



Smart home and building solutions.  
Global. Secure. Connected.



# KNX IoT case study: Digital Twin property

Engineered with **KNX** IoTech

KNX IoT 3<sup>rd</sup> Party API server: Wiser for KNX, **Schneider Electric**  
KNX IoT 3<sup>rd</sup> Party client: SIM-ON, by **SIMLAB**

# KNX IoT SOLUTIONS

## Why KNX IoT

While KNX has been capable of using IP networks to communicate (between devices, or between servers and clients) thanks to the KNXnet/IP protocol, KNX IoT qualitatively increases the interoperability at IP level, becomes SW-development friendly and adds new physical layers demanded by the market (mesh networks). In this new scenario, the KNX IoT 3<sup>rd</sup> Party API is the secure, semantically enriched and reliable way to create a data-driven infrastructure for home and building automation installations. Thanks to KNX IoT, all the stakeholders involved in the product lifecycle (manufacturers, developers, system integrators) enjoy an enhanced approach to manufacturing, developing and integration.

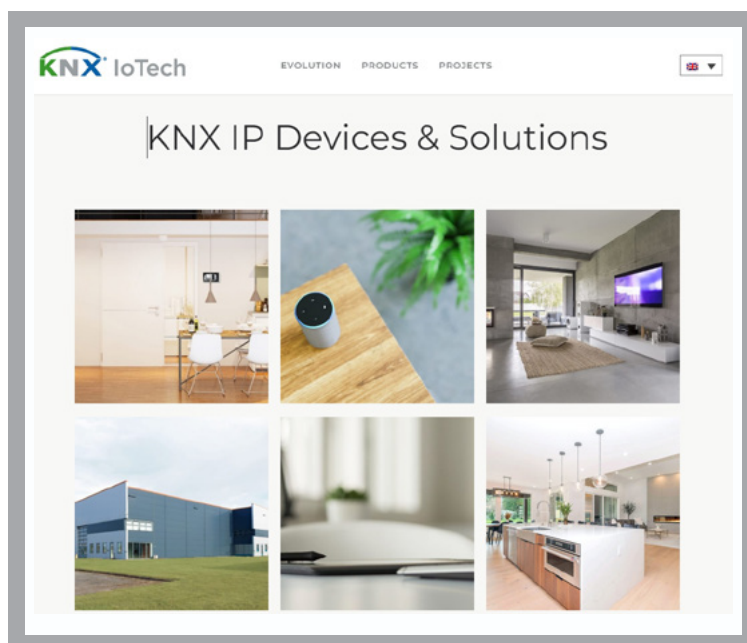


## KNX IoT: interoperable & secure landscape

With the goal of offering visibility to all the products and applications developed using IP-based technology from KNX, a new IP Marketplace has been created: <https://marketplace.knx.org>. System integrators can easily find the applications and products according to their respective category, making the process of designing KNX installations easier than ever. This IP Marketplace brings together all the devices, solutions and services made with KNX. The filtering options allow the user to screen the solutions based on field of application as well as technology (e.g. KNX IoT, KNXnet/IP), like the solution and products described in the case study.

## KNX IP Marketplace

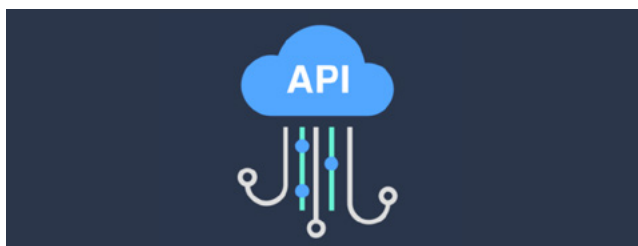
KNX has been the reference when talking of interoperability: just grab any two certified devices from any vendor and they will simply work together at application level, in a secure way. Following this philosophy, KNX IoT has been designed to maintain the security at its highest: KNX IoT 3<sup>rd</sup> Party API clients need to connect following the OAuth2.0 authentication process, where KNX IoT Point API devices come with security embedded by design. With this robust and comprehensive development landscape, manufacturers and developers can build the best devices, solutions and services in the home and building automation market.





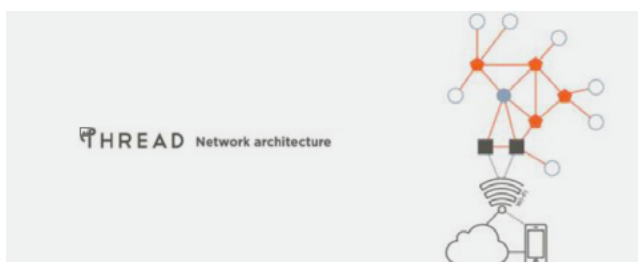
# KNX IoT TECHNOLOGY HIGHLIGHTS

What makes KNX IoT so interesting for your business?



## KNX IoT 3<sup>rd</sup> Party API

2021 was the year when KNX stepped up and offered a standardized API to interact with KNX installations: simple, secure, abstracted from the KNX-specific knowledge and future proof. Developers can create solutions and services that rely on the ample data that one can harvest from KNX installations.



## KNX Point API

TP and RF are already the foundation for successful business cases, but our past achievements does not leave us complacent: a new IPv6 communication networks, a.o. THREAD (mesh), is herewith added to the vast KNX development landscape. Of course, products based on these will be fully interoperable and configurable with ETS.

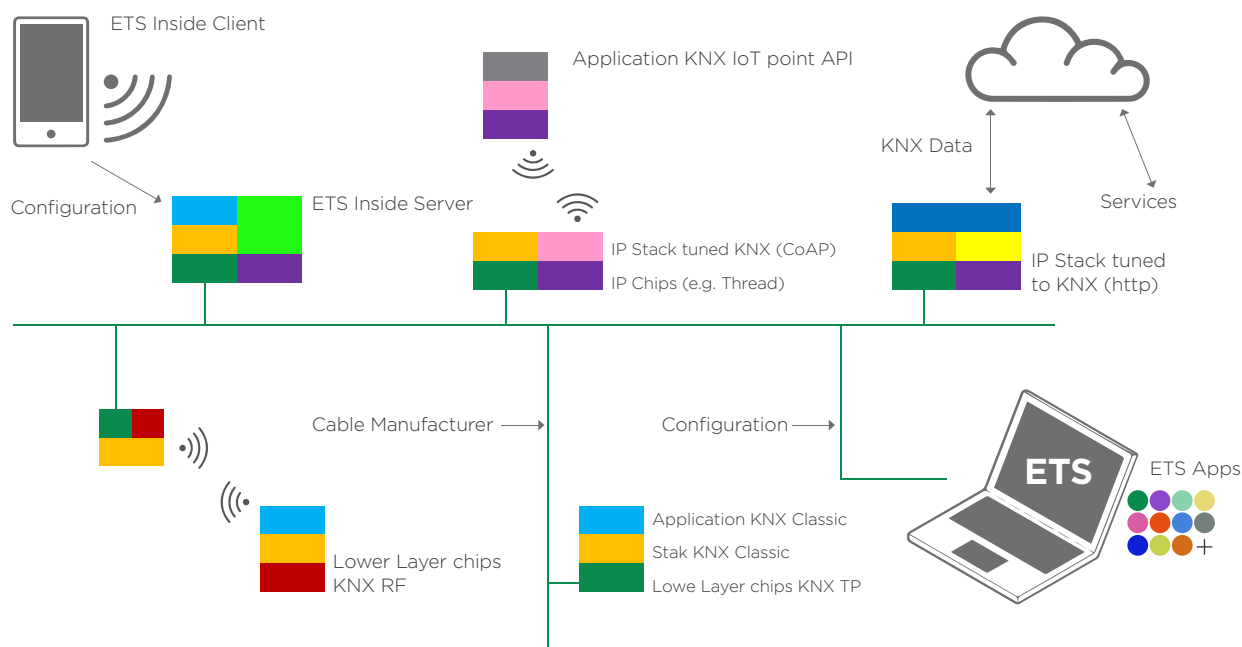


## One tool: ETS

And all these wonders are orchestrated thanks to the ETS: configure KNX devices from more than 500 manufacturers, independently of their physical layer, and export the project information for the KNX IoT 3rd Party API server with one vendor-independent tool. More than 100000 installers have been trained on ETS.

## KNX, the largest development landscape of its kind

A comprehensive development platform that creates the foundation for profitable business cases.



# KNX IoT CASE STUDY

## High-level description

The SIM-ON solution creates a digital twin of an existing property, previously scanned using Matterport (3D scanning tool for smartphones), adding a layer of management and information related to the KNX installation. The setup process is quick and easy, thanks among other things to the KNX IoT 3<sup>rd</sup> Party API server, offered by Wiser for KNX. This combination results in an outstanding solution unparalleled in the smart home and building industry: a visualization with full control over the KNX installation can be set up in a matter of minutes, with the highest quality and superb aesthetics.

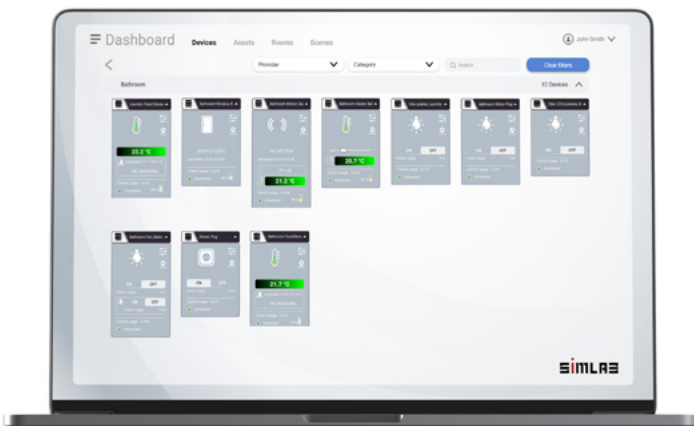


## KNX IoT 3<sup>rd</sup> Party API server: Wiser for KNX

Wiser for KNX is a server from Schneider Electric, which has been in the market for several years, and offers an environment to create visualizations, build logic and has other server-related features. It is the first server in the market offering the KNX IoT 3<sup>rd</sup> Party API server functionality. Thanks to this option, Schneider Electric can create its own software clients to communicate to the server, using the most advanced KNX technology developed to the date: a standardized API. Additionally, the manufacturer can open the KNX IoT 3<sup>rd</sup> Party API server to third parties, enabling an unprecedented cooperation between KNX Members, who can enjoy the benefits of a standardized solution: faster developments and smoother integration, hence reducing development costs.

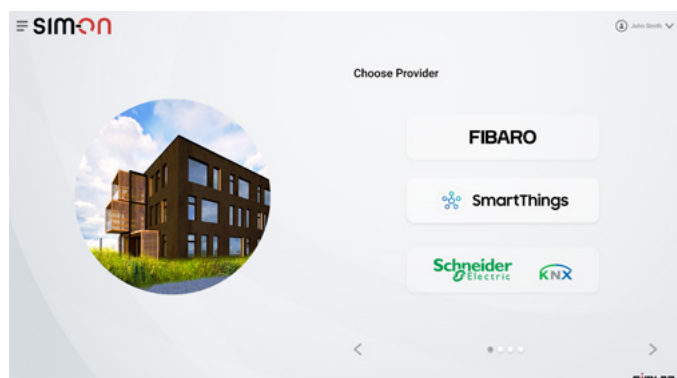
## KNX IoT 3<sup>rd</sup> Party API client: SIM-ON

SIM-ON is a software solution developed by SIMLAB, consists of a visualization environment based on a 3D reconstruction of the property. This model adds an interaction layer with the user, such as information storage about assets (e.g. invoices, manuals) or control of the existing systems. Thanks to the KNX IoT 3<sup>rd</sup> Party API technology, SIMLAB was able to add connectivity to KNX installations in a record time, which enabled a new dimension of control and interaction. This abstraction from the KNX-specific knowledge resulted in less training needed, reducing the investment and speeding up time to market.



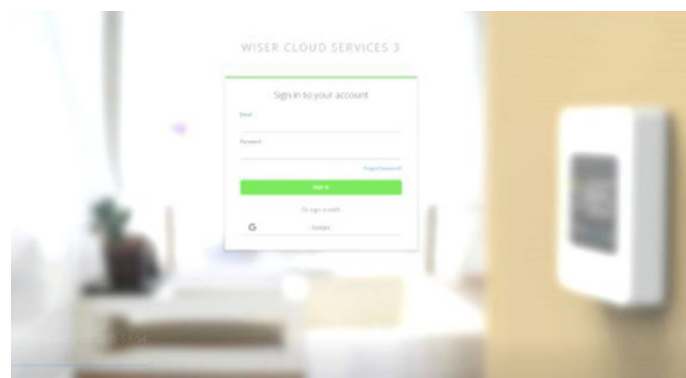
# KNX IoT CASE STUDY

## Engineered KNX IoT solution (I)



### 1. Configure the layout

As a first step, the end-user or installer (we will refer to the user from now on) can select the home automation technology provider. According to SIMLAB, the criteria to work with a provider is that the connectivity must be smooth, reliable, secure and easy to set up. KNX IoT 3<sup>rd</sup> Party API technology meets these criteria.

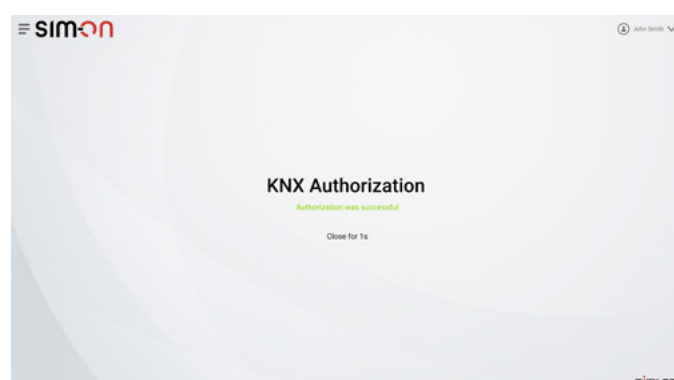


### 2. Connect to the Wiser for KNX

Once KNX has been selected, the user needs to connect to the KNX IoT 3<sup>rd</sup> Party API server (the Wiser for KNX in this case study). With this step, the security protocol gets started, ensuring a safe environment for the involved solutions to work together.

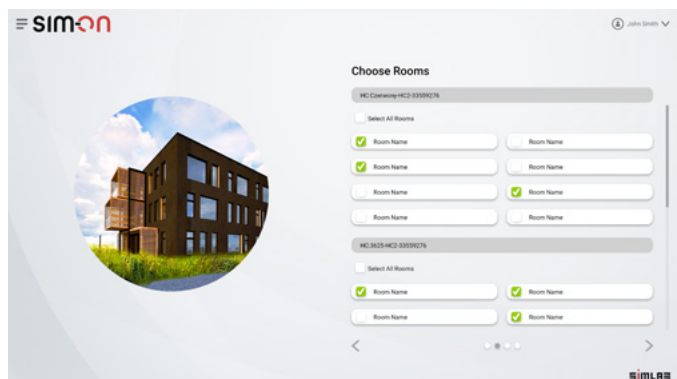
### 3. Request authorization

Once the user gets access to the KNX IoT 3<sup>rd</sup> Party API server, the software client initiates the authorization process, based on the ultra-secure OAuth2.0 (the industry-standard protocol for authorization). OAuth2.0 has the advantage of allowing third parties to access subsets of data without knowing the customer credentials, among other benefits.



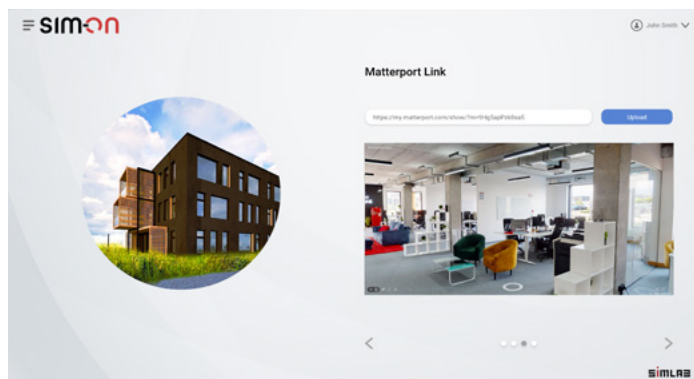
# KNX IoT CASE STUDY

## Engineered KNX IoT solution (II)



### 4. Configure the layout

Within the secure environment, the user can select the rooms to be added to the Digital Twin. This information is provided by the KNX IoT 3<sup>rd</sup> Party API server. Every room contains functions and a selection of datapoints. Note that at this point, the developer does not need to deal with group addresses or KNX-specific knowledge: simply retrieve human-readable information.

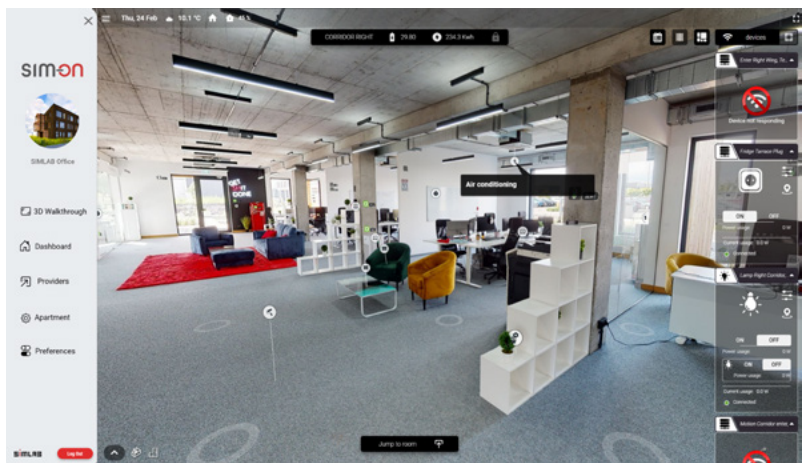


### 5. Link to 3D model

At this point, the Digital Twin has information about the rooms and functions found in the real installation. It is time to offer this information over a 3D model, by using a 3D scanning carried out using Matterport: the outcome is a space representation with coordinates, similar to what is represented in Street View from Google Maps (but indoors). The scanning can be done by professionals, or simply using a smartphone.

### 6. Request authorization

And *voilà!* In a few steps, a Digital Twin is ready to be used: the user can navigate the 3D model, finding the related controls to each room on a panel on the side. The control is bidirectional, the feedback from KNX achieved by means of WebSockets (instead of the more resource-intensive polling). You can watch a video of the setup process [here](#).



# KNX MEMBERS INVOLVED IN THE CASE STUDY

COMPANY	COUNTRY	WEBSITE
Schneider Electric Industries S.A.	France	<a href="https://www.se.com">https://www.se.com</a>
Simlab Sp. z o.o.	Poland	<a href="https://simlabinc.com/">https://simlabinc.com/</a>

## ADDITIONAL REFERENCES

- KNX IP Marketplace: <https://marketplace.knx.org>
- KNX IoT website: <http://knx-iotech.org/>
- KNX IoT Development: <https://www.knx.org/knx-en/for-manufacturers/api/>
- Wiser for KNX: <https://www.se.com/ww/en/product/LSS100100/wiser-for-knx-logic-controller/>
- Sim-On: <http://sim-on.com/>



