

## RIF import in APIS IQ Software

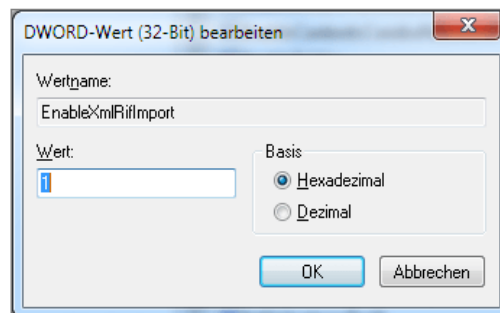
The interface was developed and provided within the bounds of a university project. It facilitates the import of data in the so-called RIF format<sup>1</sup>. This is an XML specification<sup>2</sup> that was defined to interchange requirements (Requirements Interchange Format). Among others, IBM Rational DOORS<sup>(TM)</sup> supports this format.

The extended editions APIS IQ-FMEA PRO and APIS IQ-RM PRO support the customer requirements management.

Requirements are imported initially as customer requirements. In the second step, characteristics for the system structure are generated from them. They are the starting point of the further FMEA.

### **Requirements:**

To make the option available in the IQ Software, you need to set up the option “EnableXmlRifImport” in the Windows Registry Editor (e.g. at HKEY\_CURRENT\_USER/Software/Apis/IQ65/IQ-RM PRO/Settings) and set it to 1. For versions earlier than IQ 65, make sure to use the branch corresponding to the current installation. This is displayed e.g. via *Help / Information*.



*Figure 1: Enable RIF import*

Furthermore, enable the “Customer requirements management” in the workstation settings. DOORS versions 9.2<sup>3</sup> and later include the RIF export. An additional tool needs to be installed for previous versions.

### **Procedure:**

1. Select the XML file generated from DOORS via *File / Open*. Note: This is not an MSR standard XML, but the RIF format (see above).

2. A dialog window opens, where you can configure the so-called export scheme. It is important to know that RIF is not a strictly specified declaration, but can be adjusted to a special environment. This configuration dialog is required for the import to be standardized to such adjustment. Once adjusted, the scheme can be used for all RIF documents within this export scheme.

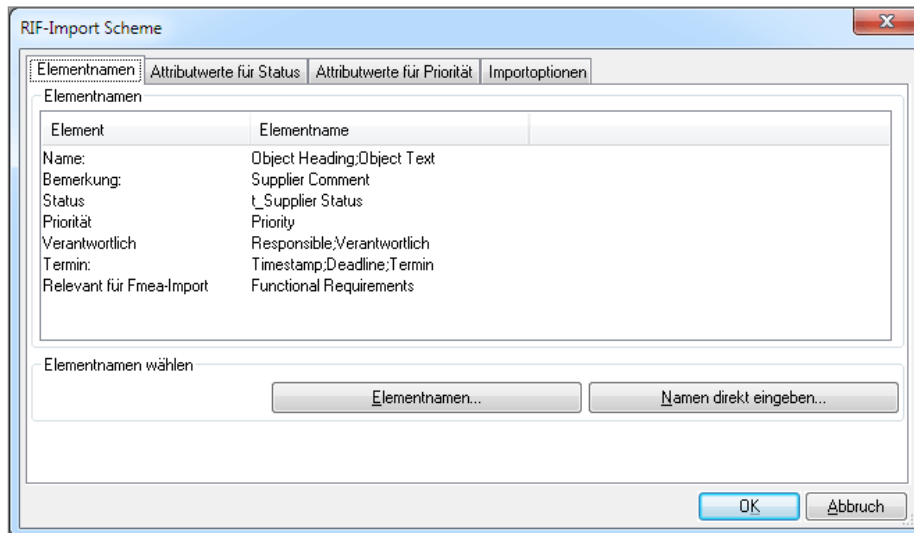


Figure 2: Configuration dialog for RIF export scheme

You can set various import options.

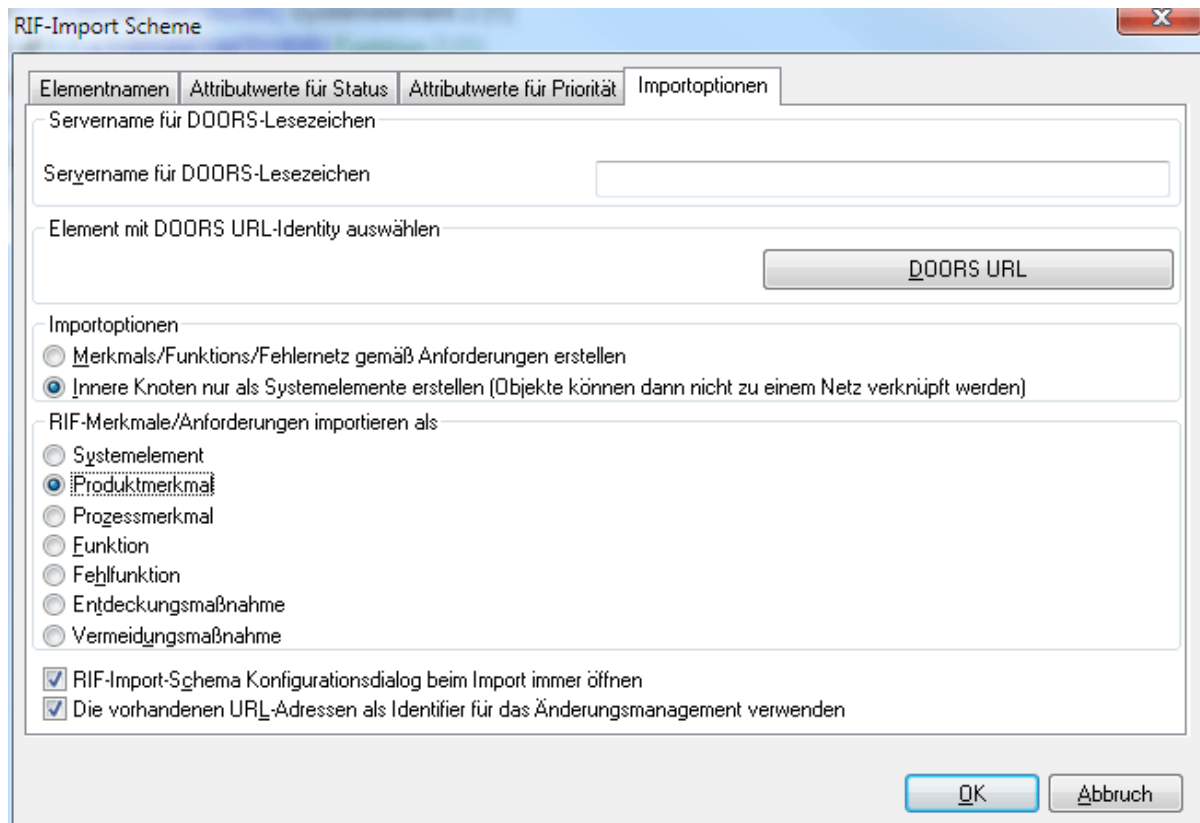


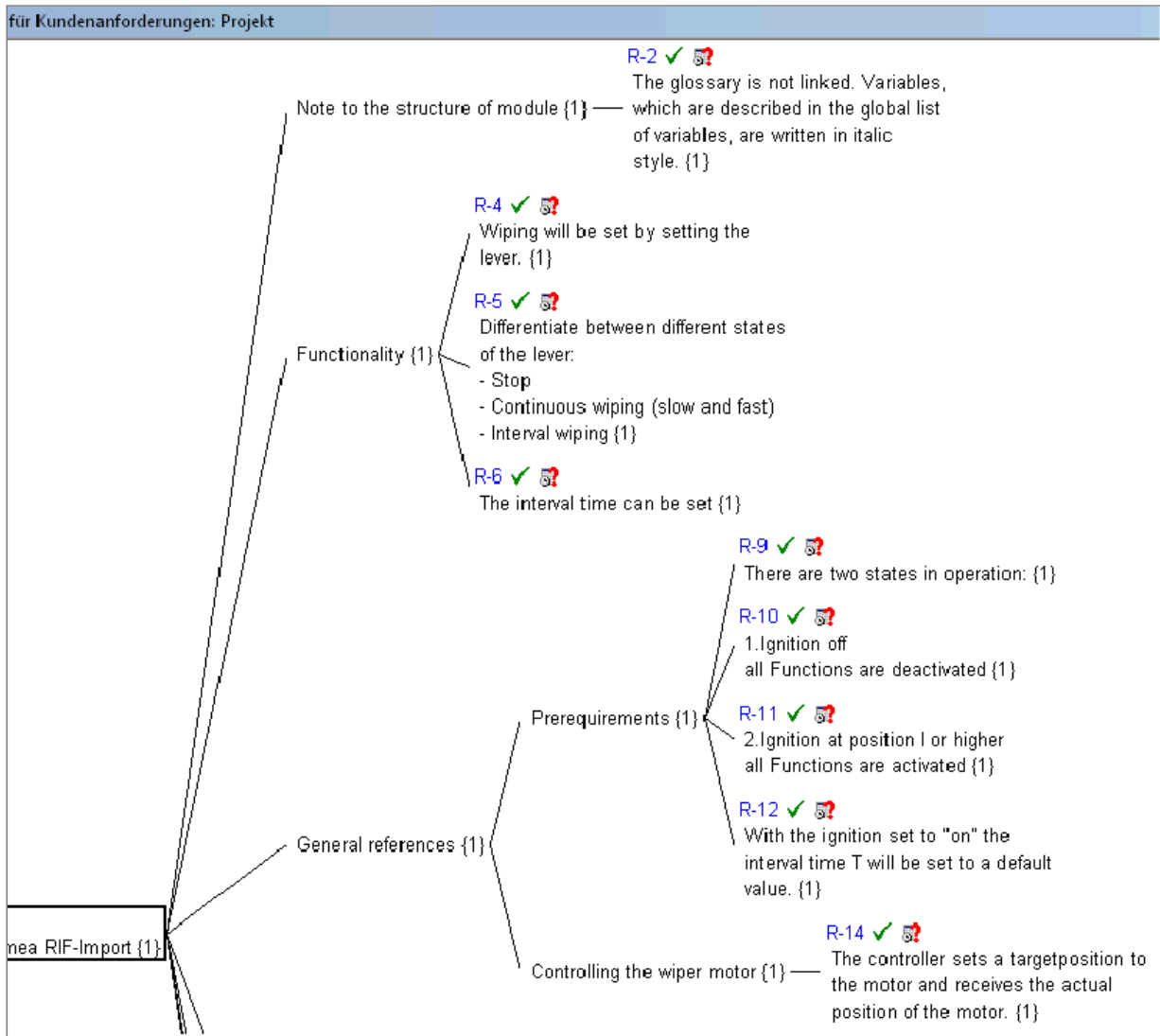
Figure 3: RIF import options

The server name is the target address for bookmarks in the IQ Software. Each generated customer requirement and each generated characteristic contains a bookmark that enables you to go to the correct location in the requirement software (DOORS) simply by a mouse click. You can freely choose the identifier. The default identifier is that which identifies the individual requirements in XML. However, you can also apply an arbitrary XML element (see button DOORS URL). The reasonable application is given by the export scheme used in the respective DOORS environment.

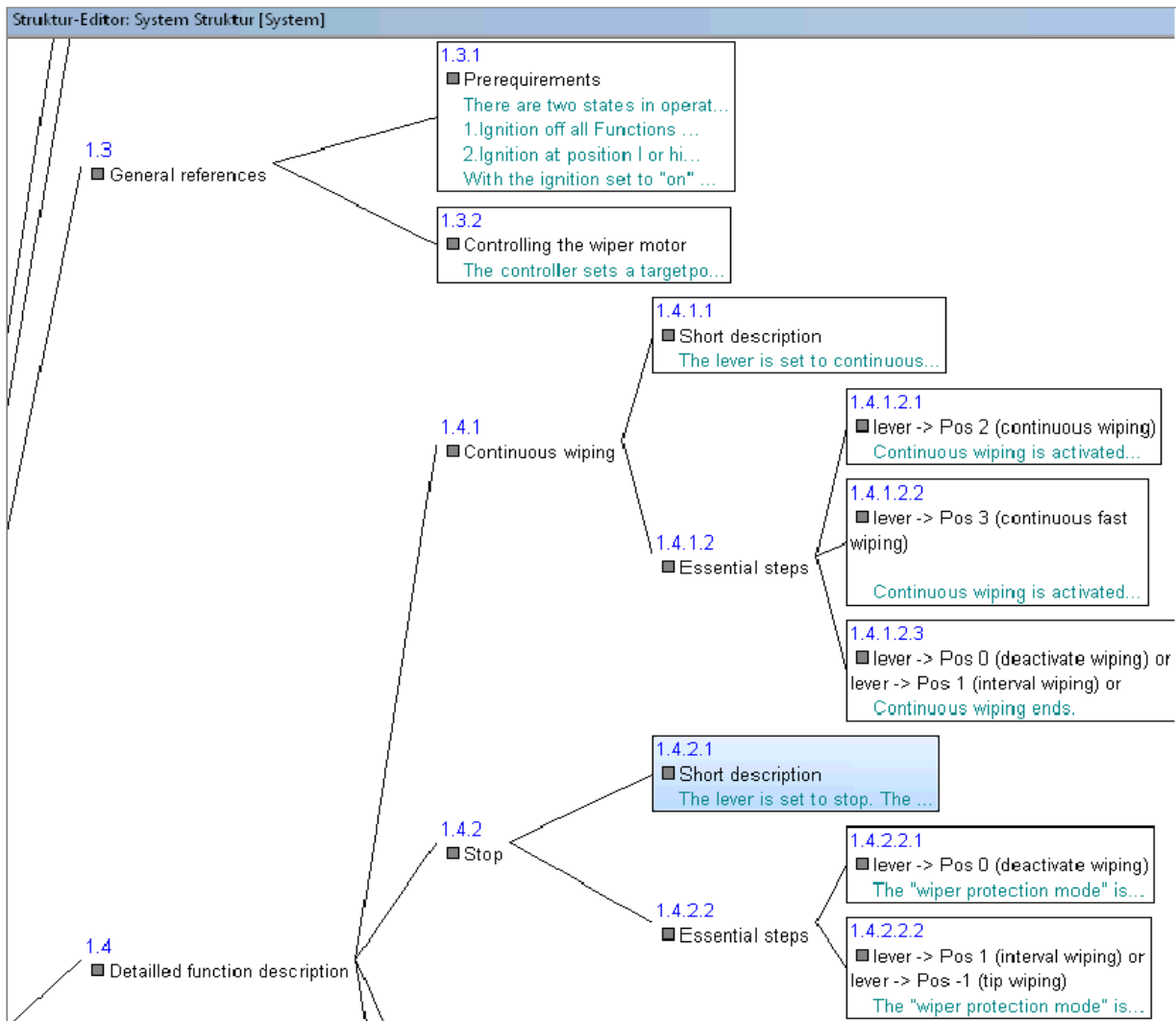
### ***Import of requirements (examples)***

Another important option is how the requirements are further processed in the second step. They can be imported either as product characteristic or as process characteristic (or as selected).

You can furthermore select how to anchor the characteristics in the structure. They can be linked similarly to the hierarchy of requirements. As an alternative, internal requirement nodes can be interpreted as system elements.



The resulting characteristics in the system structure (example with option “Generate internal nodes as system elements”):



## ***Description on how to interpret the import scheme:***

### **Register “Element names” (definition with default value, see fig. 2):**

**Name of requirement:** 'VALUE-OBJECT TEXT':

**Comment:** 'VALUE-SUPPLIER COMMENT':

**Status:** 't\_Supplier Status':

**Priority:** 'Priority':

**Responsibility:** 'Responsible':

**Deadline:** 'Deadline':

**Relevant to import:** 'Functional Requirements':

### **Register “Attribute values”, elements to assign in IQ FMEA:**

Status:

**Accepted:** 'ACCEPTED'

**Rejected:** 'REJECTED'

**Postponed:** 'POSTPONED'

Or condition:

**In progress:** 'INPROGRESS'

**Finished:** 'FINISHED'

Priority:

**High:** 'HIGH'

**Medium:** 'MEDIUM'

**Low:** 'LOW'

### **Register “Import options”:**

#### **Server name for DOORS bookmarks:**

Contains the name by which the Doors server is reached (default DOORS://)

#### **DOORS URL:**

To specify which element contains the URL for the Doors object behind. This is used to create a bookmark to the Doors object in IQ FMEA. By default, the ID of an object is applied.

#### **Create characteristics net according to requirements:**

This option causes the characteristics generated from the requirements to be linked to each other in the same hierarchical structure as the requirements.

#### **Generate internal nodes as system elements:**

This option causes that system elements (and thus the system structure) - and not characteristics - are generated from internal nodes of the requirements tree. Otherwise, artificial system elements are generated and inserted into the respective level.

**Product characteristics or process characteristics** (or as selected):

To specify whether process characteristics or product characteristics (or system elements, functions, failures, or actions respectively) are to be generated from the requirements.

**Always open configuration dialog for RIF import scheme upon import:**

To prevent the configuration dialog for the import scheme from opening upon every import

**Use available URL addresses as identifiers for revision management:**

The import and subsequent reimport provides for the possibility of revision management, where you can e.g. add new requirements or rename existing requirements. The ID is used for identification by default. This option causes the element specified for the URL to be used as identifier for the revision management instead. That is necessary, if new (other) IDs are generated for the requirements upon every export from Doors.

**Interpretation of name and comment elements:**

Starting with the sub-trees “spec-attributes” and therein “attribute-definition-complex” or “attribute-definition-simple”, the name and comment fields defined in the import scheme are searched for. If available, the element for the identifier is searched therein. This element’s value is applied to identify the name and comment fields for every “spec-object” element.

**Interpretation of element “Relevant to import”:**

The “identifier” for the specified field names (see above) is searched for within the sub-tree “attribute-definition-enumeration”. When defining this attribute, only “spec-objects” including this attribute are imported. This way, you can exclude objects in Doors from being imported into IQ FMEA.

**Interpretation of “status” element (status, priority, responsibility, deadline):**

In the sub-tree “datatype-definition-enumeration”, a “long-name” element is searched for that was defined as status in the import scheme (see above). If available, all values in the “identifier” child node are applied as identifiers of a status value (within “spec-objects”) under “enum-value”.

As an alternative, the “attribute-value-simple” procedure applies, i.e. if a field is directly available in “datatypes” or “spec-types” that corresponds to one of the fields defined in the scheme, then its “identifier” is applied. A similar procedure applies to status, responsibility, priority, and deadline.

If a status, condition, priority, or responsibility field is found within the “spec-objects”, then the child “long-name” or “the-value” is searched for therein. This is used as the basis of comparison and if the value corresponds to a value as defined in the attribute values of the import scheme, then this is applied as status, condition, priority, or to specify the responsibility.

For the deadline, the child node “date” is searched for. If available, then the software will try to generate a timestamp from the content of this element.

### ***Other:***

An export function is currently not implemented. As only a fraction of the database required by the RIF format is actually available in the IQ Software, export from the IQ Software cannot be fully enabled. Due to the great flexibility of the export schemes, exporting cannot be limited to one specific scheme. It should rather provide a tool enabling the adjustment to any scheme. The accordingly powerful configuration tool should be developed.

Another alternative would be the export into an available RIF file. This would be supplemented with the data from the IQ Software. Again, the assignment of elements and attributes from the RIF file must be effected, similar to the import (see above.).

Sources:

- 1) [http://de.wikipedia.org/wiki/Requirements\\_Interchange\\_Format](http://de.wikipedia.org/wiki/Requirements_Interchange_Format)
- 2) [http://www.automotive-his.de/rif/download/Docu\\_Requirements\\_Interchange\\_Format.pdf](http://www.automotive-his.de/rif/download/Docu_Requirements_Interchange_Format.pdf)
- 3) [http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/topic/com.ibm.help.download.doors.doc/pdf92/ratlDOORS\\_9-2-0\\_Readme.htm#new](http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/topic/com.ibm.help.download.doors.doc/pdf92/ratlDOORS_9-2-0_Readme.htm#new)