Requirements Lifecycle Management

Visure Requirements Integration with RiskCAT

Visure Solutions

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1. Visure Requirements Integration with RiskCAT

1.1. Introduction

Regulations are one of the most critical inputs for functional and especially non-functional requirements in the development of embedded systems and software nowadays.

The integration between RiskCAT and Visure Requirements allows to integrate these standards directly in the requirements platform. RiskCAT:

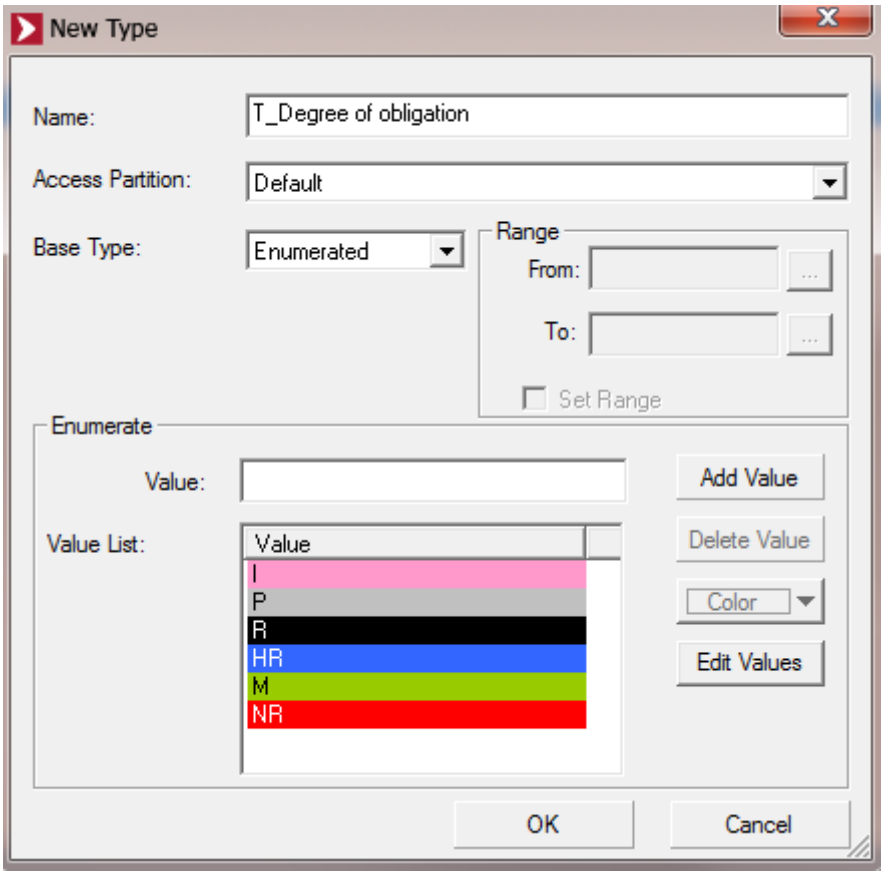
- Assists in determining the risk of the system according to the standard.
- Automatically derives the Safety Integrity Level (SIL) of the system according to the standard.
- Indicates the degree of obligation (recommended, mandatory, ...) for each measure.
- Enables the user to select the measures that shall be applied.
- Measures can be selected according to their relation to certain documents, activities, or key words.
- Allows on-line access to the exact wording of the measures or the definition of terms in the standard.
- Documents all decisions for review.
- Generates checklists for the selected measures.
- Store/Reload enables to start working with user-defined preselections of measures (e.g. company-wide guidelines).
- For almost all supported standards, a comparison module is available as extension. It allows comparing IEC 61508 (SIL 3) to the respective standard.

The interface between RiskCAT and Visure Requirements is a joint offering, composed of a licensed package provided under license agreement by RiskCAT, and the Visure Requirements import tool provided as an out-of-the-box capability in Visure Requirements.

1.2. Visure Requirements set up

Before being able to import the prescriptions, the following steps need to be done in Visure Requirements once:

- Definition of an enumerated attribute type as shown in the following image:



Name: any name can be chosen (you will use this type later in an attribute definition)

Access Partition: chose an appropriate access partition (be aware that the user performing the import must be able to assign values to the corresponding attribute)

Base Type: Enumerated

Value List: the value list must at least contain the values that appear in the "Degree of obligation" column in the file exported by RiskCAT (e.g. for IEC 61508 the values *I*, *P*, *R*, *HR*, *M* and *NR* are used) (in addition you may assign colors to each value)

- Definition of the following attributes:
  - *RiskCAT Identifier* (of type *TEXT*)

- *Source* (of type *TEXT*)
- *Degree of obligation* (of the type defined above)
- RiskCAT Export Settings (of type TEXT)
- Simple Note (of type TEXT) [only needed if Simple Note was exported from RiskCAT]

- Optionally you may define a dedicated block for the standard to be imported and you may assign the attributes defined above to this block making sure that the attributes are not available for any other requirements managed in Visure Requirements

For more information on how to define and configure attributes, attribute types and blocks please refer to the Visure Requirements documentation.

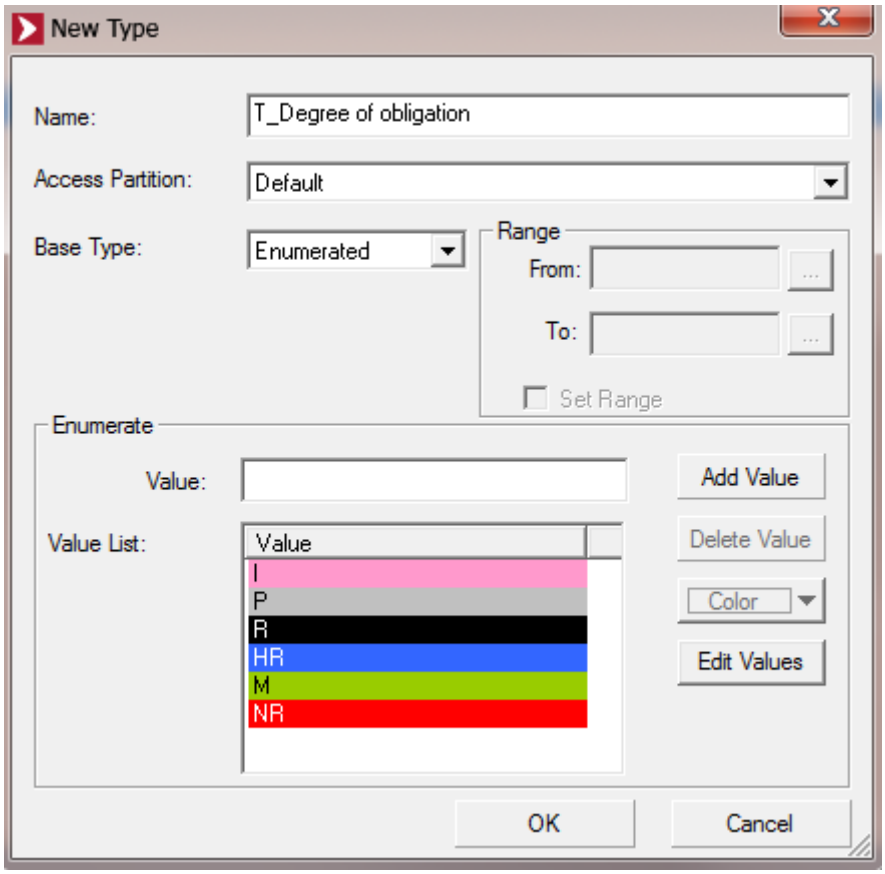
1.3. Exporting from RiskCAT

The RiskCAT export package provides a script to generate an intermediate .csv file, compatible with Visure Requirements. For further information on this package, please contact RiskCAT.

1.4. Importing into Visure Requirements

Before being able to import the previously exported prescriptions the following steps need to be done in Visure Requirements (if not already done before):

Definition of an enumerated attribute type as shown in the following image:



Name:	any name can be chosen (you will use this type later in an attribute definition)
Access Partition:	chose an appropriate access partition (be aware that the user performing the import must be able to assign values to the corresponding attribute)
Base Type:	Enumerated
Value List:	the value list must at least contain the values that appear in the "Degree of obligation" column in the file exported by RiskCAT (e.g. for IEC 61508 the values *I*, *P*, *R*, *HR*, *M* and *NR* are used) (in addition you may assign colors to each value)

- Definition of the following attributes:
  - *RiskCAT Identifier* (of type *TEXT*)
  - *Source* (of type *TEXT*)
  - *Degree of obligation* (of the type defined above)
  - RiskCAT Export Settings (of type TEXT)
  - Simple Note (of type TEXT) [only needed if Simple Note was exported from RiskCAT]
- Optionally you may define a dedicated block for the standard to be imported and you may assign the attributes defined above to this block making sure that the attributes are not available for any other requirements managed in Visure Requirements

For more information on how to define and configure attributes, attribute types and blocks please cf. in the Visure Requirements documentation.

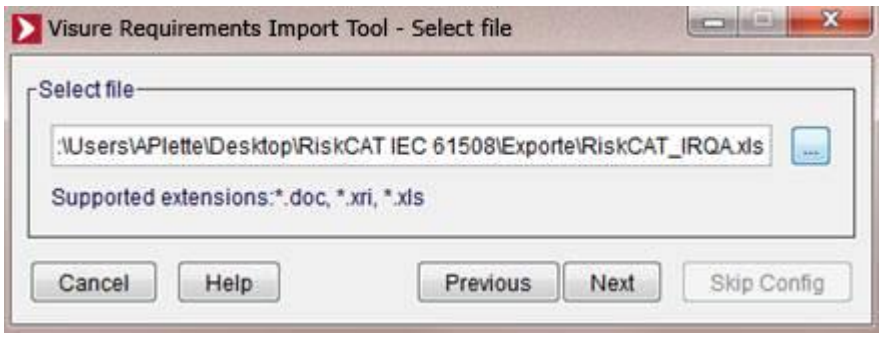
For the import itself follow these steps:

1) Convert .csv to .xls
   Open the file exported by RiskCAT (*.csv) using MS Excel and save the file in Excel 97 – 2003 format (*.xls).

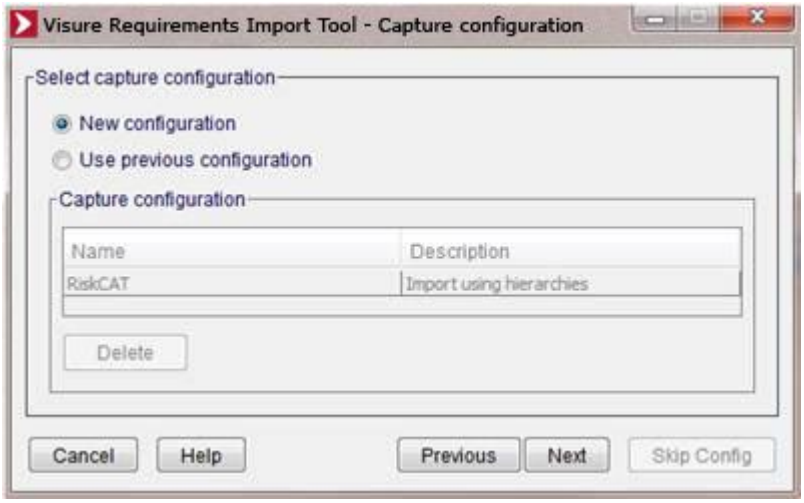
2) Perform the import in Visure Requirements using Import Tool (a detailed description how to use Import Tool can be found in the Visure Requirements documentation):

   a. From within the Visure Requirements Client select **Project → Import** from the menu

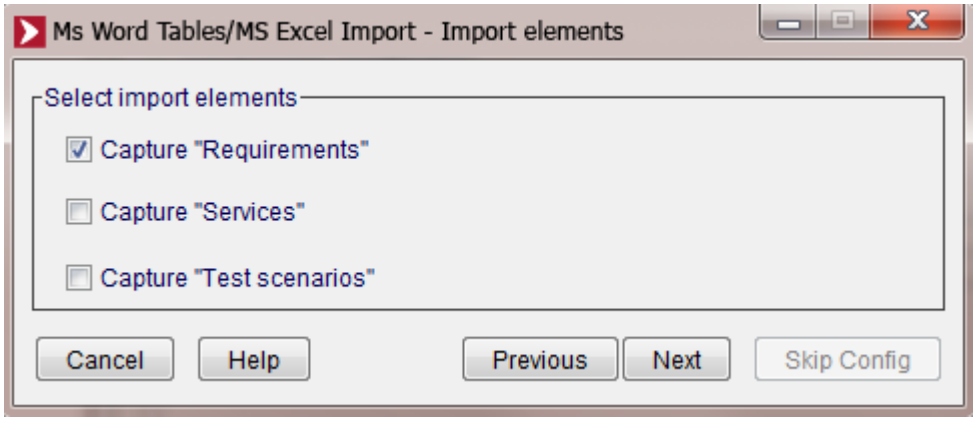
b. Select the *.xls file created above and click Next:



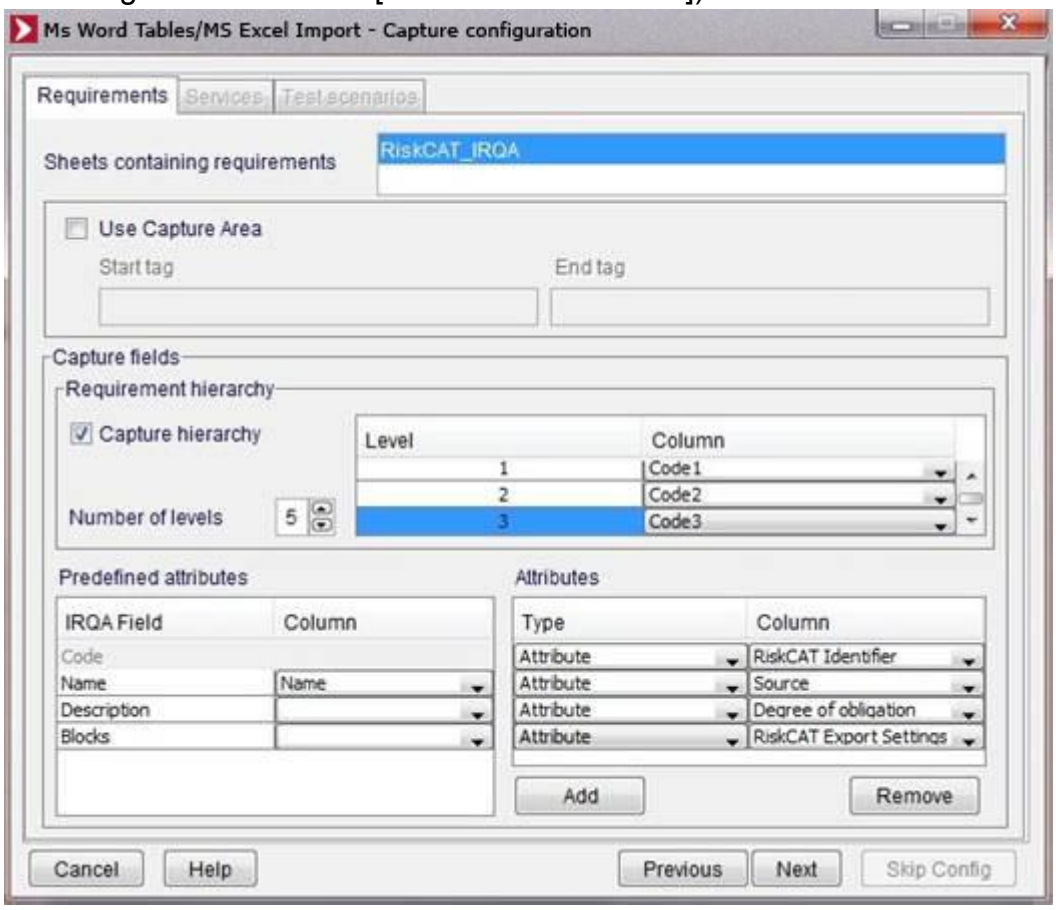
c. Select *New configuration* and click Next (if you already have done an import before and you have saved the configuration you may select *Use previous configuration* and chose an appropriate *Capture configuration*):



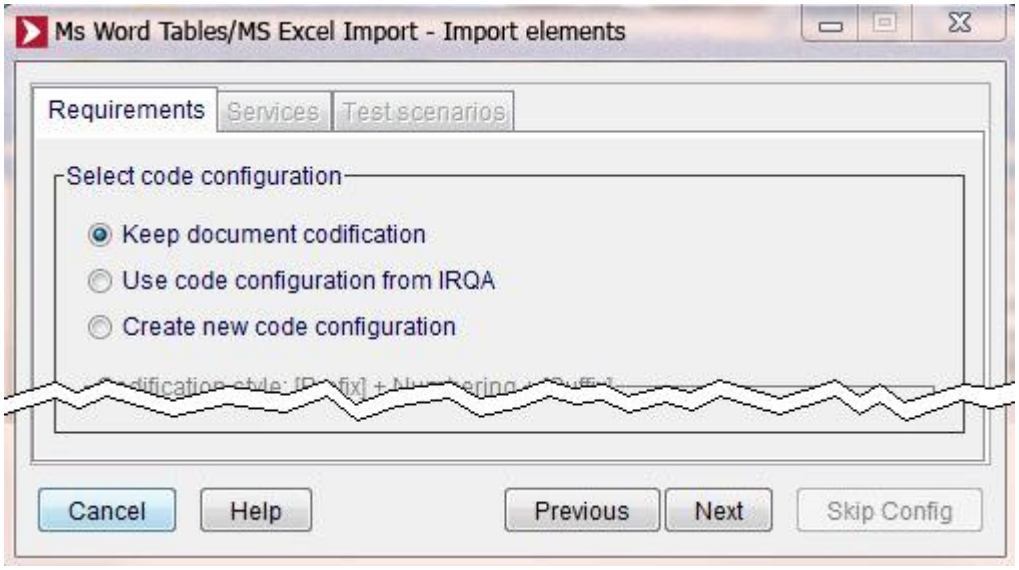
d. Check *Capture Requirements*, uncheck the other options and click Next:



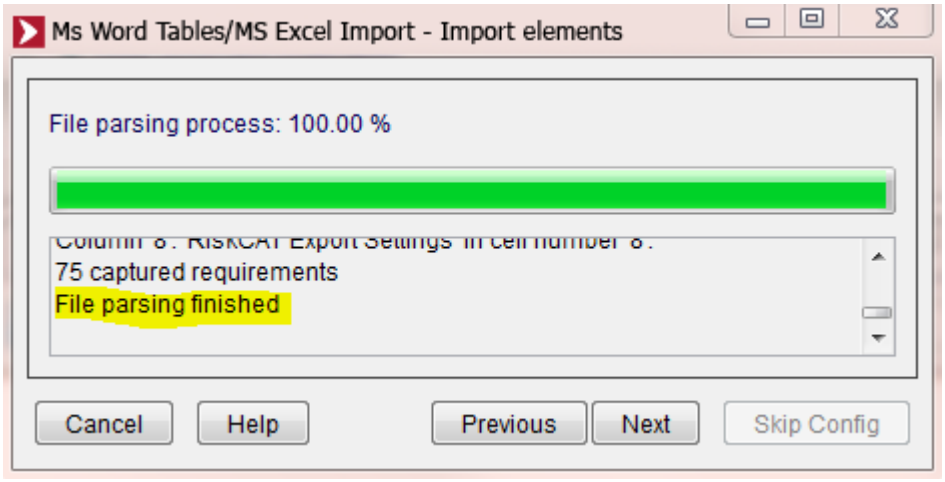
e. Configure the details as indicated in the screenshot below and click Next (you may also add “Simple Note” in the Attributes section if “Simple Note” was exported from RiskCAT; don’t forget Level 4 and 5 [“Code4” and “Code5”]):



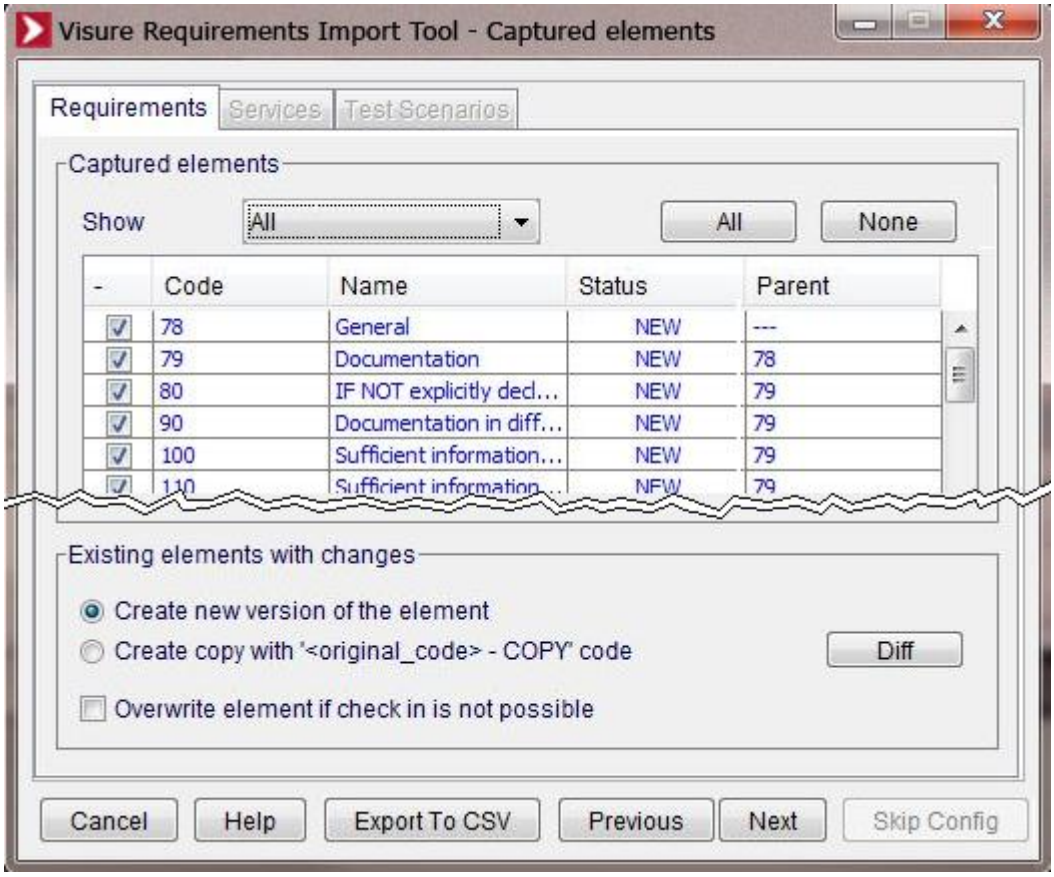
f. Make sure that *Keep document codification* is selected and click Next:



g. Wait until “File parsing finished”, then click Next:



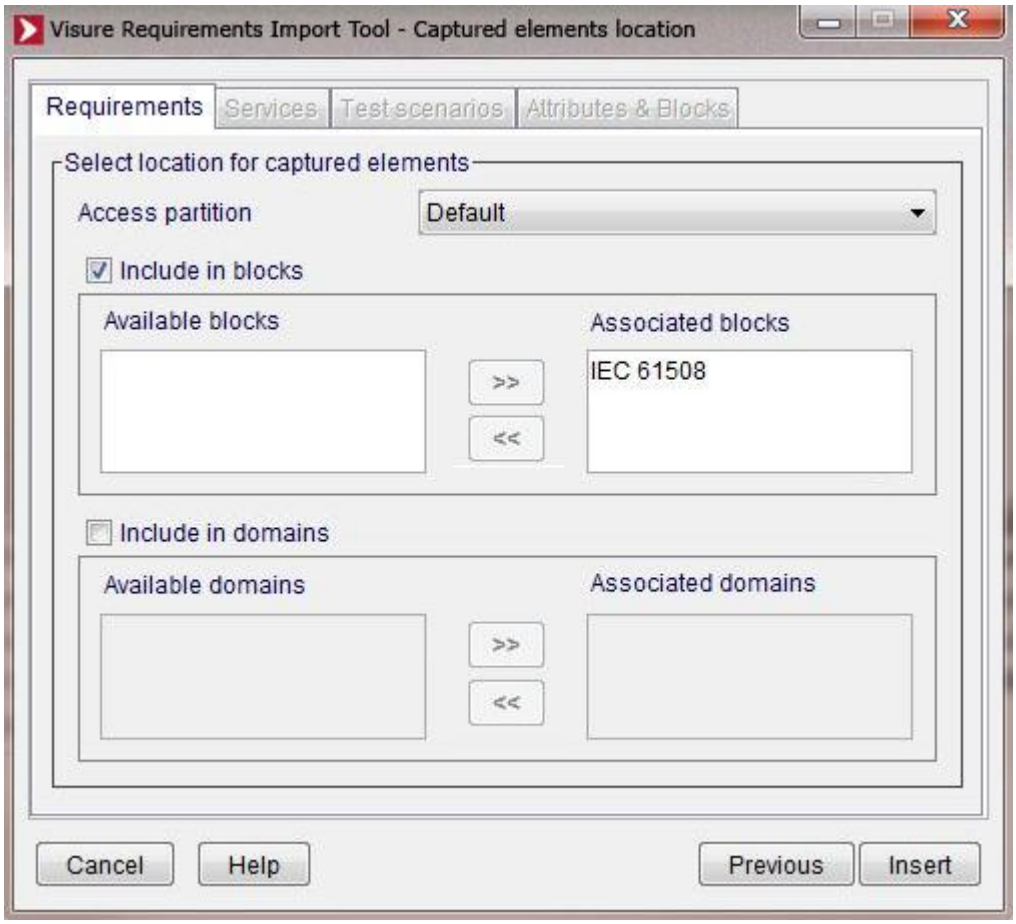
h. Check the result of the capturing process carefully, then click Next:



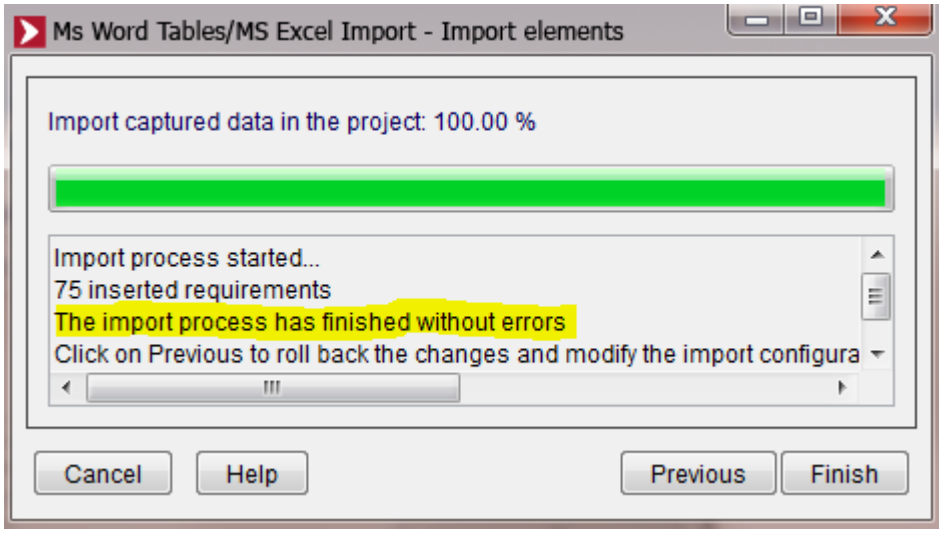
NOTE: the Status column in the *Captured elements* list indicates whether an individual element already exists with the same code in the Visure Requirements project. This may happen if you import from RiskCAT repeatedly or if you have already used the same code(s) – for whatever reason – in your project. In these cases the status is either

CHANGED or **UNCHANGED**. Please pay special attention to **CHANGED** elements to make sure not overwriting other requirements by accident.

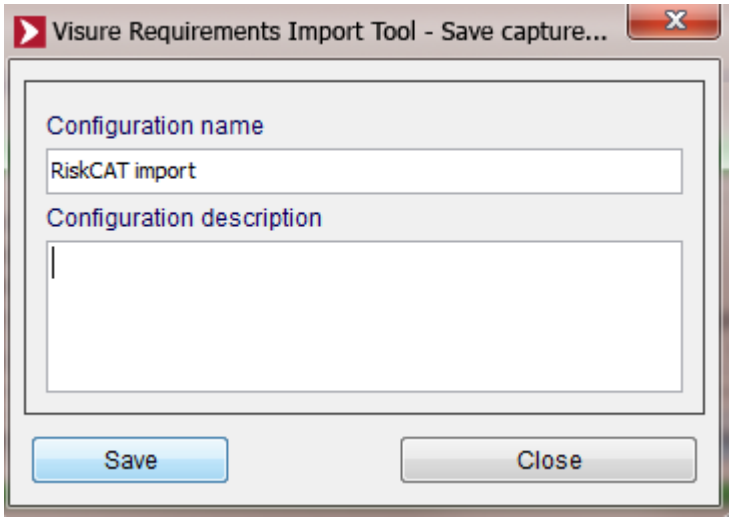
i. Select an appropriate Access partition and – if appropriate – select block(s) and/or domain(s) in which the captured elements will be included, then click Insert:



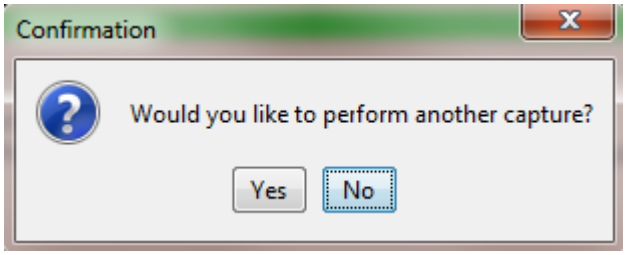
j. Click Finish after the import process is done:



k. You may save the current import settings for future reuse (or click Close for closing without saving the settings):



l. To run another import click Yes, otherwise No:



After a refresh in the Visure Requirements Client (F5) the imported data may look like this (it is recommended to use a hierarchical view for the imported data):

Code	Name	Degree ...	RiskCAT Ex...	Source	Simple Note
EN50128_A0003 (59)	Design and development (D+D)				
EN50128_T0303 (4)	SW design and implementation				
EN50128_T0304 (34)	SW design and implementation; techniques				
EN50128_0500 (33)	Choice of a suitable set of techniques for SW...	M	SWSIL 2	IEC 62279: Table A.4	
EN50128_0501	> Formal Methods including for example CC...	R	SWSIL 2	IEC 62279: Table A.4.1	Although it's just recommended we should take special care on this.
EN50128_0502	> Semi-Formal Methods [is detailed in the Ri...	HR	SWSIL 2	IEC 62279: Table A.4.2	
EN50128_0503	> Structured Methodology including for exa...	HR	SWSIL 2	IEC 62279: Table A.4.3	
EN50128_0504	> Modular Approach	M	SWSIL 2	IEC 62279: Table A.4.4	
EN50128_0505 (5)	> Choice of a suitable set of techniques for ...	M	SWSIL 2	IEC 62279: Table A.4 / Table A.20	
EN50128_0506	>> Module Size Limited	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.20.1	
EN50128_0507	>> Information Hiding/Encapsulation	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.20.2	
EN50128_0508	>> Parameter Number Limit	R	SWSIL 2	IEC 62279: Table A.4 / Table A.20.3	Not important to us.
EN50128_0509	>> One Entry/One Exit Point in Subroutines ...	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.20.4	
EN50128_0510	>> Fully Defined Interface	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.20.5	
EN50128_0511	> Design and Coding Standards	HR	SWSIL 2	IEC 62279: Table A.4.5	
EN50128_0512 (7)	> Choice of a suitable set of techniques for ...	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.12	
EN50128_0513	>> Coding Standard Exists	HR	SWSIL 2	IEC 62279: Table A.4 / Table A.12.1	

1.5. Conclusions

The interface between RiskCAT and Visure Requirements allows to ease the compliance of so many regulations and standards that apply to Embedded Systems and Software development.

RiskCAT allows to extract the set of standard requirements that apply to the environment in which the development is taking place, whereas Visure Requirements allows to manage them accordingly, allowing to analyse them in the context of the complete system and the rest of the requirements, establishing which ones apply and which don't.

Tracing those requirements that do apply to lower level requirements, and to the corresponding acceptance, system and component test will help establish validation and verification procedures to guarantee compliance.

Finally, the reporting capabilities in Visure Requirements will make it possible to generate all the required compliance documentation.