SmartStruxure™ Lite solution

Get Control. Get Efficient. Get Value.

Presented by:

Confidential Property of Schneider Electric

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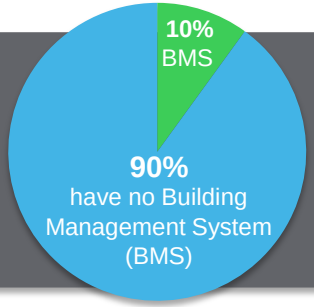
Customer pain points with Building Management Systems (BMS)

Small & medium
- Retail
- Schools
- Small offices
- Substations



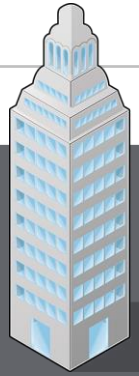
- New BMS market
- Small projects
- Little competition
- **Underserved customers**

Barrier to entry customer pain point

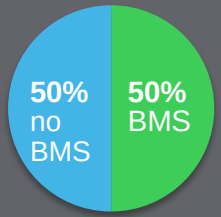
Traditional BMS are too expensive for small buildings

▲ **65%** of the commercial surface

▼ **35%**



Large
- Offices
- Hotels
- Healthcare
- Education



- Traditional BMS market
- Large projects
- Lots of competition
- **BMS customers looking for better retrofit options**

Barrier to entry customer pain point

Installing, replacing, or upgrading a BMS is complex and costly

Data from CBECS survey

"BMS" includes HVAC and lighting management systems

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The two use cases of SmartStruxure Lite solution

1 BMS for small to medium buildings

High performance meets affordability

Get the same benefits found in large-scale BMS at a small-scale price.

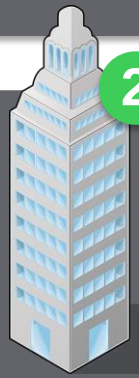
SmartStruxure Lite solution is a fast, easy way to future-fit your small- to medium-sized building using Web and wireless technology to control HVAC, lighting, and metering.

Save energy, save time, and improve comfort with minimal impact on operations.

Removing the barrier to entry

→ Lowest total cost of ownership per site for small buildings

2 Complement to BMS in large buildings



Adding flexibility and local intelligence to BMS

SmartStruxure Lite solution is also a large building BMS complement:

- Use wireless communication to control HVAC, lighting and metering to reduce the cost of new installations and retrofits.
- Control multiple applications and protocols from a single device, reducing hardware costs of controllers and gateways.
- Distribute intelligence at the zone and room level for redundancy.

Removing the barrier to entry

→ Lower installation and scalability costs for new or existing BMS

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Part of the Small Building Systems portfolio

Select your smart space

Select your SBS Offers

Large Building Space

--- SBO Integration ---

SBS Offers

Room Controllers

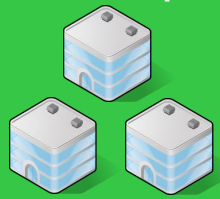
SE8000 & SE7000 Room Controllers stand-alone or integrated to SBO as default HVAC field controller.

SmartStruxure Lite

2

Complement to SBO. Enables multi-protocol, multi-application, wired and wireless integration and networking, as well as distributed intelligence.

Mid Market Space



--- Full energy upgrade ---

SBS Offers

1

SmartStruxure Lite

Mini-BMS for small to medium buildings. Get the same benefits found in large-scale BMS at a small-scale price.

Building Insights

Cloud-based solution that gives you full visibility and control of your energy usage across multiple sites for increased efficiency for your business.

Residential Space

-- Enriched experience --

SBS Offers

Wiser Air

For USA & Canada, a residential smart connected thermostat with mobile app, and compatibility with demand response programs from utilities.

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Use case 1
BMS for small to medium buildings

Get the same benefits found in large-scale BMS at a small-scale price.

Skip this use case and go directly to Use Case 2 (wireless complement to larger BMSs).

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“

HVAC and lighting represent 69% of the energy consumption of commercial facilities under 10 000 m² / 100 000 ft².”

– CBECS survey
Major Fuel Consumption (Btu) by End Use


“Energy costs are one of the top three business expenses in 35% of small businesses.”
– National Federation of Independent Business Energy Consumption poll

How do we help small & medium facilities?

The SmartStruxure Lite solution value proposition

1 Get control.

- Take control of your HVAC, lighting and metering systems
- Enjoy flexible monitoring, control and scheduling via customizable dashboards
- Access your site locally and remotely via web interface

2 Get efficient.

- Realize immediate energy savings of up to 30% on energy expenses
- Optimize your business' operational efficiency while reducing energy waste
- Operate via a single, easy-to-use interface

3 Get value.

- Quickly realize ROI through immediate energy savings
- Continue daily operations with a fast, seamless installation
- Reduce maintenance costs with improved monitoring and alarms
- Enhance occupant comfort and optimize business productivity
- Reap the benefits of no license-fee software – the best value in the industry!
- Future-proof your investment with this cost-effective, scalable solution

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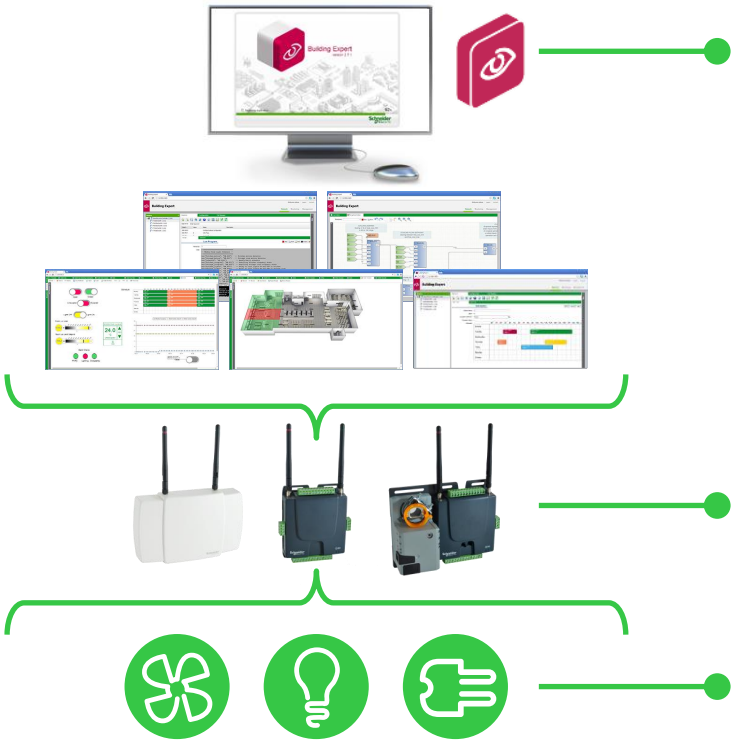
What is SmartStruxure Lite solution?

A building management system for any size building



StruxureWare® Building Expert

The software behind SmartStruxure Lite solution.

Lowest fixed costs per site for small & medium facilities

- Embedded in each MPM
- No software license-fees

Access

- Local and remote access
- Web interface

Control

- Programmable
- Schedules, events

Monitoring

- Dashboards
- Floor plans

Scalability

- Export data for analysis
- Integration to other systems

Multi-Purpose Managers (MPM)

MPMs are the bridges between your building's systems, and your ability to control them. They combine controller, gateway, and Web server capabilities, all in one box. They can integrate a wide variety of devices and systems, using either wired or wireless communication, including: EnOcean, ZigBee, Modbus, as well as analog and binary inputs and outputs.

Controllers and Sensors

Connect, monitor and control your building's systems using controllers and sensors made specifically for your HVAC, lighting, and power systems, with an ever-growing ecosystem of integrated Schneider Electric and third-party devices.

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In which facilities does SmartStruxure Lite fit?

All small to medium commercial facilities that would benefit from a BMS

Offices

Education

Banking

Retail

Healthcare

Hospitality

Utility substations

Other facilities that gain significant benefits from wireless technology

Warehouses
High ceilings, require cranes to wire, which disrupts operations

Heritage buildings and other landmarks
Facility cannot be altered

Facilities where renovation poses health risks
Where asbestos or other contaminants are in the walls

Facilities where regulation makes wiring prohibitive

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How do we…

Enable you to get control, get efficient, and get value?

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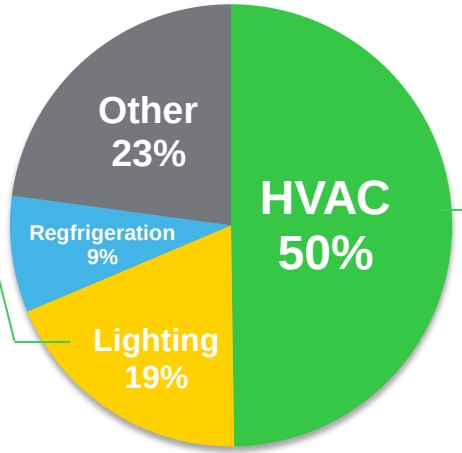
By giving you control of your facilities

Lighting management

Our solutions provide:

- On/Off and master switch
- Dimming & daylight harvesting
- Blind control
- Scheduling
- Occupancy detection

Energy consumption in facilities of less than 10 000 m² / 100 000 ft²



HVAC management

Our solutions provide:

- Application-specific control tailored to your HVAC system
- Proportional integral control
- Scheduling
- Occupancy detection

Save up to 30% on your total energy consumption

Data from CBECS survey: Major Fuel Consumption (Btu) by End Use for Buildings of 100 000 square feet or less

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By improving how your facilities operate

Equipment management

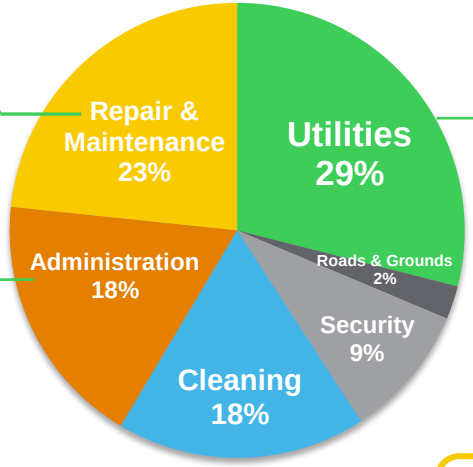
Our solutions provide monitoring of HVAC equipment, as well as other equipment (such as refrigerators), that enable you to detect potential issues and act upon them.

Customer service

Our solutions provide automated control of your facility's systems. Better control reduces the occurrence of complaints from tenants and occupants, which reduces incoming calls to your administration.

Major category expenses by building [1, 2]

All Private Sector, USA



HVAC management

Our solutions help you reduce the Maintenance & Operations expenses dedicated to Utilities via energy savings on HVAC and lighting.

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Improve operations at multiple levels while reducing expenditures

BOMA (Building Owners and Managers Association) Kingsley Report – Practical Industry Intelligence for Commercial Real Estate – Benchmarking | Autumn 2010

Excluding "Fixed" expenses (i.e.: property taxes, etc.)

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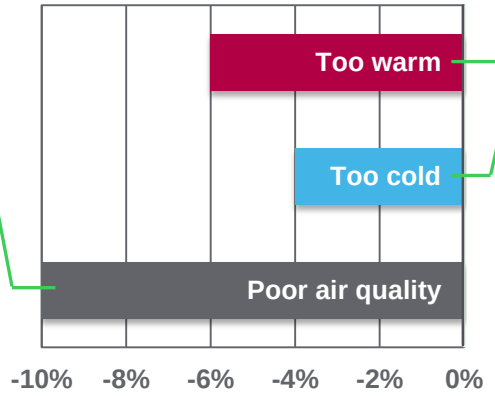
By improving the productivity of occupants

Well-being improvements

Our solutions provide:

- Better ventilation results in better air quality (less CO2)
- Occupants are less tired and more alert throughout the day
- A healthy environment positively impacts occupants

Productivity loss with poorly managed HVAC[1]



Comfort improvements

Our solutions provide:

- Too hot or too cold ambient temperatures impacts occupant productivity and comfort
- Better temperature management reduces the number of complaints due to HVAC

Improve productivity and comfort while reducing expenditures

1) Word Green Building Council study: Health, Wellbeing & Productivity in Offices

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It all adds up

- Energy savings
- Maintenance & operations cost reduction
- Productivity and comfort increase
- Facility uptime
- GHG emissions reduction

SmartStruxure Lite solution improves multiple aspects of your facility and operations for years to come.

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Empowering your facilities

A deep dive into how SmartStruxure Lite solution works for your facility

1) Scheduling 2) Occupancy Detection 3) Custom Events and Programming

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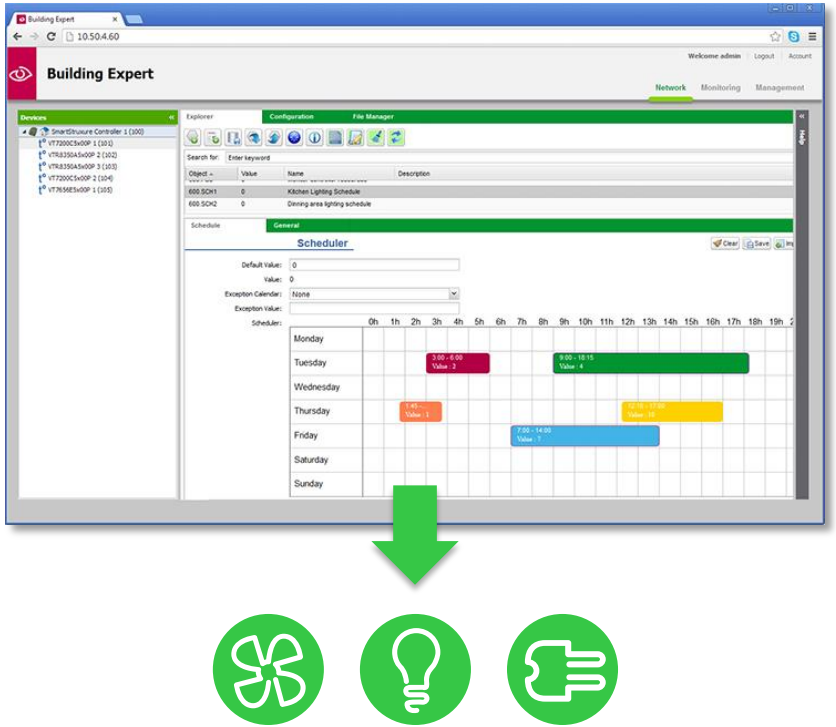
Scheduling

Regulating your HVAC, lighting and equipment based on schedules.

This generates energy savings and eliminates waste throughout the week.

The facility can use one overall schedule, or multiple schedules depending on when each zone of the facility is typically in use



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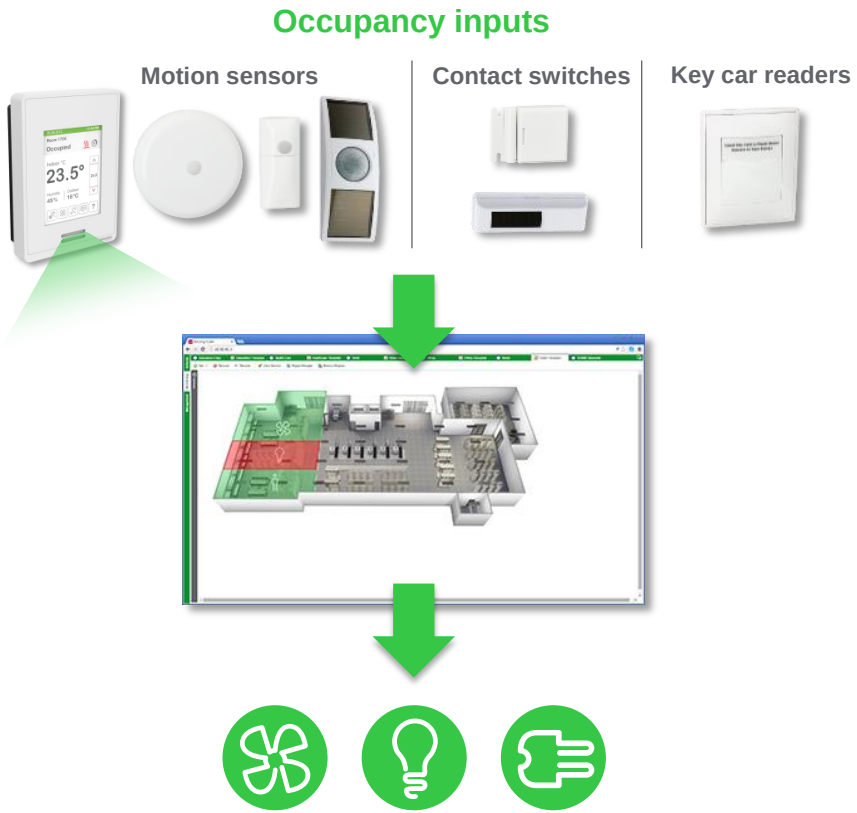
Occupancy detection

Regulating your HVAC, lighting and equipment based on occupancy.

This generates energy savings when a space is reported unoccupied, or when a door or window is left open. Targeted systems are ramped down, or turned OFF.

The occupancy status is provided by strategically placed occupancy sensors, contact switches, or key card readers.



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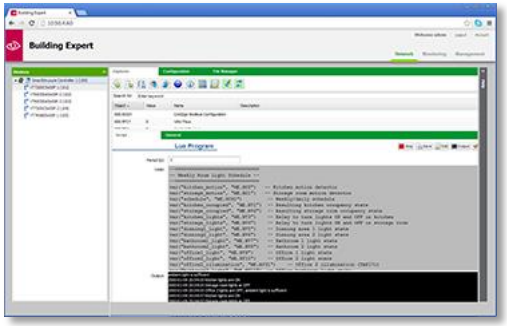
Custom Events and Programming

SmartStruxure Lite solution is fully programmable using scripts or graphical programming / block programming, enabling you to create custom Events.

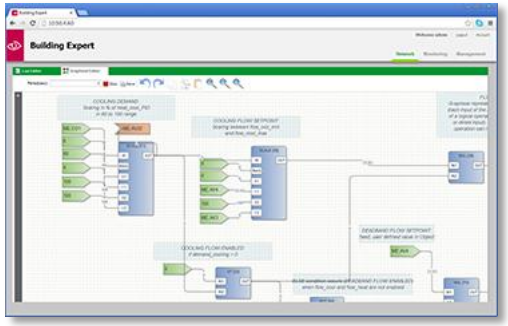
Custom Events automate your facility to be the most comfortable and efficient based on the variables of your choice.

Events can also create synergies across different systems. For example, information coming for occupancy detection can be applied to both HVAC and lighting systems.

Programming is stored locally on each MPM, which increases redundancy.



Scripting
Uses open programming language LUA, the same found on SE8000 Room controllers.



Graphical / Block
ABS, ACOS, ADD, AHYS, AND, ASIN, ATAN, AVG, BITWISE_NOT, COS, CTD, CTU, CTUD, DAY, DELAY, DIFF, DIV, EQ, EXP, EXPT, FTRIG, GE, GT, HOUR, HYS, INTEG, LAG, LE, LIMIT, LN, LOG, LT, MAX, MIN, MINUTE, MOD, MONTH, MOVE, MUL, MUX, NE, NOT, OR, PID, RAMP, Room_Ctrl, RS, RT, RTRIG, SCALE, SECOND, SEL, SIN, SQRT, SR, SUB, TAN, TOF, TON, TP, WDAY, XFR, XOR

*As of Building Expert Firmware 2.16.2

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Empowering the facility manager

A deep dive into how SmartStruxure Lite solution works for your facility manager

1) Local and Remote Access 2) Monitoring

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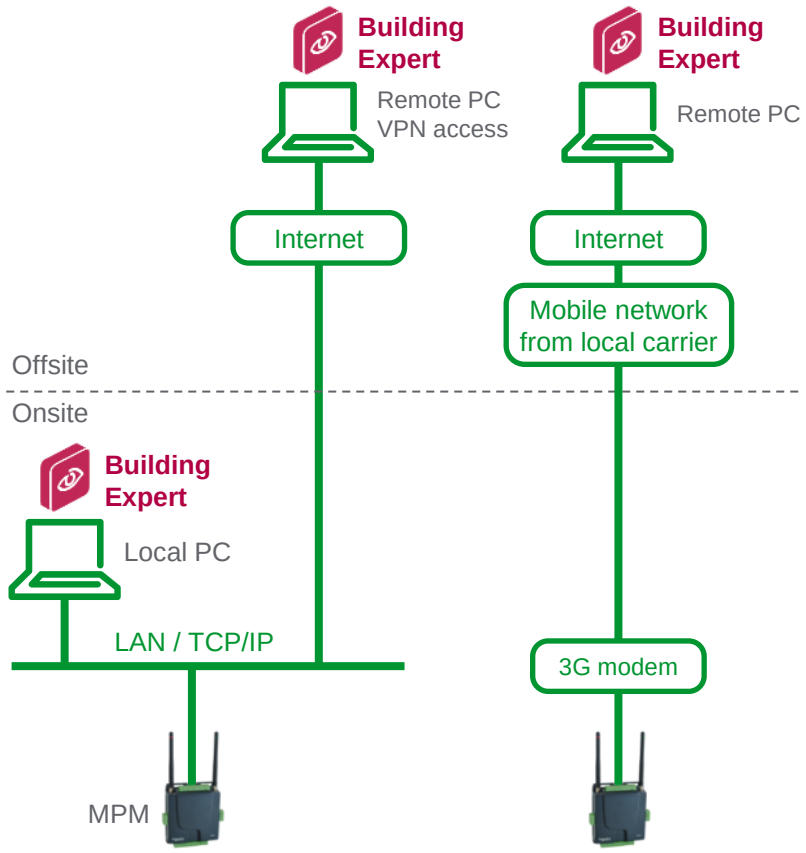
Local and remote access

Building Expert can be accessed locally and remotely through VPN connection to the facility's LAN.

The facility manager can login at any time, and from anywhere, to monitor his facility.

If the facility's LAN cannot be used, SmartStruxure Lite solution can use a 3G modem to enable remote access. The customer must purchase the appropriate data plan from local 3G suppliers.



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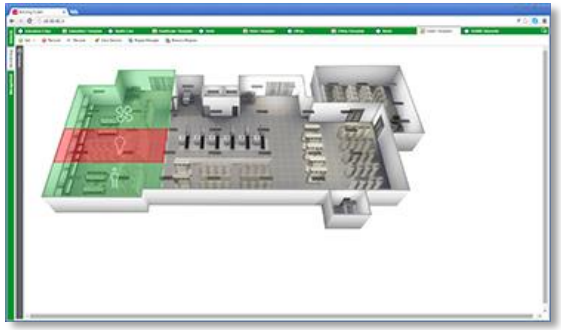
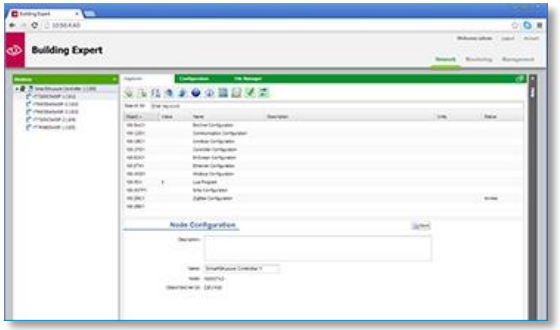
Monitoring

Building Expert offers facility managers multiple monitoring options.

Dashboards
Create custom dashboards to quickly see key metrics, variables and values for individual zones, or your entire facility.



Map sections
Import floor plans and other visualizations of your facility. On your plans, draw zones, and tag them with events. The zones will change color when their events are triggered.



Network
The Network view enables every device and point to be accessed, monitored, and edited individually.

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Success story:
Bank (UK)

Situation

- 890 branch retrofit in the UK

Solution

- HVAC, lighting and metering
- EnOcean wireless devices are used for sensing (temperature, CO2, etc.) and metering/pulse count.

Recorded results

Branch A

Energy savings: **33%**

ROI: **10 months**

Weekly savings:

547£ / 860$ / 758€

Branch B

Energy savings: **28%**

ROI: **10 months**

Weekly savings:

564£ / 887$ / 782€

Success story:
Primary School (Canada)

Situation

- The school board wanted to retrofit their facility, without having to pierce the walls, as they could contain asbestos (the school was built several decades ago).

Solution

SmartStruxure Lite delivers wireless control of HVAC & lighting:

- 9 MPMs, 31 SED-0 actuators, and EnOcean devices (29 thermostats, 57 light relays, 59 light switches)
- 0 communication wires

Recorded results

Energy savings: **15%** - Recorded by the school board

Labor cost reduction on installation: **60%** - Partner estimate

Success story:
Health System (USA)

Situation

- A top-5 rated health system wanted to take control of the energy costs in its out-patient clinics.
- The solution needs to be applied in multiple, different facilities.

Solution

SmartStruxure Lite and SE7000 room controllers work together to deliver:

- Application-specific and proportional integral control of the HVAC equipment (roof top units) with the SE7000
- Local and remote monitoring, with an automated schedule managing the SE7000

Recorded results

Energy savings: **35%**

ROI: **8 months**

Use case 2
Complement to BMS in large buildings

Adding wireless capabilities, scalability and local intelligence

Skip this use case and go directly to technology and applications.

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"It's a completely seamless solution. If we had known how easy it would be, we probably would have done it sooner!"

– Seán Diffley, Plant Engineer, Allagash Brewing Company

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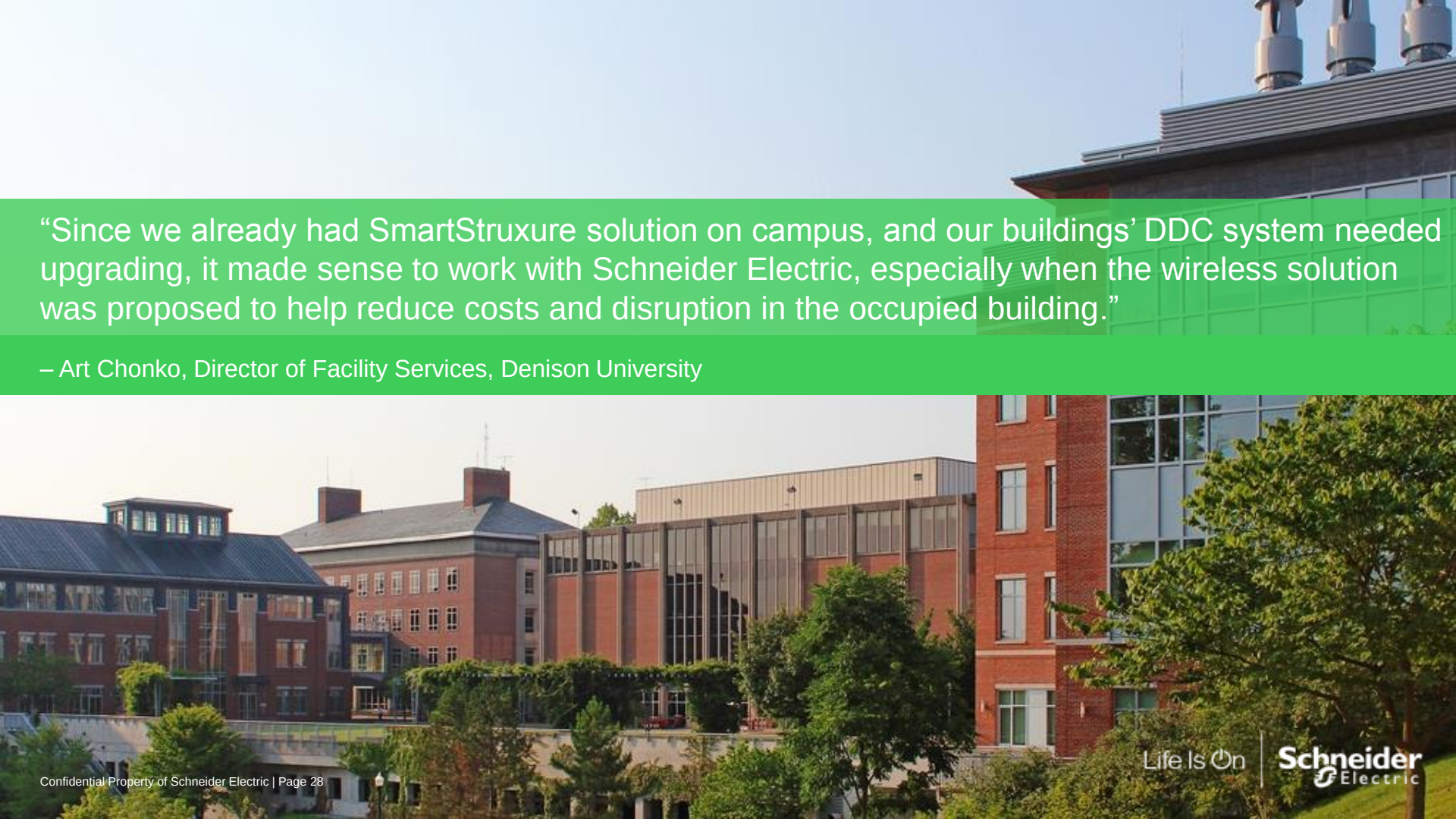

“Since we already had SmartStruxure solution on campus, and our buildings’ DDC system needed upgrading, it made sense to work with Schneider Electric, especially when the wireless solution was proposed to help reduce costs and disruption in the occupied building.”

– Art Chonko, Director of Facility Services, Denison University

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“Schneider Electric was the perfect fit, providing wired and wireless options to take control of HVAC costs in relation with room occupancy. This allowed expert system integrator Regulvar to go wired and wireless according to which option was more cost effective.”

– Dominique Quinn, Hotel manager, Albert at Bay Hotel

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Why are these customers so satisfied?

Value proposition

1

Retrofit without disrupting operations.

- Avoid lengthy installation processes that are wiring and labor intensive
- Save on labor and material costs on installation using wireless
- Eliminate or reduce downtime to a minimum with a quicker wireless installation

2

Make your BMS more scalable and adaptable to your facility.

- Enable your BMS to easily scale throughout its life-cycle
- Use wireless technology to add more sensors and controllers over time, without paying for more gateways, wiring or I/O boxes
- Relocate existing controllers and sensors easily, as communication is done wirelessly

3

Bring intelligence to the room level.

- Solidify your BMS by adding control redundancy at the local level
- Local intelligence is a failsafe that ensures efficiency and comfort are maintained in all conditions
- Keep control sequences going when doing networking upgrades, maintenance, or troubleshooting, of your large building BMS

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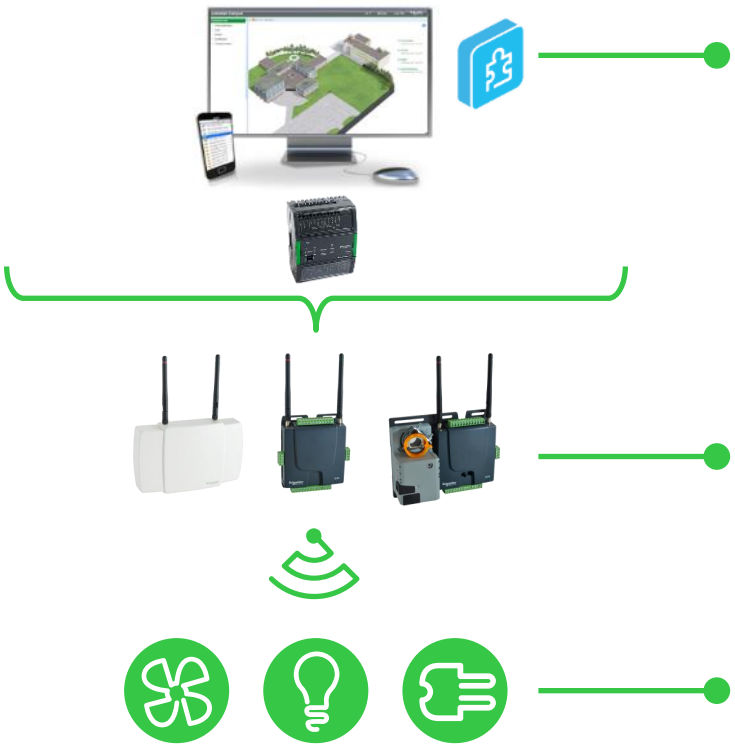
What is the SSLite complement to BMS in large buildings?

Adding wireless communication and local intelligence



StruxureWare® Building Operation (*or other BMSs*)

The software behind SmartStruxure solution.

Monitor and manage your entire buildings' performance on one network across your enterprise.

StruxureWare™ Building Operation software allows data from multiple devices throughout a building to be collected, analyzed, and managed – turning system data at the automation level into valuable business information at the management level.

Multi-Purpose Managers (MPM)

MPMs are the bridges between your building's systems, and your ability to control them. They combine controller, gateway, and Web server capabilities, all in one box. They can integrate a wide variety of devices and systems, using either wired or wireless communication, including: EnOcean, ZigBee, Modbus, as well as analog and binary inputs and outputs

Controllers and Sensors

Connect, monitor and control your building's systems using controllers and sensors made specifically for your HVAC, lighting, and power systems, with an ever-growing ecosystem of integrated Schneider Electric and third-party devices.

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Wireless ecosystem of the MPMs

Integrating wireless sensors, actuators and controllers to StruxureWare Building Operation and other large BMS

The EnOcean wireless protocol is used for short range control and monitoring.

Building Expert (the software hosted by the MPM) contains objects that facilitate the integration of EnOcean devices. The Building Expert objects match certain “EnOcean profiles”. In some cases, integration may require a script as well.

Consult our catalog to know which EnOcean products we offer (preview at the end of this presentation).

The ZigBee Pro wireless protocol is used for short and medium range control, monitoring and networking.

Building Expert (the software hosted by the MPM) contains objects that facilitate the integration of:

- Room controllers (SE7000, SE8000)
- SEC-TE terminal equipment controller
- SED-0 smart wireless actuator

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Success story:
Denison University (USA)

Situation

The university decided to upgrade the F.W. Olin Science Hall's HVAC and lighting systems to make them more efficient and to improve student and faculty comfort. It was essential that the work not damage or compromise the interior, and the timeline was extremely tight because the work had to be completed between the spring and fall semesters, and around summer research programs.

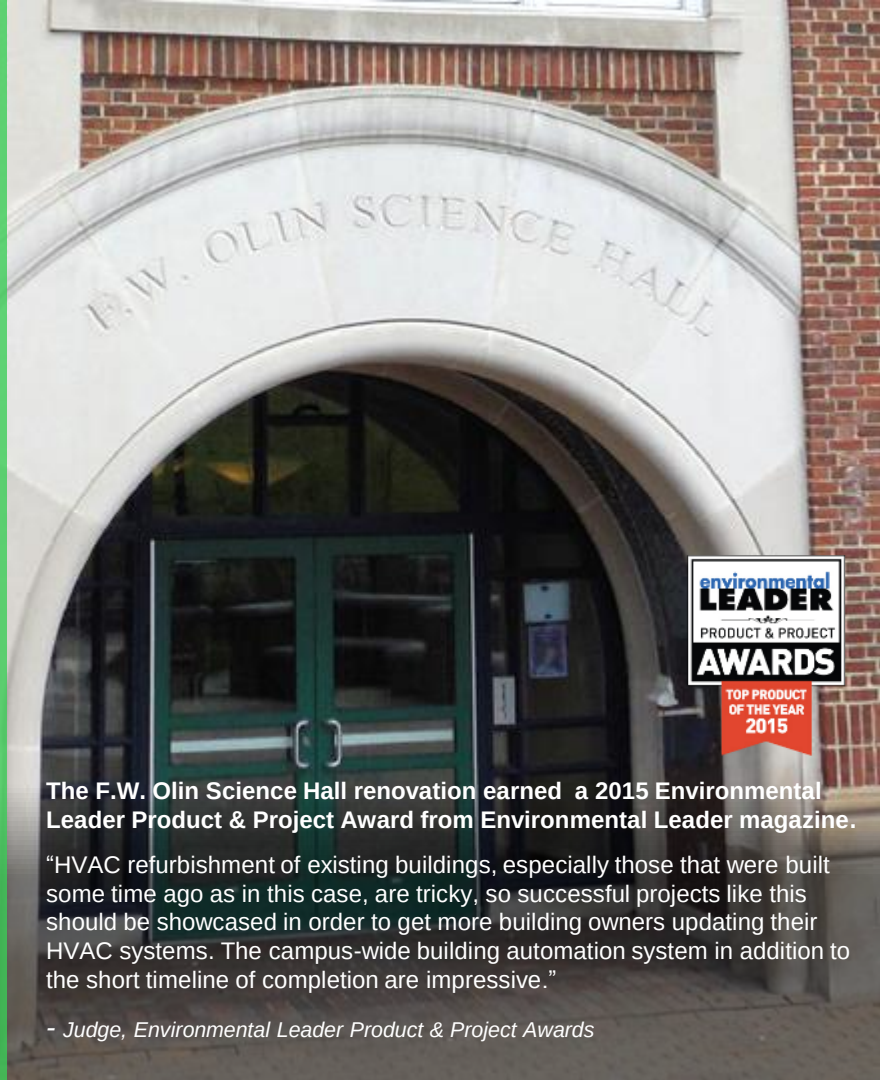
Solution

Installing Multi-Purpose Managers (MPM, as wireless gateways to the campus-wide BMS (Building Operation).

- Wireless communication with MPMs
- Integration into SBO over BACnet IP
- Installation was quick and posed minimal disruption to the F.W. Olin Science Hall's operations

Recorded results

An award-winning retrofit project



The F.W. Olin Science Hall renovation earned a 2015 Environmental Leader Product & Project Award from Environmental Leader magazine.

"HVAC refurbishment of existing buildings, especially those that were built some time ago as in this case, are tricky, so successful projects like this should be showcased in order to get more building owners updating their HVAC systems. The campus-wide building automation system in addition to the short timeline of completion are impressive."

- *Judge, Environmental Leader Product & Project Awards*

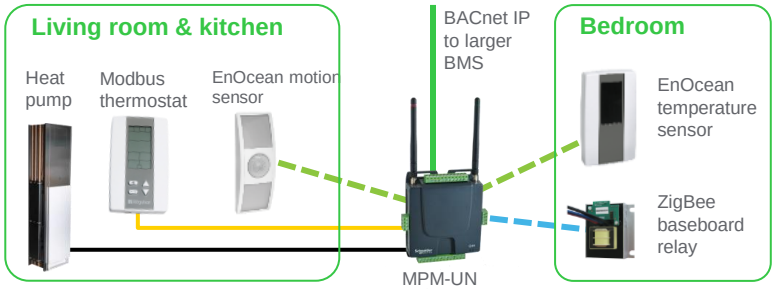
Success story:
Albert at Bay Hotel (Canada)

Situation

- Trip Advisor: #3 hotel in Ottawa, #1 for family friendly hotels
- 200+ suites with multiple rooms, equipped with heat pumps
- The hotel wants to perform an energy efficiency retrofit to better control customer comfort while saving on energy

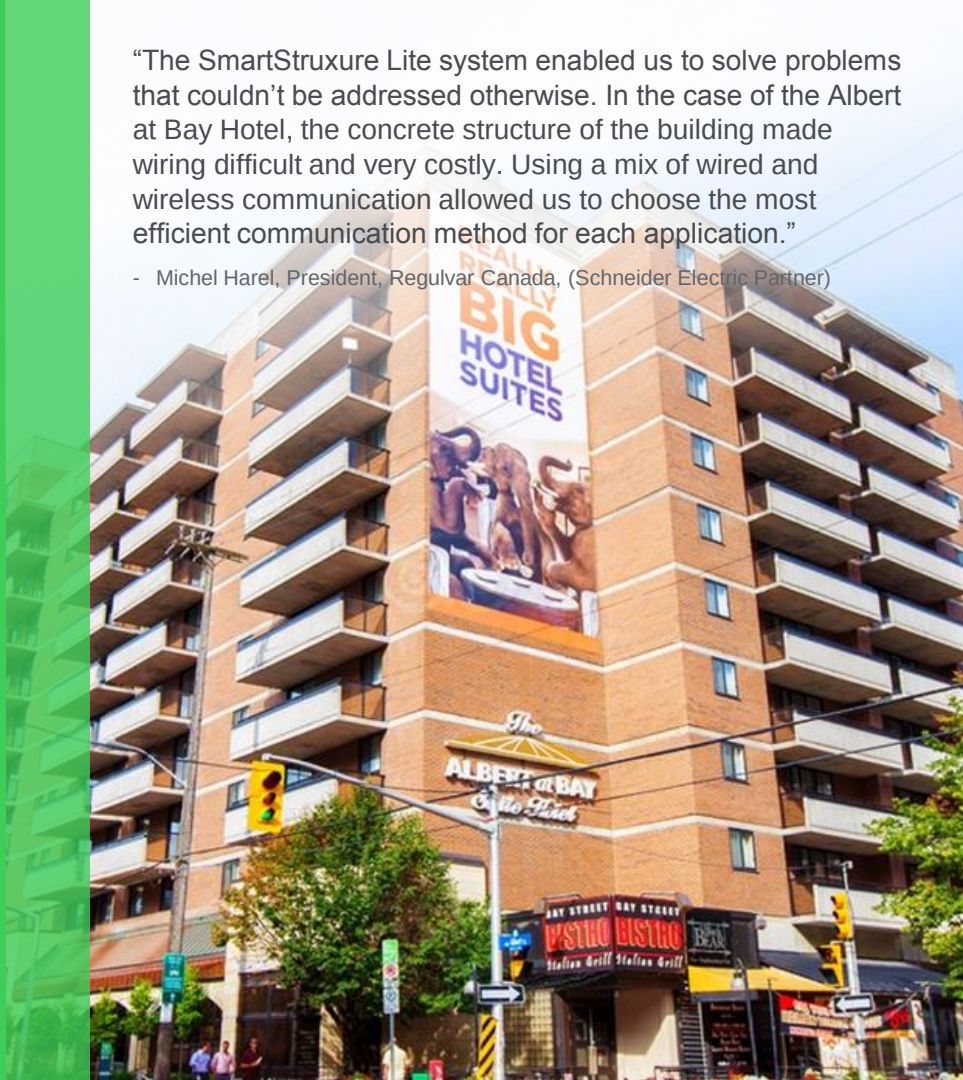
Solution

In each suite, an MPM plays the role of DDC controller and wireless gateway to control existing systems, and new components, all integrated into a larger BMS. Each room uses:



"The SmartStruxure Lite system enabled us to solve problems that couldn't be addressed otherwise. In the case of the Albert at Bay Hotel, the concrete structure of the building made wiring difficult and very costly. Using a mix of wired and wireless communication allowed us to choose the most efficient communication method for each application."

- Michel Harel, President, Regulvar Canada, (Schneider Electric Partner)



Success story:
Norampac factory (Canada)

Situation

A 427,000 ft² / 40 000 m² factory wants to better control their 25 gas-fired unit heaters. The high ceilings of the factory and safety compliance would make a wired installation extremely costly and cause downtime to the factory, a big non-starter.

Solution

The factory can maintain production using a wireless solution.

- Some heaters are directly controlled by MPMs acting as DDC controllers, while others are controlled by EnOcean relays, communicating wirelessly to MPMs
- The networking between MPMs is wireless
- The MPM monitor is integrated to the factory's BMS

Recorded results

Energy savings: **25%** on heating costs, **40,000$/year**

Labor & materials savings on installation: **45,000$**

"The system allowed us to centralize temperature control and generate interesting energy savings. The installation was done without disrupting our activities, which was very important. This would've been impossible with traditional wired control solutions."
- Fabien Demougeot, Norampac Project Engineer

Success story:
Lampron Building (Canada)

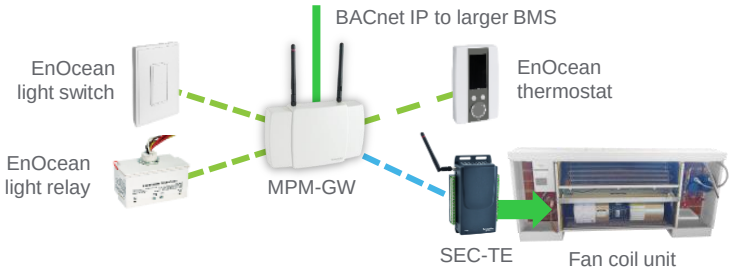
Situation

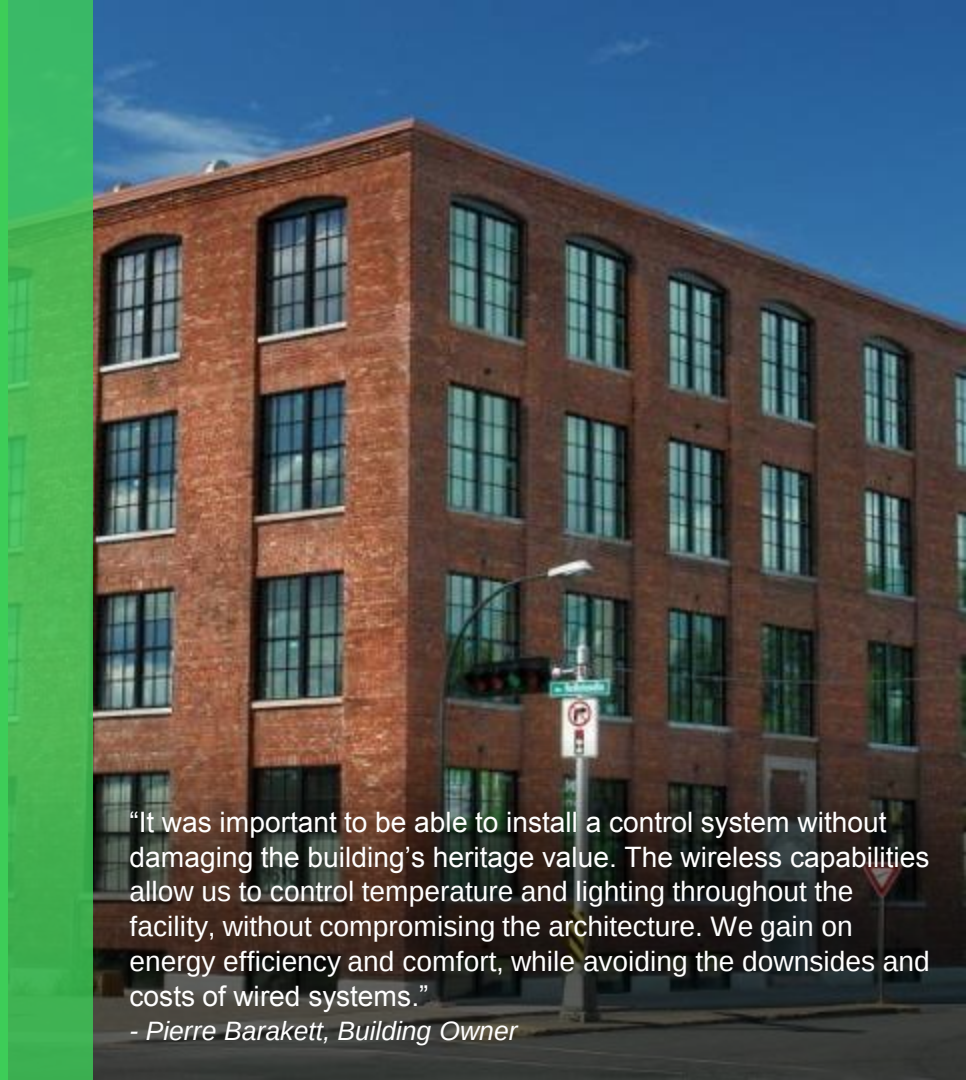
A recognized heritage building is converted to new offices. The interior walls and ceilings are made of wood an brick. To preserve the heritage value of the building, a traditional, wired installation, cannot be implemented.

Solution

MPMs are used as wireless controllers and gateways within the larger BMS. They manage both HVAC and lighting systems:

- Each MPM coordinates multiple SEC-TE and lighting zones
- SEC-TE control the fan coil units
- EnOcean light switches and relays control the lighting





"It was important to be able to install a control system without damaging the building's heritage value. The wireless capabilities allow us to control temperature and lighting throughout the facility, without compromising the architecture. We gain on energy efficiency and comfort, while avoiding the downsides and costs of wired systems."

- Pierre Barakett, Building Owner

3

Technology and applications

A detailed look at products and applications… how does it work?

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Multi-purpose management device (MPM)

All MPMs common features

MPMs are at the core of SmartStruxure Lite solution. They combine controller, gateway, and Web server capabilities, all in one box. They also host Building Expert, the software of SmarStruxure Lite solution.

On-board web server
- Hosting StruxureWare Building Expert
- Can host custom HTML web page
- Can export data over FTP

On-board gateway to
- BACnet IP (SBO & other BMS integration)
- oBIX
- EWS - EcoStruxure Web Services

Processing
- 400MHz processor.
- 64MB of RAM.
- 4GB of Flash (local storage).

Programming
- Fully programmable with LUA.
- Real-time response to scripting.
- Real-time clock with battery back-up.

Networking between MPMs
- IP/Ethernet.
- ZigBee Pro wireless mesh (option)
- CANbus daisy chain.

Inputs and outputs for end devices (model dependent)
- Analog and binary I/O (UN, VA, VS)
- ZigBee Pro (option)
- EnOcean (option)

MPM-GW
Wireless manager

Features
- No wired inputs/outputs
- Wireless inputs/outputs only
- Clean, aesthetic look for deployment anywhere

MPM-UN
Multi-purpose manager

Features
- 6 inputs / 6 outputs
- 2 Modbus connectors

MPM-VA & MPM-VS
VAV manager

Features
- 6 inputs / 6 outputs
- 2 Modbus connectors
- Pressure sensor
- Valve actuator (optional) (VA)

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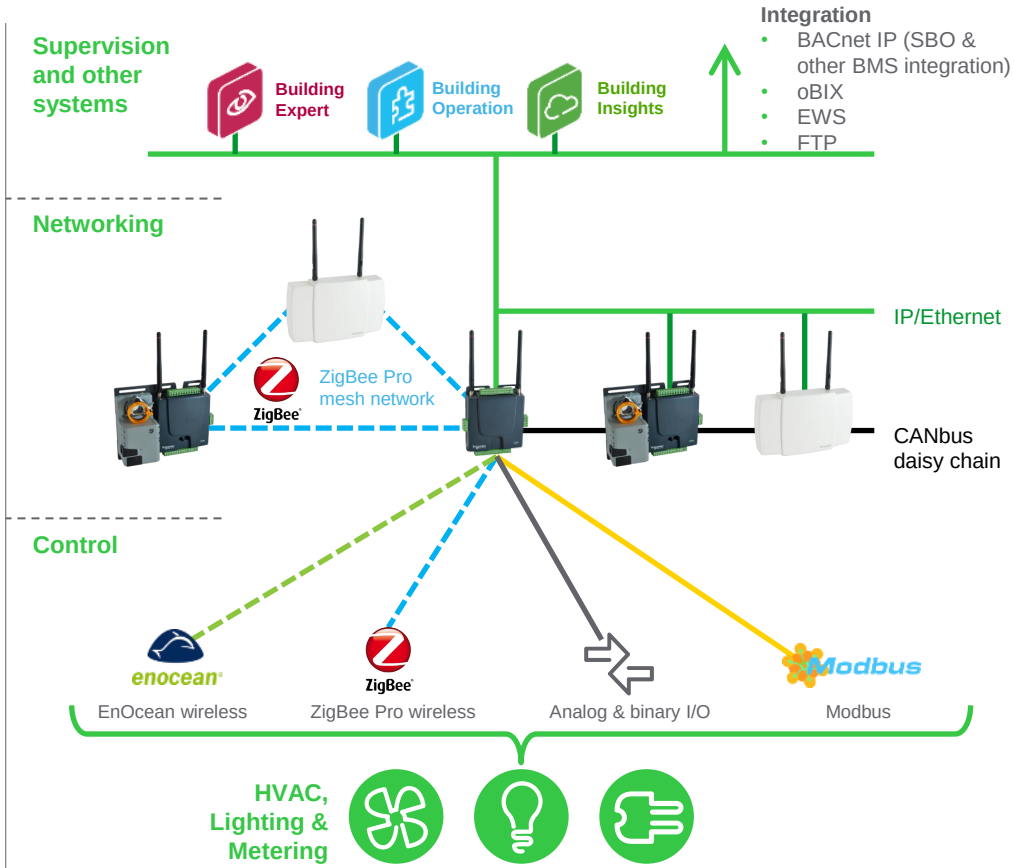
Architecture

- Integration into other systems
  - BACnet IP (SBO & other BMS integration)
  - oBIX
  - EWS
  - FTP data export in .CSV format
- Supervision
  - StruxureWare Building Expert
- Networking
  - ZigBee Pro wireless mesh network
  - IP/Ethernet
  - CANbus daisy chain
- Control of end devices
  - Wireless: ZigBee Pro, EnOcean
  - Wired: Analog and binary I/O, Modbus



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Deployment guidelines overview

- This is an incomplete summary to provide insight before you consult all the technical documentation. Please consult the complete Deployment guidelines on The Exchange for details.
- The monitor:
  - The monitor is the MPM gathering all the points of your network. You log into its IP address to manage your system.
  - Maximum number of points: 750
- ZigBee Pro wireless mesh network:
  - Maximum number of MPM: 25
  - Maximum number of nodes (MPM and end-devices): 75
- EnOcean devices
  - Maximum number of devices per monitor: 128
- If you need more, add separate MPM networks with different IP addresses that you can log into separately.

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Empowering your facilities

Our solutions for HVAC, lighting, energy, and equipment management

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Applications for your facilities

MPMs are programmable and support several communications protocol.

This enables System Integrators to create scripts to manage a wide variety of applications.

These applications can be used for both uses cases of SmartStruxure Lite solution:

- SmartStruxure Lite solution for small-to-medium sized buildings
- SmartStruxure Lite solution as a complement to SBO and other large BMS

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HVAC with Room controllers

What are Room controllers?

- DDC controller + thermostat in one device (80+ BACnet pts)
- Proportional integral control algorithm (PI)
- Application-specific control for
  - Fan coil units, Roof top units, Heat pumps, Indoor Air Quality applications, Zone control (includes a wide-variety of HVAC systems)
- Configurable sequence of operations
- Local scheduling
- Possibility to lock user interface for safety
- Maintenance “service view” (clogged filters, etc.)
- Optional on-board relative humidity sensor
- Optional on-board occupancy detection

Connectivity to

- MPMs via ZigBee Pro wireless mesh network
- Remote sensors
  - Wired sensors
  - ZigBee Pro sensors for occupancy, door and window contacts

SE8000

Unparalleled customization options

SE7000

Simply the most cost-effective alternative to DDC on the market.

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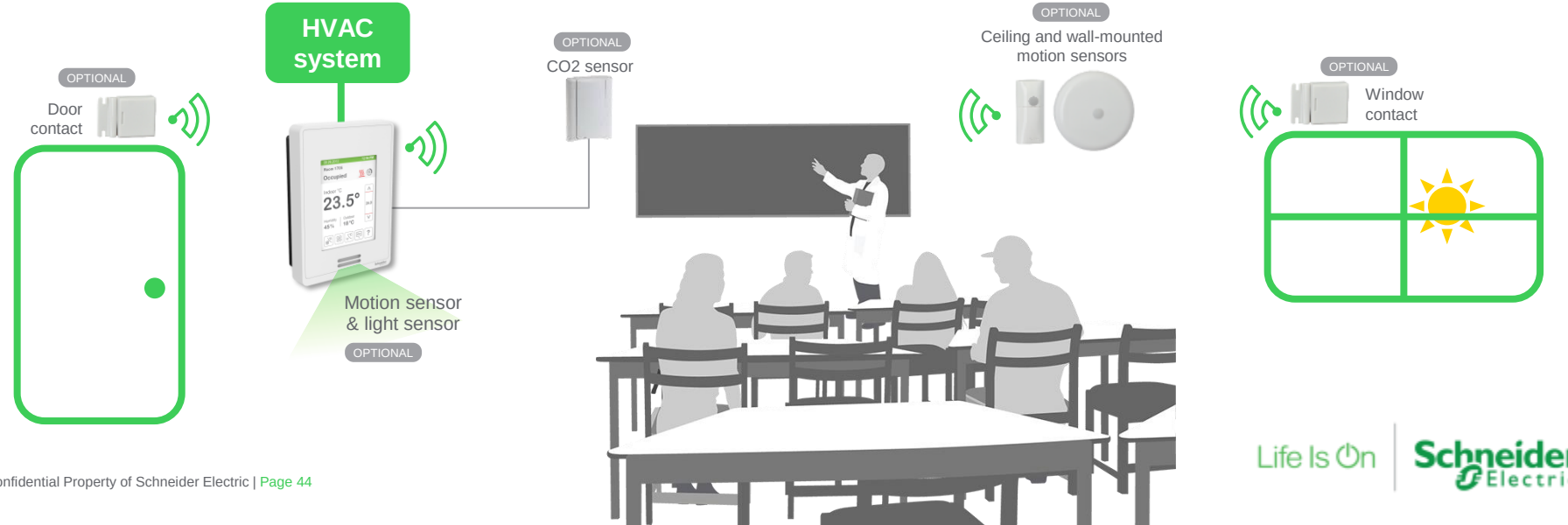
HVAC management with room controllers

Improved control
Savings throughout the day:
- Application-specific control
- PID control algorithm
- Reduced wear & tear on equipment
- Maintenance service view

Schedule
Savings according to facility planning

Occupancy
Savings when unoccupied
Savings when doors/windows are open

Integration to Building Expert
Room controllers are easily integrated into Building Expert via ZigBee Pro, enabling you to:
- Override the local control sequence and schedule
- Synchronize Room controllers with other equipment managed by Building Expert



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Focus on the SE8000

- Unparalleled customization
- Configurable interface buttons
- Programmable to override inputs/outputs
- Upgradable firmware

- Custom standby image, logo or message

- An array of attractive display color schemes

- Fascias to match every décor

- Multiple language selections

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Which SE8000 Series for which application?

All SE8000 Series
common features

- Application-specific control sequence.
- Proportional integral control.
- Native BACnet MS/TP and Modbus communication (selectable).
- BTL certified and BACnet COV.
- 100+ configurable points/parameters.
- **Optional** on-board PIR motion sensor and occupancy management.
- Schedule management.
- Service view & Test outputs.
- Programmable with Lua4RC to modify control sequences or override I/Os.
- On-board light level sensor with display dimming in low lighting.
- **Optional** on-board relative humidity sensor with dehumidification control.
- **Optional** ZigBee Pro communication module.

SE8300
Low-voltage fan coil unit

Low voltage fan coil units
- 3-speed fan
- Two-pipe & four-pipe configuration
- Heat/Cool – Reheat

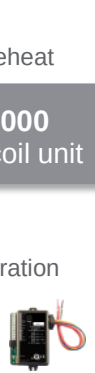
Mixed voltage fan coil units
- 110-130V requires SC1300 relay pack
- 220-240V requires SC2300 relay pack

Zone control
- Fin-tube radiators heaters
- Radiant panel heaters reheat
- Electric re-heat zones
- Cooling only VVT zone with reheat
- Cabinet
- Terminal

SER8300 & SC3000
Line-voltage fan coil unit

Line voltage fan coil units
- 3-speed fan
- Two-pipe & four-pipe configuration
- Heat/Cool – Reheat

Accessory
- Requires SC3000 relay pack



SE8600
RTU, Heat pump, IAQ

Roof top unit, heat pump and indoor air quality applications
- 1 heat / 1 cool
- 2 heat / 2 cool
- Modulating heat / 2 cool
- 3 heat / 2 cool
- Economizer
- CO2 input
- Fresh Air Station input

Heat pump applications
- Single or dual stage compress or stages
- High and low balance points
- Comfort/economy mode
- Compressor/auxiliary interlock

Life Is On Schneider Electric

Which SE8000 Series for which application?

All SE7000 Series
common features

- Application-specific control sequence.
- Proportional integral control.
- Optional communication:
- 100+ configurable points/parameters.
- **Optional** on-board PIR motion sensor and occupancy management.
  - BACnet MS/TP (B) (BTL certified and BACnet COV).
  - ZigBee Pro (P).
  - Echelon (E).
  - Wireless proprietary (W).

- 50+ configurable points/parameters.
- Service view.
- Optional on-board PIR motion sensor and occupancy management.

SE7300
Low-voltage fan coil unit

Low voltage fan coil units
- 3-speed fan
- Two-pipe & four-pipe configuration
- Heat/Cool – Reheat
- Optional on-board relative humidity sensor with dehumidification control.

Mixed voltage fan coil units
- 110-130V requires SC1300 relay pack
- 220-240V requires SC2300 relay pack

ECM fan coil unit model also available

SER8300 & SC3000
Line-voltage fan coil unit

Line voltage fan coil units
- 3-speed fan
- Two-pipe & four-pipe configuration
- Heat/Cool – Reheat
- Optional on-board relative humidity sensor with dehumidification control.

Accessory
- Requires SC3000 relay pack

SE7600
RTU, Heat pump, IAQ

Roof top unit, heat pump and indoor air quality applications
Multiple model dependent options:
- 1 heat / 1 cool
- 2 heat / 2 cool
- 3 heat / 2 cool
- Modulating heat / 2 cool
- Economizer
- CO2 input
- Fresh Air Station input
- Schedule management
- Optional on-board relative humidity sensor with dehumidification control.

Specific to heat pump models
- Single or dual stage compressor stages
- High and low balance points
- Comfort/economy mode
- Compressor/auxiliary interlock

SE7200
Zone control

Zone control
- Fin-tube radiators
- Cabinet heaters
- Radiant panel heaters
- Terminal reheat
- Electric re-heat zones
- Cooling only VVT zone with reheat

Other HVAC ZigBee Pro wireless peripherals

SEC-TE
Smart Terminal Controller

The SEC-TE is a wireless programmable terminal equipment controller for HVAC equipment and pulse counting. It includes local memory to store failsafe control sequence.

Inputs/Outputs
- 4 universal inputs.
- 4 analog outputs.
- 5 digital outputs (optional).

Communication
- ZigBee point-to-point to MPM devices.

Applications
- 2-pipe fan coils.
- 4-pipe fan coils.
- Heat pumps.
- Dehumidification units.
- Pulse counting.

Other
- 24V, 120V, 230V models available.
- Local memory to store control sequence and failsafe.
- One input can be used for fast pulse counting.

SED-0
Smart Wireless Actuator

The SED-0 is the ideal valve/damper actuator for retrofitting water-based central heating systems. It is equipped with the smallest control engine in the industry, and supports local scripting and programmability to provide distributed intelligence and enabling redundant control solutions.

Inputs/Outputs
- Inputs: 2 universal
- Actuator position/feedback
- Actuator setpoint

Communication
- ZigBee point-to-point to MPM devices

Applications
- Retrofit of water-based central heating systems
- Geothermal systems
- Chillers, cooling towers, chilled beams & ceilings
- Water source heat pumps
- Radiant floors or chilled slabs

Other
- NTP and metric ball valves available
- Local memory to store control sequence and failsafe

Required accessory
- The SED-0-ACC-M51 part number includes: M5 Lever, M5 Tappet, Endstop Ring and Mounting Panel.

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HVAC zoning

Water-based systems and perimeter heating

- Solution
  - MPM with I/O extender, or equivalent, controls the boiler
  - SED-0 wireless actuators control each zones with optional probes
  - Room controller **or** EnOcean thermostat is the occupant interface

VAV zoning

- Solution
  - MPM with I/O extender, or equivalent, controls the HVAC
  - MPM-VA control the VAV in each zone
  - Room controller **or** EnOcean thermostat is the occupant interface

Supervision & programming

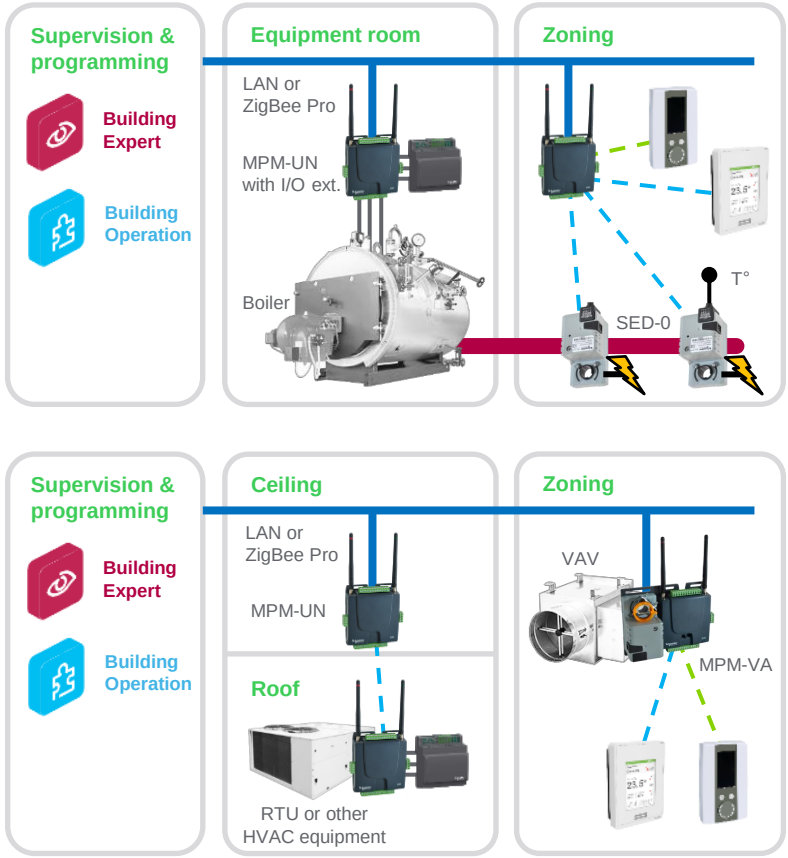
- Using Building Expert or Building Operation

Benefits

- Using wireless communication in-zone and across zones (optional) reduces installation time and costs
- Facility downtime is reduced to a minimum

Also available: SE7000 zoning solution

1) Recommened I/O extender: Eliwell SMC5500050400 or Modicon TM171OBM22R



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Lighting management

Occupancy & scheduling

- Save energy when rooms are unoccupied or off schedule
- Program timers and overrides based-on occupancy inputs

Basic lighting

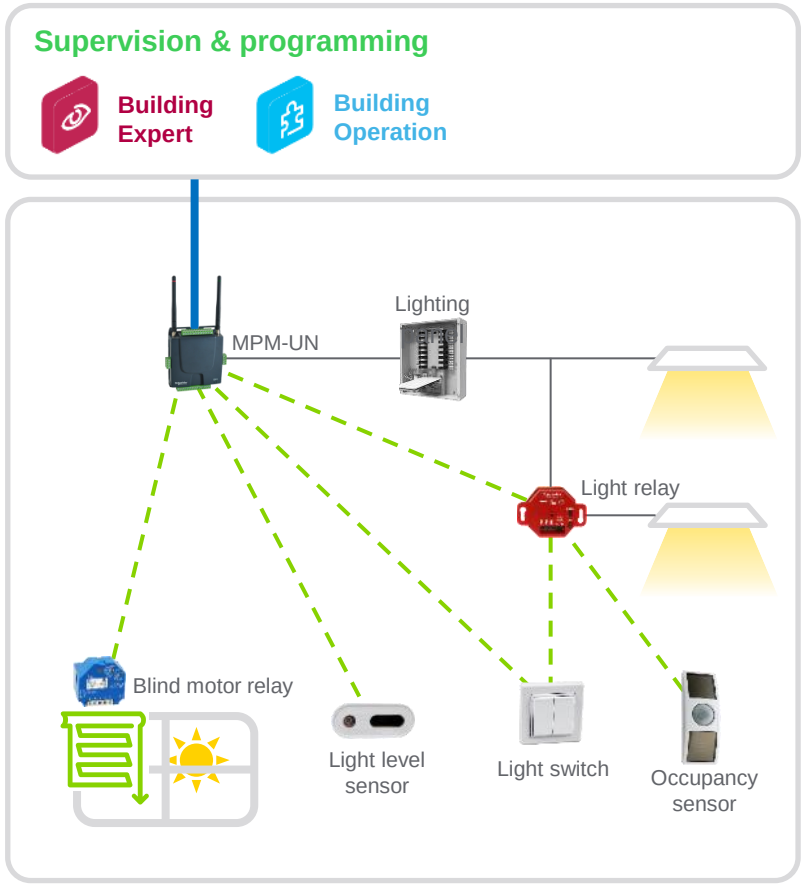
- On/Off for each zone, and master On/Off for all zones
- Occupant driven dimming using light switch
- Outdoor lighting & signage
- Wired connection directly to lighting panel and/or relays
- Wireless communication to relays for easy retrofit

Advanced lighting

- Daylight harvesting
  - Automated dimming proportional to ambient lux levels
  - Automated blind control proportional to ambient lux levels
- Maintain consistent light levels

Supervision & programming

- Using Building Expert or Building Operation



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Blind control

Reduce HVAC demand in warm and sunny climates

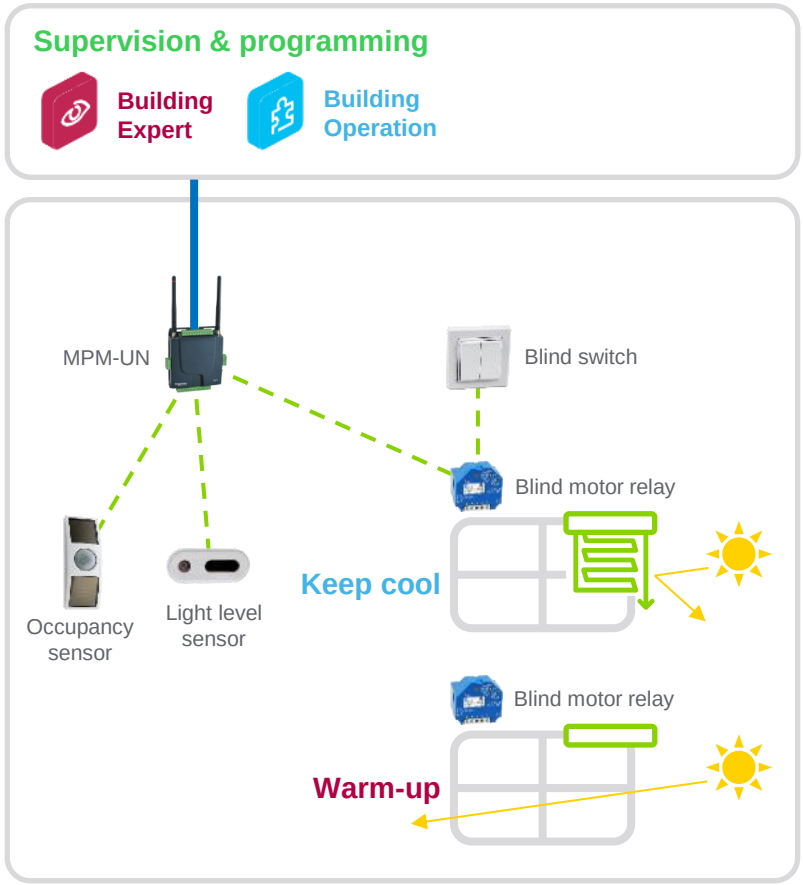
- Save on cooling/air conditioning by shutting blinds to block to sun from further heating your rooms
  - Use light sensors feeding lux levels back to the BMS
  - The BMS then orders blind motor relays to control the amount of incoming sunlight

Control lux levels for rooms with a specific purpose

- The use of computer labs, auditoriums and meeting rooms can be negatively impacted by daylight
- Blind control based on ambient lux levels enables you to deliver constant lux levels whenever these spaces are used
- If you are in a colder climate and could use sunshine to heat the space for free, blind control can be coordinated with schedules and occupancy inputs to make sure blinds are open whenever the space is not in use, and when occupants prefer keeping the blinds up

Supervision & programming

- Using Building Expert or Building Operation



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Energy management

Power monitoring and control with Acti9

- Improve energy awareness
  - Monitor instant load (kW)
  - Identify trends (last day/week/month)
- Avoid asset loss, improve maintenance
  - Alarms and event logs in case of fault
  - Email or SMS notifications (with IT permissions)
- Shut-off circuits to prevent any energy use
  - Control of Circuit breakers, Contactors, and Pulse relays
  - Lighting, when school is closed for the summer
  - Other circuits

Lowest total cost current monitoring with EM4300

- Current sensing and metering has never been easier
  - No cabling between MPM and EM4300
- Measurement with ±1% accuracy:
  - 200A, 500A using Rogowski coil with 55mm aperture
  - 1000A, 2000A using Rogowsi coil with 125mm aperture

Supervision & programming

- Using Building Expert or Building Operation

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Equipment management

Are there specific equipment you want to keep an eye on, or control throughout the day?

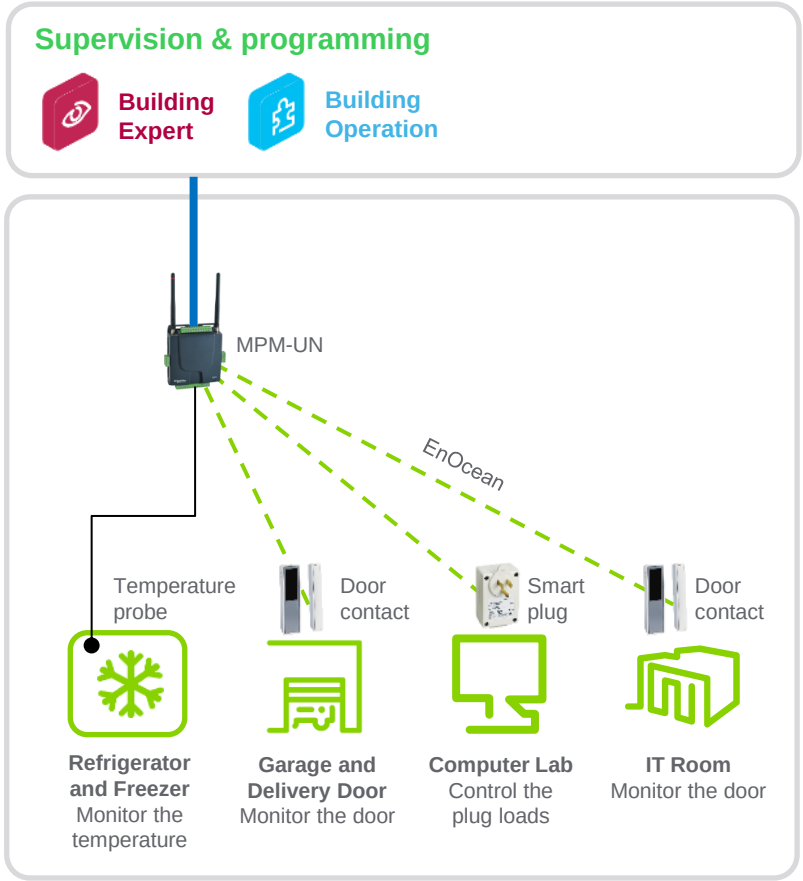
- Refrigerator and freezer temperature
  - To make sure cafeteria food is stored properly at all times
  - To avoid health risks for children
- Energy hungry equipment could be shut down during weeknights, weekends, or when the school is not in session
  - Computer labs where PCs and monitors are left ON after hours
- Doors that should not stay open for security purposes
  - Garage and delivery doors
  - IT room doors

Monitor and control equipment

- Using sensors to monitor specific equipment for safety or regulatory compliance
- Using smart plugs to control plug load and save energy

Supervision & programming

- Using Building Expert or Building Operation



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EnOcean peripherals for different applications

HVAC, lighting, and occupancy applications

- Extensive line of EnOcean products in 902MHz (Americas) and 868MHz (EMEA and APAC)
- Lighting – switches, relay receivers, load controllers, plug-in relays and light level sensors
- Occupancy – key card switches, wall and ceiling mounted occupancy sensors, window and door contact sensors
- HVAC – temperatures sensors with humidity, setpoint and fan speed control options, actuators

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Upgrading your facilities

How SmartStruxure Lite solution seamlessly integrates to your facilities

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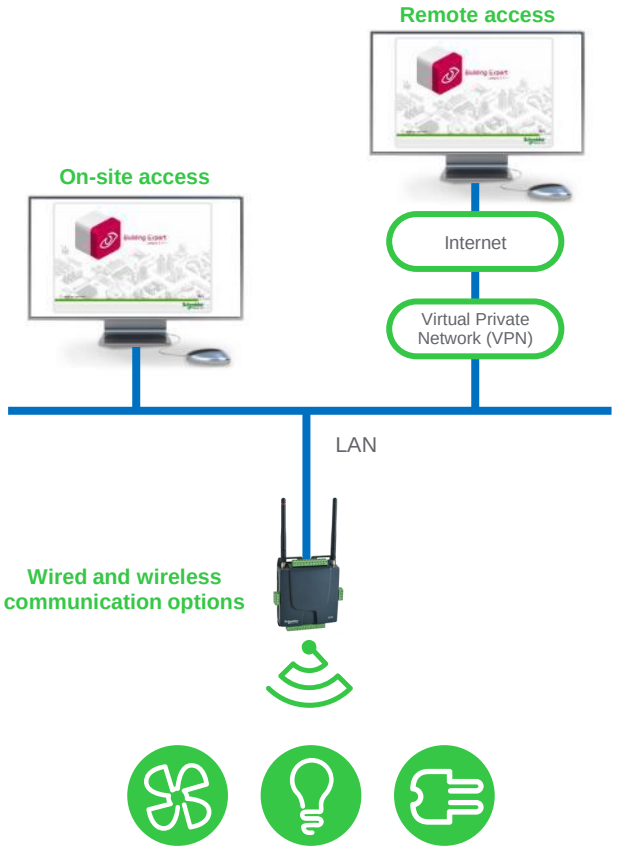
Part of your facility’s existing infrastructure

Connecting the MPM to your LAN, with proper IT setup, is all you need for:

- Local access via the LAN
- Remote access via VPN
- If required, it is also possible to work off the LAN by using 3G modems where phone carriers support this option



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Increase your control year over year

Starting with a simple installation that generates the most savings, you can increase the level of control and monitoring of your facility without having to purchase additional gateways, I/O boxes, or spend on wiring labor.

- How? By using wireless communication.

Additional comfort and energy savings

Additional comfort and energy savings

Up to **30%**
energy savings*

Year 1

HVAC control with schedule override

Year 2

Additional occupancy detection, door and window contacts

Year 3

Lighting control

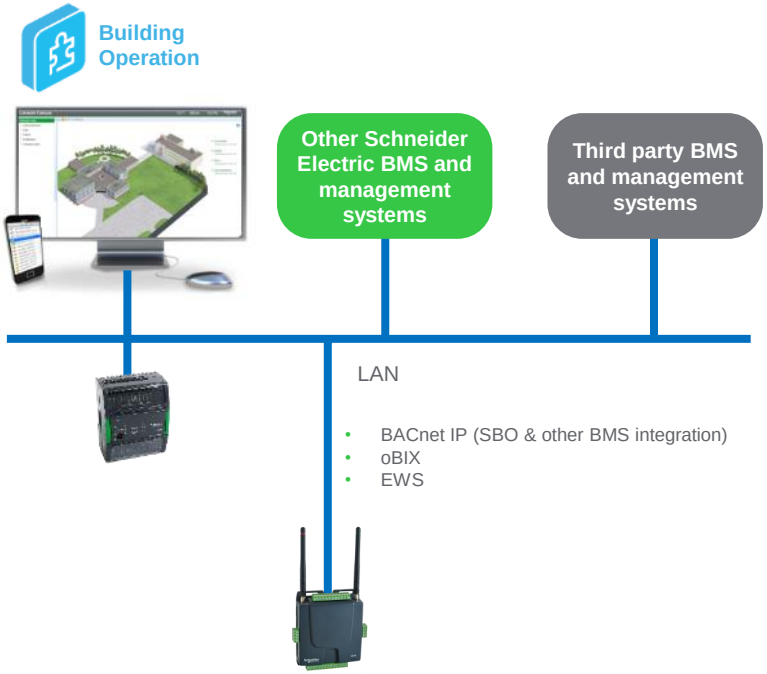
**We have seen several projects generate over 30% energy savings.*

Integration to SBO and other BMSs

MPMs can be integrated in Building Operation, and other BMS via:

- BACnet IP (SBO & other BMS integration)
- oBIX
- EWS – EcoStruxure Web services

MPMs can also export data to FTP servers for use by other software and applications



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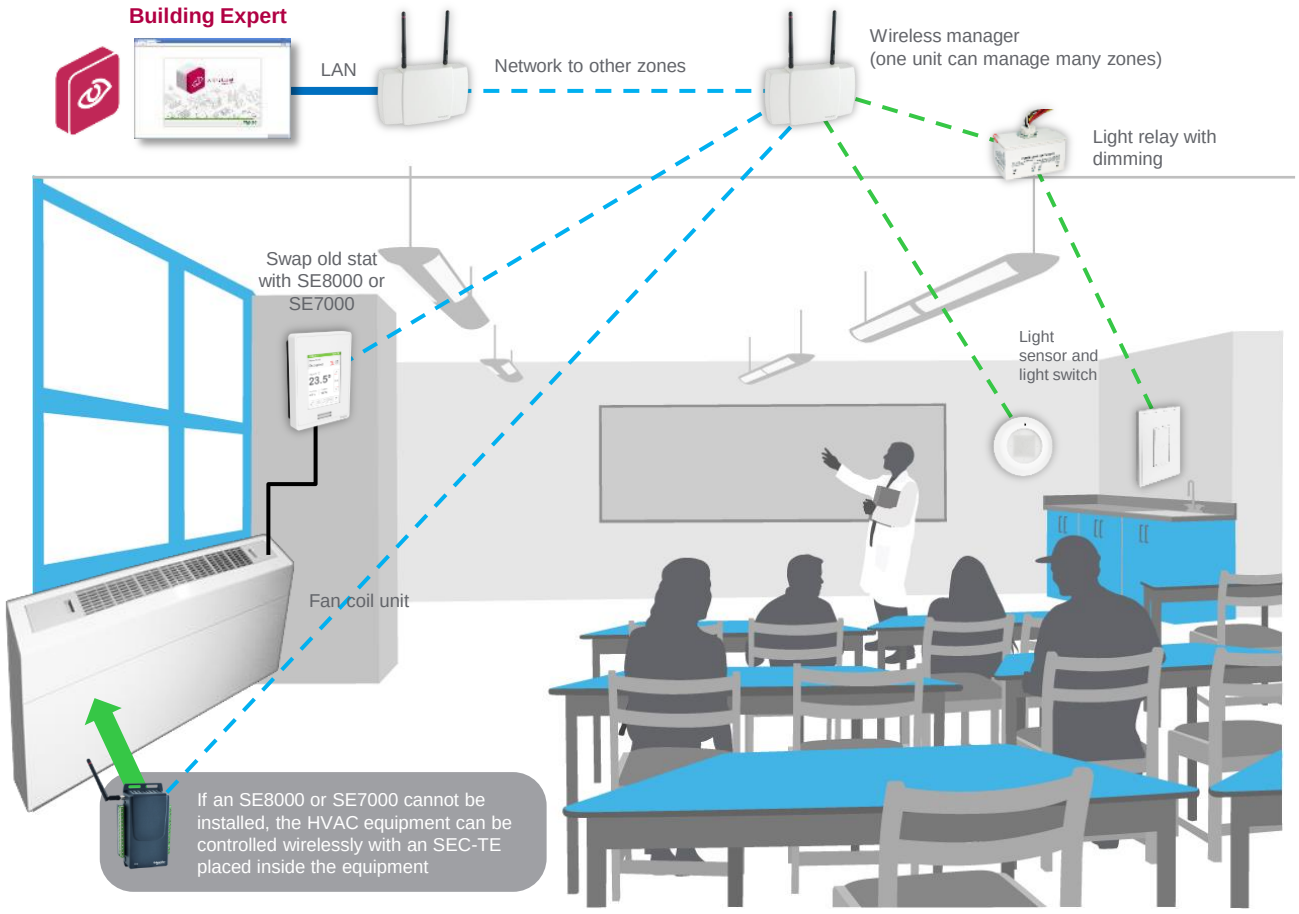
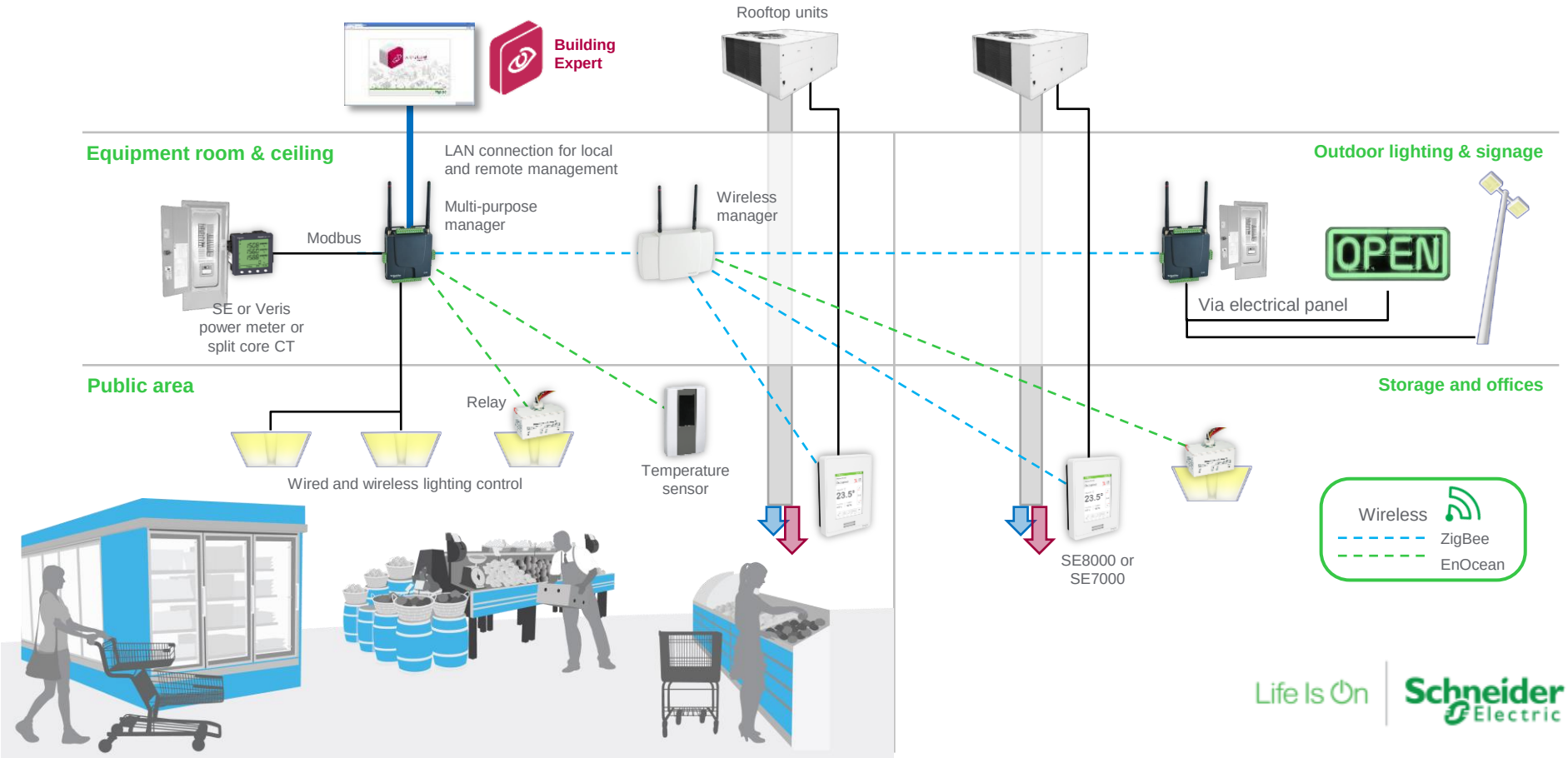
Use case: unit ventilator / fan coil school



Wireless
ZigBee
EnOcean

Life Is On Schneider Electric

Use case: general retail



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Wire…less

SmartStruxure Lite solution enables you to use wired or wireless communication. But what does wireless mean exactly?

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Wireless doesn't mean "no wires"…
It means no *new* wires.

- Wireless means faster deployments
  - Less time on the job
  - Less inconvenience for occupants
  - Eliminate facility downtime or limit it to a minimum
- Wireless can save on deployment costs
  - Lower labor costs
  - Lower material costs (copper)
  - Unbeatable price where conduit is required
  - Lower repair, paint and renovation costs
- Using wireless reassures customers about dust, asbestos or other hazards that could be present in the wall if you open them.

Wiring is perfectly fine
We have the inputs and outputs you need. We're fine with wiring.

Wireless is good too
In certain situations, it is more cost-effective and convenient than wiring.

Just do what's best
For the customer, for his facility, for his return on investment.

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Choose what is right for the job

Reuse existing wiring

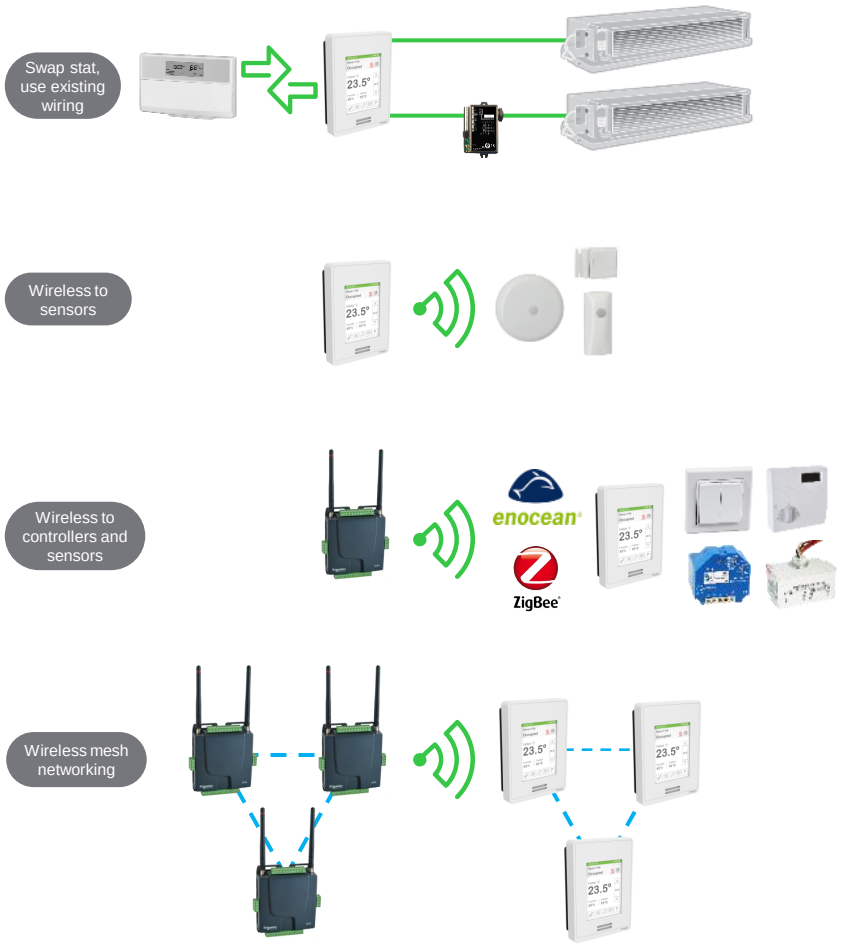
- Swap old stats with SE7000/SE8000
- Connect relay packs (SE3000) or wireless terminal controllers (SEC-TE) to equipment

Wireless control

- Application controllers to sensors
- MPM to SmartStruxure Lite peripherals and other Schneider Electric and third-party EnOcean and ZigBee products

Wireless networking

- Network of controllers
- Network of MPM devices

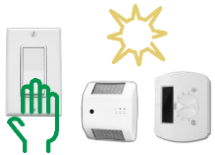


Nice to know: EnOcean & ZigBee

EnOcean
(902MHz and 868MHZ)

- Simple point-to-point telegrams
- Applications
  - HVAC, lighting, access, metering...
- Power
  - No batteries, no wires,
  - Energy harvesting
- Control only
  - Room-level control & sensing
- EnOcean Alliance
  - 300 members, 750 interoperable products, in 200K buildings

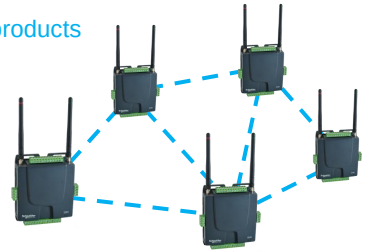
EnOcean is energy harvesting



ZigBee Pro

- Network infrastructure
- Applications
  - HVAC, lighting, access, metering...
- Power
  - Power supply or battery
- Control & networking uses
  - Room, zone and floor level
  - Wireless mesh network
- ZigBee Alliance
  - 400 members
- IMPORTANT: Not all ZigBee Pro products are interoperable.

Wireless mesh
- Self-forming
- Self-healing



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Need lighting? Occupancy? Metering?

To scale a system or add applications, simply add more wireless points.

- Once a manager (MPM) is in place, you can easily add applications to your system
- Wireless makes adding points easy for a wide variety of applications
  - Lighting control using relays, switches, light sensors and motorized blinds
  - Sensors: occupancy, CO^2, H%, etc.
  - Metering
- This enables you to answer customer needs as regulations and benchmarks evolve

Create new servicing opportunities

- Energy savings can be reinvested into further improvements at minimal cost because installation labor is greatly reduced

Wireless inputs & outputs

- Up to 30 ZigBee peripherals per MPM
- Up to 128 EnOcean points per MPM

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Selecting the right parts

MPMs, SEC-TE, SED-0 and other peripherals

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MPM-UN
Multi-Purpose Manager

Ordering information

Part numbers	Manager		EnOcean*			ZigBee Pro	I/O			VAV	
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	Modbus	Flow sensor	Actuator
MPM-UN-004-5045	x	x					x	x	x		
MPM-UN-0I4-5045	x	x				x	x	x	x		
MPM-UN-C00-5045	x	x	x				x	x			
MPM-UN-C04-5045	x	x	x				x	x	x		
MPM-UN-CI4-5045	x	x	x			x	x	x	x		
MPM-UN-D04-5045	x	x		x			x	x	x		
MPM-UN-DI4-5045	x	x		x		x	x	x	x		
MPM-UN-E00-5045	x	x			x		x	x			
MPM-UN-E04-5045	x	x			x		x	x	x		
MPM-UN-EI4-5045	x	x			x	x	x	x	x		

*EnOcean: Contact EnOcean for the latest information about the frequency in your country.
315MHz: Americas, Hong Kong, India, Japan, Thailand, Taiwan
868MHz: Europe, China, Malaysia, Singapore, Vietnam, New Zealand
902MHz: USA has transitioned to 902 MHz in 2013. Other countries may do so as well.

Models with EnOcean 315MHz to be discontinued at the end of 2015

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MPM-GW, MPM-NW Wireless Manager

Ordering information

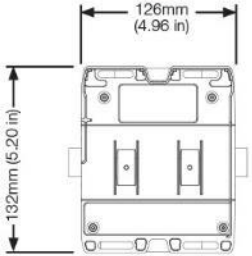
Part numbers	Manager		EnOcean*			ZigBee Pro	I/O			VAV	
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	Modbus	Flow sensor	Actuator
MPM-NW-000-5045	x	x									
MPM-GW-C00-5045	x	x	x								
MPM-GW-D00-5045	x	x		x							
MPM-GW-E00-5045	x	x			x						
MPM-GW-CI0-5045	x	x	x			x					
MPM-GW-DI0-5045	x	x		x		x					
MPM-GW-EI0-5045	x	x			x	x					
MPM-GW-0I0-5045	x	x				x					

*EnOcean: Contact EnOcean for the latest information about the frequency in your country.
315MHz: Americas, Hong Kong, India, Japan, Thailand, Taiwan
868MHz: Europe, China, Malaysia, Singapore, Vietnam, New Zealand
902MHz: USA has transitioned to 902 MHz in 2013. Other countries may do so as well.

Models with EnOcean 315MHz to be discontinued at the end of 2015

MPM-NW-000-5045

Unlike MPM-GW models, the MPM-NW-000-5045 comes with dark casing. This model is only used as a gateway with CANbus networking capabilities. It has no wireless communication capabilities.



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MPM-GW, MPM-NW
Wireless Manager

MPM-VA

MPM-VS
(no actuator)

Ordering information

Part numbers	Manager		EnOcean*			ZigBee Pro	I/O			VAV	
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	Modbus	Flow sensor	Actuator
MPM-VA-004-5045	x	x					x	x	x	x	x
MPM-VA-0I4-5045	x	x				x	x	x	x	x	x
MPM-VA-C04-5045	x	x	x				x	x	x	x	x
MPM-VA-CI4-5045	x	x	x			x	x	x	x	x	x
MPM-VA-D04-5045	x	x		x			x	x	x	x	x
MPM-VA-DI4-5045	x	x		x		x	x	x	x	x	x
MPM-VA-E04-5045	x	x			x		x	x	x	x	x
MPM-VA-EI4-5045	x	x			x	x	x	x	x	x	x
MPM-VS-004-5045	x	x					x	x	x	x	
MPM-VS-0I4-5045	x	x				x	x	x	x	x	
MPM-VS-C04-5045	x	x	x				x	x	x	x	
MPM-VS-CI4-5045	x	x	x			x	x	x	x	x	
MPM-VS-D04-5045	x	x		x			x	x	x	x	
MPM-VS-DI4-5045	x	x		x		x	x	x	x	x	
MPM-VS-E04-5045	x	x			x		x	x	x	x	
MPM-VS-EI4-5045	x	x			x	x	x	x	x	x	

*EnOcean: Contact EnOcean for the latest information about the frequency in your country.
315MHz: Americas, Hong Kong, India, Japan, Thailand, Taiwan
868MHz: Europe, China, Malaysia, Singapore, Vietnam, New Zealand
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Models with EnOcean 315MHz to be discontinued at the end of 2015

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MPM Accessories

PINK Replacement Antenna – ZigBee Pro
Short description: SSL ACC ANTENNA MPM ZP
Part number: MPM-ACC-ANT-0I0

YELLOW Replacement Antenna – EnOcean 902MHz
Short description: SSL ACC ANTENNA MPM E902
Part number: MPM-ACC-ANT-E00

GREY Replacement Antenna – EnOcean 868MHz
Short description: SSL ACC ANTENNA MPM E868
Part number: MPM-ACC-ANT-D00

Extension Cable for Antennas
Short description: SSL ACC ANTENNA CABLE MPM
Part number: MPM-RAEC-5045

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SSL-KIT – Startup Kits

Ideal for training and proof of concepts

Americas: Low V FCU, IAQ, 902MHz

SSL-KIT-EI4-PD1
MPM-UN-EI4-5045
MPM-GW-EI0-5045
SE8350U5B11
VCM8000V5045P
SE7656E5545P
SED-WDS-P-5045 – ZigBee Pro window/door contact
SED-1RS-U-5045 -- EnOcean 902MHz light switch
SED-LC277-U-5045 -- EnOcean 902MHz light relay

SSL-KIT-0I4-PD3
MPM-UN-EI4-5045
SE8350U5B11
VCM8000V5045P
SE7656E5545P
SED-WDS-P-5045
SED-CMS-P-5045 ZigBee Pro ceiling motion sensor

RC-KIT-0I0-PD5
SE8350U5B11
VCM8000V5045P
SE7656E5545B
SED-WDS-P-5045
SED-CMS-P-5045

EMEA/APAC: Low V FCU, Line V FCU, 868MHz

SSL-KIT-DI4-PD2 /
MPM-UN-DI4-5045
MPM-GW-DI0-5045
SE8350U5B11
VCM8000V5045P
SER7355A5545P
SC3514E5045
SED-WDS-P-5045
LSS10020049 -- EnOcean 868MHz light switch
LSS10020062 -- EnOcean 868MHz light relay

EMEA ONLY!!!!

SSL-KIT-0I4-PD4
MPM-UN-DI4-5045
SE8350U5B11
VCM8000V5045P
SER7355A5545P
SC3514E5045
SED-WDS-P-5045
SED-CMS-P-5045

RC-KIT-0I0-PD6
SE8350U5B11
VCM8000V5045P
SER7355A5545B
SC3514E5045
SED-WDS-P-5045
SED-CMS-P-5045

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SSL-CASE – Suitcases

Ideal for tradeshows and face-to-face meetings with customers and consultants

SSL-CASE-EI4-BE1 (Americas)

MPM, Light switch and light relay use EnOcean 902MHz

SSL-CASE-DI4-BE2 (EMEA/APAC)

MPM, Light switch and light relay use EnOcean 868MHz

Travel Adaptor

Included with the suitcases:

USB to Micro USB cable

Power cable

Ethernet cable

Instruction guide

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SEC-TE
Smart Wireless Terminal Equipment Controller

Ordering information

Part numbers	ZigBee Pro		I/O			Power		
	High power	External antenna	4 universal inputs	4 analog outputs	5 digital outputs	110-120 VAC	220-240 VAC	24 VAC
SEC-TEA-115-5045	x		x	x	x	x		
SEC-TEA-230-5045	x		x	x	x		x	
SEC-TEA-24-5045	x		x	x	x			x
SEC-TEA-R-115-5045	x	x	x	x	x	x		
SEC-TEA-R-230-5045	x	x	x	x	x		x	
SEC-TEA-R-24-5045	x	x	x	x	x			x
SEC-TEB-115-5045	x		x	x		x		
SEC-TEB-230-5045	x		x	x			x	
SEC-TEB-24-5045	x		x	x				x
SEC-TEB-R-115-5045	x	x	x	x		x		
SEC-TEB-R-230-5045	x	x	x	x			x	
SEC-TEB-R-24-5045	x	x	x	x				x

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SED-0
Smart Wireless Actuator

Ordering information

Usage of the SED-0H0-5045 requires an accessory kit.

Part numbers	Description
SED-0H0-5045	SED-0 Smart Wireless Actuator with ZigBee Pro
SED-0-ACC-M51	These accessories are necessary to be able to use the SED-0 Smart Wireless Actuators: M5 Lever, M5 Tappet, Endstop Ring and Mounting Panel.

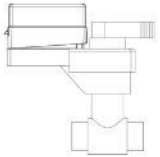
Optional accessories

North America part numbers (for more information, refer directly to the product pages of these parts)	Nominal size	
Two-way valve	inches	mm
BEL-B207(B) to BEL-B215(B)	1/2"	13
BEL-B217(B) to BEL-B220(B)	3/4"	19
BEL-B222 to BEL-B223	1"	25
Three-way valve	inches	mm
BEL-B307(B) to BEL-B313(B), BEL-B315(B)	1/2"	13
BEL-317(B), BEL-318(B), BEL-B320(B)	3/4"	19
BEL-B322, BEL-B323, BEL-B325	1"	25
BEL-B329, BEL-B330	1 1/4"	32
3/4 inch clamp	inches	mm
BEL-K-LM20	3/4"	18
LM anti-rotation bracket	inches	mm
BEL-TF-P	7" x 3/4"	179 x 18

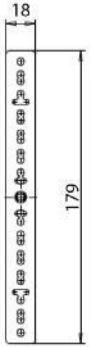
For part numbers in EMEA and APAC contact your sales representative or account manager.

When using a SED-0H0-5045 as a damper actuator, a valve, a 3/4 inch clamp and a LM anti-rotation bracket are also required.

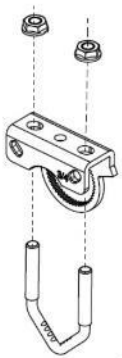
Valve to go with the actuator

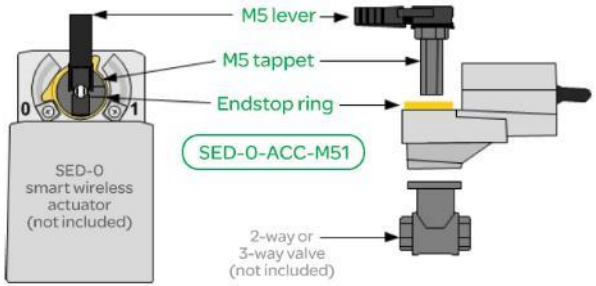


LM anti-rotation bracket



3/4 inch clamp





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EnOcean 902MHz (Americas)

Lighting

SED-1RS-U-5045		Single rocker light switch Turns on/off, and dims lights
SED-5R24-U-5045		Relay receiver – 5 wires 24VAC, 6 Amps, manual or automatic on/off
SED-3R120-U-5045		Relay receiver – 3 wires 120VAC, 6 Amps, manual or automatic on/off
SED-3R240-U-5045		Relay receiver – 3 wires 240VAC, 6 Amps, manual or automatic on/off
SED-3R277-U-5045		Relay receiver – 3 wires 277VAC, 6 Amps, manual or automatic on/off
SED-LC277-U-5045		Load controller / 24VAC-277VAC, 15 Amps, manual or automatic on/off
SED-LC347-U-5045		Load controller / 120/277/347VAC, 15-20 Amps, manual or automatic on/off
SED-LC347D-U-5045		Load controller / 120/277/347VAC, 15-20 Amps, manual or automatic on/off, 0-10V dimming output
SED-P120-U-5045		Plug-in relays 120VAC, 15 Amps, manual or automatic on/off
SED-LLS-U-5045		Light level sensor / Selectable 0-510 lux (~0-50 fc) and 0-1024 lux (~0-100 fc) ranges

HVAC

SED-T00-U-5045		Temperature sensor
SED-TH0-U-5045		Temperature and humidity sensor (sensor precision: +/- 3%)
SED-TS0-U-5045		Temperature sensor with setpoint, override button
SED-THS-U-5045		Temperature sensor with setpoint, override button, humidity (sensor precision: +/- 3%)
SED-THF-U-5045		Temperature sensor with setpoint, override button, humidity (sensor precision: +/- 3%), fan speed button

Occupancy

SED-KCS-U-5045		Key card switch Compatible with standard key cards
SED-CMS-U-5045		Ceiling mounted occupancy sensor Can operate with 10 lux (100hrs in dark)
SED-WMS-U-5045		Wall mounted occupancy sensors Can operate with 10 lux (100hrs in dark)
SED-WDS-U-5045		Window and door contact sensors / Detection gap 0.25in/7mm, can operate with 10 lux (6 days in dark), back-up coin cell battery

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EnOcean 868MHz (EMEA)

Lighting

LSS10020049		Light switch - Single gang Turns on/off and dims lights
LSS10020048		Light switch - Double gang Turns on/off and dims lights, controls blinds
LSS10020065		Plug switch French style 16A
LSS10020066		Plug switch Schuko style 16A (German)
LSS10020062		Puck 1 circuit relay
LSS10020063		Puck blind control 2-gang module
LSS502931		Wall box mounted PUK 2 dimming channel 1-10V relay / 2 dimming channel 1-10 V ballast
LSS10020070 (replaces LSS10020025)		DIN mounted 1 channel relay Single channel on/off relay
LSS10020055		Wall box mounted 2 channel blind relay 230V~/50 Hz, Protective feed with 10A breaker
LSS10020053		Indoor light level sensor 50-1020 lux, solar powered
LSS10020052		Outdoor light level sensor 300-30000 lux, solar powered

Occupancy

LSS396462		Multi-sensor PIR occupancy & light level sensor, battery
LSS10020051		Ceiling occupancy sensor PIR design, 12 M range
LSS10020067		Key card switch Compatible with standard key cards
LSS10020032		Window and door sensor Detection gap 5mm, can operate with 10 lux
LSS10020047		Dry contact sensor Can operate with 10 lux (100hrs in dark).

Tools

LSS10020040		USB dongle

HVAC

LSS226172		Temperature sensor with setpoint only
LSS252331		Temperature sensor with setpoint and humidity sensor
LSS10020033		Temperature sensor
LSS10020041		Temperature and humidity sensor
LSS10020076		Outdoor temperature sensor
LSS442510		Indoor CO2 sensor, 24 V
LSS283427		230 V valve actuator
LSS263733		24 V valve actuator
LSS270946		DO 24V valve driver
LSS298391		DO 230V Valve Driver
LSS513753		Battery powered valve driver

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Quick recap

Value proposition & documentation

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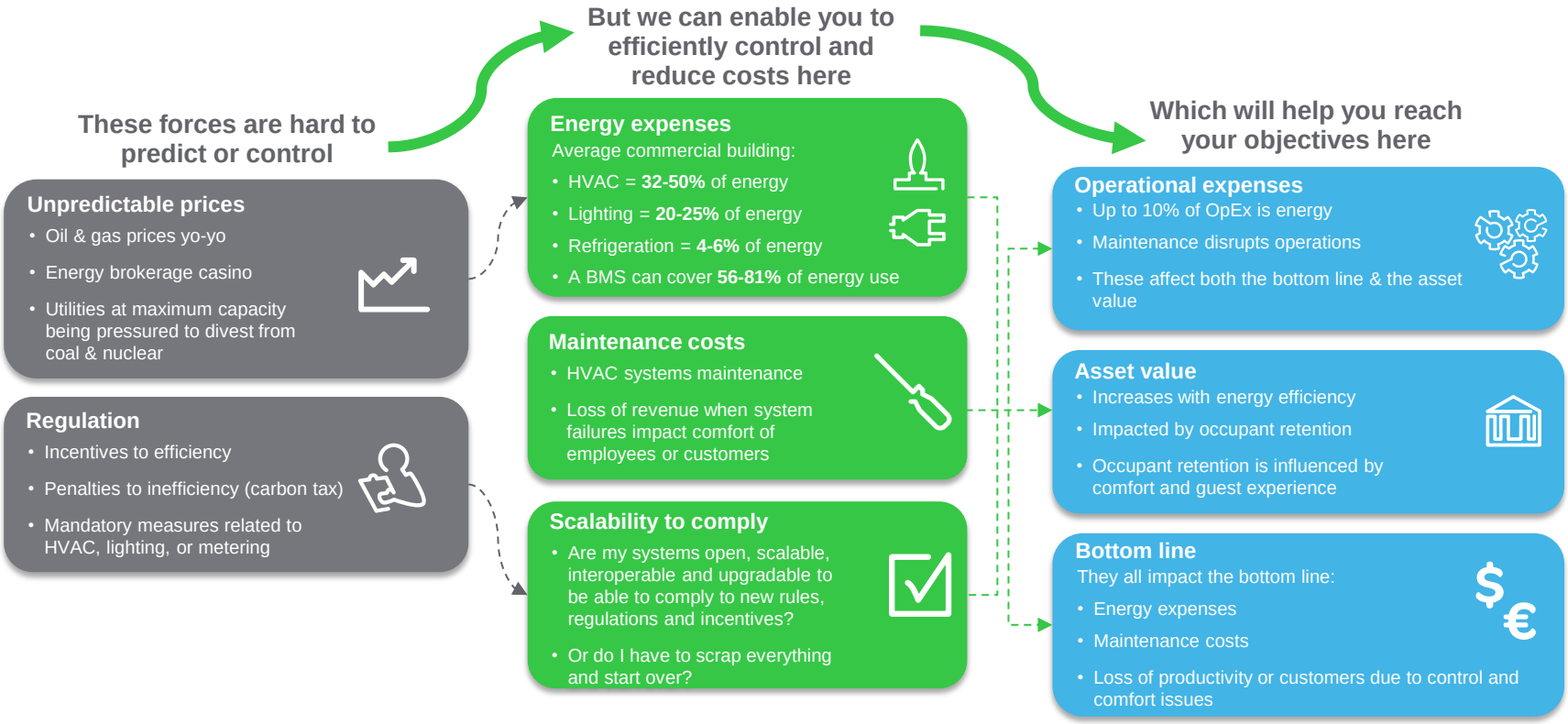
Challenges facing building owners & facility managers



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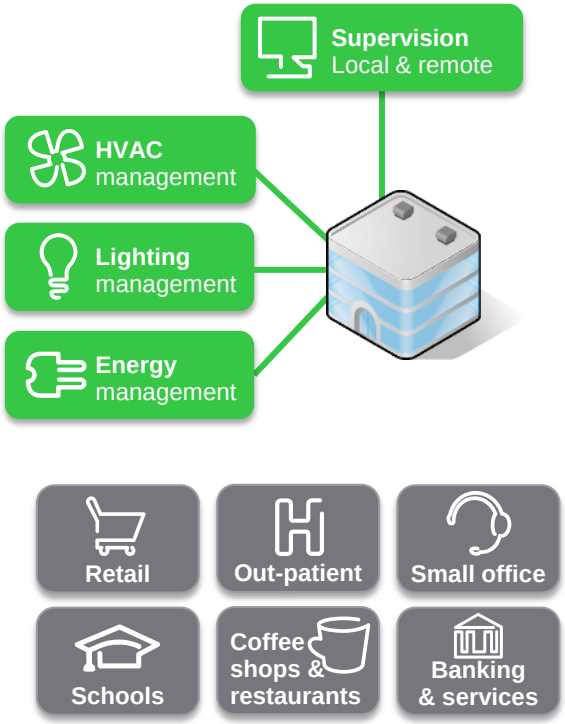
1 SmartStruxure™ Lite value proposition in small-to-medium buidlings



Get control.

- Take control of your HVAC, lighting and metering systems
- Enjoy flexible monitoring, control and scheduling via customizable dashboards
- Access your site locally and remotely via web interface

Get efficient.

- Realize immediate energy savings of up to 30% on energy expenses
- Optimize your business' operational efficiency while reducing energy waste
- Operate via a single, easy-to-use interface

Get value.

- Quickly realize ROI through immediate energy savings
- Continue daily operations with a fast, seamless installation
- Reduce maintenance costs with improved monitoring and alarms
- Enhance occupant comfort and optimize business productivity
- Reap the benefits of no license-fee software – the best value in the industry!
- Future-proof your investment with this cost-effective, scalable solution

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2 SmartStruxure™ Lite value proposition as complement to large BMS

Retrofit without disrupting operations

- Avoid lengthy installation processes that are wiring and labor intensive
- Save on labor and material costs on installation using wireless
- Eliminate or reduce downtime to a minimum with a quicker wireless installation

Make your BMS more scalable and adaptable to your facility

- Enable your BMS to easily scale throughout its life-cycle
- Use wireless technology to add more sensors and controllers over time, without paying for more gateways, wiring or I/O boxes
- Relocate existing controllers and sensors easily, as communication is done wirelessly

Bring intelligence to the room level

- Solidify your BMS by adding control redundancy at the local level
- Local intelligence is a failsafe that ensures efficiency and comfort are maintained in all conditions
- Keep control sequences going when doing networking upgrades, maintenance, or troubleshooting, of your large building BMS

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