

Smart building automation for commercial & private real estate

This is the only way to build an Internet of Things (IoT) architecture that is solid and independent. And which at the same time enables the truly secure exchange of information between all its components in a common context, i.e. in a defined situation. This enables architects and planners to proceed in an agile and future-open manner, and at the same time brings all technology into line with the desired creative line.

Thinking and acting holistically - smart technology for every requirement

Real estate users have clear ideas about what they expect from **smart building automation**: everything they want today that takes future possibilities into account. Architects and planners also know what they want: Smart technology, but with style, please. Technical requirements and creative ideas should go hand in hand, everything should mesh perfectly.

Does that work with classic building control? Probably not. Because this requires a **new and, above all, holistic approach**:



- ✓ A common management of all devices and systems.
- ✓ Across all trades - including components for the IT infrastructure.

If control, then smart.

Smart building control is much more than just digitizing. It doesn't just mean replacing pushbuttons with apps and voice control. Rather, it means bringing all the components involved into a common context. In this way, all information from the environment can be used intelligently to produce the maximum user experience. Therefore, only holistic approaches (so-called full-stack solutions) are truly smart. These support users in an unobtrusive and almost magical way to meet their individual needs and enhance their quality of life.

What does the customer expect when he thinks of smart solutions?

In the customer's mind, "smart" means that all smart devices can work with all others and react to each other in a coordinated manner. Whether it's ambience (lighting, temperature), catering (coffee, mixed drinks), entertainment (music, TV, video), communication, IT processes or motor vehicles.

Example scenario

The customer wants to prepare for the next meeting with his business partner over a cappuccino, dimmed lights and relaxing music in his office. A video call from the partner comes in, 30 minutes before the appointment.

Your customer decides by voice command to accept the call already. And the coffee cup is empty.

Components involved

Ambience: The light is gently switched to an active lighting mood.
 Smart WLAN speaker: The music gets quieter.
 Smartphone: The digital assistant indicates the incoming video call.
 IT: The call is matched with the Outlook calendar.

Ambience: Now is the time for working light.
 Smart WLAN speaker: Volume is set to mute.
 TV: For the video call, the smart TV turns on.
 Entertainment: The appointment in the Outlook calendar is automatically moved forward.
 Coffee machine: A café creme is prepared.

The conversation is over. Now action must be taken. Your customer leaves his office to solve the problem in person.

Electrical: "Do not disturb" lights up above the office door outside.

Light sensors: The sun is blinding - the blinds are lowered.

IT: If required, additional call partners are simply called and added.

IT: The computer is shut down, the light is turned off.

Electrical: All equipment is set to stand-by mode; if possible, it is disconnected from the mains.

IT: The out of office status is set in the Outlook calendar.

Building technology: The office is automatically locked.

Vehicle: The vehicle is automatically parked out. In winter, the seat heating is started.

Smart wishful thinking meets hard reality

Such scenarios are hardly feasible with a "smart" building control system in the classic sense. Even if all devices work digitally and semi-smart, this does not mean that truly smart solutions are possible in a reliable way.

Here is just an excerpt of the biggest problems of classic control centers:

- For a truly smart solution, not only the HVAC trades must be included, but also the IT infrastructure in control and monitoring must be an integral part. Only then can information be exchanged across system boundaries and yet each individual communication link be strictly controlled and operated securely against cyber attacks.
- Smart means more than just digitization. It is not enough to simply rely on voice control, apps and building technology. Rather, all available information on the respective context must be used in an intelligent manner.
- Centralized, singular building control systems are potentially more error-prone because they offer little to no redundancy. They have limited fault-tolerant operation and rely on a central basis, so that nothing works in the event of a fault. This is quite different with a distributed and decentrally organized system architecture.
- Many solutions rely on external cloud services. Partly for convenience functions such as digital assistants, but also for elementary basic functions such as access control, video and alarm systems. But it is precisely these functions that must continue to be available without restriction in the commercial sector even if the Internet and thus cloud connection fails.
- "Out of the box" solutions lead to a technological dead end. The biggest problem here is that there are a large number of largely proprietary systems and components. Their interaction is always a compromise - if it is possible at all.

- There is no monitoring of IP network traffic whatsoever. Anyone can communicate with any other IoT participant as desired. The permissible communication paths are not restricted. The internal network is usually considered "secure" from the outset. However, the crypto-Trojans have taught us that this is not true. Internal communication must be strictly regulated and dynamically segmented.
- Classic building control is anything but flexible. Everything there has to be "hard-wired" and fully programmed. But there are good alternative approaches from the world of IT services. The magic word is "declarative". This involves defining in a simple way WHAT the desired behavior should be, instead of hard "programming out" HOW the desired function can be implemented.
Since everything that is independent of technology and devices can be described in a generally valid way, it is possible in an "automagic" way to translate this information into the respective device-specific and technical configuration.
- And last but not least: Because architects and planners do not have free choice in design, they have to be satisfied with what the respective manufacturer or standard provides as a selection. Regardless of whether the customer likes it or not. This is completely different with an open and adaptive approach. Here, all devices of any standard and system can be freely and creatively combined with each other. Without having to accept losses in availability or security.

The conclusion: Only a decentrally organized building control system that works in a truly smart way with different contexts allows maximum planning and creative freedom and guarantees a future-proof and sustainable approach.

Freedom with Smart Clusters: plan & realize independently

Our specialty is smart **system and service integration for the Internet of Things (IoT)**. After all, buildings are only truly smart when all components are brought into a single context. bintellix[®] is not a manufacturer of out-of-the-box building controls, with the resulting conceptual and practical limitations.

We are convinced that the way to the **future of the IoT world** is through modular decentralized controls.

We would like to take you with us on this journey: Holistic thinking is the motto - including the entire infrastructure.

Auf diese Reise möchten wir Sie gerne mitnehmen: Ganzheitliches Denken ist die Devise - unter Einbeziehung der gesamten Infrastruktur.

[Smart Cluster Approach](#)

Use the best components at any time - without compromise

With a Smart Cluster, you can use **all types of technology from any trades** reliably in a common context. For this purpose, you can use the best components for the respective application - and this is not only related to the technical features, but also to the design. With bintellix[®] you rely on **vendor-independent and thus open standards**. We link existing stand-alone solutions into common sensor networks. The result: a

decentralized control system that is modular, open to the future, and sustainable. This allows you to react flexibly and cost-effectively to changing requirements at any time.

Attraktives Design: kreative Lösungen schaffen

Limiting classic building control solutions to a specific range of switches and devices also restricts design options. But attractive design always stings. With the Smart Cluster you remain **free in your creative decisions**, offer intuitive operating options. Go for small and discreet controls - and avoid uni-functional and usually monstrous buttons.

This makes the technical difference: Smart Cluster

With smart clusters, you build in future security: Across all trades - from specialized sensors to complex comfort functions to complete service integration to incorporate information and control elements from classic IT.

1. Control buildings across systems.
2. Plan for maximum modularity from the start.
3. Realize high-availability solutions.
4. Integrate enterprise applications.
5. Integrieren Sie Unternehmensanwendungen.

Our Smart Cluster approach makes all this possible. **With agile and flexible technology, we loosen all shackles.** All components with their relationships and benefits among each other are mapped in a common repository - across all technical layers.

This eliminates the need for complex programming. Business and organizational processes can be included across all system boundaries. All components in the Smart Cluster

Direct comparison: Smart clusters open to the future and classic building control systems

Smart Cluster	Classic building control
Cross-system solutions	Manufacturer and system bound
Decentralized grid control	Central monolithic control
Limitless possibilities	Selected system sets limits
"Best of Breed" - all desired components can be used	Largely proprietary systems and components
Everything is highly flexible	Everything is hardwired
Comprehensive, intelligent communication	Severely limited communication
Common event bus for any	Variety of interfaces

are independent, highly available, fault-tolerant and, for the first time, truly secure.

adapters and converters	& standards
Fail-safe & availability through redundant design	Ausfallsicherheit & Verfügbarkeit durch redundanten Aufbau
Infrastructure repository for all components & communication channels	Forgotten infrastructure & IoT proliferation
Independence & autonomy through decentralized organization	External dependencies & missing internet connections
Highly available and scalable cluster by low-cost individual components	Price-intensive complete solutions

Plan independently: look ahead with bintellix[®].

Those who make themselves dependent on proprietary systems, external services and benefits must limit themselves from the outset. **Only those who are independent have free choice at all times:**

1. e.g. in **energy management** in terms of solar cells, wind energy, electricity storage, wall box for e-vehicles and fuel cells and their optimal tuning depending on the time of day,
2. in **freshwater and wastewater handling** regarding water treatment, rainwater harvesting and, if required, separate used and wastewater systems,
3. in **IT and communications technology** via different channels via local hosting and redundant connection,
4. in the future **expansion** of smart building control if customer demands change, and

5. in **design** to best meet customer requirements and implement your own ideas without compromise.

Individual solutions for building control

Maybe you know this: You have invested a lot of time and money in a certain control center. This sets the path for the long term. You commit yourself to a manufacturer or a system. Vielleicht kennen Sie das: Sie haben viel Zeit und Geld in eine bestimmte Leitstelle investiert. Damit sind die Weichen für die Zukunft gestellt. Sie legen sich auf einen Hersteller oder ein System fest. If anything changes in connection with centralized control - the demands, the software, the technology - the way forward is blocked or can only be achieved with a great deal of time. In other words, by committing to one system, you can say goodbye to an ideal solution.

Where others reach their limits, we really get started

bintellix[®] ticks differently. Imagine entering a building and just about anything is possible. The world of automation and thus virtually limitless functionality is open to you. With our Smart Cluster approach, we start where other vendors and systems reach their limits. The only limiting factor for **building control** is what you or your can imagine. System integration is the key: With Smart Clusters, for example, you can realize multiple freely definable user interfaces, complete integration of existing IT systems or precisely tailored payment systems.

bintellix[®]: Industrial-grade building control system

With the support of bintellix[®] you introduce industrial quality to building control.

Our high-end solutions are highly available and redundant - all without resorting to complex hardware.

Examples from practice & for practice

Discover just a few examples of what is possible with smart clusters, but not with classic building control solutions. This is exactly what commercial building owners want.

More flexibility and individualization

Plan for the future right from the start. With Smart Clusters, you have the security of being able to

Safety in a new dimension

With bintellix[®], buildings can be monitored comprehensively and easily. A cross-system sensor network

Optimize ease of use

Offer your customers in the commercial sector maximum convenience for facility management.

Integrate IT systems

Smart clusters are by no means the end of the line when it comes to hardware. Just like actuators and sensors for


respond to future requirements. Everything is modular, flexible and individually designed. If necessary, you can expand the building's infrastructure at any time and make it more powerful. In this way, smart commercial properties can be quickly "reprogrammed" and rental losses avoided. Existing rooms can be used quickly and efficiently. All existing smart components can be integrated across systems, regardless of manufacturer.

detects threats - also with the help of artificial intelligence - and can react correctly at any time. The information is forwarded to the police or fire department, and the defined defensive measures such as additional lighting or an acoustic alarm are switched on. In addition, monitoring also takes place at other levels: For example, it is defined whether the smart TV is allowed to send images from the home camera to the Internet.




Thanks to Smart Clusters, you don't need a multitude of different control programs, apps and operating philosophies to control components from a wide range of manufacturers. All functions and processes can be controlled almost intuitively. Operating data can be transparently recorded and displayed. Requirements grow and new sensors or actuators are integrated? The operation grows with you, of course - exactly as your customer wants it to.

building control, IT systems and business processes can also be integrated. Depending on requirements, for example, tailored to individual users and their acute needs. Exactly the information that is currently needed is always available. If necessary, not only the user's own working environment moves along on the computer, but also the desired ambience for a productive working atmosphere.




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