KNX - Building Automation Solutions for Residential, Commercial and Industrial Applications

Presenter: Paul Foulkes MSc MIET. KNX UK President, Theben UK Business Manager
Agenda

- Building Automation
- What is KNX?
- Worldwide Building standards
- A brief history
- Functionality
- Performance
- Scalability
- Usability
- Reliability
- Efficiency
- KNX is Green
- Longevity

- KNX future
- Applications
- KNX Projects
- Questions?
Building Automation is integral to building design:

- Efficient building operation
- Occupant comfort
- Improving energy efficiency
- Reduced maintenance costs
- Security
- Improved life cycle

Using KNX you can deliver:

- Functionality & Performance
- Scalability
- Usability
- Reliability
- Efficiency
- Longevity
Is a smart building simply building automation?

• Discuss...

• What are the differences?
• Reacting to multiple inputs – occupancy, time, weather, energy constraints(?)
  • A mix of these inputs
  • The building is always looking for the most efficient outcome

• Multiple protocols, but working together
• Multiple agencies. Break the silos
• Integrated – this is smart or “smart”
True integration needs a true Building Automation STANDARD

2001: Publication of KNX Specifications V 1.0

2003: KNX becomes European Standard EN 50090

2006: KNX becomes International Standard ISO/IEC 14543-3-1 to 7

2013: KNX becomes Chinese Standard GB/T 20965

2017: KNX becomes Australian Technical Specification +
      KNX Data Security becomes EN 50090-3-4

KNX brings together many international standards
Integration requires flexibility - Looking in detail at sub systems and flexible function and control integration

• **System control flexibility.**
• **Direct or via gateways.**
• **Backbone integration**
A brief history

• In May 1999 these Associations founded KNX:

• **EIBA (European Installation Bus Association)**

• **EHSA (European Home Systems Association)**

• **BCI (BatiBUS Club International)**

Members are manufacturers developing devices for several applications for home and building control based on KNX like lighting control, shutter control, heating, ventilation, air conditioning, energy management, metering, monitoring, alarm/intrusion systems, household appliances, audio/video and lots more.
KNX can be coupled to many systems via gateways:

Many other gateways available...
What is KNX?

• 1 software
• 1 cable
• 1 language
• 1 integrator
• 1 designer

• Field level
• Automation level
• Supervisory level
Performance

• With over 500 manufacturers you can always specify the right product
• Distributed intelligence means devices are designed for their specific application
• Enabling offsite build and modern construction methods

• Meet the brief – no overspecification
• Cost constraints met with ease
• Speed and simplicity of deployment
• Inherent security
KNX bus cable can be run with mains cabling
Approved KNX bus cable is 2.5kV test voltage rated
2 x 0.8mm sq. solid copper conductors, red & black cores twisted pair.

Standard push-on connector for almost all KNX products
Scalability

Wired

IP

RF
Scalability

- 255 Devices per Line
- 15 Lines per Area
- 15 Areas per System
- Max 61,696 Devices

The choice of backbone
- Native KNX
- IP
KNX over IP - KNXIoT

- No capacity limit
- No bus traffic limitations
- Reduced cost installation
- Use existing networks
- KNX fibre optic option available
Scalability and performance – the friend of the systems designer

- Scalability - Topology for any project, any size
- Wiring Simplicity
- Flexibility - Use different mediums
- Decentralised - Add additional products as requirements change
Usability

- System interfaces – Keypads / APPs / Voice Control / Automation
- Integration to facilities management
- Adaptability

- Accessibility to all users
- Controllability and management
- Choice
Reliability

- Decentralisation – individual devices can fail but the system doesn’t
- Design within the product and system limits and it will work
- Standardised, Open Protocol with Product Testing
KNX energy savings

Energy Savings with KNX:
Up to 32% with KNX shading control
Up to 25% with KNX individual room control
Up to 58% with KNX lighting control
Up to 45% with KNX ventilation control
Up to 17% with KNX Heating control

Data taken from ABB PDF case study document on student accommodation 2017.
Comparing KNX control to conventional control
Efficiency

- Design the efficiency into the building
- Energy Savings for M and E services
- One infrastructure means less material
- Life cycle cost management
- Sustainability is how long it lasts *not* only how it is made

- Guaranteed interoperability
- Simplicity leads to savings
- Improve building functionality over time
Longevity

• Almost 100000 Partners worldwide
• 500+ manufacturers
• 30 years strong
• Looking back with compatibility
• Looking forward with cutting edge solutions
KNX is more than a cabled Building Automation solution. KNX offers:

• **IoT solutions**
• **Secure data communication**

And KNX is already active and working with the energy transition:

• **EV charging integration**
• **Energy storage**
• **Smart grids and demand side response (DSR)**
IP-BLiS
- KNX provides an holistic approach to efficient energy usage and is not limited to individual control of systems.
- KNX installations are future proofed – clients are not tied to one company unlike proprietary systems
- KNX covers a diversity of applications using one standard
- Cabling and networking is much simpler
A summary of what KNX can deliver:

A KNX installation can deliver:
- Efficiency
- Performance
- Usability
- Functionality
- Reliability
- Scalability
- Security

That is why KNX is the solution for building control
CONTROL YOUR WORLD WITH KNX

www.knxuk.org
KNX Projects in more than 80 Countries
...and KNX projects in UK?

- Chelsea Island (Multi Dwelling Units)
- Villa Neo (Private Residence)
- Barts Square (Multi Dwelling Units)
- Richmond Park (Private Residence)
- St John’s, Cambridge (Accommodation)
- John Keats Free School (Education)
- Amels Superyacht (Marine)
- University of Leicester Medical Building (Healthcare)
- Shadon House - Dementia Nursing home (Healthcare)
- Newcastle University (Education)
- Microgaming headquarters (Commercial)
- And Many more on KNXUK.org

- 500 Manufacturers
- 99000+ Partners Worldwide
- 930 Integrators in UK
- 8000 Products
The future? With KNX at the core

Community Energy Integration

KNX Building Control & Monitoring
Energy Production Control & Monitoring
Community Energy Grid
Grid Connection

Housing 1
Housing 2
Community Facilities

Smart home and building solutions.

www.knxuk.org
What KNX means for you

- Design efficacy – saving you time
- One infrastructure – less complication
- Use only the products you need (decentralisation)
- Medium types – always a solution
- Risk mitigation – market proven
- Cost efficient – less material
- Design for the future - sustainable

Questions?

More Info – www.KNXUK.org