Connecting the Dots

How Co-operative Principles will deliver Building Resilience



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Connecting the dots

Open protocols, adaptable buildings and the people who use them

Buildings change. Their occupants, operating requirements and technologies change with them. The decisions made about controls at the start of a project can either support that evolution or make it harder.

This report explores central themes of seminar by the same name: cooperation, interoperability and adaptability. Drawing on the discussion between Iain Gordon, President KNX UK and Alp Chirakli from GIRA, it considers how KNX and integration with other protocols can help connect building functions, retain useful existing systems and deliver a more coherent experience for users.

Five points to take away

- Start with the outcomes people need: comfort, clear control and manageable building operation.
- Treat protocol choice as a decision about the building's working life, alongside its initial installation.
- Plan integration early so individual systems can contribute to a shared building strategy.
- Assess what can be retained in a retrofit before deciding what to replace.
- Allow for changes in use, technology and user needs from the outset.

Who this report is for

Developers, consultants, specifiers, building owners, facilities teams and systems integrators considering how to make new and existing buildings more adaptable.



A handy recap of the seminar's key points to help you continue the conversation and share insights with colleagues who were unable to attend.

Contact KNX UK for in-office or team events and CPD's

Design for a building's working life

Why cooperation, interoperability and adaptability matter

A building's original brief is only one point in its life. An office may become residential accommodation or mixed-use space; a workplace may need new layouts; a home may need different controls as its occupants' needs change. The speakers argued that these possibilities should influence controls decisions from the beginning. A system should support today's requirements while leaving a practical route to future adaptation.

Three principles for connected buildings

Cooperation: designers, manufacturers, integrators and operators work towards shared outcomes.

Interoperability: building functions exchange the information and commands needed to work together.

Adaptability: the installation can respond to changes in layout, use and technology.

Why protocol choice matters to developers

Three recurring considerations: choice, versatility and long-term service.

A multi-manufacturer approach gives a project team more options when selecting equipment and considering future changes. A common controls platform can also support a range of functions across residential and commercial settings.



That flexibility needs to be designed into the project. Selecting an open protocol is a starting point; the team still needs to establish which functions will work together, how integration will be delivered and how the installation will be supported.

Connect systems around a purpose

KNX provides a way to connect otherwise separate functions such as lighting, heating, cooling and ventilation.

Using KNX alongside building management systems (BMS) and other protocols adds all the flexibility and cyber security to complex multi protocol/multi-site systems.

The useful question is what the connection enables. Does it simplify operation, coordinate a response or give the facilities team better control?

Connections should serve an agreed requirement, with appropriate interfaces and a clear division of responsibilities.

Project question:

If this building changes use in ten years, which parts of the controls installation could remain useful—and what would have to change?

Put people at the centre

Healthcare and heritage examples

Technology should fit the people using a building not the other way round.

The complexity behind a connected installation does not need to become complexity at the wall switch or user interface.



Healthcare: a clearer experience for patients and staff

The healthcare experience centre at Wandsworth HQ in which KNX controls form part of a connected patient environment is a good working example focused on making the journey easier for patients while supporting the needs the medical facility.

The strongest message was that the system should adapt to the user. For project teams, this means considering who will interact with the controls, which functions they need and how those functions can be presented clearly. The design principle: assess the user experience alongside the technical capability. ***Contact Wandsworth directly or KNX UK to view this installation.***

Heritage: modern control behind familiar finishes

Demonstrating the wide range of applications made possible with his approach. KNX UK has many members who showcase projects from assisted living accommodation to high-end residential, airports, sports stadia, multi-use & high profile public buildings. With the latter in mind the question of retrofitting energy efficient and future ready controls into historical and heritage settings.

One example includes a Belgian castle project where the client wanted smart functionality while retaining a traditional appearance. Wandsworth retract-to-centre toggle switches were connected through KNX binary inputs, allowing the visible controls to remain consistent with the heritage setting.
The example illustrates how the appearance of a control and the technology behind it can be considered separately. A familiar physical interface can be part of a connected installation when the components and design are suitable.

What these examples have in common

The user's needs and the building's character informed the solution.
The visible interface did not have to reveal the complexity of the underlying systems.
Different settings required different designs, even where the same protocol supported the controls.

Project question: can each intended user understand and operate the functions they need, without having to learn how the underlying systems are connected?

Make existing buildings smarter

Retrofit, legacy systems and staged investment

Improving the buildings already in use can involve a mixture of existing equipment, separate control systems and newer technologies.

Begin with what is already there

Retrofit examples may involve bringing existing consumer technologies, including Sonos and Apple-related services, into a more coordinated user experience. In commercial buildings this might rely on connecting disparate technologies into one simple, secure platform.

Suitable interfaces can provide a route to connecting these systems, subject to the capabilities of the existing equipment.

Retain useful systems where it makes sense

Interoperable technology can allow serviceable equipment to remain useful while controls are integrated into a fully connected system. This creates the possibility of phased investment, with upgrades spread over time rather than all systems being replaced at once.

Retention should be assessed against the building's needs. The condition, compatibility and supportability of the existing installation will determine whether keeping it is a practical choice.

Retrofit requirements also vary: however, using open protocols with worldwide standards increases the design options for the most challenging settings.

Adapt to new uses and technologies

Longevity and sustainability will be vital against the backdrop of global climate crisis and will require the need to modernise ageing building stock. A flexible controls strategy can help a building respond to new requirements without making each change a complete redesign.

Project question: which existing assets are worth retaining, which connections are feasible, and what sequence of upgrades would deliver the most useful improvement?

Take the discussion into your next project

A practical checklist for clients and project teams

Consider the following when planning your next project.

Define the outcomes

Who uses and operates the building, and what do they need the controls to achieve?

Which problems are you trying to solve: fragmented operation, difficult interfaces, changing layouts or ageing equipment?

Map the systems and connections

Which building functions need to work together, and what information must pass between them?

What protocols and equipment are already installed, and which interfaces are suitable?

Plan for people and future change

How will the interfaces suit different users and the character of the building?

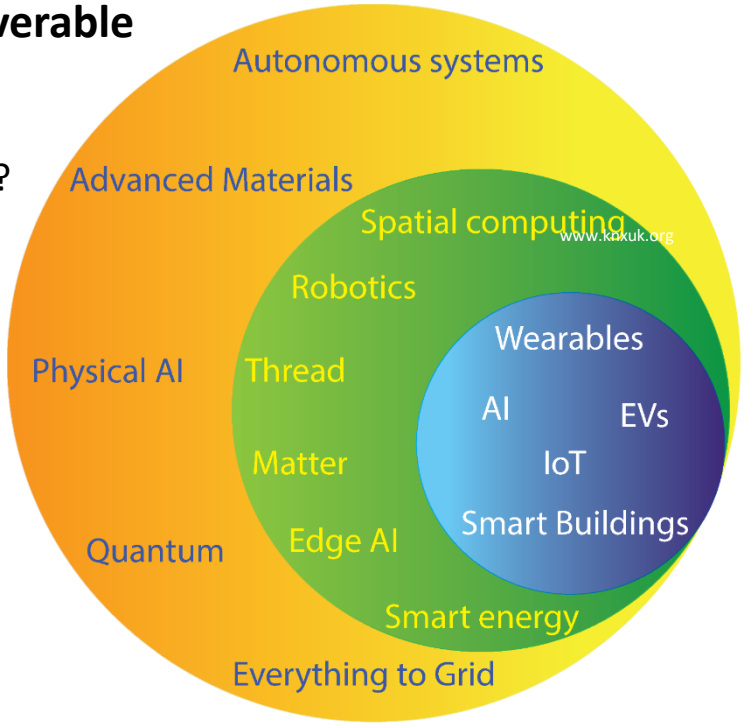
What changes in occupancy, layout or use should the installation be able to accommodate?

Make long-term operation deliverable

What can be retained, what needs replacing, and can the work be phased?

Who will commission, document, maintain and update the connected installation?

How will you check that the completed system delivers the agreed outcomes?



The lasting message

Connecting the dots means bringing people, systems and the building's future requirements into the same conversation.

KNX technology as a standalone or collaboration with other open and interoperable protocols presents a platform for that approach across healthcare, heritage, residential and commercial settings.

The value of the approach outlined in this report depends on a design that translates technical flexibility into useful, easily accessed building operation.

Continue the conversation

Explore KNX UK resources and member expertise at knxuk.org.

Request a CPD or seminar delivery att your offices or team event.

Use the project questions included in this report when discussing your requirements with a consultant, systems integrator or controls house.

KNX UK - Connecting the Dots:

Co-operative Principles for Building Resilience

KNX UK is the National Group in the UK working closely with the Global KNX Association, providing ever-evolving open protocol buildings technology.
Supported by over 500 manufacturers worldwide for more interoperable open smart building controls the emphasis is on secure, environmentally responsible and user-friendly technology for today and tomorrow.