

ATEC – Academia de Formação para a Industria

Workshop ETS5 - 25 anos com KNX





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Desenvolver e aperfeiçoar competências através da formação e qualificação de pessoas, utilizando métodos e equipamentos avançados, com o objetivo de exceder as expetativas do mercado.

Contribuir para o enriquecimento do País, potenciando o crescimento de pessoas e organizações.





SIEMENS BOSCH Tecnologia para a vida



Deutsch-Portugiesische Industrie- und Handelskammer Câmara de Comércio e Indústria Luso-Alemã







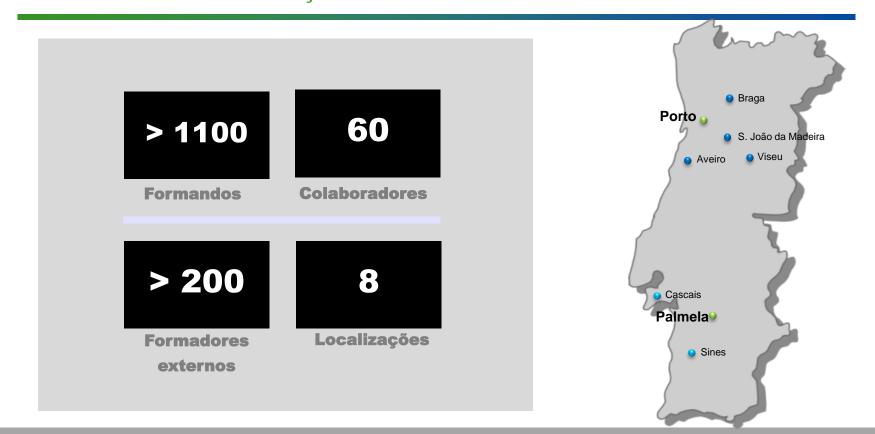


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Formação profissional

Formação empresarial



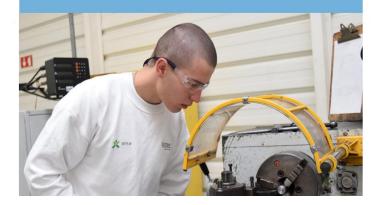


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Formação profissional dual



Formação profissional

parceria com:

Aprendizagem

Especialização tecnológica

Educação e formação de adultos



Formação empresarial



Formação empresarial

empresas e particulares

Automação & tecnologias da informação

Mecatrónica automóvel & mecânica industrial

LEAN

Comportamental & línguas

Projetos internacionais

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Agenda

ETS 5 Profissional

• O porquê do ETS5?

- Desafios, Mudanças
- Quais as novidades no ETS5?
 - IT System Environment, User Interface, Business Logic, KNX System
 - ETS Apps, extend ETS functionality (excursus to ETS App Online Catalog+)

ETS Segurança/ Core/ Tablet

- Como criar segurança com o ETS ?
- Especificações do ETS Core/ Tablet?
- Conceito e Tecnologia
- User Interface

Planeamento e datas





Novidades no ETS5

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What's new in ETS5 \rightarrow Challenges



ETS4 was launched in 2010, since this...

Formulation of new ETS requirements

from the side of users & the KNX system, here especially the integration of KNX RF System Mode in ETS

Introduction of an more and more "connected" world (I do not use wording "cloud" here)

customer expectation to data availability everywhere and every time

ETS user have less time to perform the same or an better (project) result for its customers

What's new in ETS5 \rightarrow Changes



Changes & improvements can be spilt up into three (3) sections.

- IT System Environment
 - OS support; installation behavior, updates, compatibility, ...
- User & Core Interface
 - Edit and naming behavior, views and filter, ...
- KNX System
 - Download performance, diagnostic capabilities, RF system integration

In total we have to implement ~ 110.. 125 major & minor changes.





Ambiente e Sistema IT

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What's new in ETS5 → IT System Environment

Main Points

- Database "Removal"
- Installation & Setup & OS Support
- x32/x64 Mode (ETS + Apps)
- Next Generation Plug In Software
- Performance
 - Database
 - Reports
 - New Dongle
 - Various



What's new in ETS5 → IT System Environment

Database Removal

Current ETS installation is not always 'ideal'.

- Size of the setup to download
- OS preconditions for server installation
- Interference with existing/ installed PC (server) applications

Solution

- Remove the storage principle via a "database"
- Store data in plain XML project files (indexed files → access performance)



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Installation & Setup & OS Support

ETS installation is restricted to the most recent OS versions.

- Win7 SP1 x32/x64, Win8 x32/x64, Server 2008 R2 SP1 x64, Server 2012 x64
- Reduction of Setup size : > 50% (530 MB \rightarrow 65 MB)
- Falcon is integrated part of the ETS (no COM component anymore)
- Parallel installation of ETS3/4 to ETS5 possible
- RS232 support in ETS5 discontinued
- EibLib/IP support in ETS5 continued via an ETS App

(remark: EibLib/IP was never an released and voted specification)

What's new in ETS5 → IT System Environment



x32/x64 Mode (ETS + Apps)

While ETS4 is an 32- bit application, ETS5 is able to also run as a native x64bit application.

The used "mode" depends only on the activation of the *x32- compatibility module* (legacy Plug- Ins or ETS Apps).

- No need for different setups for 32/64 bit ETS5
- All ETS5 modules are natively 32- bit (as usual) and 64- bit capable
- In case of 64- bit, the possibility to have > 4 GB RAM for the ETS application itself
- *x32- compatibility module* is activated via an in ETS5 integrated, free of charge ETS App

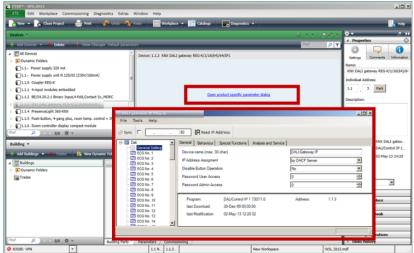
What's new in ETS5 → IT System Environment



Next Generation Plug In Software, #1

Since more than 10 years ETS supports Plug- ins; main reasons are:

- better (graphical) device configuration or specific download procedures
- additional device data storage & organization



Example: UI Plug- in

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Next Generation Plug In Software, #2

Technical improvements introduced in IT make Plug- in development more difficult for KNX product manufacturers:

IT environment (e.g. PCs and operating system)

- Compatibility (Plug- in installation on introduction of new operating systems (OS))
- Data handling (updates & performance within the compatibility layer)

Customer acceptance (ETS user interface and usage)

- User interface style of Plug- In and ETS user interface diverge
- Multi instance capability (capability to run the "Plug- in" parameter dialog only once in ETS \rightarrow parallel download)
- Drag, drop & touch mentality since introduction of *touch* capable tablets/ smartphones

➔ constantly growing extra support of devices using a Plug- in

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Next Generation Plug In Software, #3

What is our goal based on the (before mentioned) gained experience?

- <u>continue</u> to offer the ability to "program" special things in the ETS parameter dialog
- easy installation (at least easier than with current Plug- ins ...)
- faster updates & well defined update process (via KNX/ ETS APP infrastructure)
- common design style and embedded integration in ETS (as in next example)

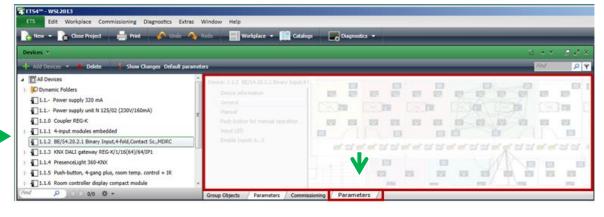
No "all or nothing" principle anymore!

What's new in ETS5 → IT System Environment

Next Generation Plug In Software, #4

The new concept is:

- referred to as 'Device Configuration Apps' (DCA)
- derived from the already known ETS App concept, that solve the following is
 - Online update capability of installed software
 - Embedded UI style, multi instance capability







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Performance #1 → database

By using the new "database free" technology and

upgrading to .NET 4.5, a considerable performance

improvement can be achieved in ETS5.

- Import/ export improvement by factor up to 10;
- An extra backup medium/ format is not necessary (the project file is directly stored as backup, no SQL *.bak file as on ETS4)

Project Hydro (~ 6000 devices) ETS4 : Import 50 Seconds; Export 20 Seconds ETS5 : Import 10 Seconds; Export 5 Seconds

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Performance #2 \rightarrow reports

By using the new "report" engine, a considerable performance improvement can be achieved in ETS5 on any kind of report.

- Generated reports speed up by factor up to 10;
- No extra report "modal window", fully embedded in ETS UI
- In report preview integrated collapse/ expand to display / hide device parameter and objects
 Project Hydro (~ 6000 devices)

ETS4 : Topology, Details \rightarrow 4628 pages, 15 minutes

ETS5 : Topology, Details → 1825 pages, > 15 seconds

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What's new in ETS5 → IT System Environment



By using an explicit for ETS5 new defined dongle we improve the stability of KNX tools in several major points.

- Improved usability
 - Dongle with 4 GB extra build in memory → store ETS projects directly on it (works as an USB stick)
 - Smaller footprint (28.5 mm x 13 mm x 4.5 mm) compared to the current dongle (see picture below)
 - No extra windows dongle driver software needed (cause of many support cases because of compatibility to 32/64 bit OS)

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Improved security

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- Fully encrypted communication path between dongle and ETS, no possible "in between security leak" as with an unprotected dongle driver
- Abandoning unsecure (crackable) HOST- ID license types
- Improved performance
 - Faster access to licenses stored on dongle, stored projects, KNX product databases; increased ETS speed (especially on ETS startup → license enumeration)

2015



2014



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Performance #4 → new dongle (de facto local server license)

By using an network (Ethernet) / USB hub it is easy to achieve a simple network license system for ETS5 dongles (generally also on ETS4 dongles).

- Improved usability
 No hand out of dongles at the course start
- Improved security
 Dongle is safely stored in server/ storage room







Product example only, no merchandising recommendation

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Performance #5 → various

By improving some explicit time consuming tasks we increase the work performance with ETS5.

- Calculating possible Line Coupler changes (filter tables) in real-time, to prevent the download of all LC's in an installation (also the non affected ones as today in ETS 3/4)
- Import without closing database (as no use of database anymore...)
- Link GA's is showing only "compatible" GOs (and not the entire list as today in ETS3/4)



User Interface

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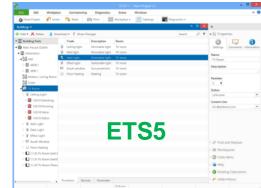
What's new in ETS5; User Interface



Style Guide

• ETS5 style guide is linked to Win8 for increased workspace and maximum screen size





In view of that it would be the best ... to have a look to the result, the ETS5





Business Logic

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What's new in ETS5; Core Interface



Main Points

- New ETS App SDK for DCA Apps → see (previous) DCA concept presentation part
- New ETS App SDK for Monitor Apps
- Standard DPT Decoder
- Falcon 5.0

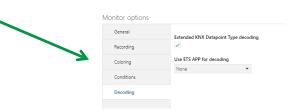
What's new in ETS5; Core Interface

New ETS App SDK for Monitor Apps

ETS5 supports an extra ETS App type to decode more/ additional telegram information.

<pre>lic void InspectTelegram(ITelegram telegram) / If a telegram is sent to any of the monitored addresses, decode the raw data f (this.monitoredAddresses.Contains(telegram.DestinationAddress))</pre>
telegram.BackgroundBrush = Brushes.White;
// Interpret raw data of telegram byte[] rawData = telegram.GetRawData(); bool snowlammon = rawData[0x11] == 1;
<pre>if (snowAlarmOn) { telegram.Info = "Snow Alarm On"; telegram.ForegroundBrush = Brushes.Red;</pre>
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1416 fro	rom bus	S=4	Low	1.1.100	Device XY	0/7/7	6	Write		02 02 5,14		LL_ACK	
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ETS5



What's new in ETS5; Core Interface

Standard DPT Decoder

- ETS5 supports standard decoding of DPT's via the GA monitor.
- Logical editing of complex data types.

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What's new in ETS5; Core Interface



Falcon 5.0

Complete redesign of Falcon, with new .NET SDK

- No more support for RS232, EibLib/IP support via an ETS App
- 2 levels; Customer (restricted service usage, e.g. memory write) / Manufacturer
- Each manufacturer receives its own, company "personalized" free of charge falcon version
- KNX manufacturer is given access to the monitor interface (on current Falcon not

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KNX System

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What's new in ETS5; KNX System

Main Points

- RF System Mode Support
- Long Frame Support



What's new in ETS5; KNX System

RF System Mode Support

ETS5 supports natively integration of RF devices (like standard TP devices).

- Assignment of GAs & GOs (also between TP/ RF devices)
- Several TP(IP) to RF couplers in a installation possible
- Dedicated assigned Domain Address (DoA) per RF "Line"



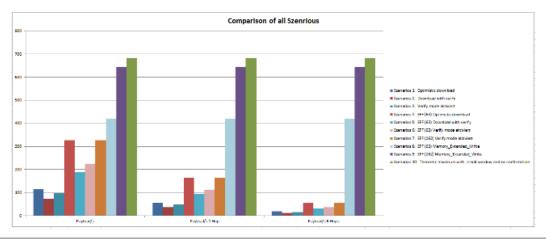


What's new in ETS5; KNX System

Long Frame Support

ETS5 supports LF \rightarrow high speed impact on memory/ property R/W services.

- Scan algorithm to detect the possible "path" length according AN090.
- Scan result stored in ETS project data (couplers, devices/ last used length)



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ETS Apps, extend ETS functionality

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Diversity of KNX Projects, problem?





Software tool, for ALL KNX installations for:

- Project planning
- Design
- Commissioning

→ Manufacturer & Product Independent !

- Specific projects require some functions = no need to be part of the basic ETS functionality
- Functions essential for experts, can be over-engineered and too complex for beginners.
- Market conditions require different project design in ETS

The Solution! ETS Apps!

What is really an ETS App ?

- Extra software within ETS!
- Adds more functions to ETS!





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Available ETS Apps (by KNX Association)





All details and available ETS Apps you can find under <u>http://knx.org</u> \rightarrow Software \rightarrow ETS Apps or under the "Download" section (<u>Flyers</u>)

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What's new in ETS5; Core Interface

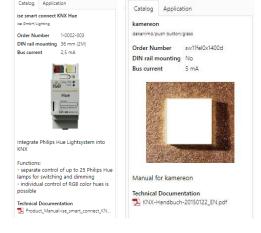


OC+ is extended with more KNX product data information for ETS customer

- PDF file (e.g. application description), zip file (collector), picture, icon & comments
- ETS Online Example → Show It



→ Examples from ETS5



Notes

- Maintenance over KNX administration UI
- Same info in ETS catalog dashboard tab and *Product Finder* panel for <u>online</u> products





Various

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What's new in ETS5; Various



Various Points

- Most significant Feature Requests (out of ~75)
 - IP routing diagnostic function (discovery of KNXnet/IP devices)
 - KNX interface; USB INF file support (online updateable interface <u>XML description</u>)
 - Separate monitor columns for IA, Name, Description
 - Adding up of bus current consumption per TP Line
 - Extended keyboard short cut definition
 - GA ex/import with 'Descriptions'
 - DPT assignment to a GA (not to several GOs only)
 - Dynamic folders; filter according GO properties
 - Removal of line types X.0 as a separate element (like in ETS2) → most customers delete the "main line"
 - Buildings; location of "Cabinet" in a "Room" possible
 - Search with "*" and "?" + replacement for selection only
 - Internet access; proxy with authentication (often used in larger KNX member companies)
 - Extended parameter preview on multi selected devices (standard value versus individual value)

What's new in ETS5; Summary

ETS5 Catchphrases

Next ETS5 contains a lot of improvements, here again grouped according:

Infrastructure

- Database (removal)
- 64- bit capability
- Improved performance
- New dongle
- Next generation Plug- in software (DCA)

User Interface

- Improved ETS user interface (increased working area)
- Online catalog + (more information on KNX product databases of manufacturer)

KNX System

- New KNX RF System Mode integration
- Support of KNX long frames (enhanced download performance)





ETS Security/ Core / Tablet

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ETS Security

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KNX Technology Workshop ETS Security



Retrospect

Following also the security "discussion" (e.g. summer 2014), KNX recommends to <u>start</u> the ETS Security development as fast as possible (done, already started).

It shall be the goal to

Allow KNX manufacturers to secure an KNX installation by

- Encrypt the entire communication running on IP networks
- Encrypt individual "communication" channels (group objects) in devices requiring higher security levels for (part of their) communication

Today's Security at KNX

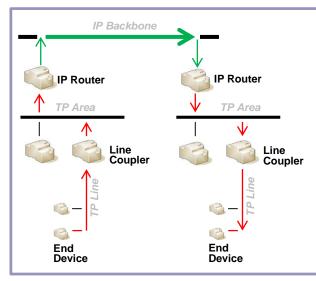
<u>Position paper</u> & flyer to create/ build safe KNX installations (without implemented KNX security protocol) you can find at http://knx.org/knx-en/downloads/ (section Marketing/ Flyer)

KNX Technology Workshop ETS Security

KNX°

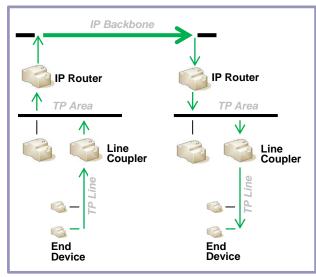
Technology Overview

KNXnet/IP Secure



All KNX telegrams between the two (or more) IP Routers are encrypted

Data Security



The group communication of a particular sender (one or more group objects) to another group object(s) is encrypted

- Unsecured communication
- Secured communication
- KNXnet/IP Secure and Data Security can be combined in one installation.

ETS Professional



Functionality Excerpt

- Key management and distribution
- Establish secure link and download





ETS Core/ Tablet

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ETS Roadmap, ETS Core/ Tablet

Retrospect

. . .

In May 2014, KNX together with its members decided to start with three (3) new KNX projects (KNX 2020 Projects).

One of them was the *ETS Smart Home/ Light Commercial* project, with current working title: 'ETS Core'.

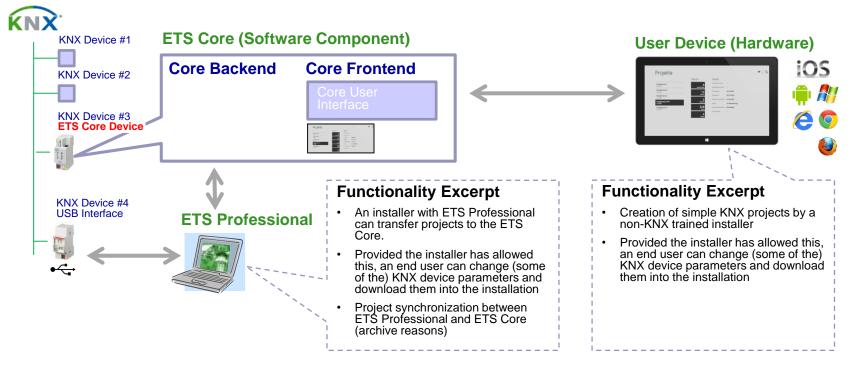
It shall be the goal to

Allow KNX manufacturers to also offer KNX kits for the smart home/light industry market

- Supporting simplified configuration for existing S Mode devices (without the need to modify any of the existing devices)
- Permitting a limited amount of modifications to parameters/links
- Later extendible with ETS Professional

ETS Roadmap, ETS Core

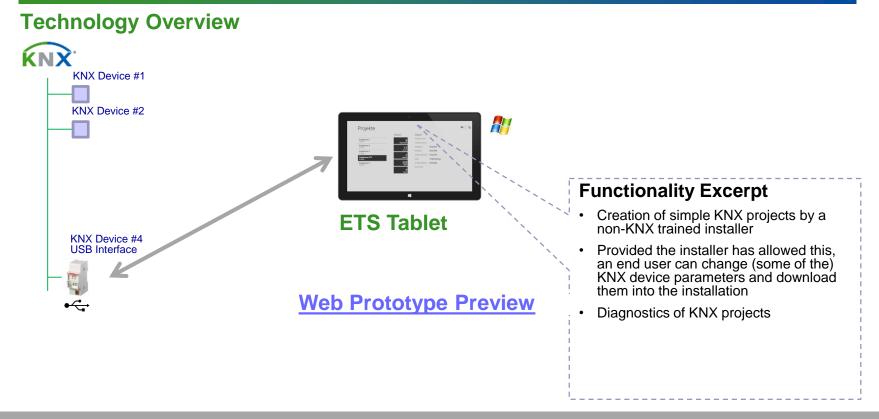
Technology Overview



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ETS Roadmap, ETS Tablet







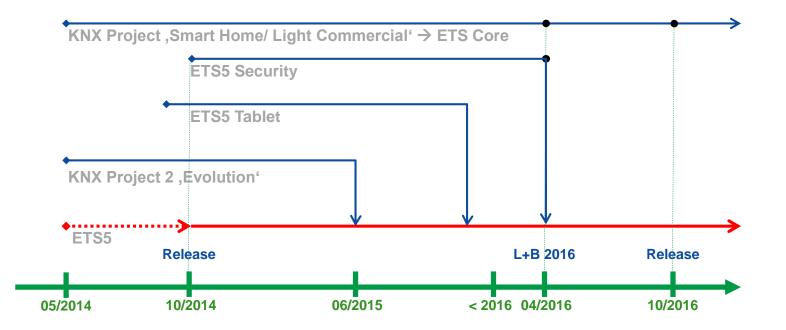


Total Schedule

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Total Projects Schedule







Your Questions?

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Thanks for your attention!

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