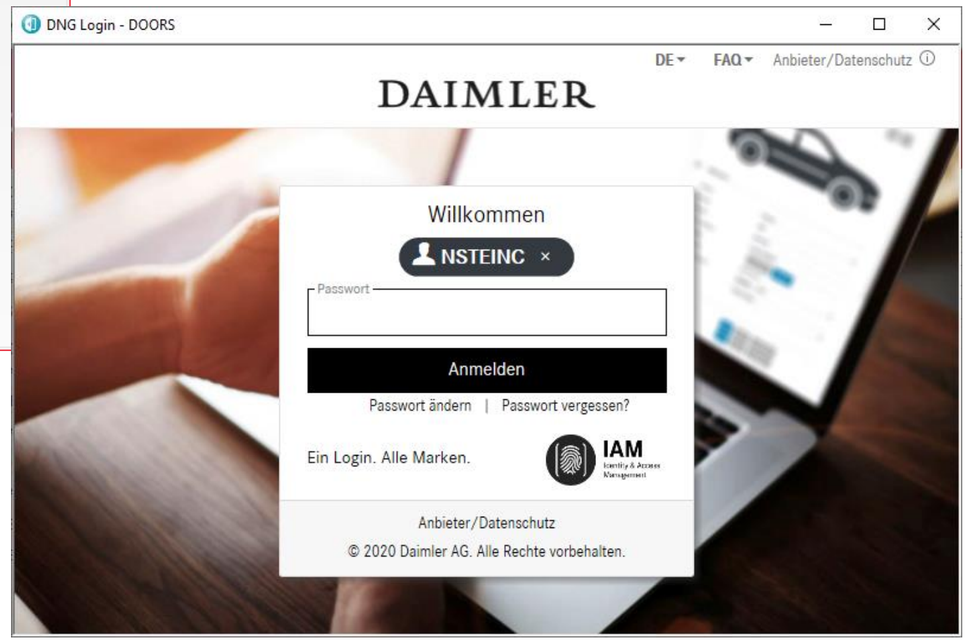
Executing the Migration

Step 1: Select Target Module + Basic settings

- Select Target Module by its URI
- Select a view which content will be migrated
- Select a DOORS Enum Attribute for derive the Artifact type
- Select Heading Behavoir
  - Same as in DOORS
  - Based on Artifact Type

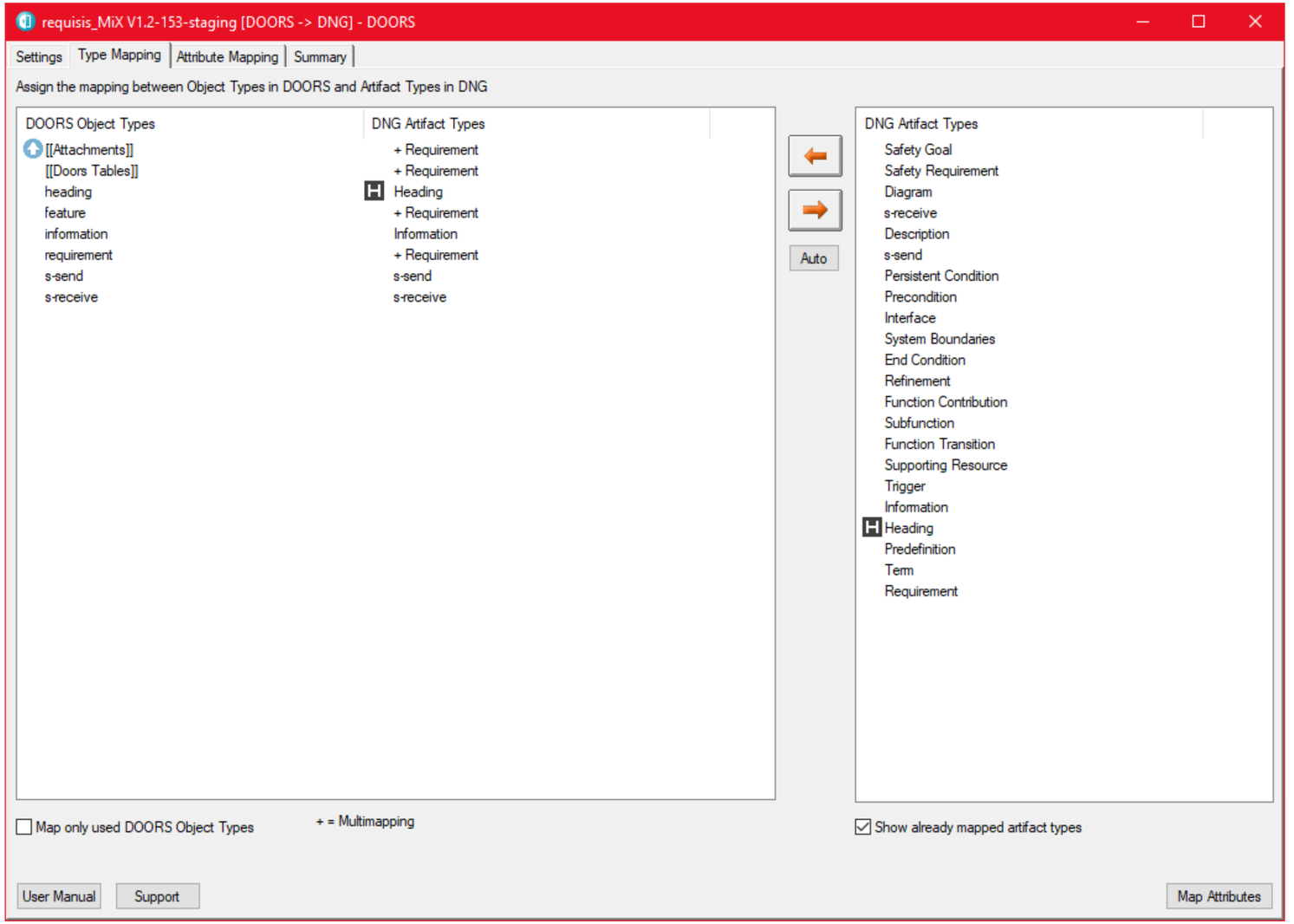


Database login to get oAuth token (works also with OIDC)



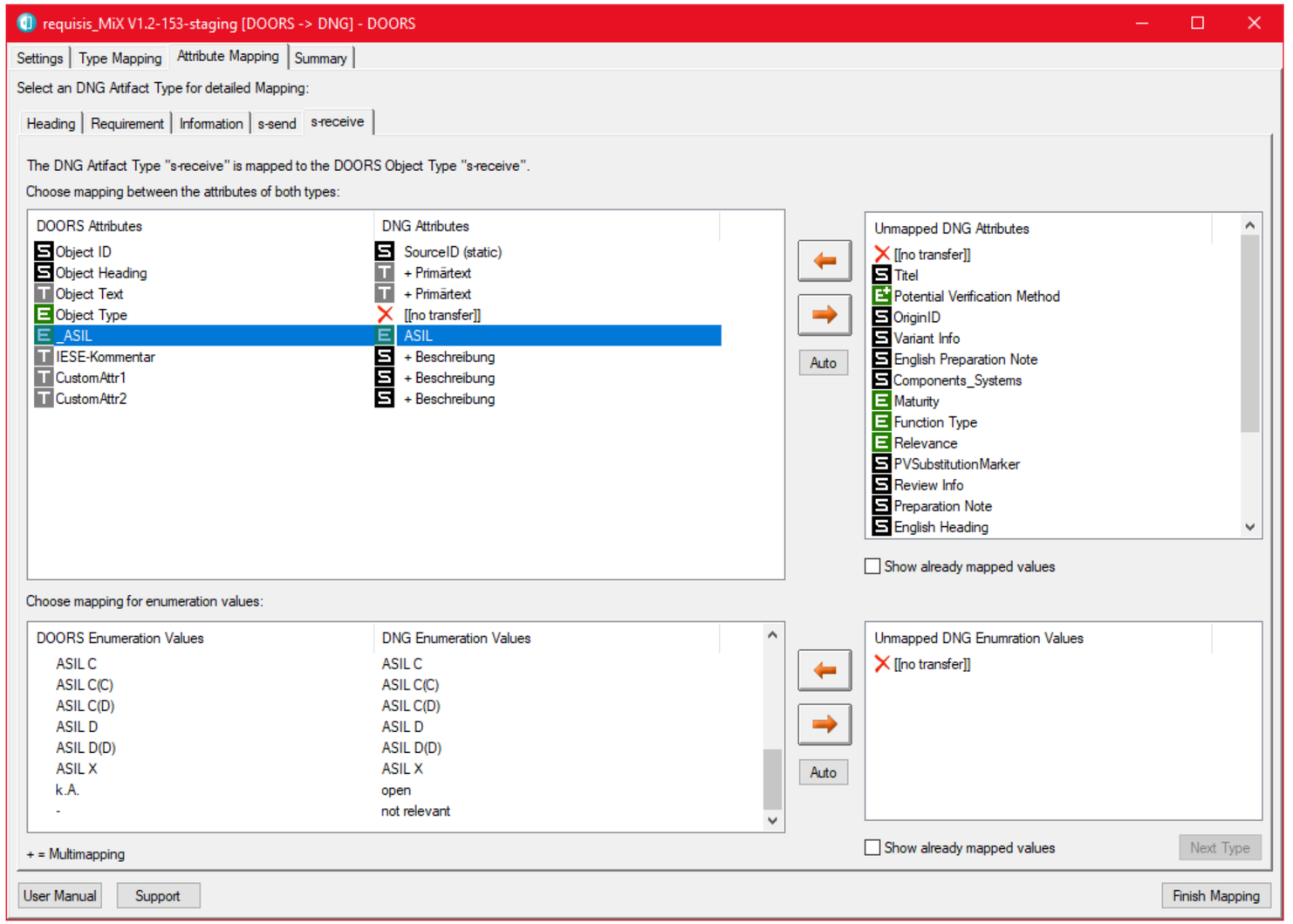
Step 2: Artifact Type Mapping

- Artifact Types are read directly from DNG
- Mapping prefilled by mapping rules
- n:1 Mapping is possible
- Just drag and drop or use arrows to map



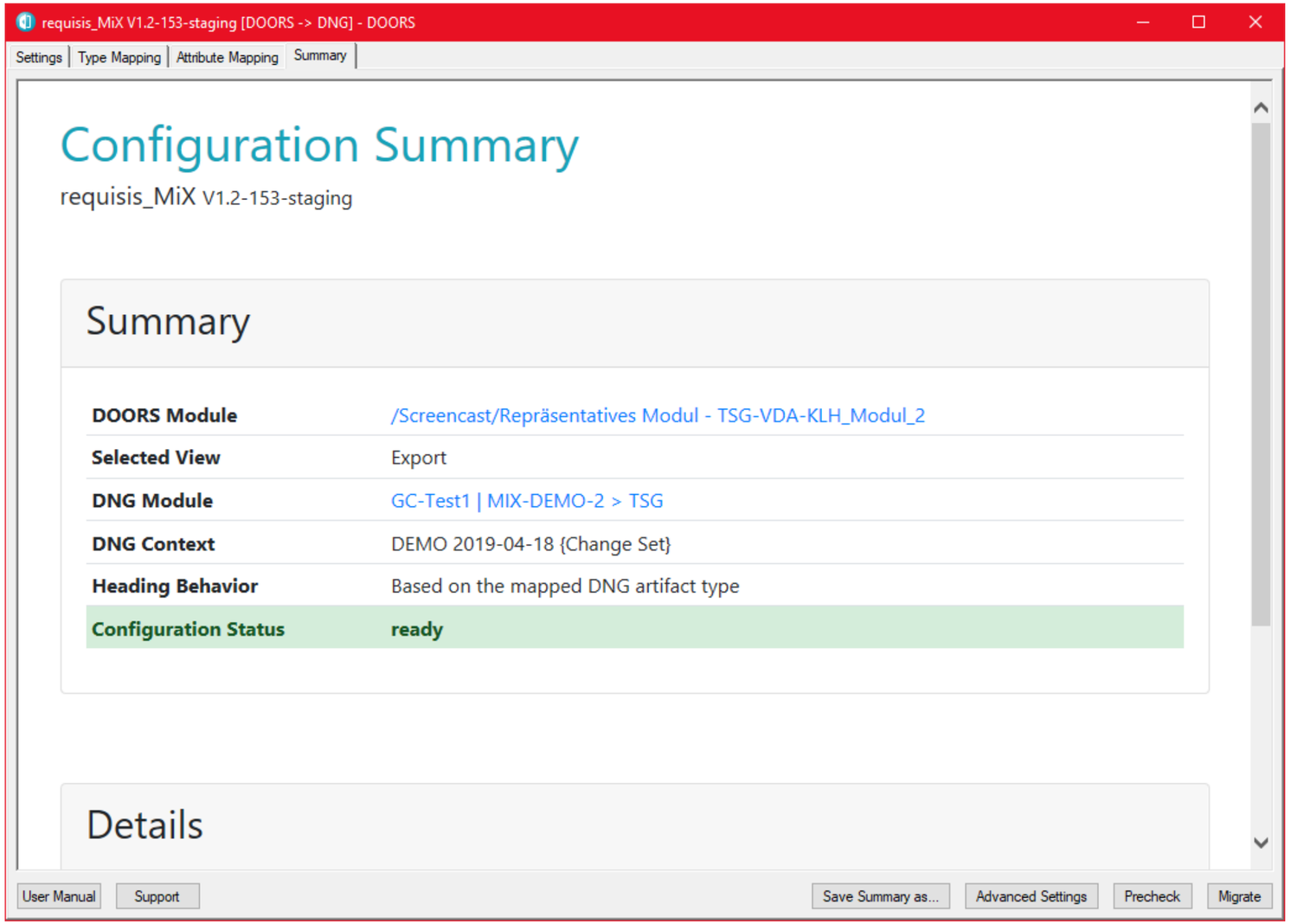
Step 3: Attribute and Enumeration Value Mapping

- Attribute are read directly from DNG
- Mapping prefilled by mapping rules
- Mappings per Artifact type
- n:1 Mapping is possible
- Also mapping of Enumeration Values
- Just drag and drop or use arrows to map



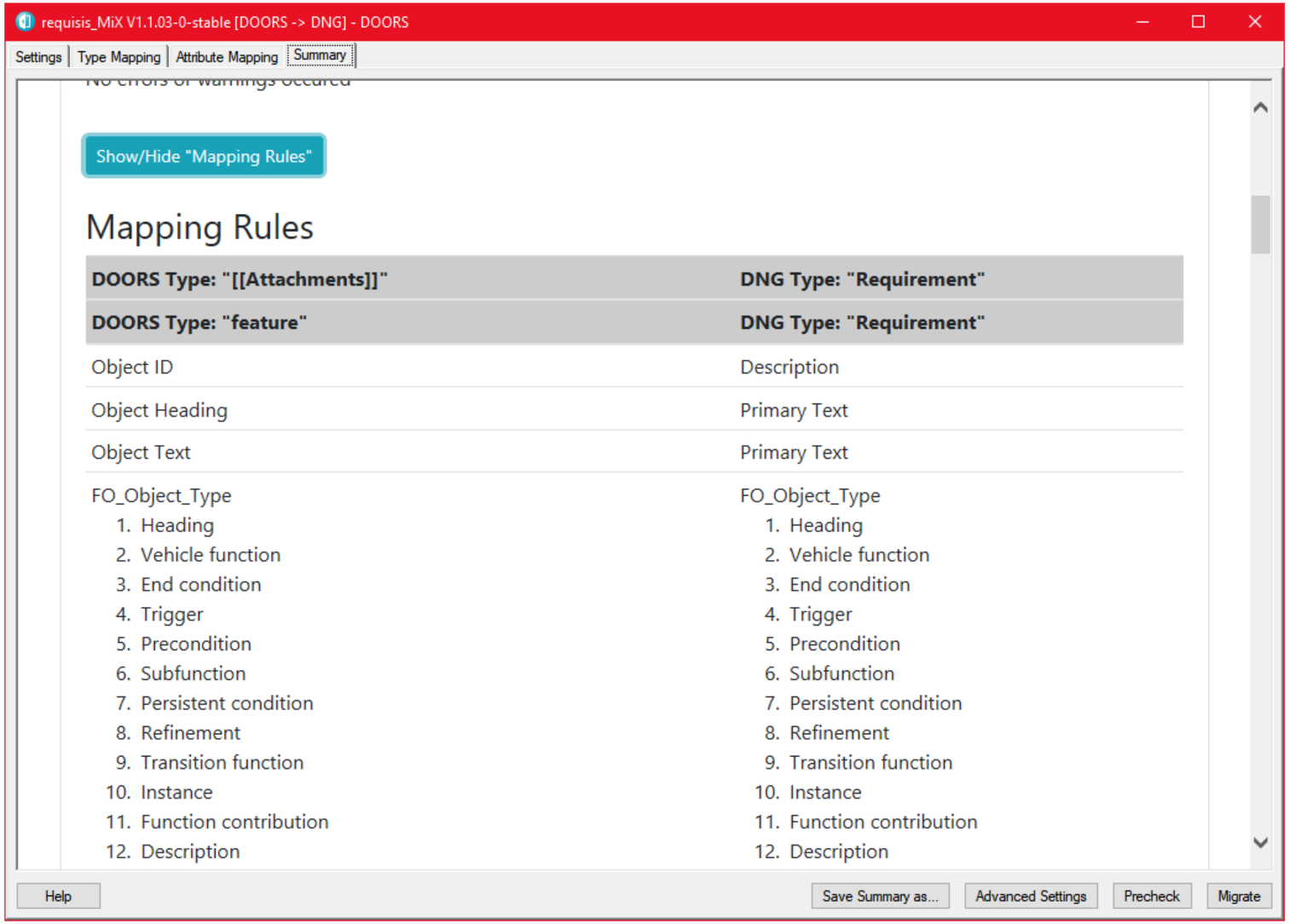
Step 4: Check Summary (Basic Settings)

- All relevant settings
- Including chosen Mappings
- Basic configuration check
  - Do all objects have a selected “object type”
  - Does the view contains a filter without “show ancestors”
- Can be saved to disk



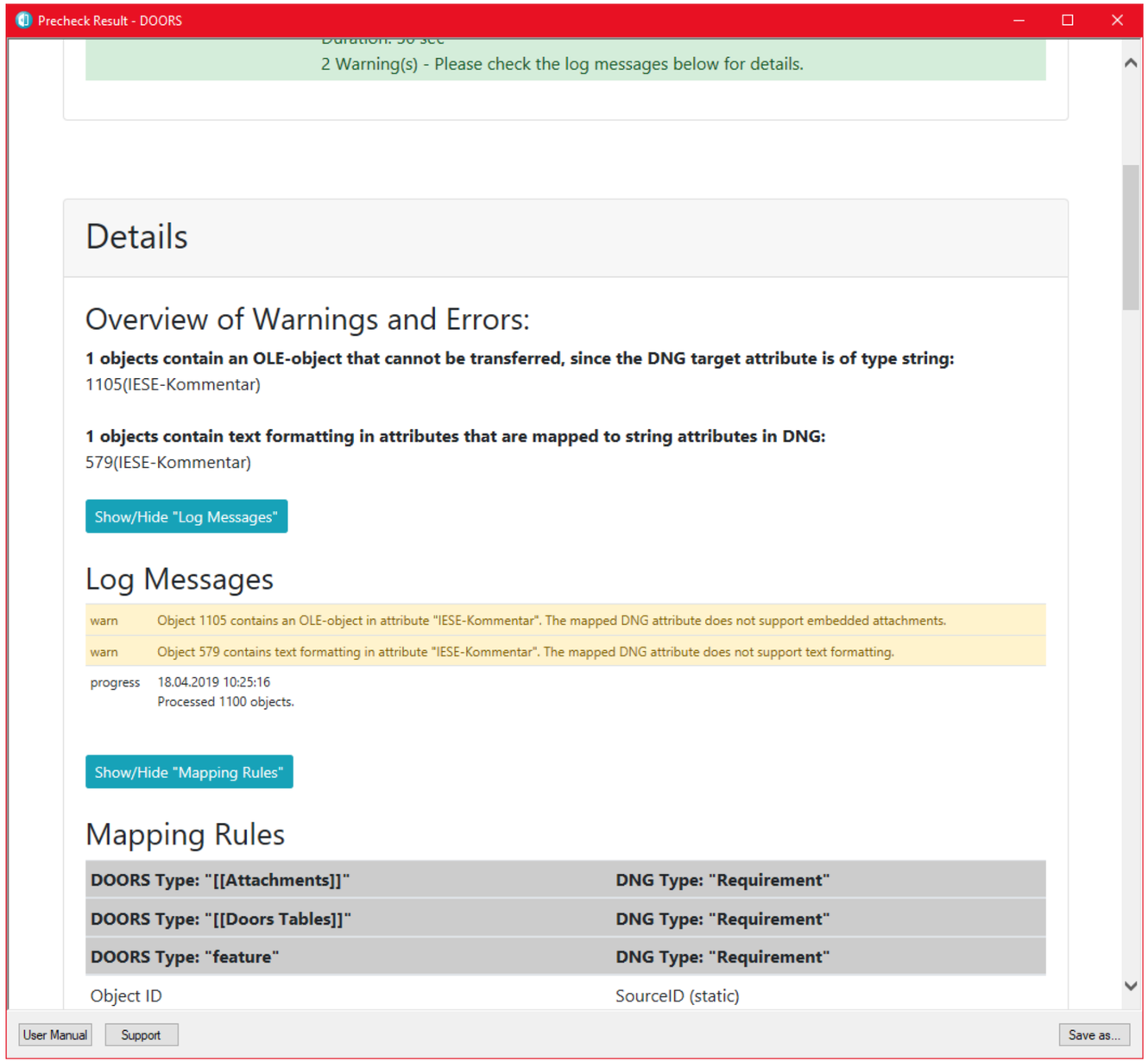
Step 4: Check Summary (Mapping Rules)

- All active Mappings shown as a table
  - Artifact Type Mapping
  - Attribute Mapping
  - Enum Mapping



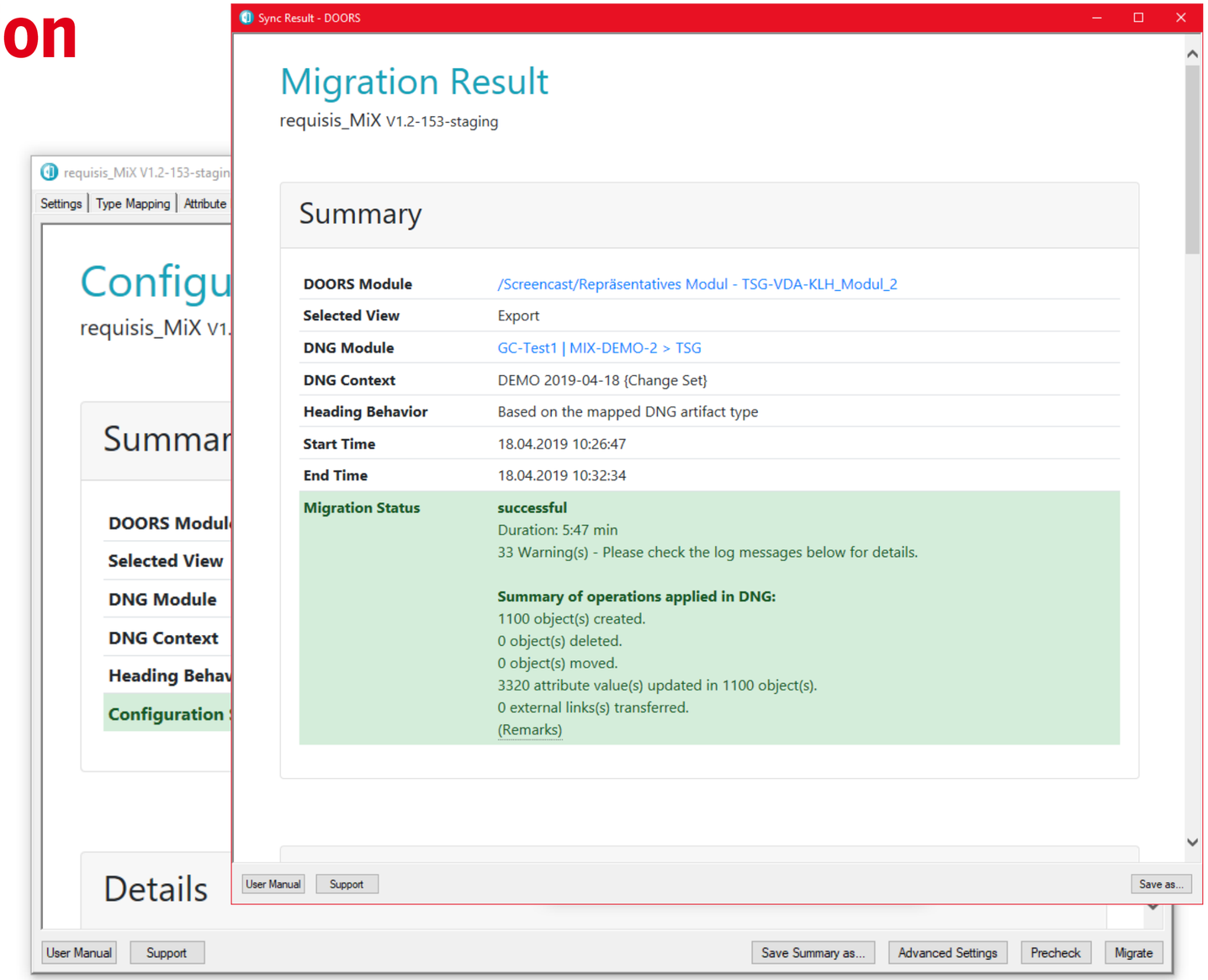
requisis_MIX: Pre-check

- Pre-check for possible data loss caused by tool differences, like
  - OLEs in attributes mapped to other attributes than primary text
  - Text formatting in other attributes
  - Unsupported text formatting
- Can be saved to disk



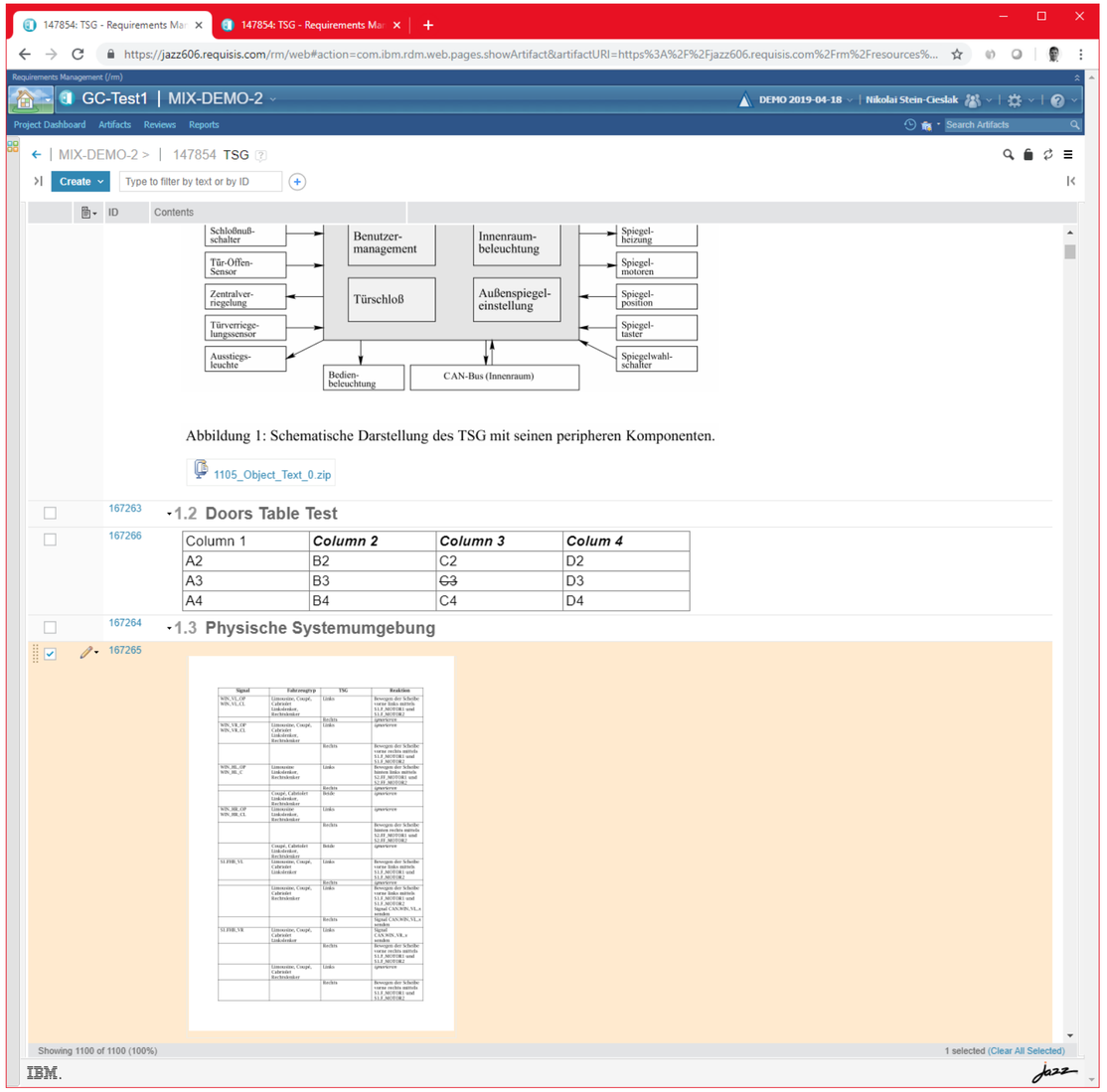
Step 5: Perform Migration

- **Perform the Migration**
  - Direct or later
  - Repeat if needed as update to prio migrated data
- **Migration Result**
  - All relevant configuration settings
  - Information about data-loss
  - Migration Results
  - can be saved to disk



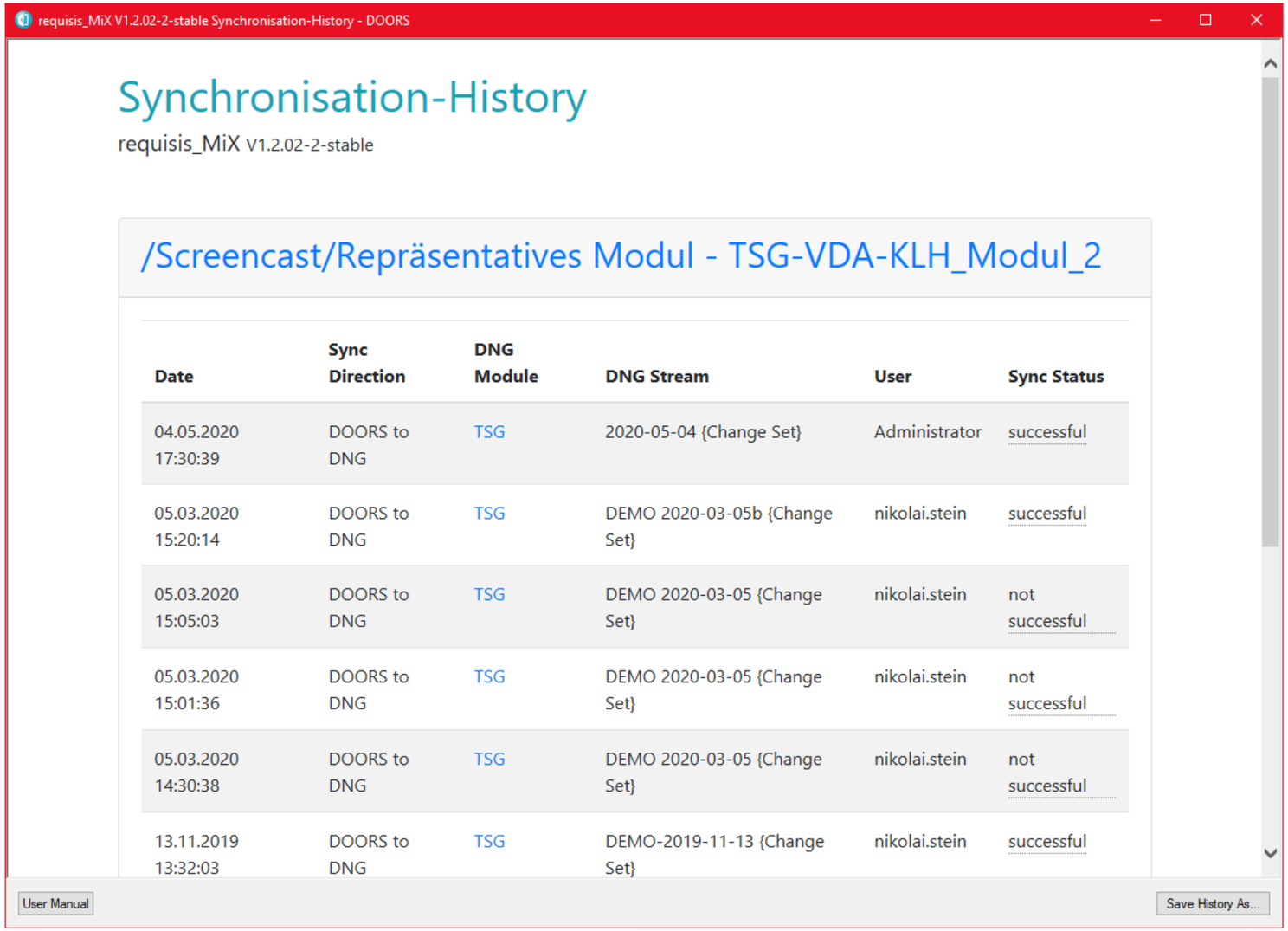
Finishing the Migration

- Review the results in DNG
- Deliver change-set if satisfied with the result
- Lock-down Modules in DOORS if desired



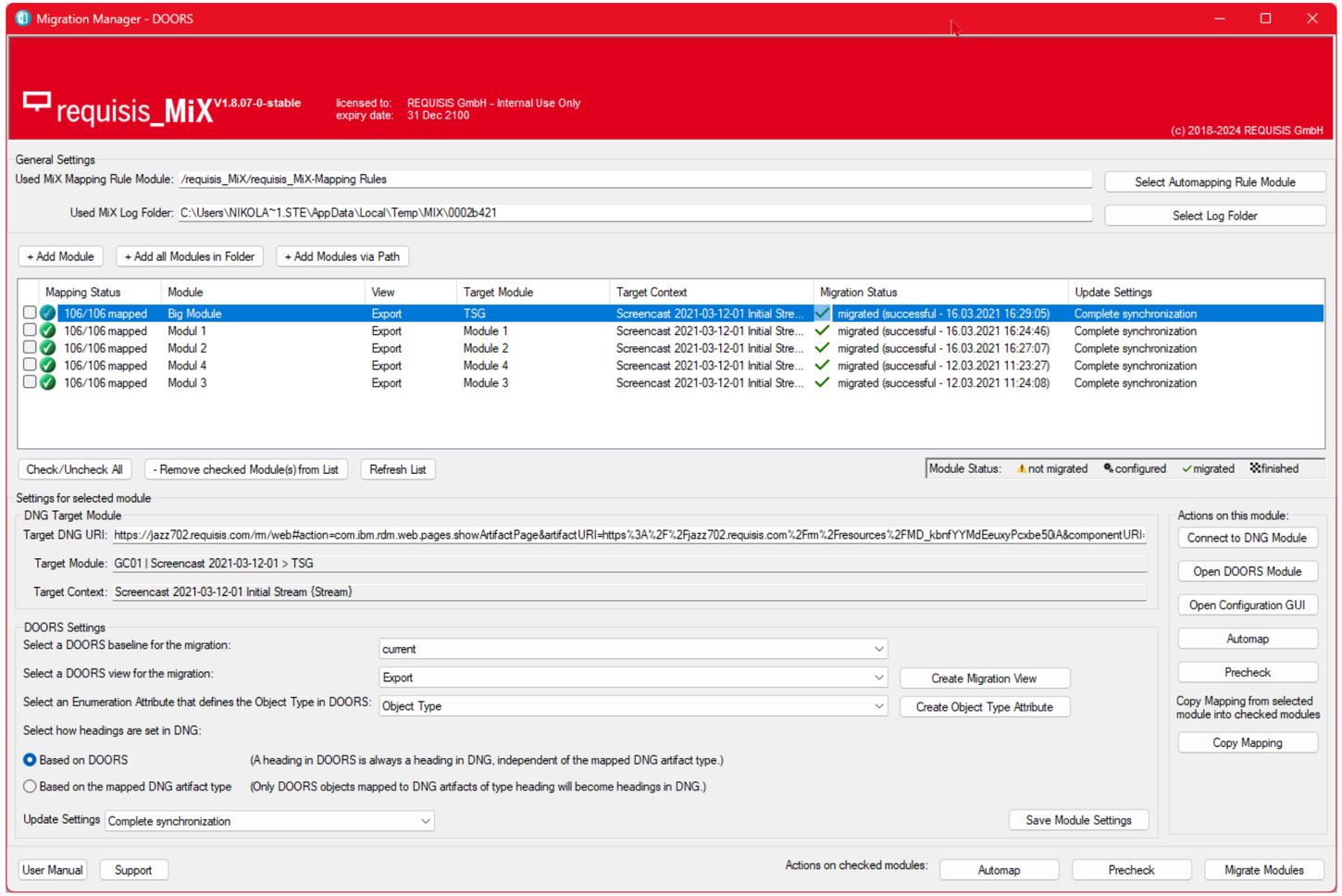
Synchronization History

- Allows to see all prior migrations of a module
- Migration Targets are stored as Module Attributes and Object Attributes (Base Aritfact and Binding-Artifact Uri)



Migration Manager

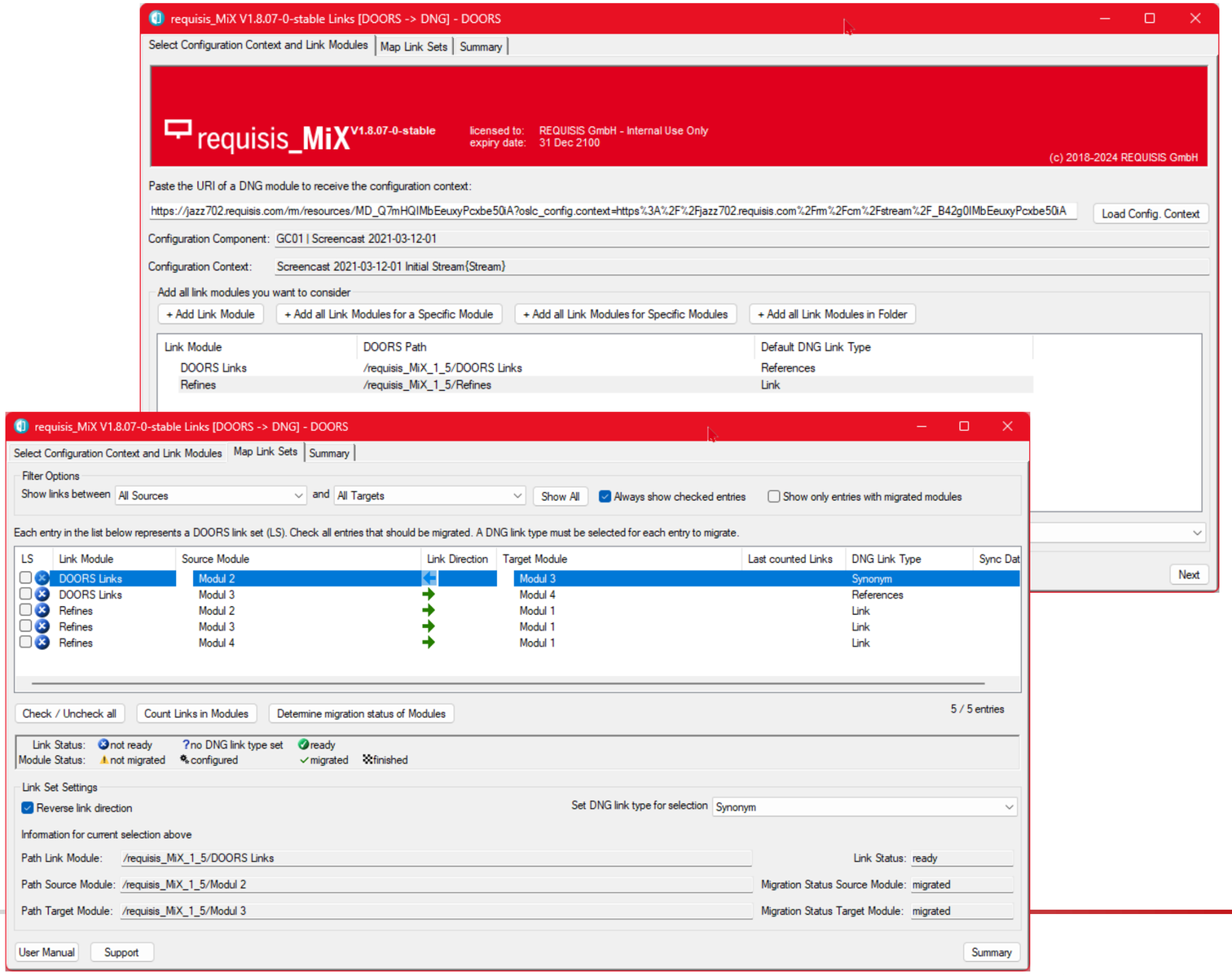
- **Conduct Migration of many modules**
  - See the status of all Modules
    - Migration Settings
    - Mapping Status
    - Migration Status
  - Bulk Actions
    - Auto-Mapping & Copy Mapping
    - Precheck
    - Migrate
- **DXL-Api**
  - Creation of Modules in Migration Manager and DNG
  - Execution of Migration-Steps



Link Migration

- Replicate Links within DOORS to Links within DNG

- Workflow
  - Select Target Configuration
  - Add DOORS-Link-Modules
  - Select Default Link Type per Link-Module
  - Modify Settings for every Link-Set
    - Link Type
    - Link Direction Reverse
  - Review Summary
  - Perform Link-Migration



requisis_Toolbox

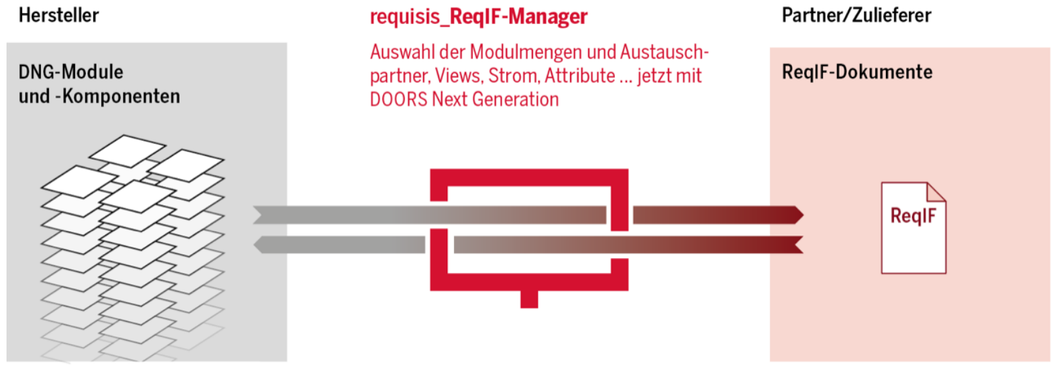
ReqIF-Interchange, ReqIF-Viewer, Module Compare

requisis_Toolbox: ReqIF-Manager

- **Function**
  - ReqIF Data Exchange
  - Configure and orchestrate round-trips
  - Reusable-Configurations
  - Pre-, Postprocessing & Automation
  - Overcoming DNG: Limitations
    - Configurations over multiple components
    - ReqIF-File Optimization for compatibility

- **Special Function for Suppliers:**
  - Mapping of Attributes to own Type System
  - Reusable-Mapping-Rules

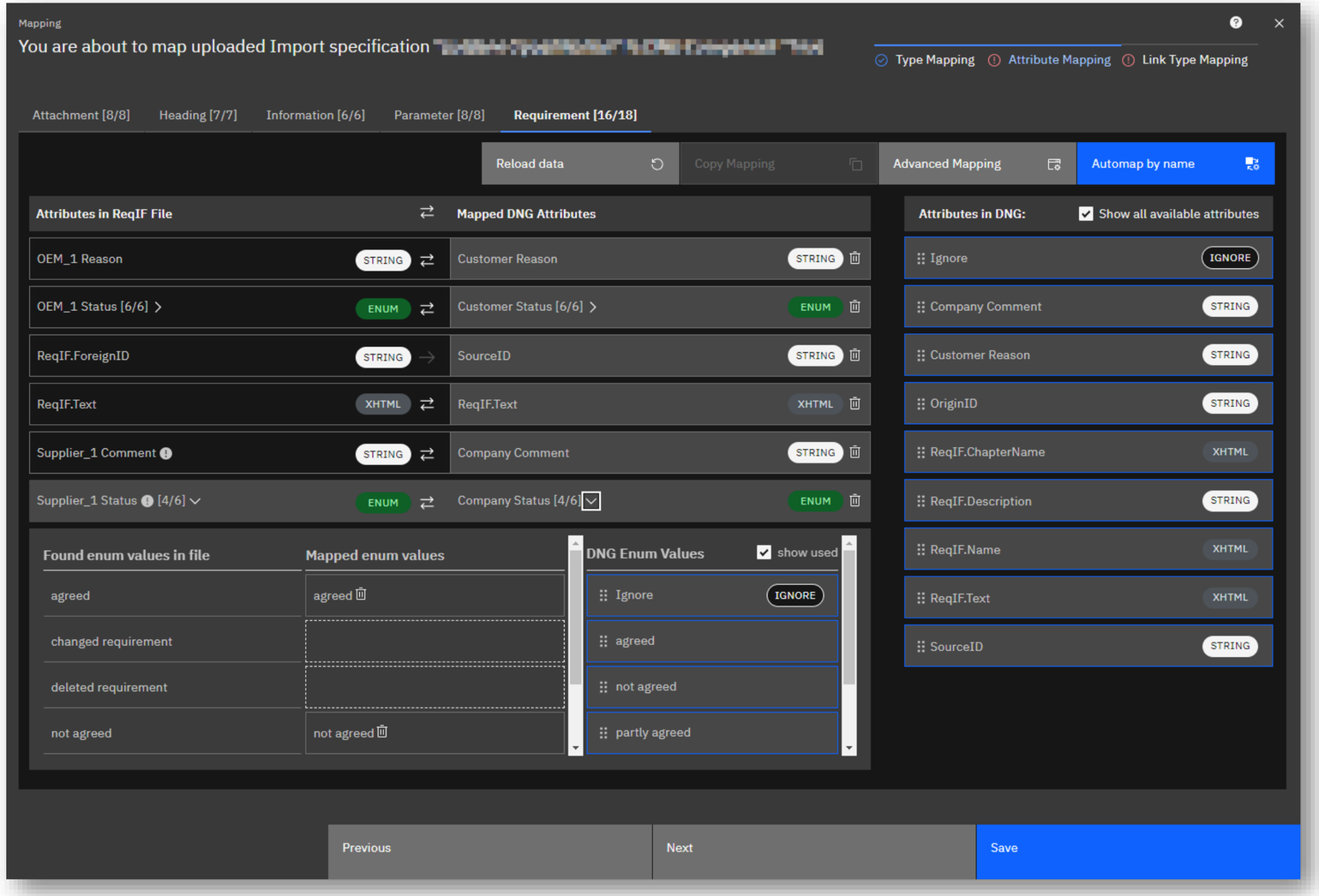
- **Special Functions for Customers:**
  - Mange Multiple Partners at the same time



ReqIF-Manager DEMO

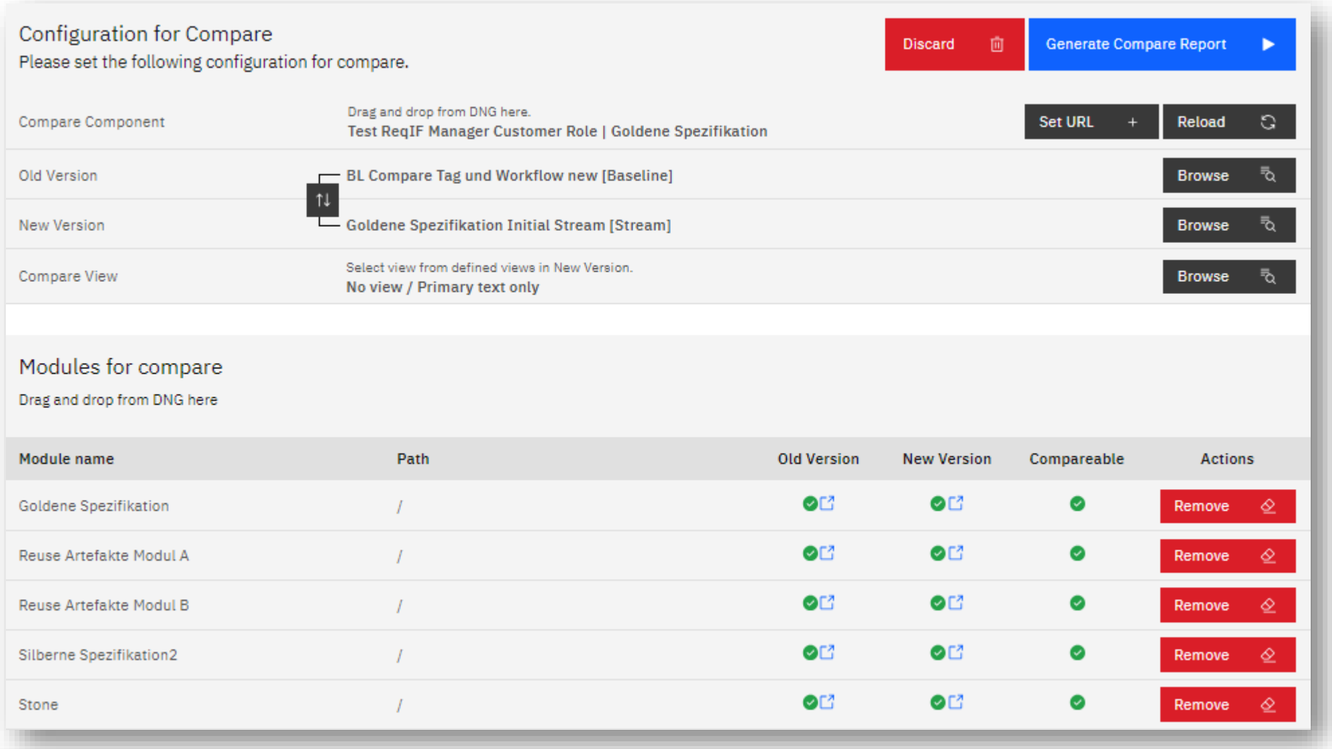
requisis_Toolbox: ReqIF-Manager: Mapping

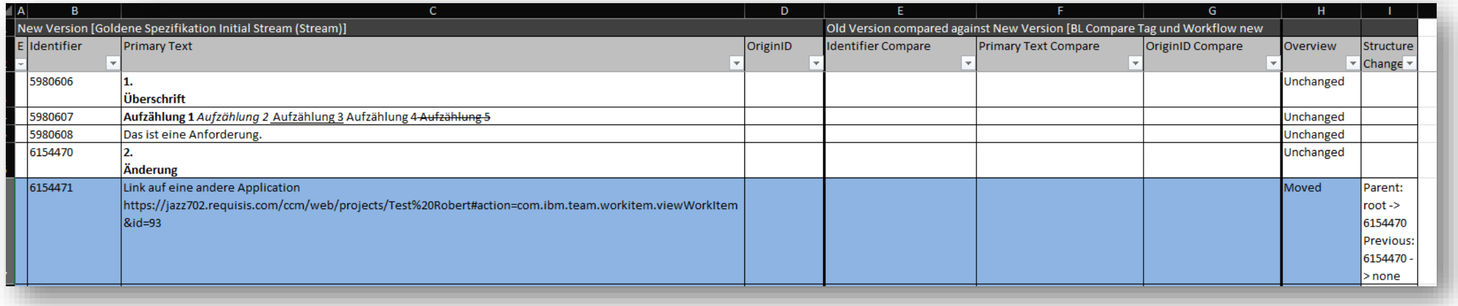
- Spec-Object Types to Artifact types
- Attributes
- Enumeration-Values
- Select Direction
- Save & Load Mapping Profiles



requisis_Toolbox: Compare-Tool

- **Function**
  - Compares Multiple Modules with another Version (Baseline, Stream, Changeset)
  - Exports to Excel
- **USPs**
  - Excel-Export of multiple Modules including Pictures in one Excel File

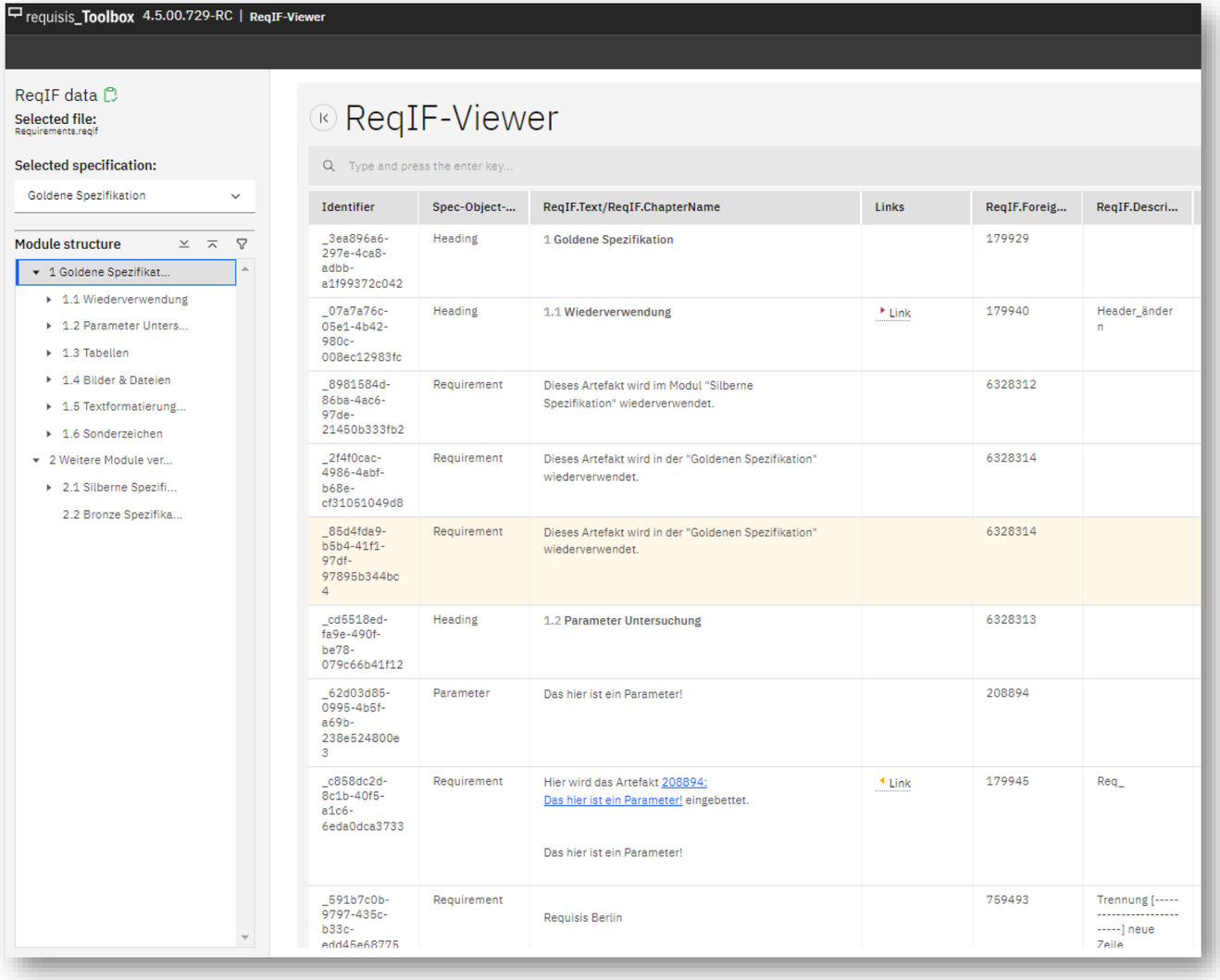




	B	C	D	E	F	G	H	I
	New Version [Goldene Spezifikation Initial Stream (Stream)]			Old Version compared against New Version [BL Compare Tag und Workflow new				
E	Identifier	Primary Text	OriginID	Identifier Compare	Primary Text Compare	OriginID Compare	Overview	Structure Change
	5980606	**1.** **Überschrift**					Unchanged	
	5980607	**Aufzählung 1** *Aufzählung 2* Aufzählung 3 Aufzählung 4 ~~Aufzählung 5~~					Unchanged	
	5980608	Das ist eine Anforderung.					Unchanged	
	6154470	**2.** **Änderung**					Unchanged	
	6154471	Link auf eine andere Application https://jazz702.requisis.com/ccm/web/projects/Test%20Robert#action=com.ibm.team.workitem.viewWorkItem&id=93					Moved	Parent: root -> 6154470 Previous: 6154470 -> none

requisis_Toolbox: ReqIF Viewer

- **Function**
  - View ReqIF-Files in Browser
  - Look and Feel like a Doors/DNG-Module
- **USPs**
  - Fast
  - Look and Feel like a Doors/DNG-Module



DNG API Gateway

Access DNG Data using a documented API

DNG-Api-Gateway: Key Features

- **RETRIEVE CONTENT**
  - Artifacts from global and local streams
  - Module content from local and global streams
  - Support for large modules
  - Attributes & Links
- **MODIFY CONTENT**
  - Read, write and modify module structures
  - Create, update and delete artifacts
  - Read and update binary artifacts
  - Add, move, delete Artifacts from the Module Structure
  - Create, Discard & Deliver Changesets
  - Create & Remove Links
- **INTERFACE**
  - Json
  - Rest & CRUD (Create, Read, Update,Delete)
- **DOCUMENTATION**
  - Documentation available as OpenAPI

DNG Api Gateway

- **Function**
  - Access Data of DNG using a defined API
  - Read, write & modify operations
  - Save time on reverse engineering DNG interfaces and use our documented interface instead
  - Stable interface, even if DNG version and interfaces change.

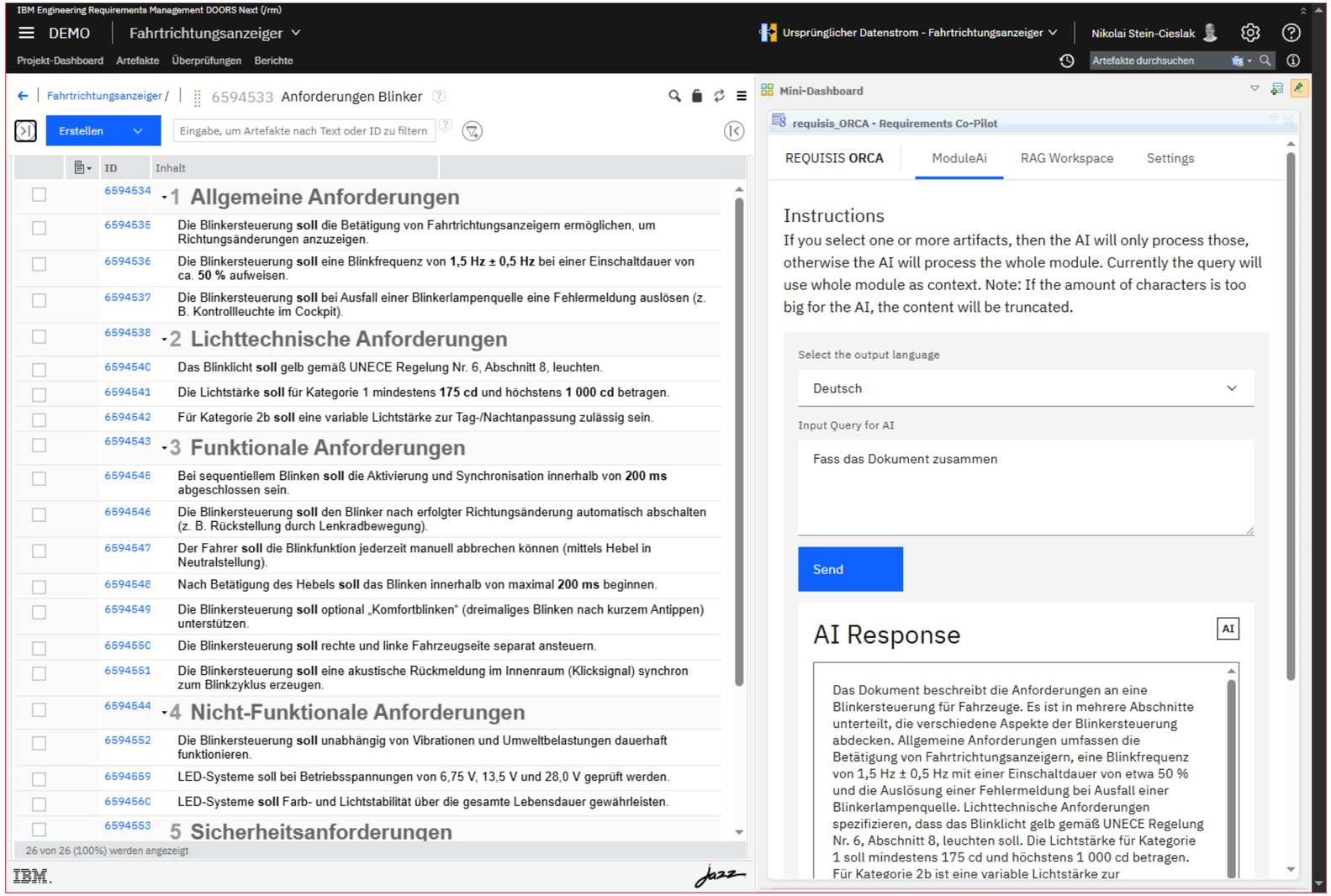
- **USPs**
  - Speed and Server-Load optimized Access to DNG Data
  - Don’t care about API-Changes of private IBM APIs
  - OpenAPI-Specification available
  - Develop optimized workflows through automations
  - Solution matured on real-world challenges.

requisis_ORCA

Ai Copilot for DOORS Next Generation

requisis_ORCA - AI Co-Pilot for DOORS Next (15 Min)

requisis_ORCA



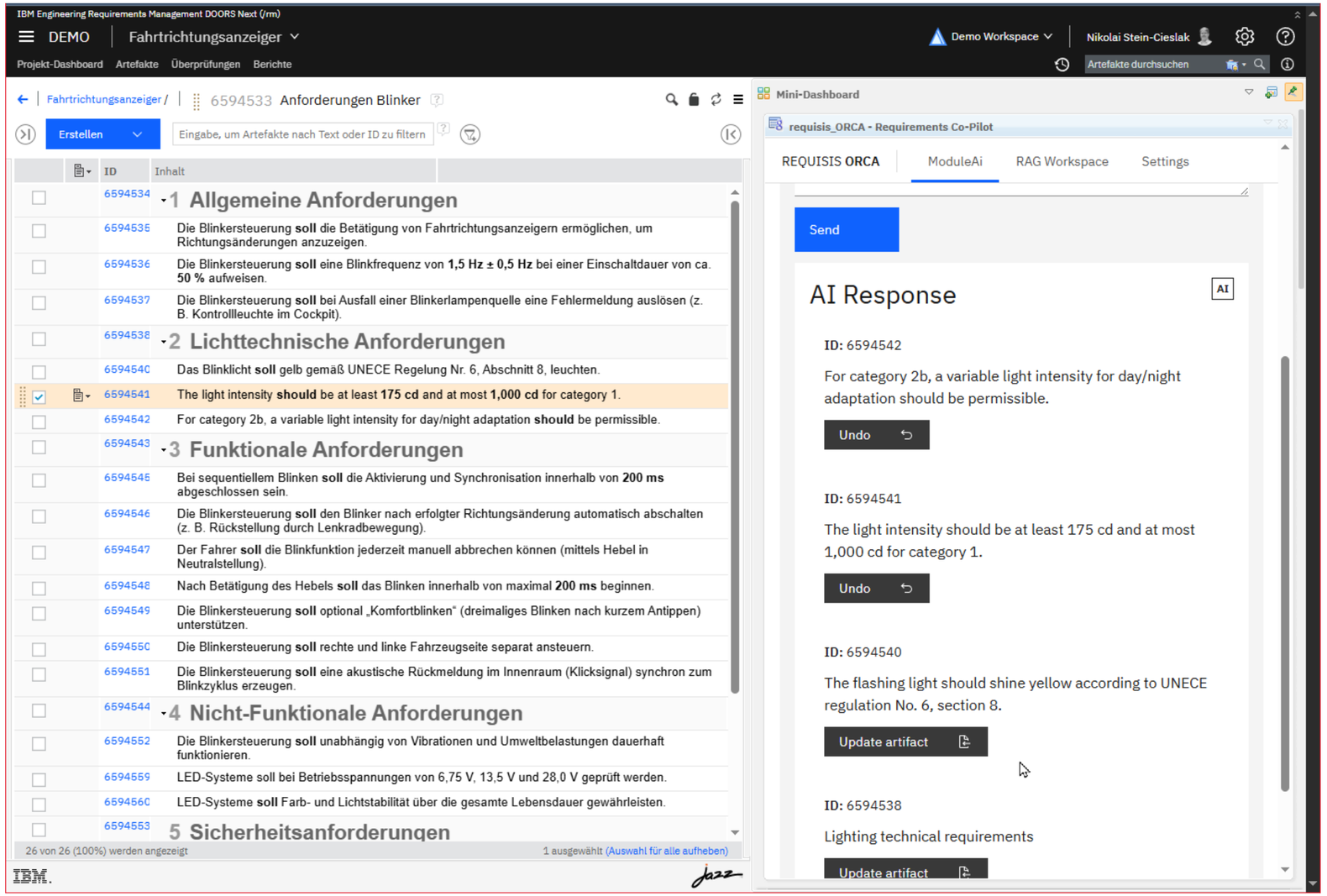
- Integrated as Widget in DOORS Next
- Example shows
  - Summary of a module

requisis_ORCA: Functions

- **Module AI**
  - Free-Text-Prompting
  - Use-Cases
    - Modifications of existing requirements
    - Text generation based on existing requirements (summary)
    - Create new artifacts (requirements, test cases…)

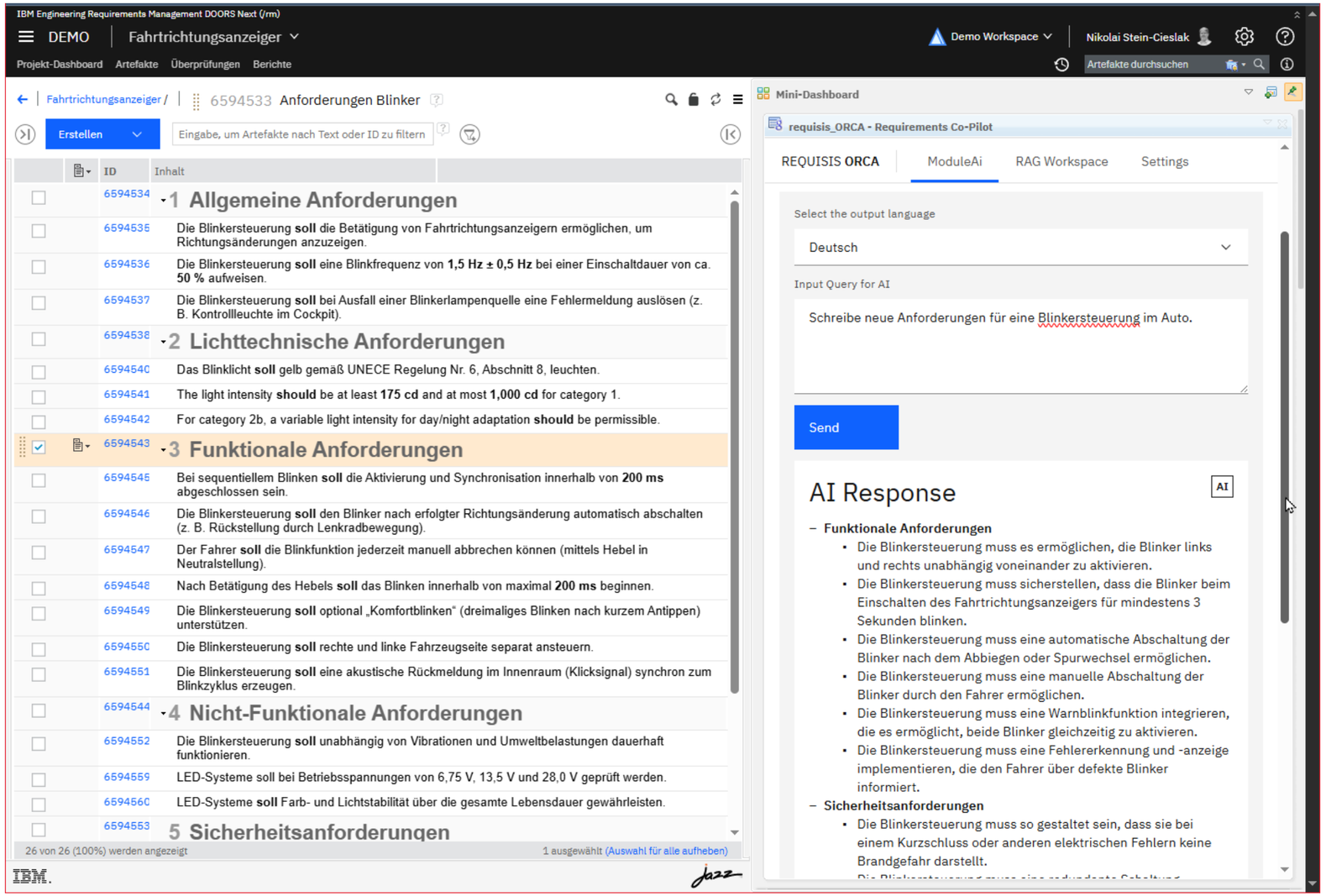
- **RAG-Workspace**
  - Upload DNG Modules and Documents (PDF, Word, Powerpoint, ReqIF)
  - Chat with documents / ask questions about the document content
  - Find related text in documents / check requirements against documents
    - Conflict detections
    - AI assisted compare

requisis_ORCA: Translate Usecase



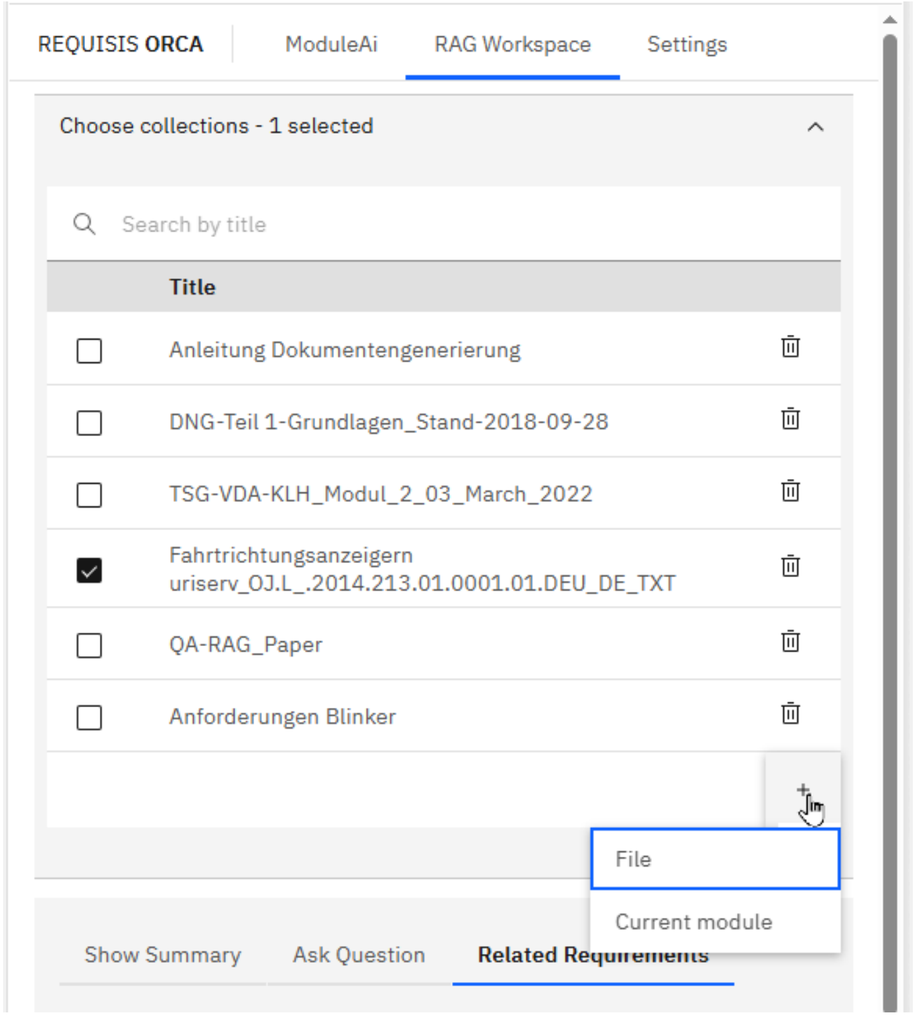
- Translate by using simple promts like „translate into english“
- Results show up per artifact
- Update on Button-Press (incl. Undo)

requisis_ORCA: Creation of artifacts Usecase



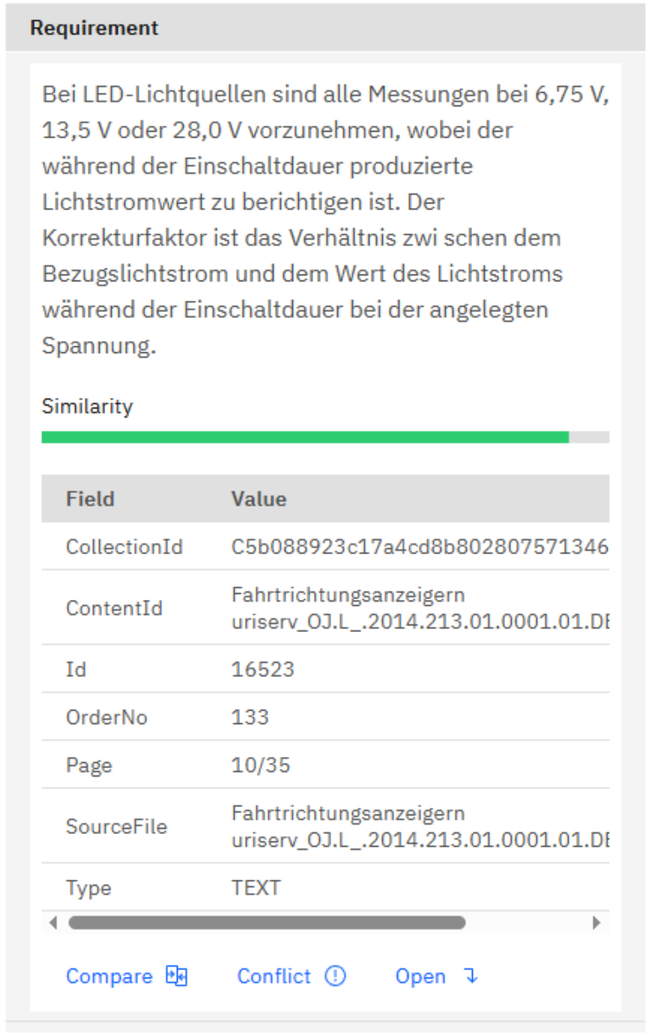
- Generate Artifacts by using simple prompts
  - Additional requirements
  - Test cases
- Add the artitfacts into same or other module by the press of a button

RAG-Workspace



- **Der RAG-Workspace**
  - Use Documents and other modules as knowledge base
  - Individual for every user
  - Upload a DNG module by a single press of a button
- **RAG usecases**
  - Chat with documents / ask questions
  - Check requirements and find related text in documents

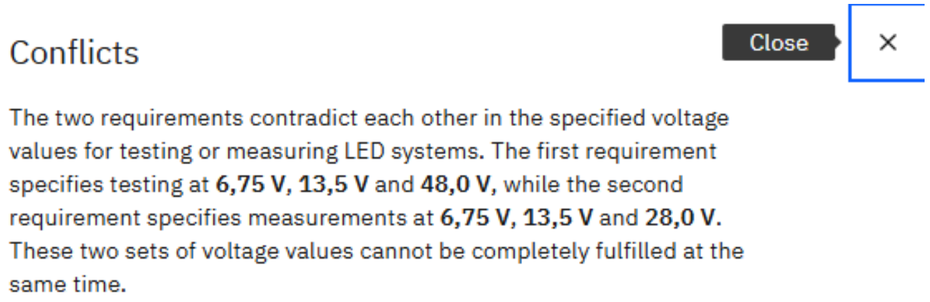
RAG-Workspace: Related Requirements



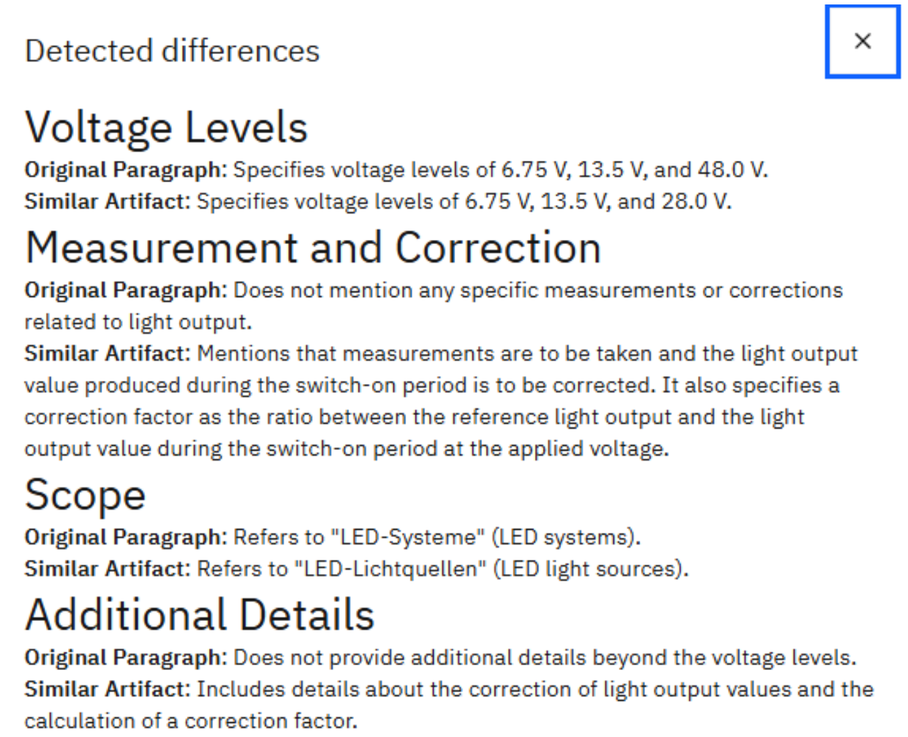
- Display of related test in other documents
- Metadata of source document
- Compare Function
- Conflict indicator
- Open the source document or module

RAG-Workspace: AI Functions

- Conflict detection between artifact and related text



- Comparisson between artifact and related text
- Display orderd by aspect or topic



requisis

Eyes on the horizon.
Feet on the ground.

Thank you for your attention!

Book a Meeting now for deeper discussion

https://hub.requisis.com/meetings/nikolai-stein