Interface QS1 – IQ

Data transfer from QS1 to IQ

QS1[1] provides the data to be transferred in an XML file. This XML file must be generated according to the definition given in MSR FMEA version 2.1.2 and be valid.

The content of the XML file represents a structure in terms of IQ[2]. This structure is imported into a new or an existing FME file. If the given FME file already contains the structure from the XML file, then the structure is updated in the FME file on the basis of the information contained in the XML file.

Two scenarios must be considered when updating:
1. Objects in the structure were supplemented with new objects
2. Attributes of an object were changed.

Re 1)
These are structural changes within the structure, which are in detail:
1. A structure element is supplemented with a structure element (in the structure tree).
2. A structure element is supplemented with a function or a characteristic.
3. A function/characteristic is supplemented with a failure.
4. A failure is supplemented with a revision state.
5. A revision state is supplemented with an action group.
6. An action group is supplemented with an action.

Such changes are included in the FME file on the basis of the XML file.

Data transfer by means of FMX file

The IQ software is started by QS1 via a ShellExecute function. An FMX file is transferred as the parameter for IQ. This FMX file is structured like an INI file and contains information regarding the data transfer.

Structure of the FMX file:
All information regarding the data transfer from *QS1* must be entered in the section *[QS1]*.

Example:

```
[QS1]
xml=<XML file name>
fme=<FME file name>
id=<Object Identity>
```

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[1] QS1: QM software from QSC (www.qsc-group.com)
[2] IQ: APIS IQ-Software (www.apis.de)

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Addition [2011-03-07]
If no XML file name is specified, the IQ software is started, the FME file opened and the object with the identity given under "id" is focused on.
<u>Note</u>: Please note that the "id" is case-sensitive.

Data transfer by means of update files

QS1 writes changes of the data to be integrated in IQ into update files. When an FME file is opened in the IQ software, such update files are searched for and, if available, the content of these files is imported. This function should be configurable.

The name of an update file has the following structure:

```
<FME file name>_update_<consno>.XML
```

The update files contain only those data objects and their attributes, which were changed. Make sure that the update files are imported in the order of their consecutive numbers. The file can be deleted after it was successfully imported. If an error occurs during the import, an error log file must be written.
The update files are in the same directory as the FME file.

Data transfer from IQ to QS1

When an FME file is saved or IQ closed, the changes are written into an XML file. A separate XML file is generated for each changed structure.
<u>Note</u>: In the first version of the project, the user has to confirm for every saving process that the changed data are to be exported for QS1 as well. In the later versions, this process is to take place without user confirmation.
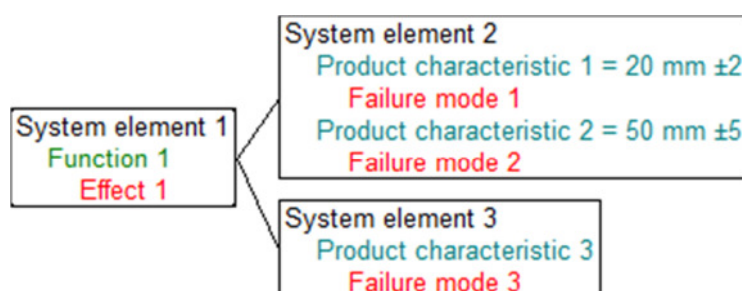
The structure of the file name is as follows:

```
<FME file name>_<structure ID>_<Timestamp>_IQ.XML
```

The XML files are in the same directory as the FME file.

The XML file contains only the changed objects of a structure.

Taking the following structure as the basis, a few examples will illustrate that:

1. Change an attribute of an object:
If a specification is assigned for "product characteristic 3", then the XML file contains only "product characteristic 3". The other objects are not contained.

2. Add new objects
If a new product characteristic is defined for "structure element 3", then the XML file contains "structure element 3" and the new "product characteristic 4". For "structure element 3", the list of available characteristics was extended and "product characteristic 4" is a new object, which must therefore be contained in the XML file as well. "Product characteristic 3", which is also available for "structure element 3", is not contained in the XML file, because it was not changed.
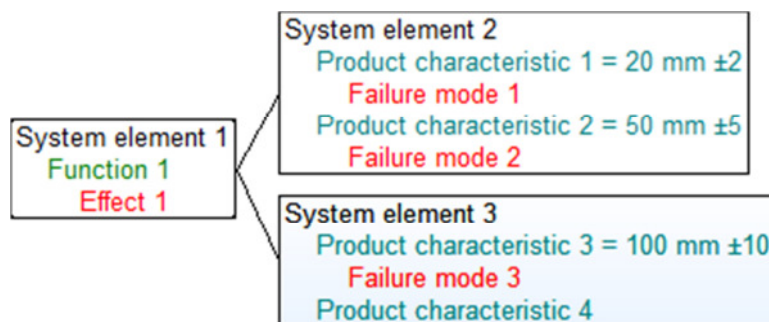
3. Delete objects
If an object is deleted, then the XML file contains only the superordinate object. If e.g. "product characteristic 2" is deleted from "structure element 2", then the XML file contains "structure element 2", because the list of characteristics for this element was changed. "Product characteristic 2" is not contained, as it does not exist anymore. QS1 can detect the deletion of "product characteristic 2" by comparing the list of characteristics of "structure element 2" and thus delete "product characteristic 2" and all its dependent objects (failures, etc.) from the data base of QS1 as well.
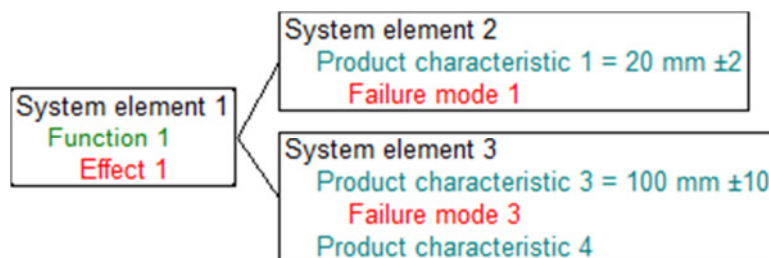
First-time data transfer

If the connection of IQ to QS1 is activated for the first time, it may be required to transfer data that are already available in IQ to QS1. In such a case, it is not sufficient to transfer only the changed objects, but the entire structure must be exported. To make sure of that, an attribute is stored with the structure, which stores the time the structure was imported for QS1 the last time. This attribute is not available, if the entire structure is exported.