KNX Certification of Products

5

Procedure

Summary

This document contains the description of the KNX Certification Procedure of Products and Accreditation Scheme for Test Labs.

This document is part of the KNX Specifications v2.1.

Version 01.03.01 is a KNX Approved Standard.

Document Updates

Version	Date	Modifications
1.0	2000.01	Approved Standard
1.1a	2002.11	Working document: deleting of all forms by making reference to where they can be downloaded – integration of comments from KonCert September 2002 meeting
1.1b	2003.02	Working document: integration of comments following submission of v1.1 to KonCert members – integration of AN005 and AN021 – additional editing of paragraphs 3.6, 5.6 and 6.2
1.1c	2003.04.10	updating of paragraph on accreditation of test labs (5.8), update of paragraph on validity of the KNX certificate (3.11.1) and reassessment (3.11.2)
1.1RfV	2003.04.25	last editorial changes – finalisation for release for voting
1.1FV	2003.10.03	integration of comments from release for voting – slight change of clause 4.6 to reflect current status of forms – any reference to EN 50090-2-2 replaced by reference to Volume 4/1 to be in line with this latter part – change in paragraph 5.9 following KTB October 2003 meeting
1.1AS	2004.06	integration of comments from final voting – publication as Approved standard
1.2WD	2007.11	Proposal for upgrade of Volume 5
1.2RfV	2007.11	Draft Proposal for voting
1.2DV	2008.03	Draft for Voting version – resolution of comments from Release for voting cycle
1.2AS	2009.02	Publication as approved standard – October 2008 no comments in final voting – integration of AN 105 in clause 5.3
1.3 DP	2011.10	Update to replace paragraph 6.1.2 to reflect current status ETS MT 4 – other smaller editorial improvements
1.3 DV	2012.01	Resolution of comments from Release for Voting cycle
1.3 AS	2012.05	Resolution of comments from Final voting cycle – publication as AS.
01.03.01	2013.10.22	Editorial updates for the publication of KNX Specifications 2.1.

Contents

1 Introduction

This volume of the KNX Specifications describes the KNX Association's Certification Scheme for products.

This volume of the KNX Specifications is divided in the following clauses:

- ♦ clause 1: introduction

- ♦ clause 2: definitions

- ♦ clause 3: various phases of the KNX Association Certification Scheme for products (introductory phase, registration, testing, certification, surveillance, re-certification and re-assessment as well as a number of special cases)

- ♦ clause 4: overview of the various forms needed for registration and testing

- ♦ clause 5: description of a number of special KNX certification related aspects such as application notes, …

- ♦ clause 6: presentation of the tools used during the KNX Association Certification Scheme for Products (support for creation of a product database entry with the Engineering Tool Software package ETS®, …)

This Volume does NOT contain the actual conformance (test) requirements: it merely makes reference to them (see Fig. 5- 10).

2 Definitions

KNX product:

Any device, component or tool that is connected to the KNX network (whether or not with communication relevant parts).

BAU:

A bus access unit is the KNX communication relevant part of a KNX product and complies at least with the minimum requirements as laid down in Volume 6 as regards implemented KNX protocol stack and agreed physical layer.

BCU:

A bus coupling unit is a standardised bus access unit according Volume 9 Part 4 Chapter 1.

BIM:

A bus interface module is a standardised bus access unit according Volume 9 Part 4 Chapter 2.

Certified KNX product:

A certified KNX product is a product that conforms to the minimum requirements as laid down in the KNX specifications and has successfully passed the KNX Association's Conformance Assessment. As a consequence it may bear the KNX logo.

Such a product may either be an application product, a basic or system component or a software package (tool or similar).

In the case of a certified basic and or system component/device, it may or may not comply with the KNX standardised features as laid down in the KNX Specifications Volume 9. These standardised features are optional for certification: if implemented, the features however have to follow the regulations as given in the KNX specifications. Both the standardised as well as the non-standardised solution may bear the KNX logo, provided in both cases at least the minimum requirements are fulfilled (for more information see Volume 9).

Certifiable product:

For such products, requirements and tests have been laid down in the KNX Specifications.

non-certifiable product:

For such products, requirements and tests are <u>not</u> defined in the KNX Specifications (e.g. peripheral devices such as infrared remote transmitter) at the time of application for certification. As a consequence, they may not be branded with the KNX logo.

KNX Basic and System components/devices

These are products of which the features are explicitly laid down in the KNX Specifications.

Some of these features are standardised (see Volume 9), of which compliance is optional for certification.

KNX Basic components/devices

A KNX product without communication relevant part is regarded as a KNX basic component/device.

Examples: TP Cable, several connector types (DIN rail contact block, bus interface connection block [for BCU], PEI, data rail to wire connector, …), TP data rail (cover), TP overvoltage protector, TP power supply unit, TP choke, PL filter, PL phase coupler.

KNX system devices

A KNX product with (one or more) communication relevant part(s) not enabling connection of an additional application part (as specified in Volume 9 Part 4) is considered a KNX system device.

Examples: TP Line coupler, EDI/RS232, USB, TP/PL media coupler, PL-Repeater, TP-Repeater.

KNX System components

A KNX product with a communication relevant part enabling connection of an application part (as specified in Volume 9 Part 4) is considered a KNX system component.

Examples: BCU UP TP/PL, standardised Bus Interface Modules

application module

When a bus coupling unit can be separated from a KNX device, the remaining part is typically called an application module. The application module typically determines the function of the KNX device, i.e. whether it is a sensor (application module is e.g. a push button) or actuator (application module is e.g. a relay).

KNX application product

Is the combination of an application module, a bus access unit and an application program. In some cases two or more of these parts constitute one unit, which cannot be divided in the above-mentioned components (e.g. pre-loaded application programs in a KNX product, of which the application module can not be separated from the BAU).

KNX tools

Software packages such as visualisation and control software, planning and configuration tools, test tools, ..…. KNX Certification of tools is still under consideration and therefore currently not possible.

Main certificate

Certificate granted to a member-company of KNX Association (or (sub)licensee, hereafter also referred to as member), who was responsible for the development of a KNX compatible product and applied to have it certified by KNX Association.

Derived certificate

Certificate granted to a member-company of KNX Association, who markets a product under his own brand name for which a main certificate already exists.

re-assessment

Procedure that is applied when modifications are carried out to an already certified product (be it main or derived).

Product group

A product group denotes the collection of all products for which the KNX requirements apply in the same way and give the same result during conformance assessment.

Master product

The master product is a product selected by the manufacturer out of a product group. Only this product is submitted to the required conformance tests. However, the results of these tests are applicable for all the other members of the group.

Member of product group

All products of a product group including the master product.

ETS®

Engineering Tool Software: tool used for planning and commissioning KNX installations, currently supporting TP1, PL110 and S-mode configuration, in future to be extended with support for all KNX media and ensuring the linking of products configured by different non-S-mode KNX configuration methods.

The KNX Manufacturer Tool is an extra tool necessary for the creation of product database entries (detailed description see 6.1).

product database coordinator

Unique person at a company applying for KNX certification, who bears the ultimate responsibility for the creation and maintenance of ETS product database entries of the applying company.

certification coordinator

Unique person at a company applying for KNX certification, who bears the ultimate responsibility for contacts with the KNX Certification Department and KNX accredited test labs.

ETS Catalogue entry

A catalogue entry in ETS groups the commercial data of a product defined in the ETS database and is symbolised by a booklet. A catalogue entry is linked to a product: the latter does not contain any commercial information. A product is symbolised by an agreed product symbol. Many catalogue entries, i.e. many commercial variations may be attributed to one product if all these variations belong to a same product group.

BDUT

Bus Device Under Test – KNX Association uses the terminology to denote the combination of hardware (in standardisation normally referred to as DUT or EUT) and software (in standardisation normally called SUT or IUT).

3 Description of the KNX Certification Process

3.1   Scope of the KNX Certification Scheme for Products

In line with the KNX Association's statutes, the purpose of the KNX Association's Certification scheme for products is to:

- Achieve a defined minimum degree of compatibility between products of different vendors (i.e. member companies of KNX Association).

- Establish the KNX trademark on a world-wide level as a token for quality.

- Increase the market success of the KNX technology in Home and Building Systems Engineering.

Owing to this Certification Scheme, the KNX logo signifies that:

a) When used in connection with an application product:

- The product complies with a product standard as chosen by the applicant as well as any (additional and/or higher) requirements of Volume 4/1.

- The product complies with the minimum KNX system requirements for application products (see Volume 6), including a defined minimum degree of interworking according to Volume 7 and functionality according to the manufacturer's specifications.

b) When used in connection with KNX standardised basic and system components:

- The product complies (if applicable) with the minimum KNX system requirements for basic and system components (see Volume 6 respectively Volume 9).

- The product complies with the KNX hardware requirements as laid down in Part 4/1.

- The product complies with the entire set of hardware interface requirements as laid down in Volume 9 (including the features marked as 'standardised').

c) When used in connection with KNX non-standardised basic and system components

- They comply with the requirements as stated in Volume 9 of the KNX specifications but merely to those marked as mandatory (specific requirements to ensure that bus communication is not impaired).

3.2 Involved Parties

3.2.1 Overview
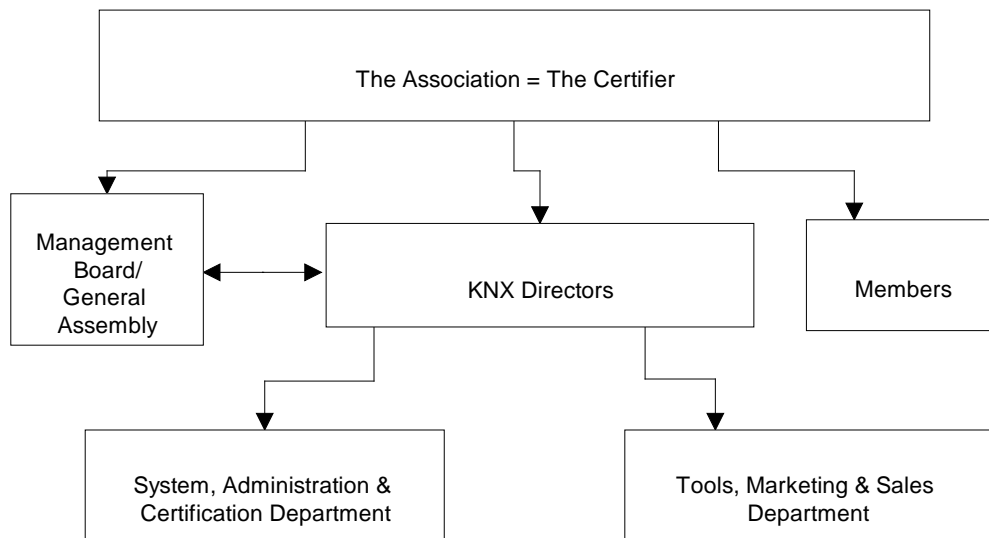
Fig. 5- 1: Internal structure of KNX Association and its relation to its members
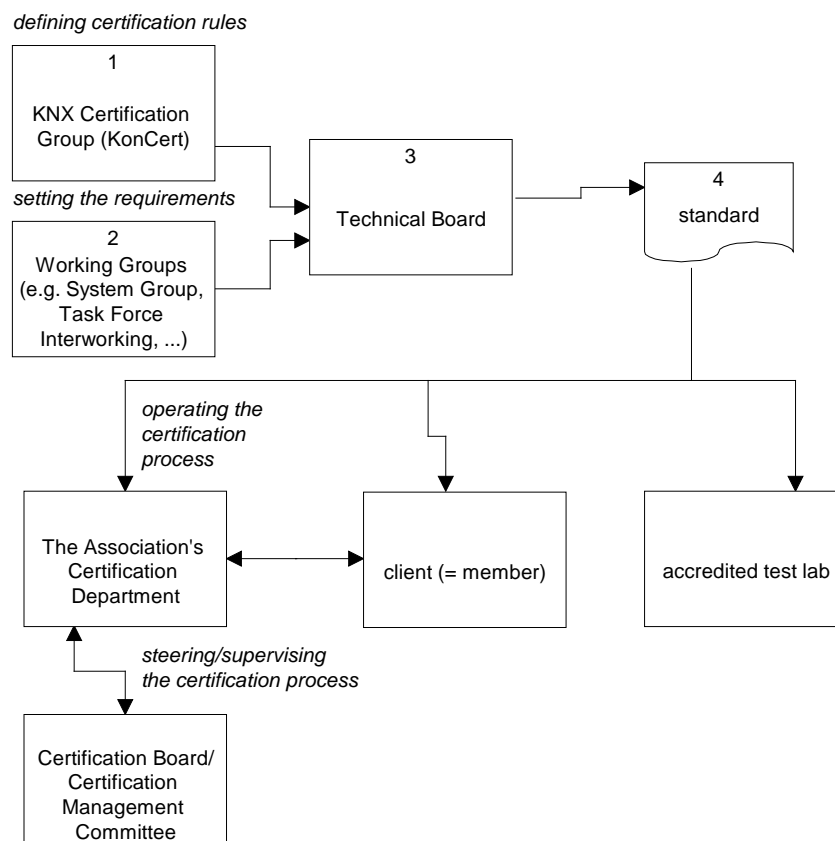
Fig. 5- 2: Decision and document flow between parties involved in the KNX Association's certification process

3.2.2 In-depth Study

The following parties are involved in the KNX Association's Certification Scheme for products:

a) The *applicant*, i.e. a KNX Association member company

b) The KNX Association (proprietor of the KNX Trademark) respectively its *Certification Department* acting as a registration and certification body.

> The operation of this department is run in accordance with the requirements of EN 45011 (General criteria for bodies operating product certification)[1].

> One of the consequences of applying this European standard is the full neutrality and integrity guaranteed by the KNX certification Schemes. Any expert to whom KNX Association takes recourse in the framework of the operation of the KNX Association 's Certification Scheme (e.g. members of the Certification Board) is obliged to sign a confidentiality agreement.

> During assessment of the operation of testing laboratories, the KNX Association's certification department together with its designated experts takes into account the requirements of EN45002 (General requirements for the assessment of testing laboratories) and 45003 (General criteria for laboratory accreditation bodies).

> Note: In case of new system implementations, which require extensions to the then valid requirements of the KNX specifications, prior to Certification the KNX Association's System Department[2] shall make a compatibility pre-assessment.

c) The KNX Association's Certification steering bodies

  - The Certification Working group (KonCert) and its task forces, responsible for the drafting, extension and maintenance of the KNX Association's Certification procedure for products including test specifications and test tools.

  - The KNX Association's Certification Management Committee (KCMC) grouping two representatives from the Certification Working Group and two from the KNX accredited test labs, responsible for harmonisation/interpretation of test procedures. The KNX Association's Certification Board[1] appoints the above representatives to the KCMC for a two years' term. When necessary two more experts can be co-opted on proposal of the KNX Directors' team.

  - The KNX Association's Certification Board[1] grouping representatives from the Certification Working Group, the KNX Association's Management Board and public bodies (e.g. user organisations, ...) responsible for the surveillance of the Certification process and the compliance of the KNX Association's Certification Department to EN45011. The Certification Board also acts as the ultimate body of appeal.

  The operation of all three above-mentioned steering bodies is co-ordinated by the KNX Association's Certification Department.

d) The third party KNX accredited test labs[3], of which the tasks are outlined in the underneath clauses.

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[1] The KNX Association's Certification Department will strive for official accreditation under EN 45011. Until it does, appeals regarding KNX certification of products have to be addressed to the Management Board instead of to the still to be set-up Certification Board.

[2] The procedure for applying for a system extension is described in clause 5.9 .

[3] For a description of the KNX Association's accreditation procedure for test labs, refer to clause 5.8.

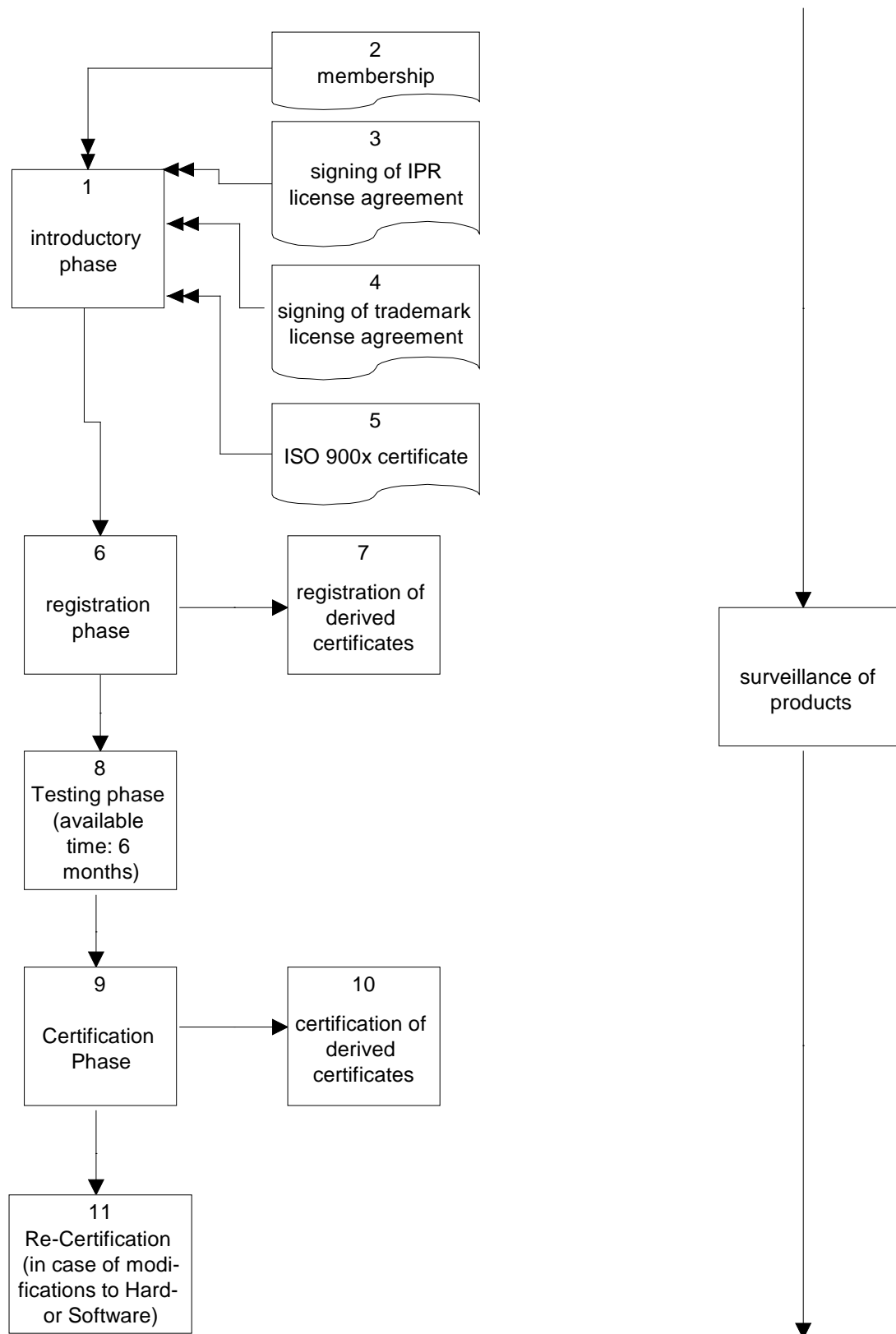## 3.3 General Overview of the Certification Procedure of Products

Fig. 5- 3: General Overview of the Certification of products

3.4   Overview of the certification process: client view

Before a developed product is certified, the client will go through the following phases:

Phase	Who to contact	Main purpose
Introductory	Association	To become member, sign the trademark and IPR license agreement, provide proof of ISO 900x compliance
Registration	Association	To apply for the use of the logo on a product and a database entry
Testing	KNX accredited testing laboratory	To verify the conformity of the product
Certification	Association	To receive the certificate which confirms the usage of the logo

Fig. 5- 4: 'Overview of the certification process: client view'

3.5   Introductory Phase

1. If a company has developed a KNX compatible product and wants to brand it with the KNX logo, it shall address KNX Association to inquire about the conditions for membership (if not yet a member).

    The majority of the KNX Association's Management Board shall approve the application for membership in case the candidate applies for shareholdership, else the team of KNX directors.

    Note: should the company decide to renounce its membership in KNX Association, according to the stipulations of the Trademark License Agreement it also renounces its right to use the KNX logo, even if its registered and/or certified products (continue to) comply with the KNX requirements.

    As a second step, the new member shall purchase a copy of the KNX Manufacturer Tool, in order to be able to generate the ETS registration database required for certification of products[4]. Until further notice, such a database entry is waived for E-mode compatible products and for products supporting the KNX RF medium. However, after a maximum of 6 months after the availability of the ETS extensions able to handle E-mode and KNX RF products, the applicant is obliged to deliver the required database entry. If he fails to do so, KNX Association has the right to withdraw an already granted certificate.

    As a third step the member shall address the KNX Association's Certification Department to receive an entry in the ETS database as a new member with corresponding manufacturer's code[5].

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[4] If necessary, this work can be subcontracted to another member or licensee and even – if necessary – to the association (subject to additional fees).

[5] This code shall be stored in the BAU's memory and is checked by the ETS when downloading application products: only if both correspond, will ETS carry out the download procedure.

2. A KNX Trademark License Agreement (text of which may be obtained on request together with a copy of the Graphical Guidelines for Third Parties and the KNX Association's Scale of fees for product certification) shall be concluded as a pre-condition for KNX certification. The trademark license agreement governs the use of the KNX logo on registered and/or certified products.

3. The KNX IPR License Agreement (text of which may be obtained on request) shall be concluded as a second pre-condition for KNX certification. The IPR license agreement governs the handling of intellectual property rights owned by the member companies of KNX Association, which are necessary for the development of a KNX compatible device.

4. If a nationally accredited certification body has certified the quality management system of a manufacturer, the applicant shall submit a copy of his acquired certificate.

5. If the quality management system of a manufacturer has not yet been certified by a nationally accredited certification body, the necessary arrangements with KNX Association for a QS audit called pre-license inspection shall be made, which is carried out at the applicant's premises. The following cases can be distinguished:

   a) Manufacturers applying for main certificates shall at least comply with ISO 9001:2000 – compliance shall then however cover design, manufacturing and final product inspection/testing.

   b) Manufacturers applying for derived certificates only do not need an ISO 900x certificate, nor are they submitted to a QS audit carried out by KNX Association.

   c) in case a manufacturer applies for a certificate, whereby the product is delivered by a third party, the following table applies:

Supplier is:	Vendor is:			
	KNX Association member	KNX Association member	KNX Association member	KNX Association member
	ISO 900x	ISO 900x	no ISO 900x	no ISO 900x
	main certificate	Derived certificate	main certificate	derived certificate
KNX Association member with ISO 900x	acceptable	acceptable	acceptable	acceptable
KNX Association member no ISO 900x	acceptable	acceptable	acceptable	acceptable
non-KNX Association member **with** ISO 900x	acceptable	excluded by definition of derived certificate	not acceptable	excluded by definition of derived certificate
non-KNX Association member **without** ISO 900x	acceptable	excluded by definition of derived certificate	not acceptable	excluded by definition of derived certificate

Fig. 5- 5: 'Table listing requirements for Quality Management System (QMS)'

Each year until the applicant's QMS has been duly certified by an accredited third party, the KNX Association's audit team carries out a surveillance audit.

When during this surveillance audit, corrective measures are laid down which are not remedied within the time specified by the KNX Association's auditor, as a first step KNX Association may block any further release of product data. As a second step, it may oblige the manufacturer to remove the KNX mark from his products.

5. Before submitting the first application, the applicant shall nominate the product database and the certification co-ordinator(s) of the company and pass their names on to the KNX Association's Certification Department.
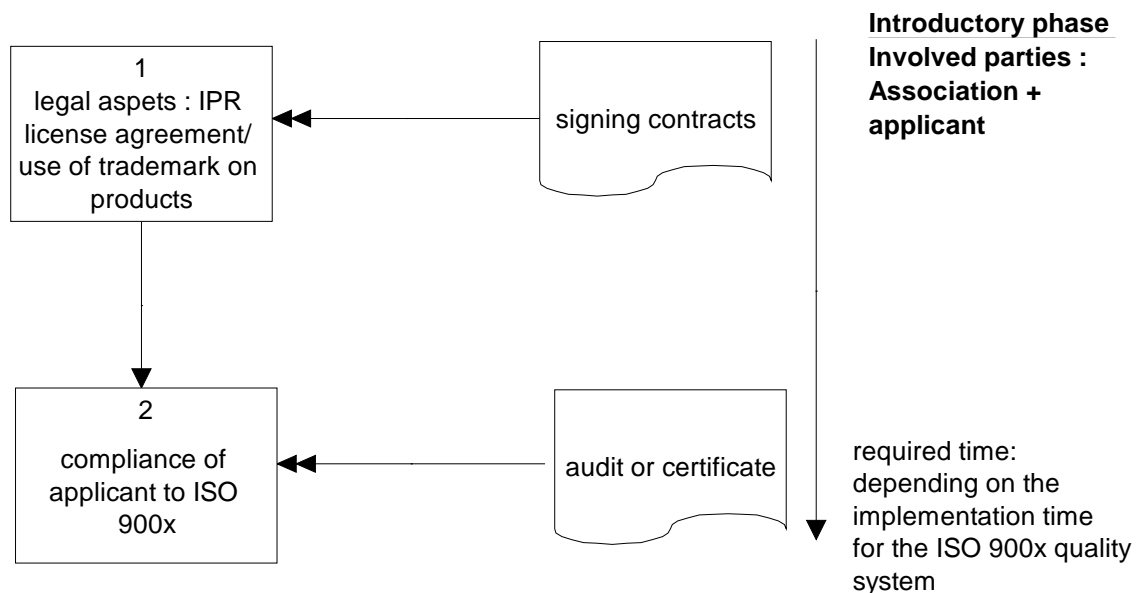
Fig. 5- 6: 'Summary of Introductory Phase'

3.6   Registration Phase

Prior to launching a product on the market labelled with the KNX logo, the applicant shall address KNX Association to register it[6].

1. For a given product (or group of products), a KNX Association member company shall apply for Registration by submitting the filled-in KNX forms and an appropriate ETS registration database to KNX Association (see clause 4 for to be filled in forms and 6.1.2 for creation of registration database with the help of KNX Manufacturer Tool).

   Note: Until the ETS is able to handle E-mode and KNX RF products, the requirement for the submission of a file for inclusion of the to be certified product data in the ETS database is waived for E-mode and KNX RF products.
   After the availability of the relevant ETS module supporting E-mode and KNX RF, the applicant is obliged to submit the missing file (contents still to be defined) retroactively within six months after the availability of the relevant ETS module. If he fails to do so, KNX Association has the right to withdraw the already granted certificate.

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[6]   Registration of a product does not imply that the applicant shall release the product on the market. The applicant explicitly authorizes publication of the product data in the KNX Directory of registered/certified products.

2. KNX Association will subsequently

♦ on the basis of the supplied filled in-forms, make a first non-binding technical evaluation of the certifiability of the submitted product compared to the valid specifications. If negative, the KNX Certification Department has the right to refuse the relevant application. The above technical evaluation does not in any way imply that what has been registered by KNX automatically passes the ultimate third party conformity tests.

♦ (in case of an above positive evaluation) register the relevant product group(s) by attributing consecutive numbers ("registration numbers") and will integrate the product data into its central database;

♦ inform the applicant about the registration number allocated to each product and/or product group by KNX Association and remit the released product database together with an invoice charging the applicant with the KNX registration fees according to its Scale of fees[7];

♦ If desired by the applicant, the product data will also be integrated into the KNX Directory of registered/certified KNX solutions, which is published on a regular basis.

♦ Once registered, the product may be sold branded with the KNX logo.
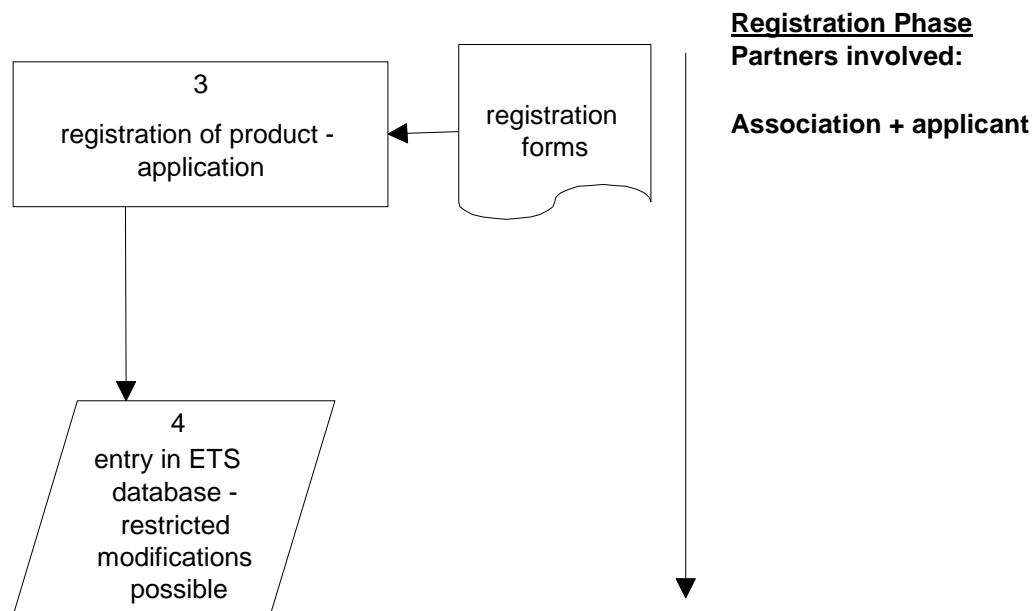
Fig. 5- 7: 'Summary of Registration Phase'

Remarks:

a) Should the product and/or application turn out not to comply to the KNX requirements during the testing phase, according to the stipulations of the signed trademark license agreement KNX Association may

❑ oblige the applicant to remove the KNX logo;

❑ in severe cases of non-conformity, claim redress for the prejudice caused by the use of the KNX trademark on a non-conforming product and publish information about the sanctions taken;

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[7] A copy of this scale of fees can be obtained from the KNX Association's Certification Department.

      b)   Registration of products can only be filed on the basis of Approved standard parts or standard parts that are in the final voting stage. In the latter case, KNX Association has the right to withdraw already granted certificates for any product based on standard parts in the final voting stage, should these parts not be positively voted and thus not become approved standard (see Fig. 5- 8).
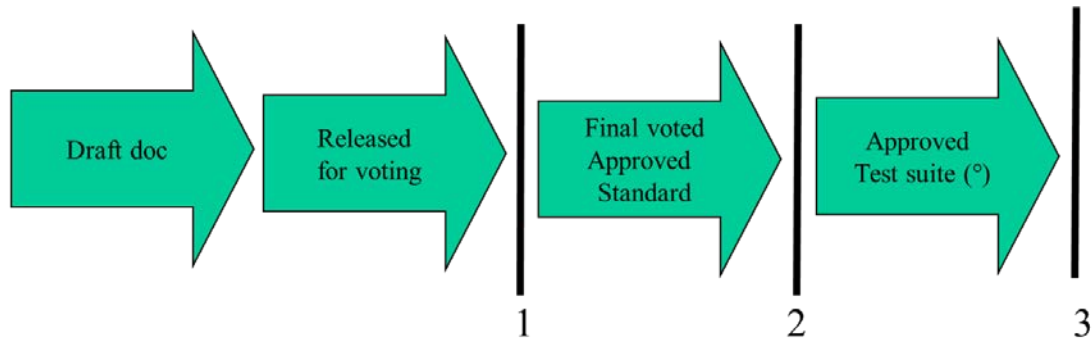
- From Point in time 1
  - Registration only possible with reservation - basis positively released for voting document with available comments (if any)
- From Point in time 2
  - Registration always possible - basis approved standard
- From Point in time 3
  - Certification – basis approved standard/test suite

(°) for more information see clause 3.7

Fig. 5- 8: Basis for registration/certification

3.7 Testing Phase

The testing phase shall be concluded at the latest six months after registration of the relevant product at KNX Association.

KNX Association has the right to halt the registration of any new submitted product if:

- the 6 months' time delay of the Registration Procedure for a distinct product has been exceeded and
- it is abundantly clear that the postponement of certification is only due to the applicant's negligence.

The postponement of further registration remains in place until the above-mentioned product has been successfully submitted to the required tests.

The steps to be taken during the testing phase are summarised in Fig. 5- 11. The terminology as used in this table denotes the following:

♦ *'CE declaration'* denotes the legally required CE conformity declaration, which also states conformance to the product standard. KNX Association will assess whether the selected product standard is suitable for the declared product type.

This implies that applicants have the choice to declare their developed product as fit for use in either home or industrial environment (as far as the standard allows it).

KNX Association recommends that the applicant makes use of the services of the KNX accredited test labs to carry out the necessary hardware tests.

♦   *'third party test'* denotes the execution of the KNX conformance tests according to the KNX Association's test specifications by a KNX accredited test lab of the applicant's choice. KNX testing focuses on KNX communication and interworking: however in order to be able to judge on the interworking behaviour of an application, the functionality as described in the PIXIT[8] is tested.

♦   *'PDB'* denotes the product database for registration as can be generated by means of the KNX Manufacturer Tool (for further information on how to generate this database, refer to clause 6.1.2 of this Volume).

♦   *'Test by KNX Association'* denotes the execution of the KNX conformance tests by the KNX Association's Certification Department according to the draft KNX test specifications or in the case an accredited test lab does not exist for these conformity tests. Normally, as soon as test requirements become stable, the relevant tests will be transferred to the KNX accredited test labs.

For communication testing, two reference samples have to be made available to the KNX accredited test lab of your choice.

The samples shall be in a new clean condition and ready as if to be sold on the market, i.e. identical in design and performance as the products to be marketed. Prototypes or the like are not admitted for certification.

If the KNX accredited test lab also carries out the required Hardware tests (EMC, Electrical Safety, and environmental conditions) on your behalf, additional samples may be required. Please inquire about the exact quantity at the test lab of your choice.

Normally the test lab returns the test samples after completion of the test as KNX Association does not oblige the KNX accredited test labs to make arrangements for proper storage of type test sample(s) for future reference purposes

Where the relevant requirements to be fulfilled by the relevant product types can be found is stated in Fig. 5- 10.

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[8] PIXIT = Protocol Implementation eXtra Information for Testing according ISO 9646 'Information Technology – Open Systems Interconnection – Conformance testing methodology and framework'.

Product type	HARDWARE REQUIREMENTS			SYSTEM REQUIREMENTS		PAPERS: INPUT FOR		
	Electrical Safety, EMC, environmental conditions	electrical and mechanical KNX standardised features	Other HW-requirements and recom. [9]	Interworking/ functionality	other system requirements	Registration	system testing	certification
application product using certified system stack	CE declaration established by manufacturer according Volume 4/1		Conformity Declaration in KNX Datasheet	accredited test lab		- General Application form - Hardware datasheet - Software datasheet with list of implemented data points and their formats (e.g. Application PIXIT Header) - PDB - PICS (except for application products with fully certified system stack)	- BDUT initial reaction - Application PIXIT (Header and data point descriptions) - (opt. instruction sheet)	system conformance test report + (CE) conformity declaration + instruction sheet
application product using uncertified or partly certified system stack					if released test spec. : accredited test lab if no uniform test spec. in HB or no KNX accredited lab for these tests: Test by KNX Association Certification Department via witness testing		- BDUT initial reaction - Application PIXIT (Header and data point descriptions) - PICS for system stack - PIXIT for implemented services - (opt. instruction sheet)	
basic components	Conformity declaration established by manufacturer on the basis of the KNX specifications							
system components					if released test spec. : accredited test lab if no uniform test spec. in HB or no KNX accredited lab for these tests: Test by KNX Association Certification Department via witness testing		- PICS for system stack - PIXIT for implemented services - (opt. instruction sheet)	
system devices								
tools				Under consideration				Under cons.

Fig. 5- 9: 'Product types: What is tested by whom?'

[9] Other hardware requirements relate to: Use of protective impedance, direct coupling of SELV to TP KNX, functional safety, useful life, maximum TP bus power consumption, connection of BAU to application module (PEI), connection of product to TP bus, Power available via PEI/current consumption during switch on/off (only applicable for BCU's).
Other hardware recommendations relate to: Fit calculation and material recycling.

No.	Product type	Electrical Safety, EMC, environmental conditions	electrical and mechanical KNX standardised features	Other hardware require-ments	Interworking and functionality	other system requirements
						Phys. Layer, Collision, LL, NL, TL, AL, Management, Local, …
1	application product using certified system stack	Volume 4/1 (requirements) Volume 4/2 and Volume 4/3 (tests)		Volume 4/1	Volume 3/7 (requirements) Volume 8/7 (tests)	
2	application product using uncertified or partly certified system stack					Volume 3 (toolbox), Volume 6 (Profiles), Volume 8 (system test specifications)
3	basic components		Volume 9/1			
4	system components		Volume 9/2			Volume 3 (toolbox), Volume 6 (Profiles), Volume 8 (system test specifications)
5	system devices		Volume 9/3			
6	tools				under consideration	

Fig. 5- 10: 'Product types: Where can the relevant requirements and test specifications be found?'

3.8 Certification Phase

1. When the documentation according Fig. 5- 9 is submitted to KNX Association and positively assessed, KNX Association will issue the KNX certificate of conformance to officially confirm the right for the product/group of products concerned to bear the KNX Trademark.

2. When the documentation according Fig. 5- 9 is submitted to KNX Association and negatively assessed, KNX Association will oblige the relevant applicant

   • to withdraw the product from the market;

   • (if applicable) to confirm by means of the KNX General Application Form that the application program is no longer distributed by means of ETS product databases or used in projects.

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┌──────────────┐
│ 1            │
│              │          ┌──────────────┐
│ Testing phase│          │              │
└──────┬───────┘          │ PIXIT, PICS  │
       │◄◄────────────────┤              │
       ▼                  └──────────────┘
┌──────────────┐
│ 2            │
│ examination of│
│ supplied PIXIT│         ┌──────────────┐
│ and PICS     │          │              │
└──────┬───────┘          │ samples      │
       │◄◄────────────────┤              │
       ▼                  └──────────────┘
┌──────────────┐
│ 3            │◄◄─────────────────────────┐
│ execution of │                           │
│ tests        │                           │
└──────┬───────┘         ┌──────────────────────────┐
       │                 │ 5                        │
       │                 │ retesting and informing  │
       ▼                 │ association in case of   │
     �◊     yes    │ evolution of version of  │
    ┌ 4     ┐────────────►│ database entry          │
    │corrective│          └──────────────────────────┘
    │measures │
    │needed ? │
     └───┬───┘
         │ no
         ▼
    ╱──────────╲
   ╱ 6          ╲
  ╱ creation of  ╲
 ╱ KNX system    ╱
 ╲ conformance  ╱
  ╲ test report╱
   ╲──────────╱
```

Testing phase
Partners involved:
accredited test lab +
applicant

maximum available
time for test phase:
6 months

Fig. 5- 11:'Summary of the tests phase'
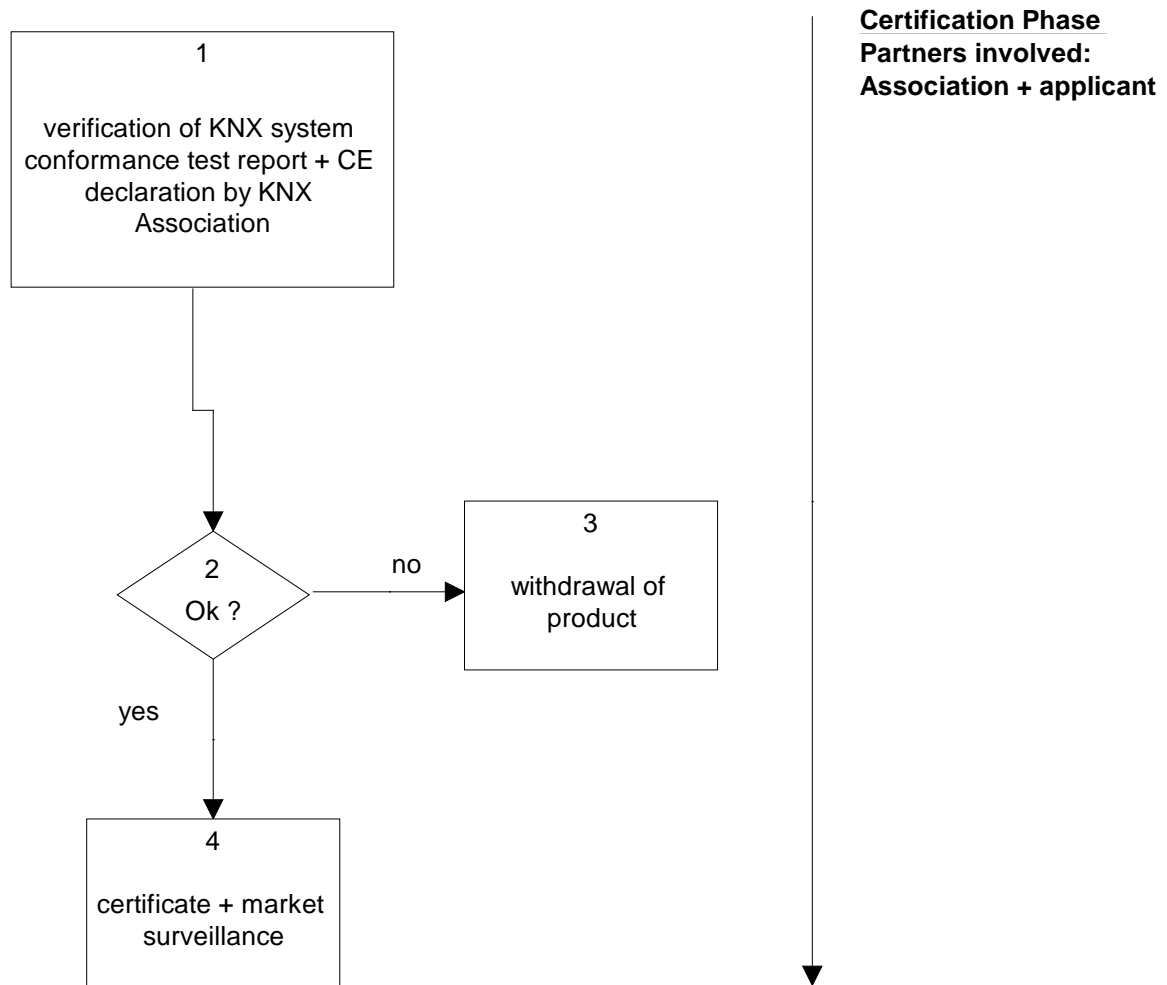
Fig. 5- 12:'Summary of the certification phase'

3.9   Market Surveillance

a) Verification of manufacturer's documentation

The KNX Association's Certification Department has the right to:

- require from a manufacturer copies of the product's technical file to assess the basis on which the CE Conformity Declaration was established. Such test reports shall be delivered within 4 weeks after KNX Association requires them from the manufacturer. The KNX Association's Certification Department has the right to delegate the assessment of these reports to representatives from KNX accredited test labs.

  When a test report emanates from an accredited test lab, the KNX accredited test lab shall only check whether

  a)   the required test has been carried out;

  b)   during the test the required parameters have been set according to the KNX Specifications and/or product standard.

  When a test report emanates from a non-accredited test lab or directly from the manufacturer, the KNX test lab shall verify in depth if the test procedure fully complies with the standard on the basis of which it has been carried out.

 The test lab does not have the right to oblige re-tests.

- set a date, by which the manufacturer shall be able to present missing information, in case KNX Association or the test lab working on its behalf establishes that test reports are missing or incomplete. If by the above date the information is still missing, KNX Association has the right to oblige the manufacturer to withdraw the KNX mark.

As soon as corrective measures are needed, the resulting costs are borne by the manufacturer.

b) Verification of compliance of products drawn from the market
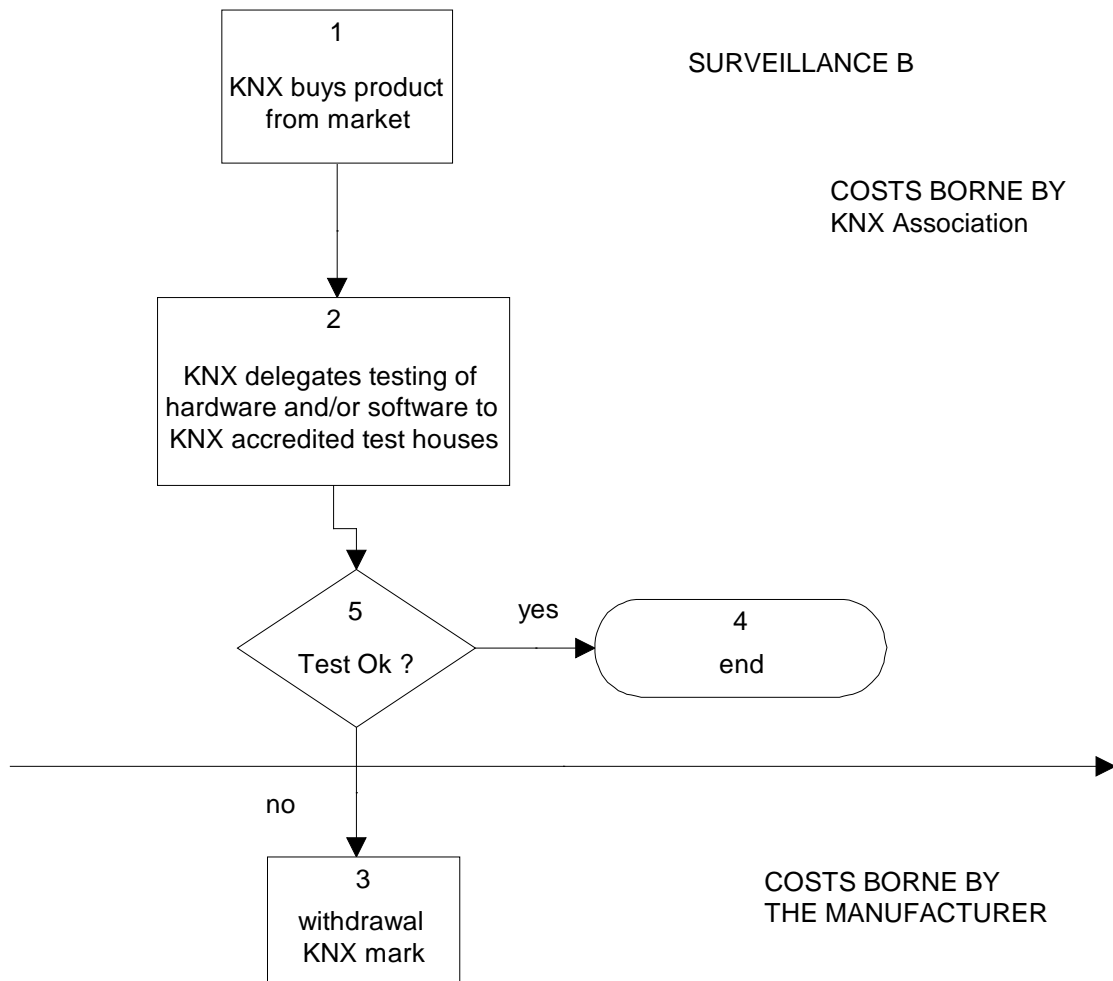
The KNX Association's Certification Department has the right to

- draw a product from the market and delegate re-tests of hardware and system requirements to one of the KNX accredited test labs.
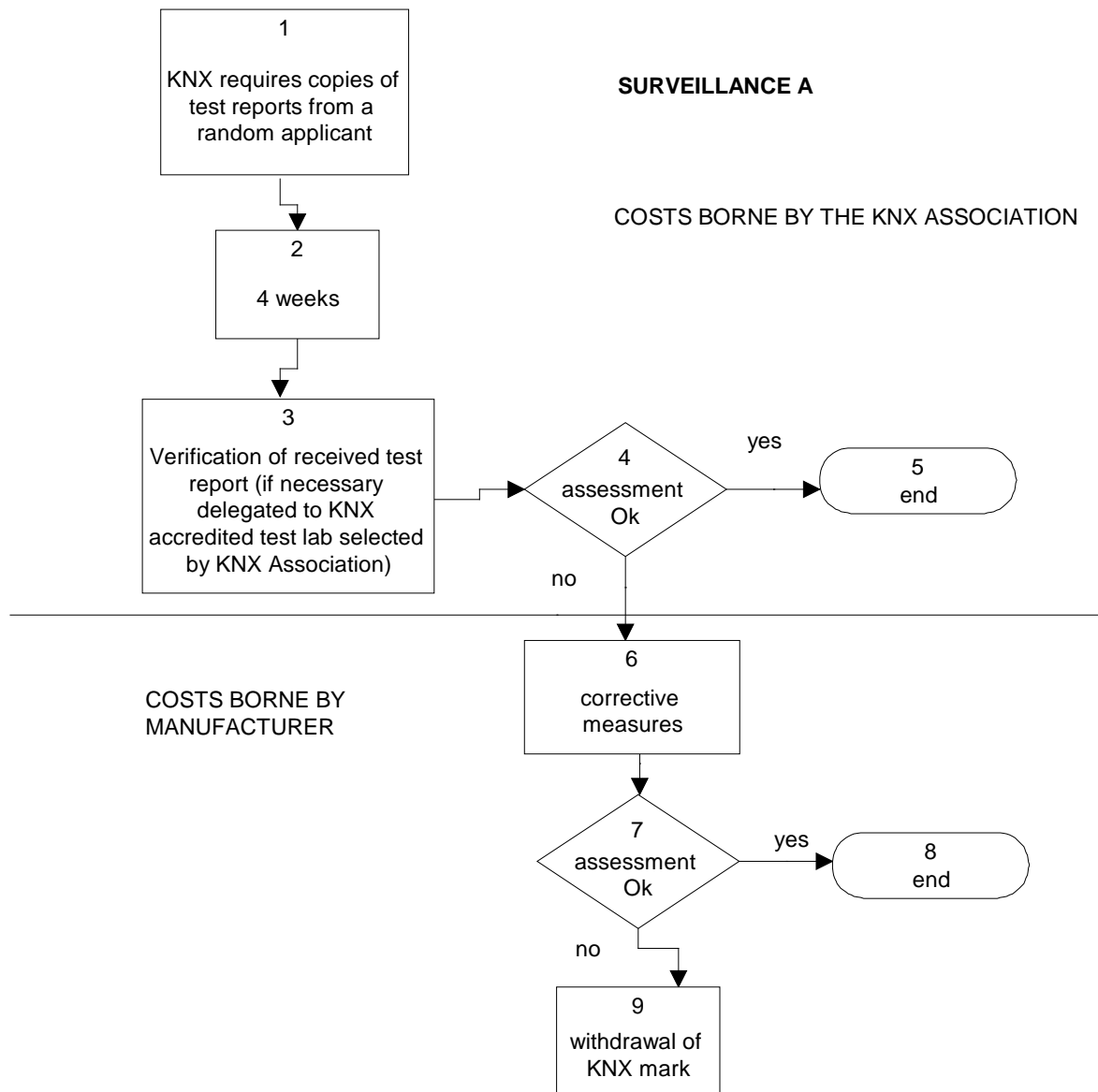
Fig. 5- 13: 'Surveillance Type A: verification of test reports'

```
        ┌─────────────────┐
        │        1        │                    SURVEILLANCE B
        │  KNX buys product│
        │   from market    │
        └─────────────────┘                 COSTS BORNE BY
                │                            KNX Association
                ▼
        ┌─────────────────┐
        │        2        │
        │ KNX delegates   │
        │ testing of      │
        │ hardware and/or │
        │ software to     │
        │ KNX accredited  │
        │ test houses     │
        └─────────────────┘
                │
              ╱   ╲
            ╱   5   ╲      yes    ┌─────────────┐
           ╲ Test Ok?╱  ────────▶ │     4       │
            ╲       ╱             │    end      │
              ╲   ╱               └─────────────┘
               │
          no   │ ─────────────────────────────────────────▶
                ▼
        ┌─────────────────┐
        │        3        │         COSTS BORNE BY
        │   withdrawal    │         THE MANUFACTURER
        │   KNX mark      │
        └─────────────────┘
```

Fig. 5- 14: Surveillance Type B: Re-Tests of certified KNX products

3.10   Identification of Product Groups - Derived Products

3.10.1   Product Groups

Products with modifications <u>solely</u> related to colour and/or markings may be combined in product groups: if desired by the manufacturer the order numbers may be combined to one number containing wild cards (e.g. '*' or '?'). For the entire product group, the submission of one CE-declaration according to EU directives suffices. KNX Association will attribute one registration number to the entire product group in combination with one application program.

Products with modifications exceeding the above are considered as different products and will receive in combination with an application program different registration numbers. These products may not be combined to product groups, neither may they be grouped under one order number with wild card. For each single product a CE-declaration shall be submitted.

Note: In the KNX Manufacturer Tool, only products belonging to a same product group may be defined as additional catalogue entries belonging to the same ETS product, as shown in clause 6.1.1.2 of this Volume.

3.10.2   Derived Products

According to the definition as given in clause 2, derived products refer to products manufactured and already certified by another KNX member but taken over and branded by a different KNX member.

Products can only be considered as 'derived products' if the extend of the modifications do not exceed

- colour

- marking

- modified housing

- position of terminals not affecting electrical safety

- position of operational elements and indicators

- changed fixing means

- original certified software, modifications only related to reduced number of parameters, manufacturer code, device type, version number and commercial data.

If they do, they are considered as new master products for which an application for a main certificate shall be submitted to KNX Association.

3.11 Re-Certification and Reassessment

3.11.1 Re-Certification

The KNX Certificate has an unlimited validity, provided the product remains unchanged as regards hardware as well as software. If it is changed, the conditions for re-assessment in clause 3.11.2 apply.

3.11.2 Re-Assessment

The following rules apply for products that are modified as regards hardware and software <u>during</u> the validity of the certificate (so called re-assessment procedure).

a) Should applied hardware modifications to the products result in a new Conformity Declaration, then it shall be submitted to KNX Association for re-certification of the respective product together with the above stated form.

b) Should the software have undergone modifications, the following rules apply:

◊ original certified software unchanged, less parameters/objects: no tests required

◊ original certified software unchanged, more parameters/objects: re-tests

◊ original certified software changed: re-tests

Applied software modifications involving change of the binary code or extension of the number of parameters/objects therefore in all cases imply a renewed registration and certification. When new parameters (i.e. no dummy parameters or parameters addressing other locations in an already registered binary image-file, e.g. S19) are added to already certified binary image-files, this will always lead to renewed tests and certification. However, in this case, conformity tests can be reduced to the full testing of the extended functionality and a random test of the unchanged part of the application.

When certified products implementing part of the application program or system stack in an additional micro-controller or an ETS plug-in are modified, KNX Association shall be informed via the submission of a KNX Declaration on Product Modification.

On a case-by-case basis, the KNX Certification Department will then assess whether the certified product and/or ETS plug-in shall be re-tested or not. Certification relevant modifications especially relate to the product's bus and/or download behaviour, e.g. modification of group objects, parameters, supported client/server management services, …. Modifications to the ETS plug-in user interface are in principle not certification relevant.

In the case of certification relevant modifications to hardware/software, which is sold via OEM, the original supplier shall always inform his OEM customers.

Important: If KNX Association's Technical Board (KTB) has identified a gap in the requirements, which has to be covered by all products (old and new), it is possible that the KTB obliges all applicants to reassess their products.

3.12 Special Cases

3.12.1 Re-combination of Parts already certified in other Combinations

A certified KNX product consists of the following parts: a BAU (whether or not integrated), an application program and an application module.

If parts are recombined, which have once shown compliance to the KNX requirements (be it system, interworking or hardware requirements) in any combination of above-mentioned parts, it lies in the responsibility of the manufacturer to check the correct functioning of this new combination.

Although an application at KNX Association for this new combination is compulsory (via the General Application Form and the Declaration on Product Modification), tests at a KNX accredited test lab is not. However, in the framework of market surveillance KNX Association still reserves the right to oblige re-tests of this new combination at a KNX accredited test lab.

3.12.2 Combination of Parts already certified in other Combinations with new Parts

Exchanging a part of a certified product by a new uncertified part (be it a new BAU, a modified user program or a modified hardware) results in the checking of compliance of this new part only (according to the valid KNX specifications requirements). Is this new part

a) hardware, then a CE declaration for this new hardware shall be submitted;

b) software, then a KNX system conformance test report shall be submitted established by an KNX accredited test lab.

3.12.3 Applications for a Derived Certificate

A derived certificate implies that another manufacturer than the original submits an already registered/certified product.

Only when the modifications to the original product fall within the range of the acceptable selection criteria for derived products (see clause 3.10.2) can it be submitted for a derived certificate. If not, an application for a main certificate shall be submitted.

The applicant has to declare all modifications and has to submit at least:

•   the general KNX Association-application form ;

•   the Declaration on Product Modification ;

•   an ETS product data base (in which the original product data has been adjusted to the applicant's needs).

After KNX Association has checked the documents for completeness, the KNX mark will be granted after the fees have been paid and provided the main certificate has already been granted to the original manufacturer.

Registration of a main product is a prerequisite for registration of a product derived from the latter.

3.12.4 Withdrawal of a registered and or certified Product

For products that have technically or commercially phased out or for products of which the application programs turn out to be faulty, the following shall be done:

By means of the General Application form the applicant shall declare that the given application program will no longer be incorporated into new product databases and/or the relevant hardware (with KNX logo) distributed to customers. In case of faulty applications such a statement is compulsory.

Already installed products or distributed applications are not affected by this withdrawal. Withdrawn products may be stored at the manufacturer for maintenance of existing installations: these shall however not bear the logo.

In this way the applicant can free himself of any further invoicing of annual certification fees.

Compliance to the above rules is checked by KNX Association in the framework of the certification surveillance procedure.

The holder of a main certificate shall in all cases inform any OEM customer in the possession of a derived certificate of any withdrawal from certification of the respective main certificate.

3.12.5   KNX Certification of Training Equipment

If a device is used for training purposes only, compliance to the entire set of KNX requirements is not obligatory.

Although its product data may be integrated into the ETS database, it may not be labelled with the KNX mark nor be commercialised. The training centre shall confirm this by means of an appropriate declaration. This possibility applies to KNX-ISO 9001 certified training centres only. Products emanating from other training centres or manufacturers shall follow the standard procedure for certification of products.

3.12.6   KNX Certification of Ready-for-Use Add-on Modules – Printed Circuit Boards (including BAU)

For assessment of compliance to the KNX requirements, for which these products shall be tested in operation, the PCB/module shall always be installed in its usual environment (e.g. housing). The resulting product shall subsequently be tested as an inseparable unity. The requirements as listed in the KNX Specifications shall be met by the entire product (PCB/module + environment/housing in which it is normally installed).

For assessment of compliance to the KNX requirements, for which these products must not be tested in operation, the PCB/module can be separately submitted to the required tests. After the tests, the PCB/module shall be installed in its usual environment and function according to its specifications.

The PCB/module may be labelled with the KNX mark, if it has successfully passed the required tests and is accompanied by an instruction sheet, specifying the environment(s) in which it has been tested.

3.12.7   KNX Certification of Twisted Pair cable

There are two ways to have Twisted Pair cable approved by the KNX Association:
- either the company (must not even be a member) simply requests the form 'Manufacturer's declaration for cable' from the KNX Association: by filling it in and returning it, the company declares that the cable complies to the requirements for TP1 cable. The commercial details from the cable are entered into the KNX Association's catalogue of registered and certified products under the section 'recognized cable'. The cable may however **NOT** bear the KNX logo.
- or the company – as a full member - submits the cable to the full KNX Certification Procedure by filling in the 'Manufacturer's Declaration for cable' and returning it together with test reports to further substantiate the compliance to the certification requirement. These test reports are subsequently assessed by the KNX Association's certification Department. If positive, the cable is entered into the KNX Association's catalogue of registered and certified products under the section 'certified cable'. The cable may then bear the KNX logo.

3.12.8 Use of legacy trademarks and KNX Trademark on PC Tools

The KNX Association does not offer certification of PC based software packages compatible to the KNX or one of the legacy standards.

After written permission by KNX Association, the logo can however be used for publicity reasons in the corresponding splash screen (see ETS) or manual, if the following is included: 'The Trademark is a registered logo of the KNX Association. It is used with kind permission and does not signify certification by KNX".

Colour and size of the logo shall be in accordance with the KNX graphical guidelines.

Note:

> It is possible to extend the ETS functionality in the form of ETS apps. Such apps can only be developed by KNX members, after the conclusion of an appropriate license agreement with the Association. The correct use of the available ETS app Application Programmer's Interface is validated by means of a tool, next to a visual/manual validation.

> Further information can be obtained from the KNX Association directly.

4 Overview of the required Forms for Registration and Certification

The underneath listed forms are available free of charge as Word templates from the KNX Association's Certification Department. The certification forms contain online help (by pressing the F1 button) for every field to be entered by the applicant. Fields not applicable to the submitted product can be left open.

In view of the fact that online help is included in the certification form templates, further information on how to fill in these forms is not repeated in the underneath paragraphs.

If applicable, the KNX certification forms may also be used for certification of products according to legacy certification schemes (e.g. EIB).

4.1 KNX General Application Form

Form shall be submitted for registration of any product and/or application (be it new, derived or modified).

Form shall also be used when withdrawing products from certification.

The form can be used for one or a whole range of products: if necessary, lists with the required data may be appended to the form.

4.2 KNX Declaration on Product Groups

Form shall be submitted for registration of any product group, which has been formed, based on the definition of a product group as given in clause 2 of this Volume.

4.3 KNX Data sheet for Hardware

Form shall be submitted for registration of any hardware master product (only for main certificates). The form also allows stating other product group members, if applicable.

All applicable fields shall be filled in for the master product as stated in the General Application form. References may be made to an existing company instruction sheet, which may then be attached to this data sheet.

In case of relevant modifications, an updated version of the submitted form shall be sent to KNX Association.

4.4 KNX Data sheet for Software

The form shall be submitted for registration of any software (be it application or certification relevant firmware). In case of relevant modifications, an updated version of the submitted form shall be sent to KNX Association.

4.5 KNX Product Modification Declaration

Form shall be submitted for registration of a modified hardware and/or software respectively when applying for a derived certificate or a recombination of already registered/certified parts.

4.6 PICS and PIXIT

4.6.1 PICS

The KNX PICS proforma allow the applicant to state compliance to the mandatory features of one of the standardised profiles of Volume 6 as well as information on optional implemented features of one of the standardised profiles of Volume 6.

This PICS proforma shall be provided for any product, of which the system software is either uncertified or partly certified (for definitions of certified/uncertified system stack, see Volume 8/1). Further information on the implementation of the supported KNX services shall be provided in the PICS and PIXIT Proforma for implemented KNX Services.

4.6.2   PIXIT

The following different types of PIXIT Forms currently exist:

a) a form for providing additional information on the implementation of the KNX services. For use, see clause 4.6.1

b) a 'KNX PIXIT Header' form for providing an overview of the data points implemented in a given application as well as an identification/functional description of the to be tested application.

c) a form for describing the individual implemented data points in a given application, i.e. the KNX datapoint description form

d) a form for describing the BDUT's (Bus Device Under Test) behaviour on

   ➢ initialisation

   ➢ failure and return of bus power

   ➢ (if applicable) failure and return of ancillary power

A KNX accredited test house has the right to accept forms of presentation which are different from the PIXIT-proforma standardised by KNX Association, provided the contents of these documents is equal to or exceeds the information normally provided by PIXIT proforma.

The applicant therefore has the following three options[10]:

1. either he elaborates the PIXIT proforma using the word templates available from KNX Association as a starting point;

2. or he makes sure that the internal software documentation he submits to the test lab contains at least the same information as the one he would normally submit by means of the PIXIT-proforma.

3. or last but not least a combination of the two cases above, e.g. where the applicant uses the word templates available from KNX Association but makes explicit reference to existing software documentation, which he/she attaches to the filled out KNX forms.

• the PIXIT proforma may be rationalised, if a certain data point description applies to a number of objects or parameters. It is in this case not strictly necessary to fill in one data point description per object/parameter.

• the PIXIT proforma shall at least be signed on the PIXIT header form.

4.7   Company Type Test Reports

Company type test reports shall be compliant to the relevant EN/ISO/IEC 17025 requirements.

Restricting test results simply to "pass" or "fail" is only acceptable if the standard, on which a test is based, does not strictly oblige the tests body to document the values during the test and if a result can only be documented by means of "pass" or "fail".

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[10] as regards the PIXIT Header and the datapoint description form, one may also export the data imported from the ETS database by means of EITT Test Tool to a txt-file and add the missing data

4.8 Product Instruction Documentation

Product instruction documentation may be necessary for some products to inform the electrical contractor/installer, amongst others

- on installation (e.g. mounting, assembling, environment, …)

- on electrical safety (e.g. use of products in combinations, environment,…)

- on liability aspects (e.g. hints on risk reduction, …)

- in case of detachment of BCU and application module (e.g. for storage and delivery reasons) - the approval of the product expressed by the KNX mark (e.g. located at the hardware) is <u>only</u> valid if

a)   the Application Unit is properly connected to the BCU;

b)   the certified application program is loaded.

As the product instruction sheet is part of the product it shall be submitted along with the other filled-in forms at the latest when applying for certification of a given registered product.

5   KNX Certification Related Special Topics

5.1   Product Labelling

5.1.1   Basic Labelling Requirements

❖ Each device shall be clearly identifiable as regards the physical Medium and the implemented Configuration Modus.

❖ This Basic Requirement is certification relevant, i.e. verified and fixed in the Test Report by the accredited Test-Lab.

❖ The listed examples for labelling are recommended:

KNX Transmission Media	Label	KNX Configuration Modes	Label
TP1	TP1	S-Mode	S
PL110	PL1	E-Controller	EC
RF	For labelling requirements for KNX RF devices, consult Volume 3/2/5	E-LTE	EE
IP	IP	E-PB	EP

Notes:

a) The place of the label on the product (front, back or sideways) may be decided by the manufacturer, but may not be in conflict with the relevant trademark design rules and KNX logo guidelines.

b) If a device is a gateway connecting different media, the recommended labels shall only be used if the respective media comply with the KNX requirements.
For instance, if an S-mode device connects TP1 with a proprietary RF solution, the RF label shall not be used. The device shall therefore only bear the TP1 and S mode label.
Hence, when a device offers an IP connection, it may only be labelled with the defined and recommended label "IP", if it at least complies with the minimum KNX(net/)IP profile. In all other cases, the IP label shall not be used.

5.1.2 Combination examples Certification Trademarks and recommended Label

The recommended Label may be printed next to the Certification Trademark or as a Stamp anywhere on the product. Other similar but clear information about Transmission Media and / or Configuration mode is also allowed.

  1. KNX product, TP1 medium, supporting S-mode

> (EIB – Logo inherently signifies S-Mode and TP1 medium, additional labeling with S-Mode and TP1 not strictly necessary. In case of PL110 use, additional information on PL110 becomes necessary)

  2. KNX product, TP1 medium additionally supporting controller mode (EC):

5.2 Application Notes

The KNX requirements may in some cases not be sufficiently clear and may give rise to different interpretations and/or misunderstandings.

When during the Certification Procedure incidents occur, these shall be recorded in accordance with the EN 45011 standard: for this an application note is drawn up. An application note is regarded as an extension to the KNX Specifications after approval by the KTB.

The same procedure of application notes is applied when during the release of two issues of the KNX specifications new or extended requirements have to be published.

In most cases such incidents will be recorded by the Certification working group and the KNX accredited test labs. However any expert group has the authority or duty to record such incidents.

- when such an expert group has approved a new application note, it shall pass it on to KTB, which will subsequently vote on its contents. The latest version of the individual application notes (either as approved standard or under vote) is available at any time from the KNX Association's FTP Server.

- Also for the creation of new application notes, a standard word template exists, which contains a.o. fields to state the repercussions of the application note's contents on other requirements as well as the following fields:

  ♦ an application note reference: the first digit is a consecutive number while the second relates to the year in which it was drawn up;

  ♦ revision number if different than 0

  ♦ subject (giving a sort of title)

  ♦ question (which has to be clarified)

  ♦ clauses of the relevant KNX rules and/or requirements

  ♦ answer

  ♦ proposal from which day onwards it shall come into effect; i.e.:

    ◊ immediately after KTB approval, if the application note is only an interpretation of an existing requirement;

◊ immediately after KTB approval, if conformance to a new requirement is thought to be vital to the KNX system

◊ after a transitional period after approval by KTB.

- Details of the KTB voting process are written in the KTB internal rules.

Application Notes come into effect on the date marked in the application note itself (i.e. date of approval + transitional period set by the expert group or KTB).

Approved application notes can be cancelled in the following way:

- normally the moment they are integrated into the KNX specifications or related documentation

- or when two thirds of the KTB core meeting cast a positive vote on a proposal for withdrawal

Any case of appeal is dealt with by KTB as the competent body.

5.3 Update Procedure of the KNX specifications

The volumes and parts of the KNX Standard can go through the following stages:

Abbreviation	Meaning	Additional information
WD	Working Document	The Document is not yet approved in the respective working group
DP	Draft Proposal	The respective working group has approved the document: it is therefore a candidate for inclusion in the next release for voting cycle
DV	Draft for Voting	The comments from the Release for voting cycle have been resolved by the responsible working group. The document is now a candidate for inclusion in the next Final voting cycle. If comments following a Release for voting cycle are however not resolved within a maximum of two years, the status of the document automatically switches to the status PPO.
AS	Approved Standard	The comments from the Final voting cycle have been resolved by the responsible working group. The document is published on the KNX FTP Server. If comments following a Final Voting cycle are however not resolved within a maximum of two years, the status of the document automatically switches to the status PPO.

PPO	Proposal for Phasing Out	The part of the KNX Standard is a candidate to be phased out.
		
		This is described in an Application note that is submitted to voting.
		
		The AN has a fixed document structure listing:
		
		   - the to be phased out functionality
		   - a list of concerned documents/profiles
		   - reasons for phasing out
		   - end date for registration of products according to phased out functionality.
		The processing of approved application notes listing to be phased out functionality, depends on the nature of the phased out functionality:
		
		   - if the phased out functionality was never used in certified KNX products, the phased out parts are moved

		to the KNX archive. In case the approval influences only some clauses of a KNX standard part (e.g. Volume 6 Profiles), this document concerned shall be updated and the former version be moved to the KNX archive. This folder is located on the KNX server, not on the KNX Specifications CD sent to KNX members. - If the phased out functionality was used in certified KNX products, the phased out parts are moved to a separate clearly identified folder on the KNX specifications CD. It is possible for members to appeal to KTB against a decision to phase out a KNX standard part but only until the set end date for certification.
PO	Phased Out	The part of the KNX Standard is phased out and can no longer be the basis for an application for KNX certification.

A list of the KNX standard parts indicating the respective revision numbers and the transition dates for certification are contained in an Excel sheet, which is published on the KNX FTP Server and updated after each KTB voting cycle. The version number of this list can be quoted in the KNX certificate.

The smallest entity of the KNX Specifications, which will be updated, is a chapter. In other words, separate pages will not be individually updated.

5.4   Transitional Period between new Issues of Requirements

The transitional period between two versions of the KNX specifications is fixed to 1 year (if not decided otherwise by the KTB). The transitional period for application notes is specified explicitly in the heading of the application notes.

5.5   Tests of Products on the Basis of obsolete Requirements

Generally, tests of products (especially system and basic components/devices) shall always be carried out on the basis of the last valid edition of the KNX Specifications. There are however two exceptions:

- if the manufacturer has placed an order for the execution of conformance tests (to be carried out on the basis of a preceding version of the KNX requirements) at a KNX accredited test lab at the latest four weeks prior to the elapsing of the transitional period of a new issue of the KNX specifications or application note.

- if the manufacturer has applied at KTB for an exceptional permission to be able to have his product tested on the basis of an obsolete version of the KNX specifications. A manufacturer shall also apply for such an exceptional permission if a given application note has come into effect (after the transitional period has elapsed) that had not been taken into account at the time of the development of a given product.

It is not allowed to certify products on a mixture of requirements of different versions of the KNX specifications, e.g. partly on the KNX specifications version 1.0 and partly on version 1.1.

5.6   Use of KNX Logo on unregistered Products

The use of the KNX logo on unregistered products is principally not allowed.

For a start, any company that wants to label its products with the KNX logo shall have signed the KNX Trademark and IPR License agreement.

If these agreements have been signed, the company may brand unregistered products with the KNX logo for publicity reasons (in product catalogues, brochures, on fairs, …) but **ONLY** if KNX Association has been *informally* notified by the manufacturer: informal notification here means that registration is not required, a simple letter suffices.

However, a company may never sell unregistered products branded with the KNX-logo until registration of the respective product has been filed at KNX Association.

Registration in this context means at least submitting the product information (amongst others the filled in KNX data sheet, ..) to KNX Association. Only after KNX Association has confirmed the registration by communicating the allocated registration numbers, may the product be labelled with the KNX logo and be commercialised. KNX Association has the right to withdraw any previously granted registration.

The six months' time delay of the Registration Procedure (after which the registered product shall be duly tested and certified) only starts after integration of the submitted KNX product database into the ETS database[11].

5.7   Elaboration of CE declarations for KNX devices

A CE declaration shall cover all directives relevant for the product, in particular the Low Voltage (LV)-directive and EMC directive. It shall be established according to the requirements as given in Volume 4/1.

5.8   KNX Association's Accreditation Procedure for Test Labs

5.8.1   General

Interested and qualified third party tests institutions may enter into a bilateral co-operation agreement with KNX Association. As a prerequisite such parties shall meet the **KNX Requirements for the Accreditation of Tests Institutions.**

For this, they shall pass the resulting assessment by KNX Association, the extend of which may, in the case of national accreditation, be restricted to ascertaining the capability to assess products to the KNX requirements and to run the KNX tests as described in Volume 8 of these KNX specifications.

For each type of test (Interworking and Functionality tests, Layer test, …) a separate application for accreditation is necessary. Accreditation for a specific type of test is only possible, after KNX Association has officially published the respective test specifications.

In case the test lab is not nationally accredited, the assessment will also include a full check of the EN/ISO/IEC 17025 requirements.

For the execution of assessment rounds at applying test labs, KNX Association has set up an assessment team, consisting of a trained auditor (from the KNX Association's staff members) and external (technical) assessors, who have been recruited from KNX Association's member companies and have duly signed a confidentiality declaration.

As regards the information exchange between KNX Association as certifier and the KNX accredited test labs in the framework of the KNX Certification Management Committee, refer to clause 3.2 of this volume.

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[11] until further notice only applicable to S-mode products

5.8.2   Procedure

As a preliminary phase and in order to acquire the necessary experience in the field of KNX, any interested test lab may submit a letter of intent (text available from KNX Association's Certification Department). This letter of intent allows the test lab to purchase any material available at KNX Association (e.g. conformance test tools) at membership prices. This preliminary phase is limited to one year. Once this year has elapsed, the test lab is obliged to submit a formal application for KNX accreditation.

Any interested test lab shall submit a formal application by means of the forms available at the KNX Certification Department. If the department, in which the to be set-up KNX test lab is located, has been nationally accredited according EN/ISO/IEC 17025, a copy of the acquired certificate shall be sent along with the filled out application forms. If a staff member has already attended the necessary training at a certified training centre (which is highly recommended), a copy of the acquired certificate shall also be sent to KNX Association.

As a second step, the applying test lab shall sign the KNX Association's co-operation agreement for test labs. The text from this contract is available from the KNX Association's Certification Department. Apart from the arrangements of this contract, the test labs are entirely free to conduct their work for the interested manufacturers.

After conclusion of this contract the applying test lab shall select a KNX device and corresponding application program from a manufacturer of its choice, on the basis of which it can carry out a sample test. This device test shall check the conformance of the device at least as regards hardware and Interworking/Functionality. The device test shall be carried out on the basis of the KNX requirements as documented in the KNX specifications: for this, the test lab will have to require the necessary input (PIXIT, …) from the manufacturer of the selected device. A new applying test lab may directly apply for accreditation for other KNX conformance tests (e.g. layer tests), provided KNX Association has duly published the respective test specifications.

The test results shall be documented in a sample test report complying with the EN/ISO/IEC 17025 requirements.

This sample test report shall be submitted to KNX Association. In the framework of a workshop of the assessment team, this report will be evaluated and any first comments will be passed on to the applicant.

If the outcome of the above workshop is positive, KNX Association will then take the necessary steps for the execution of an assessment round at the applicant's premises, which will consist of:

     a)   an assessment of the compliance to the EN/ISO/IEC 17025 standard (if the applicant is not yet nationally accredited);

     b)   proficiency tests using the submitted sample test report as a reference, in order to assess the KNX aptitude of the test lab staff members. Proficiency of the test lab engineers carrying out the relevant KNX tests is required, proficiency of the head of the test lab only is not sufficient to achieve KNX accreditation.

In case a), the assessment round will consist of 1 staff member from KNX Association and one external expert. The assessment will in most cases take 2 days. In case b), the assessment team will be limited to 1 staff member from KNX Association and one external expert. The assessment duration depends on the number of tests, for which a test lab has filed for accreditation (e.g. if only for interworking and functionality tests, limited to one day).

In both cases, only the costs for the staff members from KNX Association have to be borne by the applicant. KNX Association will draw from its own financial resources to refund the travelling expenses and living allowances of the selected external assessment team members.

If the outcome of the audit is positive, KNX Association will issue the KNX accreditation certificate and invoice the incurred costs (Scale of fees can be obtained from the KNX Association's Certification Department).

If the outcome is negative, the laid down measures shall be corrected within the time specified by the assessment team: if this is not possible, the entire assessment round has to be repeated.

If the test lab was nationally accredited, the validity of the KNX certificate is identical to the national EN/ISO/IEC 17025 certificate. Every three years the latter type of KNX accredited test lab is submitted to a surveillance audit.

If the test lab was not nationally accredited, the validity of the certificate is six years. Every two years the latter type of KNX accredited test lab is submitted to a surveillance audit.

Each year or in case of staff changes, an accredited KNX test lab shall present a list of test engineers working on testing projects, for which the test lab is accredited. In case of staff changes since the accreditation, the KNX accredited test lab shall present evidence that any new staff members have either received internal or external training on the tests, for which the test lab had achieved KNX accreditation. In the case of staff changes or where the test lab does not carry out a minimum of one test campaign every one and a half years, KNX Association has the right to carry out a surveillance audit within three months after notification to the accredited KNX test lab.

5.8.3   Witness Testing by KNX accredited test labs

Witness tests by accredited test labs is possible under the following conditions:

- The KNX accredited test lab carrying out these witness tests delegates a staff member, who is appropriately qualified.

   The qualification of the staff member respectively the accreditation of the test lab for this type of tests (if not yet done) is ensured in two steps:

   1. As a first step the responsible staff member of the interested test lab is invited as a guest to participate in a witness test carried out by the association (presupposes the agreement of the audited member company and the signing of a non-disclosure agreement by the candidate test lab).
   2. As a second step, the above staff member carries out the next witness test for the same type of tests, thereby acting as lead auditor under the supervision of the association. In the case of a positive evaluation by the association, the above staff member of the test lab is considered qualified and the test lab accredited for this type of tests.
- The use of calibrated equipment during the witness tests is ensured and documented in the resulting test report (e.g. by annexing copies of the calibration certificates of the used equipment).

```
┌─────────────┐
│      1      │
│ preliminary │
│phase < 1 year│
└─────────────┘
       │
       ▼
┌─────────────┐        ┌──────────────────────┐
│      2      │        │ application forms +  │
│   formal    │◄───────│  EN/ISO/IEC 17025    │
│ application │        │ certificate + training│
└─────────────┘        │     certificate      │
       │               └──────────────────────┘
       ▼
┌─────────────┐        ┌──────────────────────┐
│      3      │        │      contract        │
│conclusion of│◄───────│                      │
│contract KNX - Test   └──────────────────────┘
│     lab     │
└─────────────┘
       │
       ▼
┌─────────────┐        ┌──────────────────────┐
│      4      │        │ input from manfacturer│
│ Test lab selects◄────│ (test reports, PIXIT, ...)│
│device for sample     └──────────────────────┘
│ test (hard- and
│  software)  │
└─────────────┘
       │
       ▼
┌─────────────┐        ┌──────────────────────┐
│      5      │        │ sample test report from│
│ KNX assessment◄──────│      test lab        │
│team workshop│        └──────────────────────┘
└─────────────┘
```

no : renewed audit within the time specified after agreed corrective measures were remedied

```
       │
       ▼
   ◇ 6 ◇                ┌──────────────┐           ◇ 8 ◇
  workshop ok  ──yes──► │      7       │ ──yes──► assessment
      ?                 │assessment round│         round ok?
                        └──────────────┘
  no                                                  │ yes
                                                      ▼
new version of sample                          ┌──────────────┐
test report on basis                           │      9       │
of workshop feedback                           │     KNX      │
                                               │ accreditation │
                                               │ certificate  │
                                               └──────────────┘
                                                      │
                                                      ▼
                                               ╭──────────────╮
                                               │     10       │
                                               │ end - start of│
                                               │ surveillance │
                                               ╰──────────────╯
```

Fig. 5- 15: Summary of the KNX Accreditation Procedure

5.9   System Extension Approval Procedure

5.9.1   General

The KNX System extension approval procedure ensures consistency and integrity of the KNX System and applies in all cases not explicitly covered by the KNX Association's Certification procedure for products.

These include in particular extensions of the KNX specifications (e.g. new medium).

The System extension approval procedure requires the applicant to inform KNX Association as soon as possible on proposed changes or extensions toETS or its components to deal with new implementations. Under this procedure, KNX Association may accept or reject the proposal.

Full acceptance of the system extension is a precondition for allowing the certification of the corresponding products.

No claims for KNX Conformance can be made for specifications or implementations which are not explicitly specified or allowed by the valid Issue of the KNX specifications, without successful conclusion of the procedures of this KNX system extension approval procedure.

5.9.2   Authority & Responsibility

Decisions taken in the framework of the KNX System Extension Procedure are under the joint authority and responsibility of the KNX Association's System Director, the System Group and Technical Board (with the relevant Expert Groups).

Initial System Assessment is handled directly by the System Director under the guarantee of full confidentiality.

Final Authority over the relevant KNX system extension resides with the KNX Association's Management Board.

5.9.3   Practical Arrangements & Co-ordination

An application for KNX system extension shall be submitted directly to the KNX Association's System Director.

The KNX Association's System Department under the direction of the System Director co-ordinates handling of applications under the present procedures.

5.9.4   Outline of the Procedure

The *KNX System Extension Approval procedure* distinguishes the following steps:

1. Initial System Assessment
2. System Specification Management
3. System Component Conformance Assessment
4. System Component Version Management

5.9.4.1 Initial System Assessment

Handles: initial co-ordination of System or System Component Applications (i.e. new specification, new BAU, new device descriptor type, …);

Objectives: • ensure one single entry point for all "system aspects"

                 • determine further steps and dispatch to procedures below

                 • guide the applicant through the preparations

Handled by: System Director, possibly assisted by System Department (SD) and Certification Department (CD)

Nature: confidential

Procedures: • informal contacts, leading to formal System Application;

                 • in case of a System Component Application, the applicant submits a detailed System Component Version Description

                 • (if needed) provisional allocation of a new device descriptor type 0 after signing of disclaimer (copy to be obtained from the KNX system department) by the applicant

                 • assessment to determine what further steps are necessary

5.9.4.2 System Specification Management

Handles: additions and changes to the KNX Specifications Volume 3, 6, 9, 10 or associated standards (of non-editorial nature)

Objectives: • control the evolution of the KNX System Specification to ensure consistency

                 • constitute a framework to arrive at formal acceptance

Handled by: System Department (SD), System Group (SG), Technical (and possibly Management) Board

nature: public ("commercial in confidence")

procedures: • Admissibility Assessment

                 • System Specification Assessment

                 • Test Specification Assessment

5.9.4.3 System Component Conformance Assessment

During this phase, the normal KNX Association's certification procedure for products applies as described in this Volume.

5.9.4.4 System Component Version Management

handles: new System Components, new roles or new versions;

objectives: • co-ordinate ETS integration

                 • manage Device Handling ID ("Mask Version")

                 • assess and deal with possible side effects (for training centres, product databases, …)

handled by: System Department

nature: confidential preparation; changes to ETS or its components or other
                 accompanying measures are public (but could be handled anonymously)

procedures: • assessment of Device Handling

                 • Device Handling ID management

                 • KNX Software Engineering procedures

The time required to take the necessary preparations may vary depending on the importance of the changes required. The table below gives an indicative order of magnitude.

Support in ETS or its components can only be guaranteed for the next scheduled upgrade or release. With tighter version control of ETS and its components, this may be reduced to once a year.

Importance	timing for initial submission
minor change	at least 3 months before commercial introduction
substantial change	at least 6 months before commercial introduction
major change	at least 12 months before commercial introduction

5.9.5   Dependencies for Certification

The following relations between the KNX System Extension approval procedure and the KNX Association's Certification Scheme for products shall be noted:

• no Registration before confirmation of Admissibility of extension (at least positive release for voting status);

• no Registration before "tool support" of extension;

5.9.6   Possible Applicants

The following restrictions apply:

• Only KNX Association members can submit System Components for certification.

• Only KNX Association and committed System Providers can submit a System Specification Application. A System Provider fulfils the requirements about system documentation, non-discriminatory commercial conditions etc.

These will be laid down separately.

5.9.7   Resources controlled by KNX Association

The following "resources" fall under the control of KNX Association:

1. The KNX System Specification.

2. The BAU "Mask Version" or DeviceHandling ID.

3. The KNX Tool Environment with its public and private interfaces, derived tools (ETS) and underlying data model.

6 Tools used in relation with KNX Certification

6.1 KNX Certification and ETS

6.1.1 General Guidelines

6.1.1.1 Important ETS file formats during registration/certification

knxei: file extension of product database submitted by manufacturer to KNX Association for registration.

knxrcd: file extension of registration database submitted by KNX Association to manufacturer to change the registration data of a product/application.

knxprod or vd3 to vd5: file extension of product database submitted by the manufacturer to the ETS end user. Vd3 to vd5 shall be used for ETS3, knxprod for ETS4..

6.1.1.2 Use of Wildcards

Only products belonging to a product group[12] may be submitted for integration into the ETS database under one or more catalogue entries with order numbers containing a wildcard (representing one or more digits). They may all be attributed to the same ETS product. The same registration number is allocated to the combination of the entire product group and one attributed application program.

Example: push button single in three colour variations

Name of product	order number
Push button blue	623 12
Push button red	623 1*3*
Push button green	623 1*4*

   Generalised: push button single | 623 1**x** |

6.1.1.3 Other Guidelines

a) The use of several 'Master' PC's (i.e. PC on which the KNX Manufacturer Tool is installed) is NOT recommended: registration data received from KNXA must be imported to the same KNX MT Project as the registration data sent to KNXA was exported from in order to avoid inconsistencies.Always save your data before exporting data wrapped up as an knxei-file to KNX Association.

b) Never delete product data, modify them and re-export them again, when data was already dispatched for certification. When receiving the registration data from KNX Association, the tool will reject import.

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[12] For the definition of a product group see clause 3.10.1 of this volume.

6.1.2 Creation of Product Database with KNX MT

6.1.2.1 Creating a new MT Project
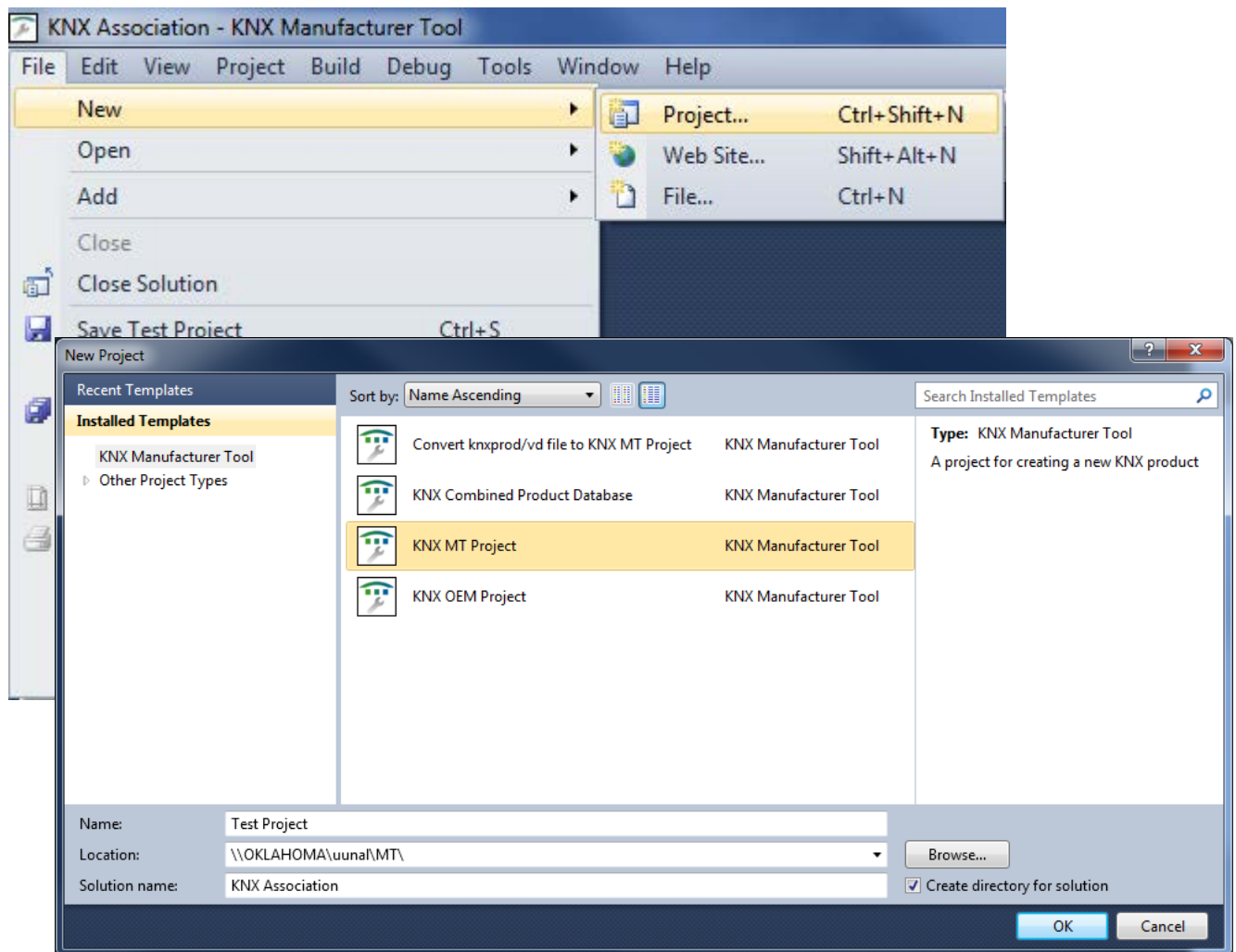
All work in the KNX Manufacturer Tool is organized in Projects. A project contains all source files necessary for the creation of a product database, e.g. application program descriptions, catalog structure, external binary files, help files etc.

In order to create a new project, execute the **File » New » Project** command and select the "KNX MT Project" template.

6.1.2.2 Creating new KNX Product data

Select the target ETS version. This setting determines the type of ETS product data to be distributed to your customers. Note that this target version is fixed and cannot be changed after the project is created.

Select your manufacturer ID and Name. In this example **KNX Association** is selected.
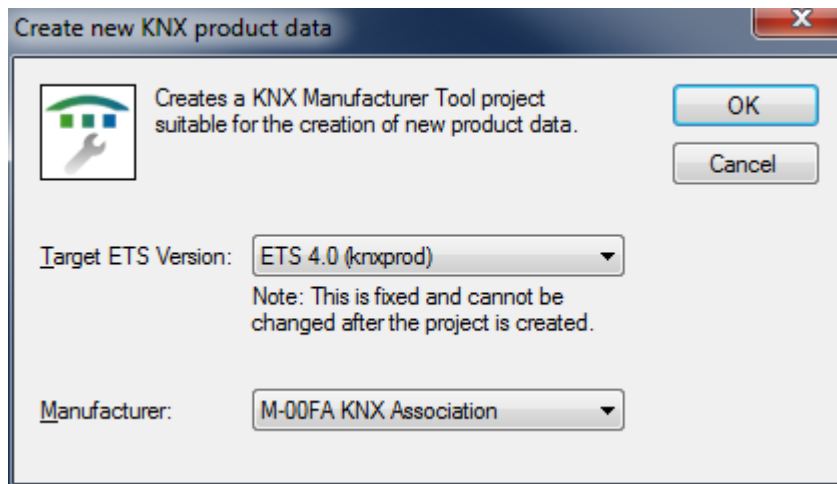
- If the desired manufacturer is not available in the list when creating a new project, ask KNX Association for a new master data file.
- In the meanwhile, you may continue to use "**KNX Association**" as manufacturer. Use the OEM function to transfer the project data to your name once the master data with your manufacturer ID is available. This is done in the following way:
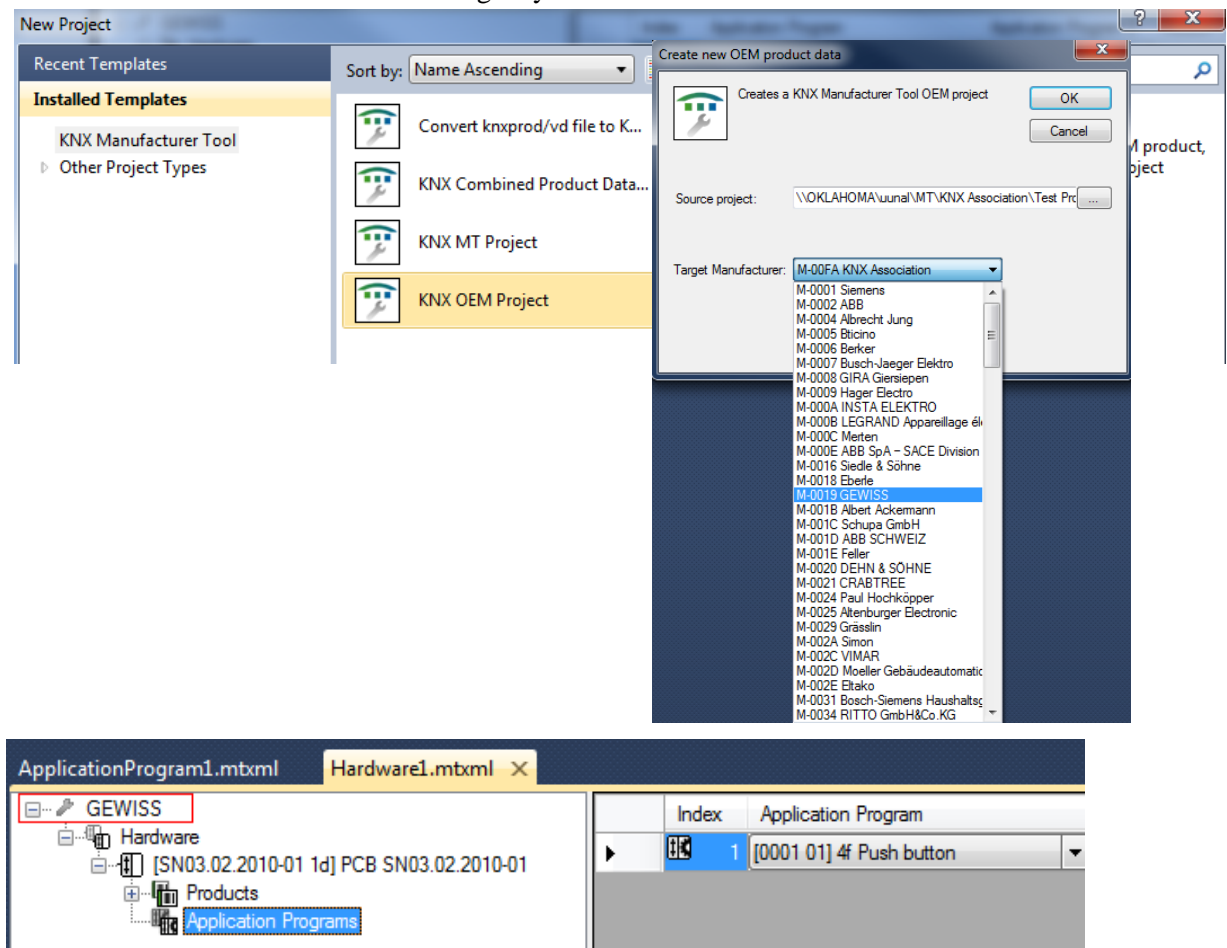
- execute *File >> New >> Project* command and select **KNX OEM Project**
- Select the *.mtproj file of the project with the original data
- Select the target manufacturer, i.e. your manufacturer ID and name.

6.1.2.3   Creating hardware and product data
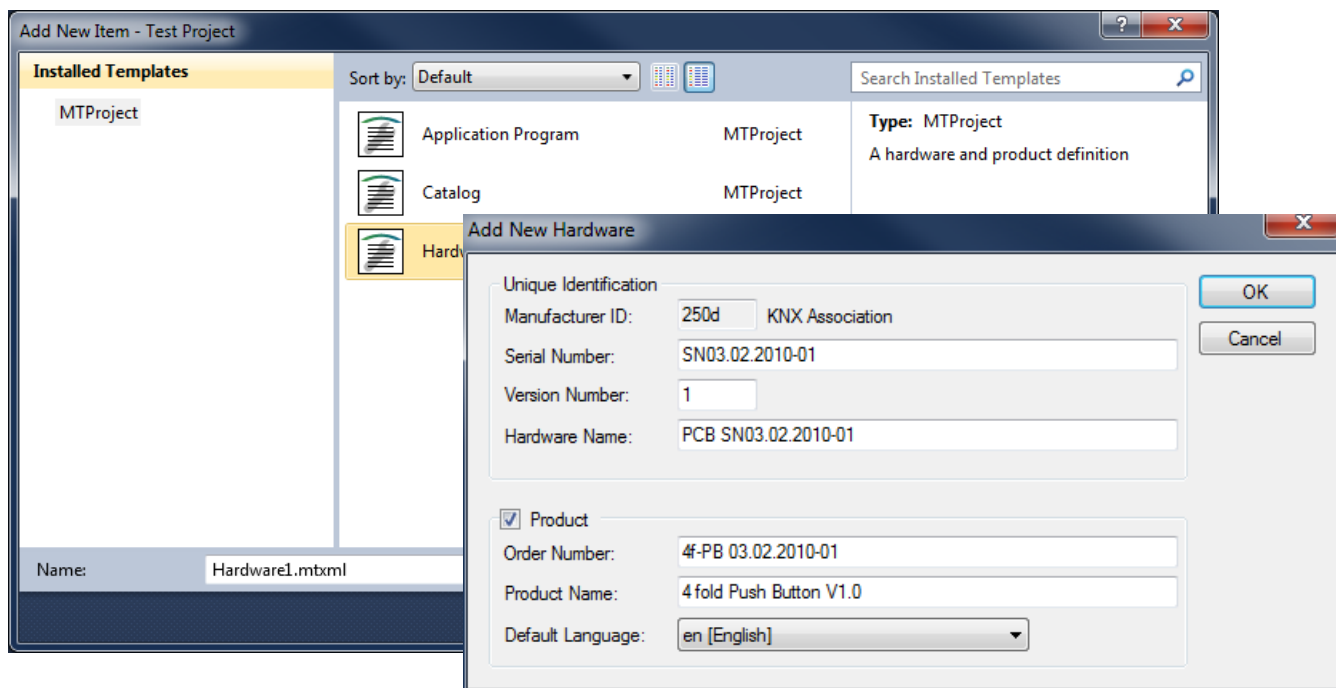
- Click the right mouse button (context menu) and select **Add > New item > Hardware**
- Enter the Unique Identification of the new hardware:
    - Serial Number and Version Number. This is the unique key of the hardware. You should avoid having to change it later.
    - Hardware Name: this is not visible for the ETS end user.
- Define the product details. This is the commercial realization of the hardware.
    - Enter the order number. This is the unique key of the product. You should avoid having to change it later
    - Product name: this is the product name in the default language.

6.1.2.4 Creating an application program
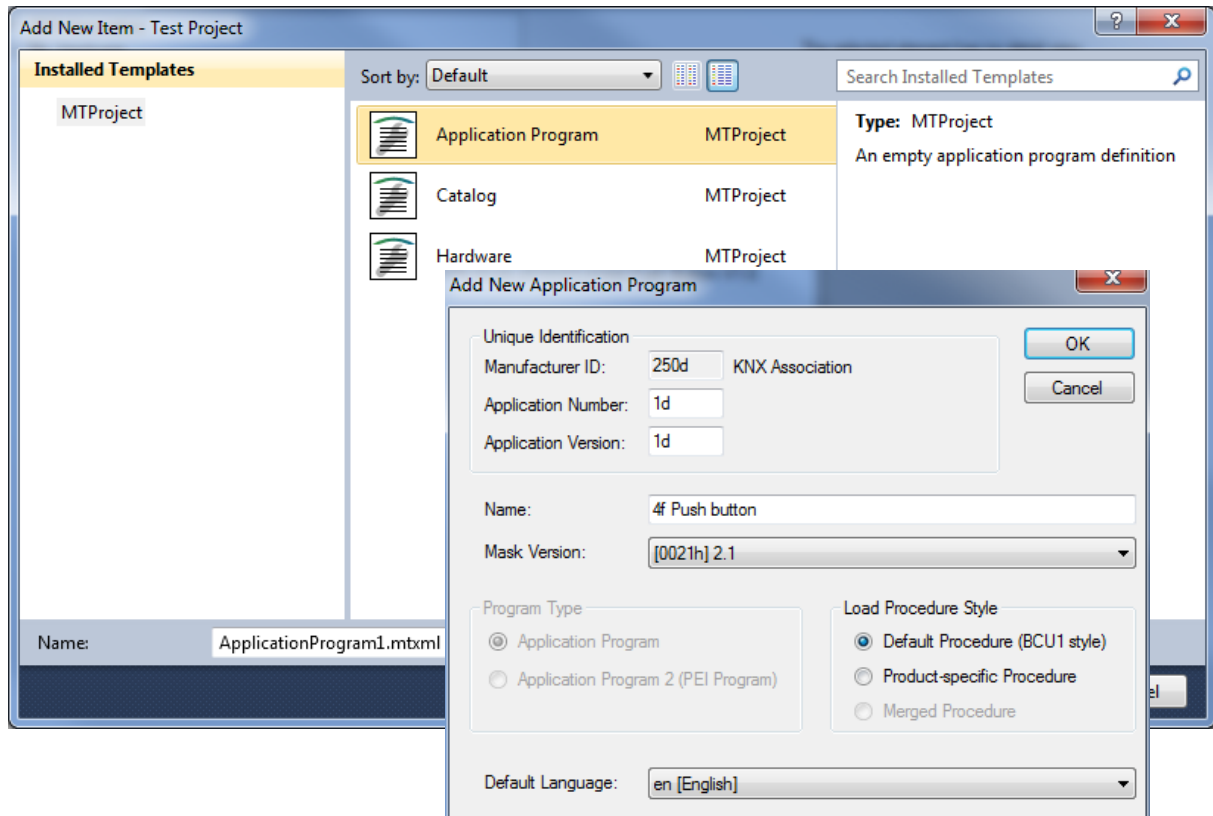
- Click the right mouse button (context menu) and select **Add > New item > Application Program**
- Enter the application number and Application Version. This is the unique key of the application program. Avoid having to change this later on.
- Enter the Name of the application program in the default language
- Select the assigned mask version:
  - Depending on the selected mask version, you can select the option "Application program" or "Application Program 2 (PEI Program)".
  - Depending on the selected mask version, you can select the option "Default Procedure (BCU1 style)", "Product-specific Procedure" and "Merged Procedure".
- Default language: This is the language of all user-visible texts directly entered in the application program elements.

6.1.2.5 Assigning Application program to Hardware
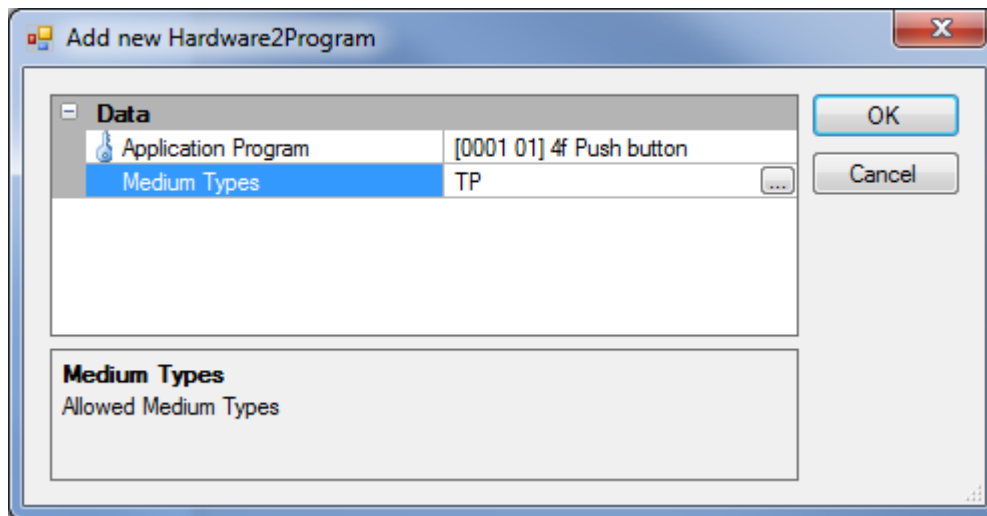
↓ Select the first entry of the hardware (not the commercialization realization) and select "Add new Hardware2Program" option via the context menu.
↓ Select the application program you created in Step 3
↓ Select the "Medium Type"

6.1.2.6 Importing Binary Data

To import binary data do the following:

↓ Select the application program in the product data window
↓ Execute the Import Binary Data command from the context menu
↓ Select the S19/S28/S37 file
↓ A preview of the data and - if present in the file - the load procedure is shown
↓ To create or update the group objects, check "Add ComObjects".
↓ Click OK to perform the import

6.1.2.7   Reconstructing Parameters & Group Objects

6.1.2.7.1   Static Part

6.1.2.7.1.1   Parameters

6.1.2.7.1.1.1   Definitions

Device parameters in MT4 are implemented in a very specific way:

Structure: "ParameterRefRef" -> "ParameterRef" -> "Parameter"

- "Parameter" is the actual parameter as it is stored in memory
- "ParameterRef" refers directly to "Parameter", it offers the possibility to override values and properties
  Example 1: A parameter linked to a particular rocker might need different default values when set up for switching or dimming.
- "ParameterRefRef" refers directly to "ParameterRef" and is the resource that will be used to visualize "Parameter" in the ETS parameter dialog.
- "ParameterRefRef" is automatically created when its associated "ParameterRef" is added to the dynamic structure of the Application Program (see further down).
- "Parameter" can have more than one associated "ParameterRef", regardless of the target version.
- If the target version is lower than ETS4.0, then "ParameterRef" can only have 1 associated "ParameterRefRef"
- If the target version is ETS4.0, then "ParameterRef" can have more than one associated "ParameterRefRef".

6.1.2.7.1.1.2   Add Parameter Types

Before parameters can be defined, parameter types shall be created. In order to do so, select the application program, the Static or the ParameterTypes node.

The following example shows a basic example on how to create a parameter structure and group objects.

The goal of this exercise is to create a product that shows 1 parameter and 1 communication object in ETS. The value of this parameter can be incremented by using the arrows within the text field or by simply changing the value in the text field. The default value of this parameter is set to 50d.

- Select "**Static**" in the Application Program
    - Context Menu: ***Add new > ParameterTypeNumber***
    - Type in the Internal Name = My Parameter. This name must be unique within the application program
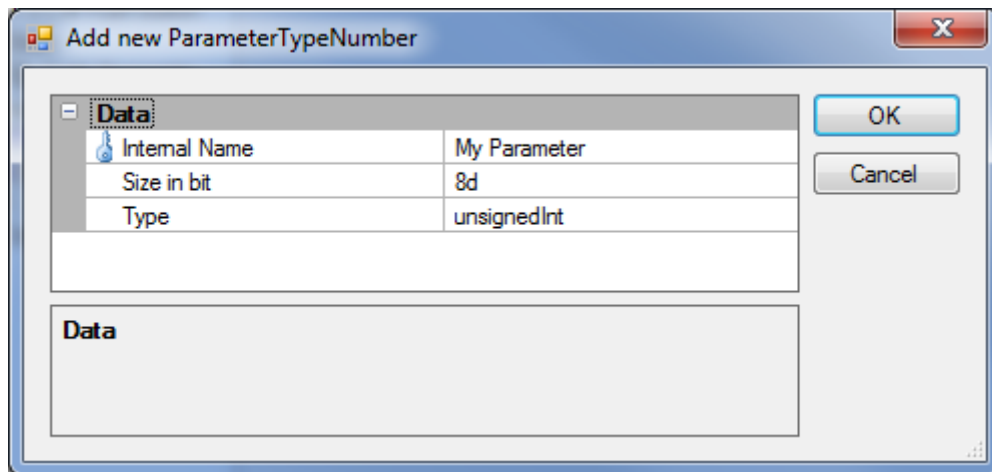
6.1.2.7.1.1.3   Add Memory Parameters

A Memory parameter describes the location of a parameter in the memory.

Select "Static" in the Application Program

Context Menu: Add new > Memory Parameter
Select "My Parameter" under Parameter Type
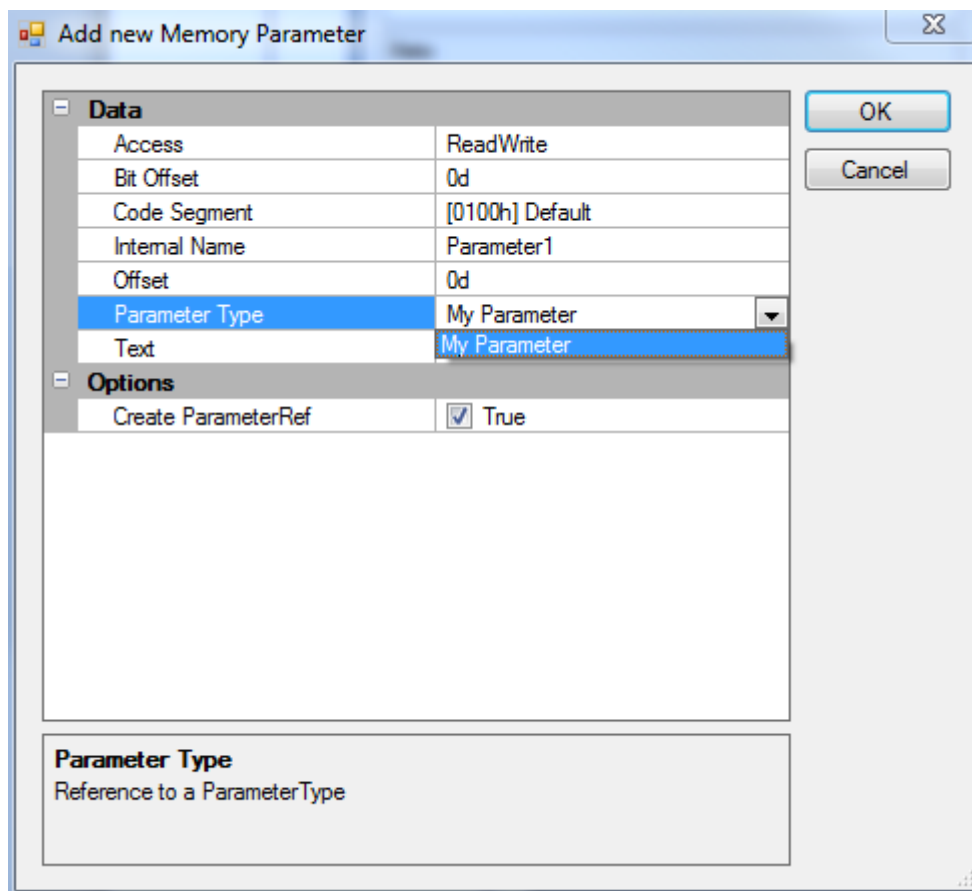
+ Set the default value of the parameter to e.g. 50d

+ When creating a parameter, the corresponding ParameterRef will be created, in which you can find the memory parameter you created before.

6.1.2.7.1.2   Group Objects

6.1.2.7.1.2.1   Definitions

+ In the tool named Communication Objects (COs).
+ COs in MT are implemented in the same way as parameters.
+ Structure: "ComObjectRefRef" -> "ComObjectRef" -> "ComObject"
+ "ComObject" is the actual CO as it "resides" inside the device.
+ "ComObjectRef" refers directly to "ComObject", it offers the possibility to override properties.
  Example 2: A particular CO could need, depending on the "situation", different DPTs.
+ "ComObjectRefRef" refers directly to "ComObjectRef" and is the resource that will be used to visualize the "ComObject" in the ETS device detail dialog.
+ "ComObjectRefRef" is automatically created when its associated "ComObjectRef" is added to the dynamic structure of the Application Program (see further down).
+ "ComObject" can have more than one associated "ComObjectRef", regardless of the target version.

6.1.2.7.1.2.2   Add Communication Objects

+ Select "**Static**" in the Application Program or select "**ComObjects**" under Static
  ▪ Context Menu: Add new > ComObject
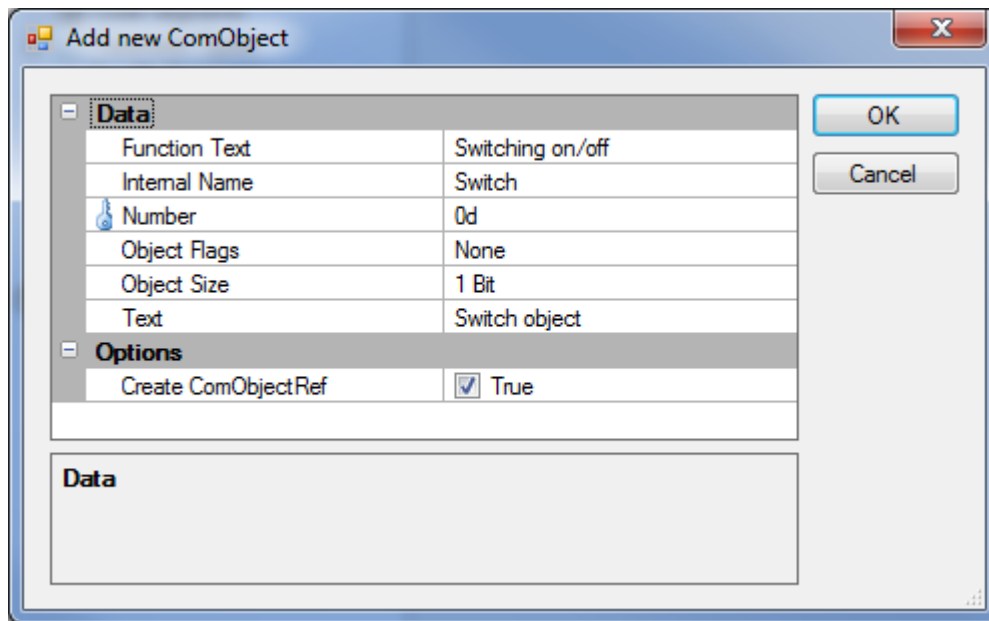
After creating an object, a ComObjectRef will be created, in which you can find the communication object you created just before.

6.1.2.7.2 Dynamic Part

The dynamic part is the representation of the parameters and group objects in ETS.
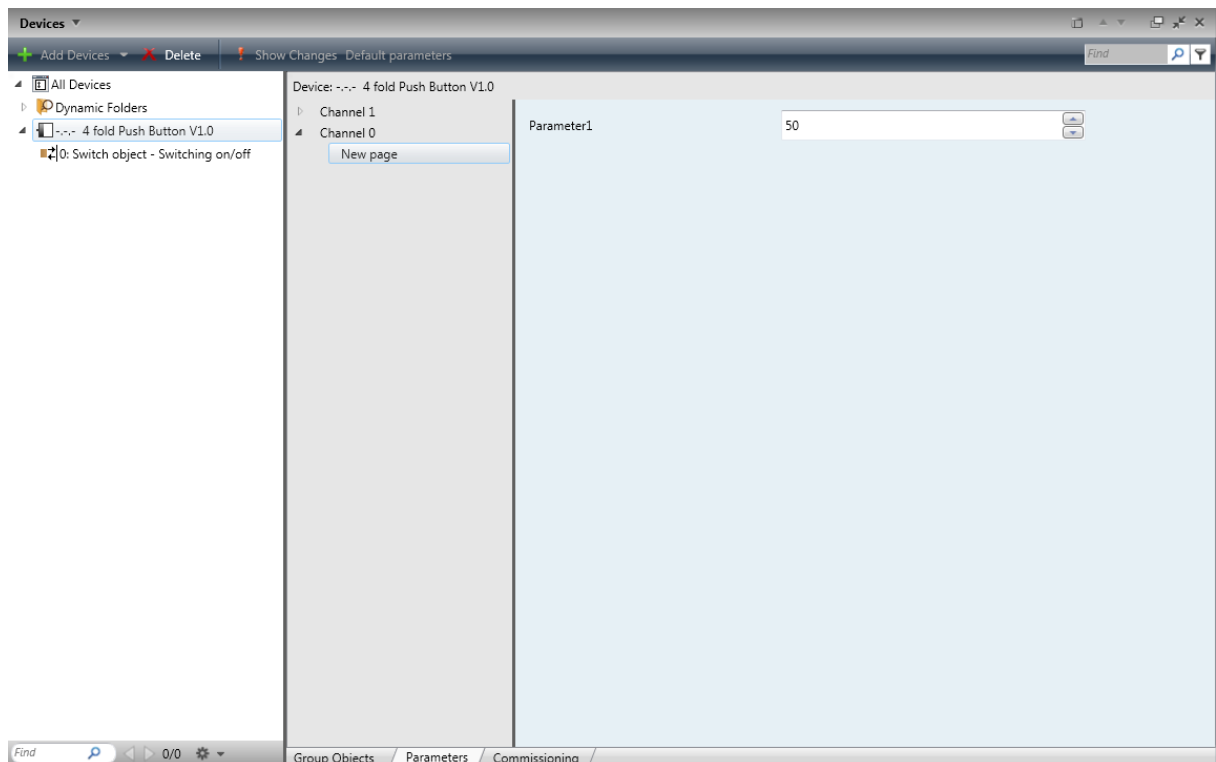
6.1.2.7.2.1 Add Channels

✚ Select "**Dynamic**" in the Application Program
- Context Menu: **Add new > Channel**
- Channel 0
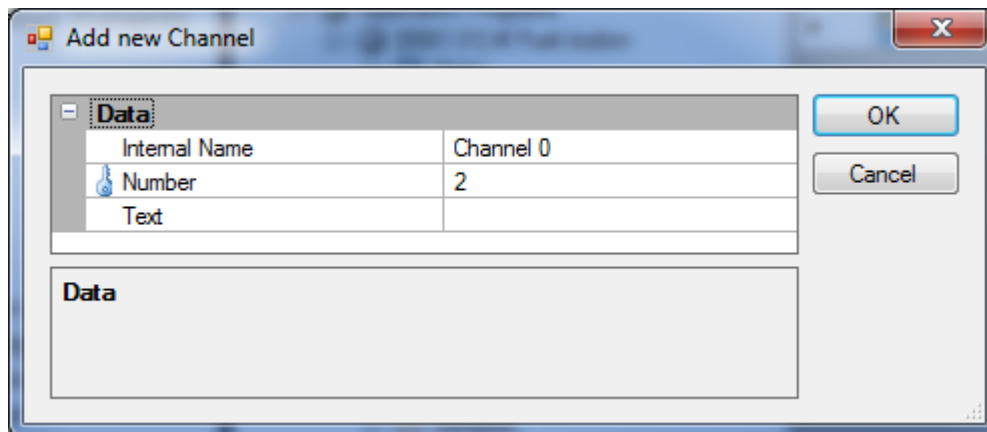
✚ Select "**Channel 0**" in the Application Program
- Context Menu: **Add new > ParameterBlock**
- **Page2**
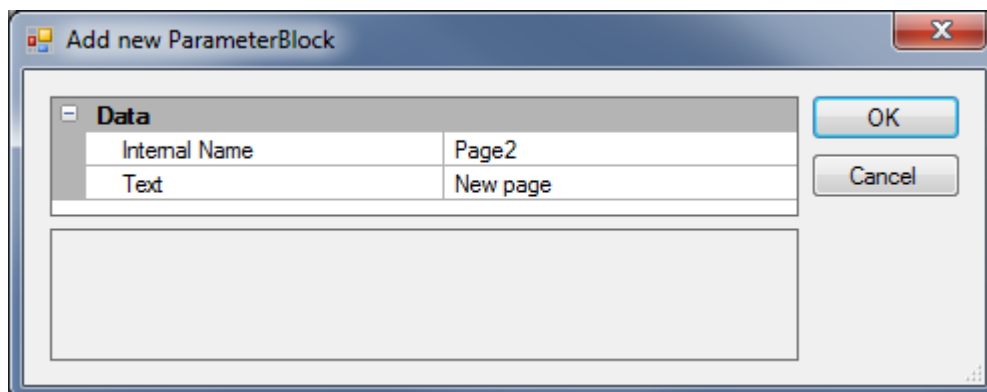
✚ Select "Page2" under Channel 0
- Context Menu: **Add new > ParameterRefRef**
- Select **Parameter1**

✚ Select "Page2" under Channel 0
- Context Menu: ***Add new > ComObjectRefRef***
- Select ComObjectRef Switch-Switching on/off
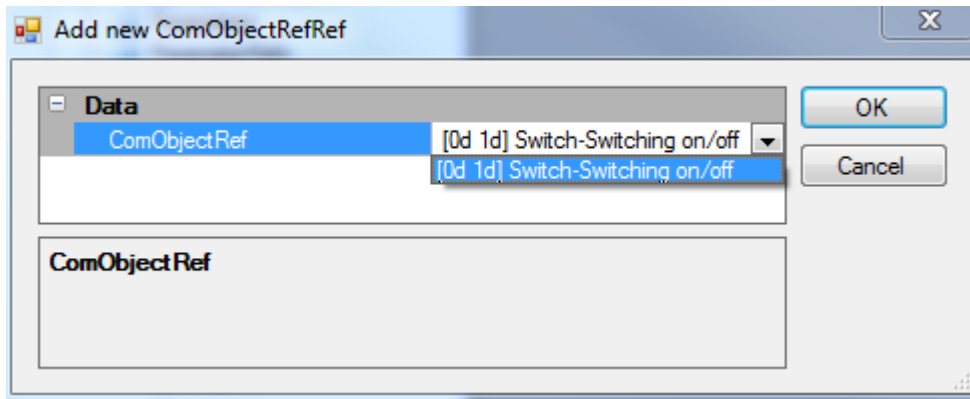
6.1.2.8   Editing and testing the first channel of the application program

6.1.2.8.1   Goal

The check function is used to find problems in the created product data.

6.1.2.8.2   Start

To start the check:

✦ open any of the product data files (*.mtxml file) in the project

✦ execute the menu command *Build » Check* or click on the ![icon] (check the current file only) or

![icon] (check the whole project) toolbar icon.

6.1.2.8.3   Results of Check

The results (errors and warnings) will be displayed both in the output window (useful e.g. for saving and printing) and in the error list.

In the error list, the following actions can be performed:

✦ get help on the error/warning: select "Show Error Help" in the context menu of the error message
✦ jump to the location of the error/warning by double-clicking the entry

6.1.2.9   Copying the channel as required using smart copy

With Smart Copy you have the possibilty to set replacement rules. The entered values are remembered for the next invocation (even if you close the dialog with Cancel, so if you need to look up something in between, you will not lose already entered data).

Select the Channel which you want to copy and select *Paste Special* in the context menu under "Dynamic".

6.1.2.10 Testing the complete project / Preview function

After having copied the channels it is required to test the complete project on errors and warnings.

The preview window serves the following purposes:

- Verify appearance and translation
- Verify correct download image creation

You may open one or two (e.g. to compare different languages) preview windows.
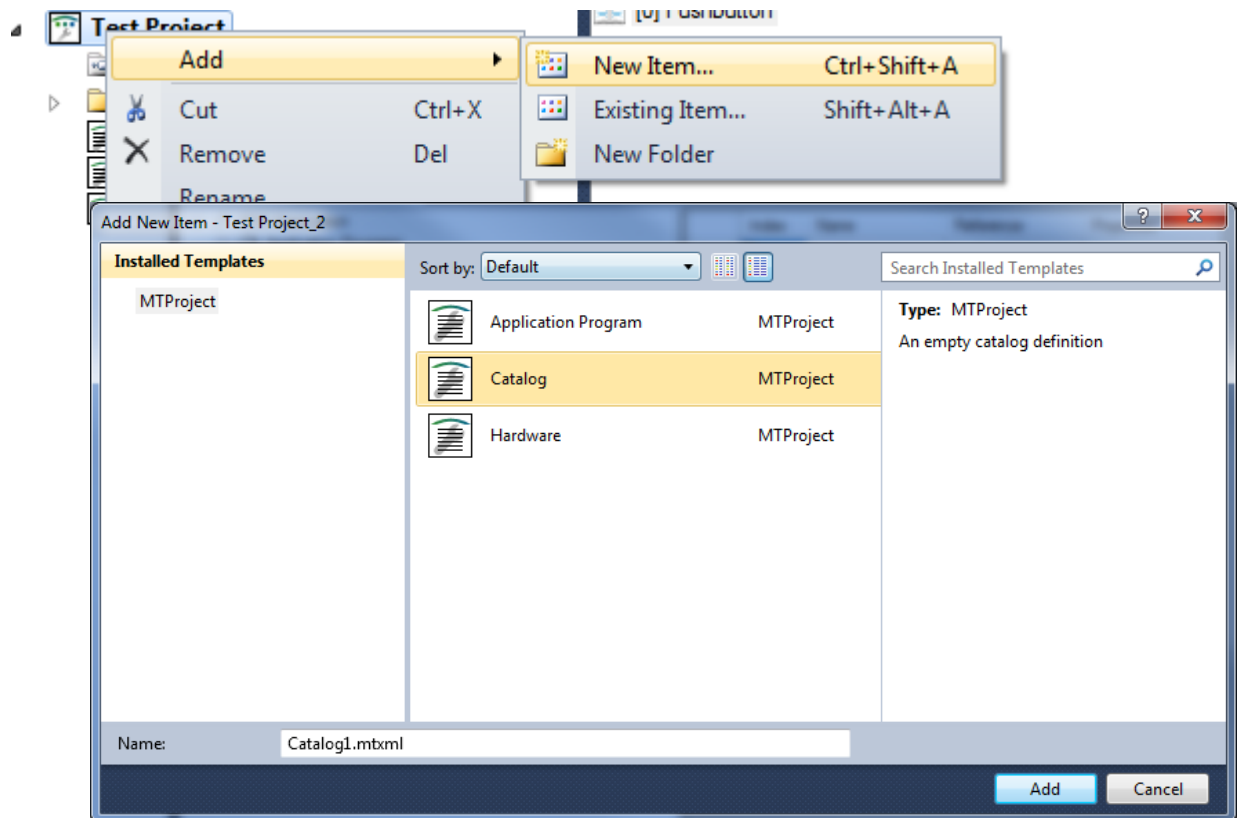
To open the preview window:

- Select an ApplicationProgram, a Hardware2Program or a CatalogItem
- Execute the menu command **View » Preview** or click on the 🔍 toolbar icon

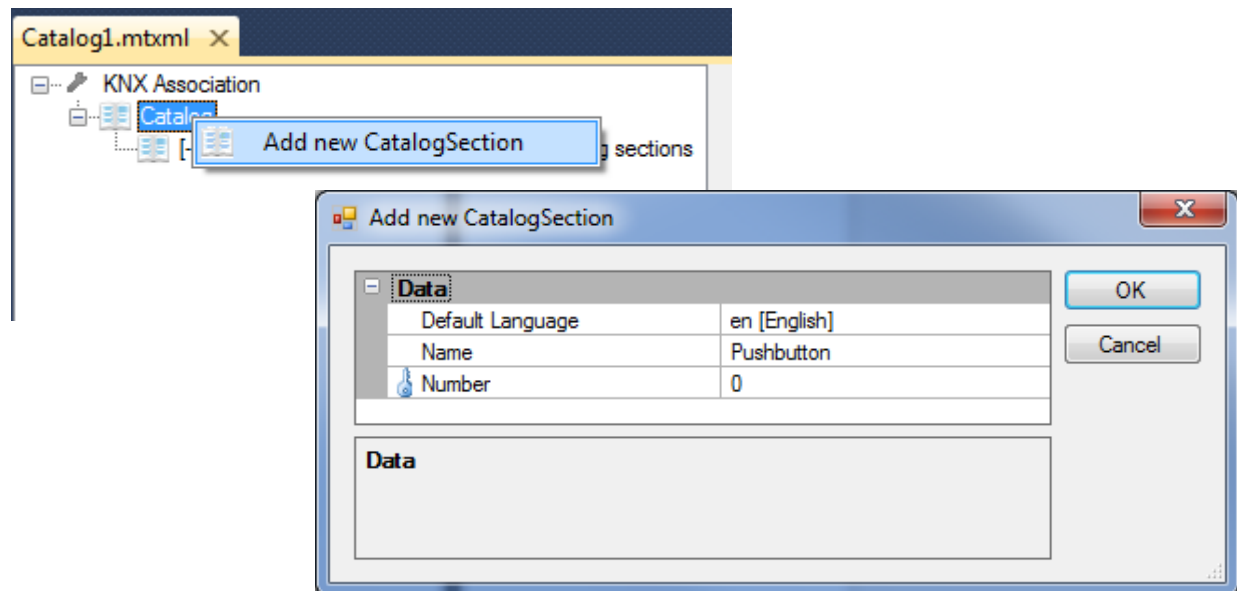The preview can only be shown if there is a valid Hardware2Program entry.

Up to two preview windows can be open at the same time.
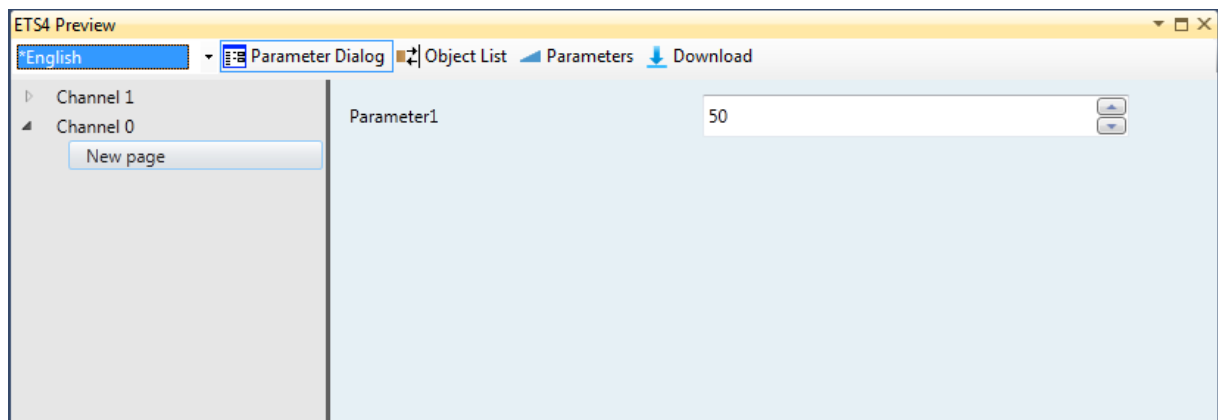
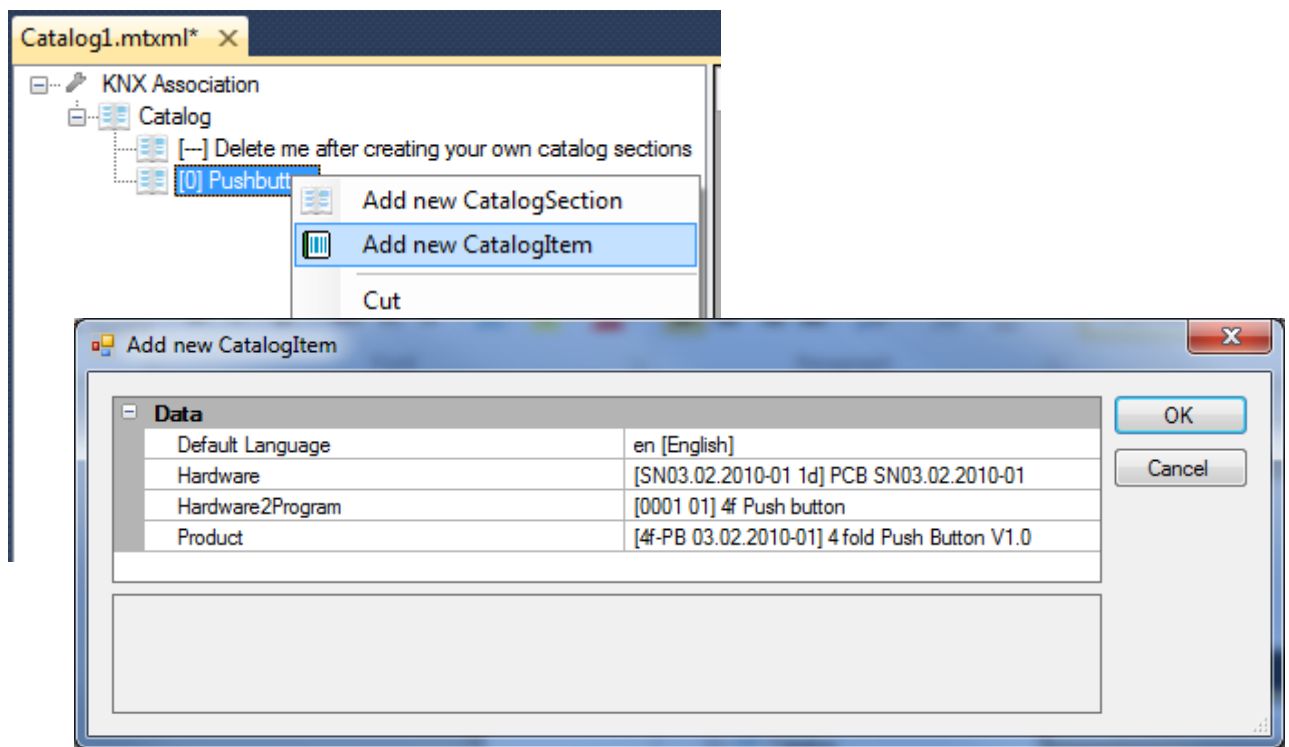## 6.1.2.11 Creating a Catalog structure and Catalog Items

Execute the *Project >> Add >> New Item* command and select the Catalog template.

Edit the catalog by selecting the "Catalog" node and then execute the **Add New CatalogSection** command via the context menu.

To add a new CatalogItem select the CatalogSection and then execute the **Add New CatalogItem** command.

Note: For technical reasons (XML scheme), there is an artificial CatalogSection without a Number and Name in the newly created catalog file. Make sure to delete this file after you have added your own CatalogSections.

6.1.2.12 Registration Process
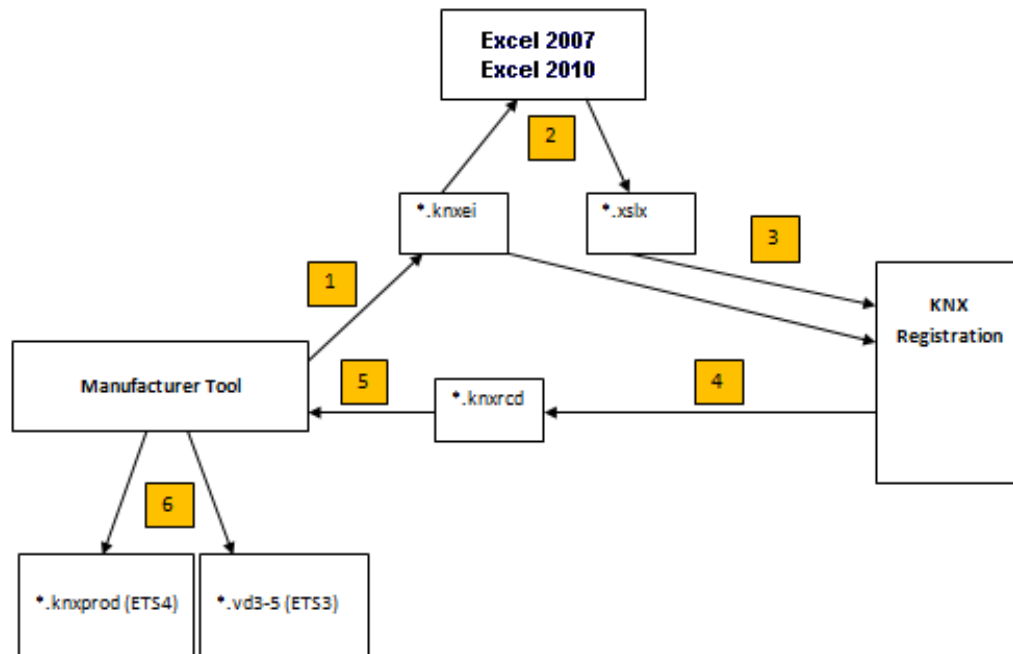
The steps shown in the above figure are explained in the underneath next clauses.

6.1.2.12.1 Exporting the finished product data as knxei file

Before starting with product registration make sure that:

- The check function is completed without any errors
- **All registration-relevant data (marked with an exclamation mark) are finalized. It is not possible to change registration-relevant data after registration without losing the registration status.**
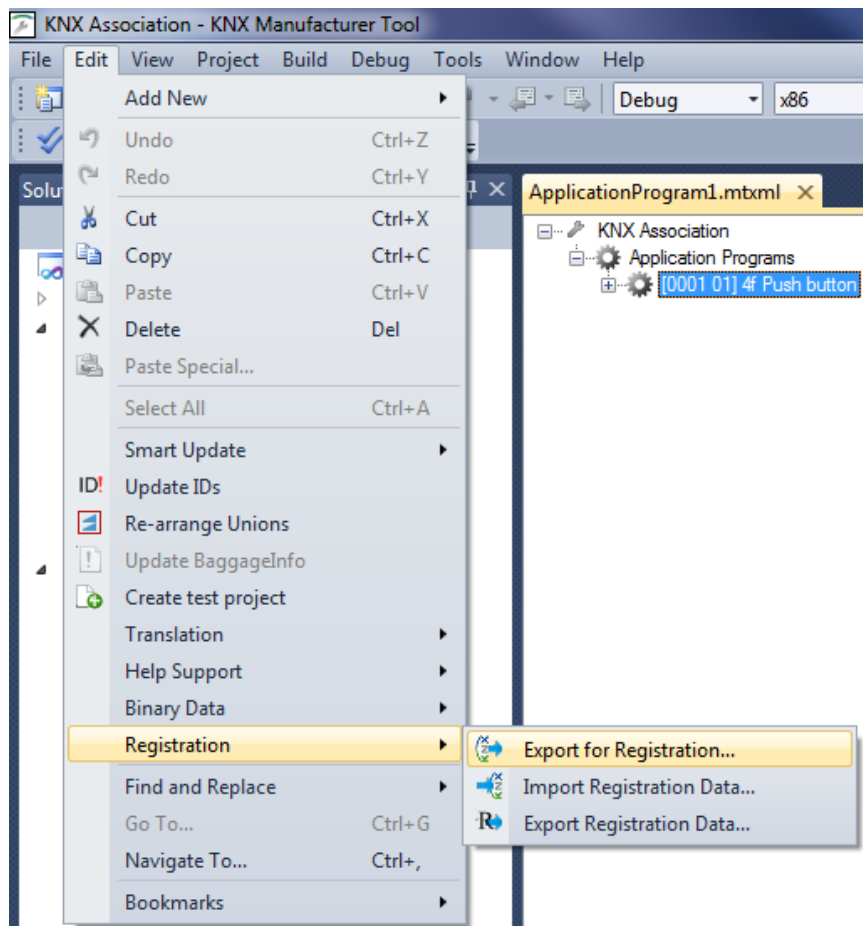
To submit data for registration, export the KNX Manufacturer Tool project as knxei file using the *Edit » Registration » Export for Registration* command. This command is only available if a product data window is active. In order to open the product data window double-click on the *.mtxml file in the solution explorer.

This command will always export the whole project. If you wish to only register some of the products in this project, create the registration documents only for these products.

Note: Do not change any registration-relevant data after the knxei file has been created. If you do so, the knxrcd import functionality will recognize this and hence the new registration status will not be imported. In other words, your product will still have the status "unregistered".

6.1.2.12.2 Creating registration documents

This extra program to automatically create registration/certification documents is available for any licensee of the MT 4. An extra exe file is delivered along with the KNX MT installation files.

This function can however only be used if **Microsoft® Excel 2007** or **Microsoft® Excel 2010** is installed on your PC.

Both for registration as well as testing of KNX products, a number of forms have to be filled out. Open the Microsoft Excel template "**KNX_certification_forms_ETS4.xltx**", which is available if one installed the Certification forms program that is made available together with the MT 4 installation files.

In the "**Certification Case**" of your application you have the possibility to select which type of registration you are applying for. The underneath mentioned table provides more information.

Case Number	Certification Case	Description	file type that can be read into Certification Form Tool
1	**New request**	New request for product of original manufacturer.	knxei
2	**New + OEM request**	New request for product of original manufacturer and additional request for one or more OEM products that are based on the new product.	knxei
3	**OEM request**	OEM request based on an existing registered / certified product.	knxei or knxprod
4	**Modified software**	Modified software. New MT project based on an existing one.	knxei or knxprod
5	**Modified hardware**	Modified hardware. New MT project based on an existing one.	knxei or knxprod

After you have selected the knxei or knxprod file - containing the hardware and the application program that are to be registered – on the basis of the data contained in these knxei or knxprod file many fields of the Excel registration forms will be filled out automatically. Complete the missing date in the several tab sheets. Where possible, the tab sheets offer check boxes and drop down menus. Moreover, nearly all fields include an inline-help.

Note: The inline-help for the hardware data sheet can be called by hovering over the numbers on the left hand side.

The following six types of tab sheets are created:

Sheet type	Description
General Application	This sheet contains general information about the selected product(s) like e.g. name and order ID.
HW DS	Hardware Datasheet: This sheet contains information about the hardware.
SW DS	Software Datasheet: This sheet contains information about the software.
Reassessment	This sheet describes the already registered / certified original products and their modifications.
OEM	This sheet describes the already registered / certified original products and the OEM product which is derived from the original main product
Overview DP	This sheet lists the datapoints of the selected applications program.
CRT summary	This sheet contains a summary row for each selected product-application combination (data in this tab is reserved for use by the KNX certification department).
Withdrawal	Specify the products which are not marketed anymore in this sheet.

6.1.2.12.3 Overview DP

The implemented group objects in your application program shall be well documented. Therefore, the node "**ComOjectRefs**" contained in the Static part of the application program in your MT4 project shall be completed meticulously. The following guidelines are helpful when creating a product database ready for registration:

- The default language of all implemented datapoint types as well as functional texts shall be in English;
- In the MT4 Project: Select the correct datapoint type by its main number and sub number e.g. [1.1] DPT_Switch. Avoid using generic datapoint types like e.g. 1.xxx
- If the datapoint selected is not supported by ETS3, leave field "Datapoint Type" empty and complete the correct "Datapoint Type" in the field "Visible Description".

6.1.2.12.4 Sending knxei file and Excel registration documents to KNX Association

- Send knxei file + Excel Registration forms by email to KNX Association. Documents do not have to be signed.
- Wait for KNX Association to return the knxrcd file
- In the mean while you can still modify the **non-certification relevant entries** e.g. translate the new product data….

6.1.2.12.5 Importing received knxrcd file in project

After registration (or any other kind of status change, e.g. from "Registered" to "Certified" or to "Future use not recommended"), you will receive a knxrcd file containing the new status.
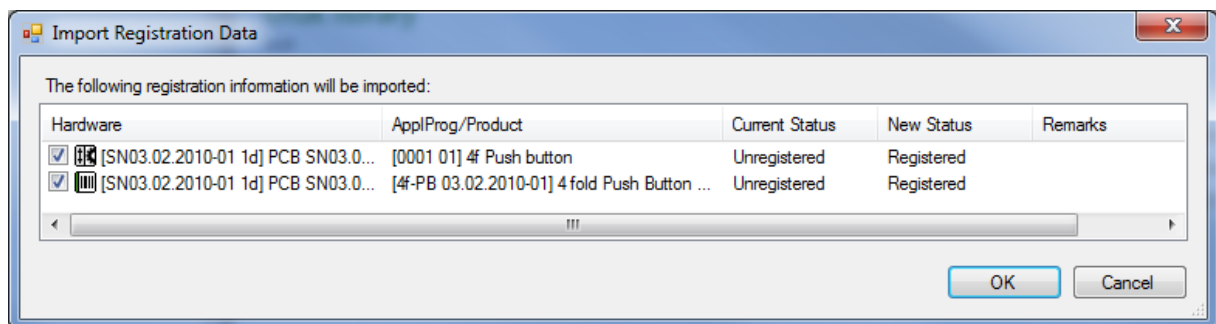
Use the *Edit » Registration » Import Registration Data* command to import the received knxrcd file into the same KNX Manufacturer Tool project, from where you originally exported the knxei file. This command is available only if a product data window is active (as explained before).

The dialog "Import Registration Data" lists all updated registration data in the knxrcd file. The meaning of the individual columns is:

- **Current Status**: this is the current registration status in the KNX Manufacturer Tool project data.

- **New Status**: this is the registration status from the knxrcd file
- **Remarks**: any (possible) problems are listed here

If registration-relevant data changes have been made, then the signature in the registration data will not match any more and the product will be remain unregistered!

After importing, some product data windows may be opened automatically and marked as modified. It is recommended to save the data immediately after import.

6.1.2.12.6 Creating an ETS test project
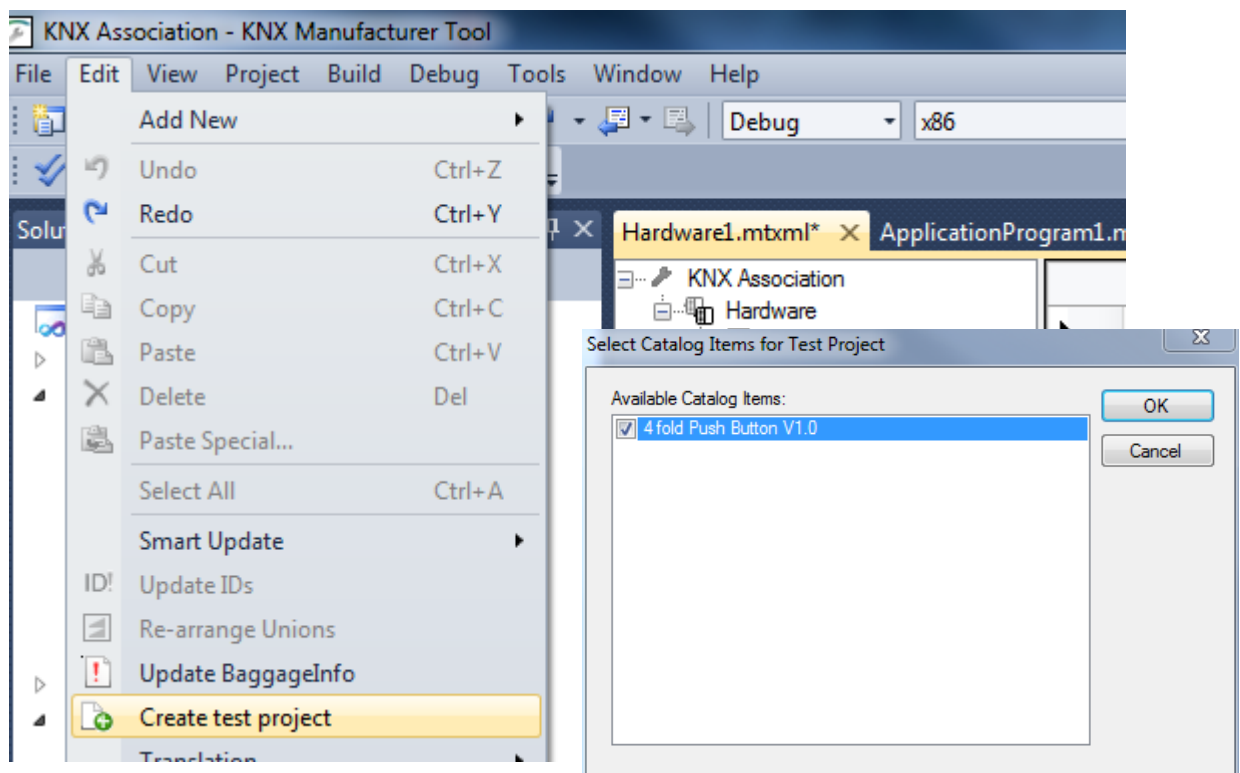
Even if you are able to produce product data files at any time, when the product data contains no errors it will not be possible to instantiate devices in ETS with this data, unless the product is registered. To test an unregistered product, use the "Create ETS test project" function:

- Execute the menu command "Create test project" in the Edit menu
- Select one or more Catalog items from the list

Depending on the target ETS version a *.knxproj (target = ETS4) or a pr5 (Target = ETS3) file will be created. This file contains a single project with one device (not assigned to any line or room) per selected catalog item.

6.1.2.13 Creating knxprod/vd file
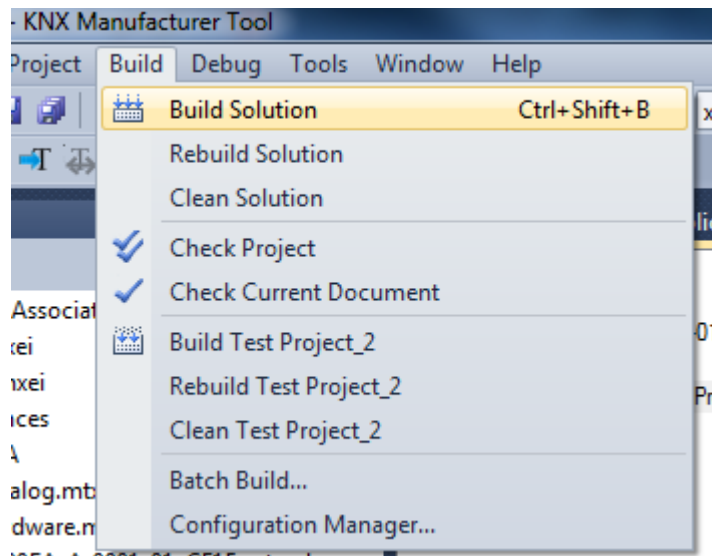
Execute the *Build » Build Solution* command or hold the keys *Ctrl + Shift + B.* This will first do a complete check of the product data and then create the target file.

The output file (knxprod or vd) is created in the subdirectory "**out**" of the project directory.

You can now distribute your product to your customers and to the test lab.

6.1.2.14 Certification Process

When you have received a favourable or negative test report from the KNX accredited test lab, submit one copy to KNX Association. In the case of a positive test report

- KNX Association will send you a knxrcd file, which you have to import again in the corresponding project.
- Execute the *Build » Build Solution* command in order to create an updated knxprod / vd file
- Distribute this file to your customers

6.2   Other tools

Special KNX tools as needed during conformance tests are described in the various parts of Volume 8 or the relevant manuals as delivered along with the software package. Please refer to this volume or to the manuals for more information.