New perspectives with KNX
KNX IoT
KNX Secure
ETS Inside

Light + Building 2016
Frankfurt am Main, Germany
New perspectives with KNX
In the next 10 minutes…

Then, Now, Tomorrow*
On a time travel with KNX into the Future
Outlook on the newest KNX System & Tools development

* Star Trek ‘Next Generation’, final episode
New perspectives with KNX
Past Light + Building fairs

2010
KNX presents the new ETS4!
Easy! User interface
Fast! Im-/export
Open! Open XML format

2012
KNX presents the new ETS App concept!
Functional! Solution oriented
Flexible! Unlimited possibilities
Individual! Only on demand

2014
KNX presents the new ETS5!
Embedded! Everything integrated
Smart! Clear and tidy
Wireless! RF as easy as TP
New perspectives with KNX
Current Light + Building 2016

The KNX Association presents the topics that will shape the next decade.

**KNX IoT**
Stay connected with KNX Web Services

**KNX Secure**
Full secured KNX installations

**ETS Inside**
ETS, stored in a KNX device

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2010/12/14

2016
1. KNX IoT
How to connect my KNX installation to all the things in the internet?
With KNX Web Services!

KNX Web Services are … “Internet” ready

• Integrate a KNX based system easily and in a standardized way in an(y) IT infrastructure
New perspectives with KNX

KNX IoT

Internet of Things

Definition (Wikipedia)

• Network of physical objects or “things” embedded with electronics, software, sensors and network connectivity
• Objects able to collect and exchange data
• Enabling connection between physical world and computer based systems
• Each “thing” uniquely identifiable
• Each “thing” is able to interoperate with internet infrastructure
• 2020: 50 billion such objects
KNX IoT

KNX, already long part of the IoT?

Since more than 10 years, KNXnet/IP allows to integrate KNX into IP based networks. Already since then, there is a **KNX of Things** (KNXoT) – compare previous definition Wikipedia.

- Physical objects → KNX devices
- Network connectivity → TP, RF, PL, IP
- Collect and exchange data → group objects/interface objects – properties
- Connection between devices and computers → KNX data interfaces
- Each “thing” uniquely identifiable → KNX serial number and/or individual address
- Each “thing” able to interoperate with internet infrastructure → KNX IP Routers
New perspectives with KNX

KNX IoT

Current trend: APIs

Reunite different home automation solutions via a unified interface
• In a central device in the installation
• In your Smart Phone
• In the Cloud

Drawbacks of these solutions compared to KNX
• Increased complexity of the installation *(look to the left)*
• No proven reliability of these solutions (yet)
• Central device is weak spot in these concepts

But: Data is power! Information on the user profiles of the smart device could provide business opportunities

Offering of additional services ➔ data mining

But: there is no strict need to be able to access every single data element in a home/building (e.g. occupancy mode)
New perspectives with KNX

KNX IoT

KNX Web Services, the goal …

Create a possibility that IT systems and KNX networks can be interlinked by means of a KNX Gateway!
New perspectives with KNX

KNX IoT

KNX Web Services, how we did it…

KNX speaks native (restful) web services!

GET
http://localhost:8080/installations/views/all Nicaragua/devices/.../temperature2controller/datapoints/temperature2value/D%2D01/

IP Router

KNX WS Concept Gateway

KNX WS Exporter App
KNX IoT

KNX Web Services, what we deliver...

KNX will offer ETS WS Exporter APP and free KNX Specification.

- Export ETS project data represented according a standardized (tagged) KNX information model
- Possibility to add additional data (e.g. geo-localization info of project devices) before exporting

KNX will offer sample implementation of WS Gateway.

- Usable on Raspberry PI 2 Linux platform
- Including WS Gateway binary software to map tagged project data to oBIX (open Building Information Exchange) object model
- With example of WS client allowing browsing through connected installation (reading/writing values)
New perspectives with KNX

2. KNX Secure
New perspectives with KNX

KNX Secure

KNX Security Today

When taking the proper measures, the safety level of KNX installations can already be made increased today → see standardized KNX security checklist

Examples of such measures in the KNX security checklist

• Preventing access to the network via the various KNX physical media
  • avoid IP addresses directly accessible from the internet

• Limiting unwanted communication inside the network
  • Load Filter Tables of Couplers

• Protecting configuration communication
  • Set a Device (BAU) Password

• ...

Find the checklist on www.knx.org
How to ensure (maximum) privacy/security of a KNX installation?
With KNX Secure!

KNX Secure is… SAFE

- KNX Secure uses AES128 CCM for encryption/ authentication
- *Advanced Encryption Standard (AES)* is a standard encryption algorithm (ISO/IEC 18033-3)
New perspectives with KNX

KNX Secure

Technology Concept, IP Secure

KNX IP Secure encrypts the entire KNXnet/IP frame.

All KNX telegrams between two (or more) IP Couplers are SECURED
KNX Secure

Technology Concept, Data Secure

KNX Data Secure only encrypts the APCI and the payload.

The group communication of a particular sender (one/more group objects) to another group object(s) is **SECURED**
**New perspectives with KNX**

**KNX Secure**

**Technology Concept**

**KNX IP Secure** and **KNX Data Secure** can be combined in an ETS project/ installation.

ETS handles key management/ distribution, establishes ‘secure links’ and downloads these links in KNX Secure devices.

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[Diagram showing KNX IP Secure and KNX Data Secure integration]
New perspectives with KNX

KNX Secure

ETS

KNX Secure affects also the ETS.

**Devices**

**Topology (Backbone)**

**Secure Project Settings**

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Topography Key

Device Keys
New perspectives with KNX

KNX Secure

How it works in ETS…

… is described in detail in the new ETS 5.5 help file.

KNX Secure
New perspectives with KNX

3. ETS Inside
How to attract more people to realize “Smart Home” projects with KNX?
With ETS Inside!

ETS Inside is… SMART, SIMPLE, SAFE

ETS Inside is… your ETS, stored in a KNX device

- Create KNX installations with ETS “inside” for your home/building
- Use ETS Inside on any device (your tablet/ smartphone)
- Store your ETS “inside” in your home/building
New perspectives with KNX
ETS Inside → Two Roads to KNX success
Creating a KNX installation – your first tool option

ETS Professional

The KNX tool to create and manage KNX installations of any size or functionality level
- The tool offers the professional KNX installer lots of flexibility to arrange his work (e.g. user defined UI settings, filters, …)
- Installer can navigate in great detail through the complete KNX project data (also offering analysis possibilities)
- A powerful PC with reasonable screen size is needed.
New perspectives with KNX
ETS Inside – Two Roads to KNX success
Creating a KNX installation – your second and new tool option

ETS Inside

The KNX tool to create and manage KNX installations of reduced size and functionality

- The tool supports the KNX (unskilled) installer with smart working procedures and simplified user interface.
- A handheld device with smaller screen size is sufficient.

A completely new User Interface
- Abstracts KNX specificities
- Adapted to mobile devices
New perspectives with KNX
ETS Inside → Architecture

Technology Overview

ETS Inside (Software)
- Backend: Download, Synchronization
- Frontend: User Interface

User Device (Hardware)

Functionality Excerpt
- Creation of simple KNX projects
- Provided the installer has allowed this, an end user can change (some of the) KNX device parameters and download them into the installation

• Sure, this way of working will work too!
New perspectives with KNX

ETS Inside → Installer’s Perspective

A new SMART way to design a KNX project!

Benefits

• Easier market entry
• Reduced start-up effort
• Use of standard KNX devices
• Exchange data with ETS Professional
New perspectives with KNX

ETS Inside → Customer’s Perspective

A SIMPLE way to manage your own KNX installation!

Benefits

- Have remote access to your installation
- Use ETS Inside on any device, e.g. own tablet/ computer with iOS, Windows or Android
- Change individual parameters yourself
- Store your KNX project inside your home/building
New perspectives with KNX
ETS Inside → Manufacturer Perspective

A SAFE way to address more customers!

Benefits
- Standard KNX devices usable (no need for gateways)
- Identical product training for customers as with ETS Pro
- KNX Secure supported also by ETS Inside
New perspectives with KNX

ETS Inside → User Interface

Project Dashboard

Project Functions
- Connection and project settings
- Diagnostics

Project Overview
- Imported and open projects
- View project details
New perspectives with KNX

ETS Inside → User Interface

Project Building Overview

Building Browser
• Easy overview of building (parts)

Device View
• Information on devices embedded in tiles
New perspectives with KNX
ETS Inside → Facts & Information

System
• User → iOS, Android, W10
• ETS Inside Device → W10 (IoT), more planned
• Size of installation when creating it with ETS inside: 255 devices – one project

Release
• 10/2016

Price
• 160 €/license (incl. dongle, without ETS Inside device)

More Information/ Live View
• see live demonstrations of ETS Inside here at L+B
  • KNX IoT city (that’s here …)
  • Hall 8, F98
  • Hall 9, B30
Timing
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Release Dates

ETS Inside

KNX Secure

KNX IoT

ETS5

Release
L+B 2016
Release

10/2014
03/2016
10/2016
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Thanks!