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Lighting control & intelligence at the edge

Henri Juslén, Helvar Oy

Towards the cloud & services – live Demo

Ilkka Mäkelä, Helvar Oy

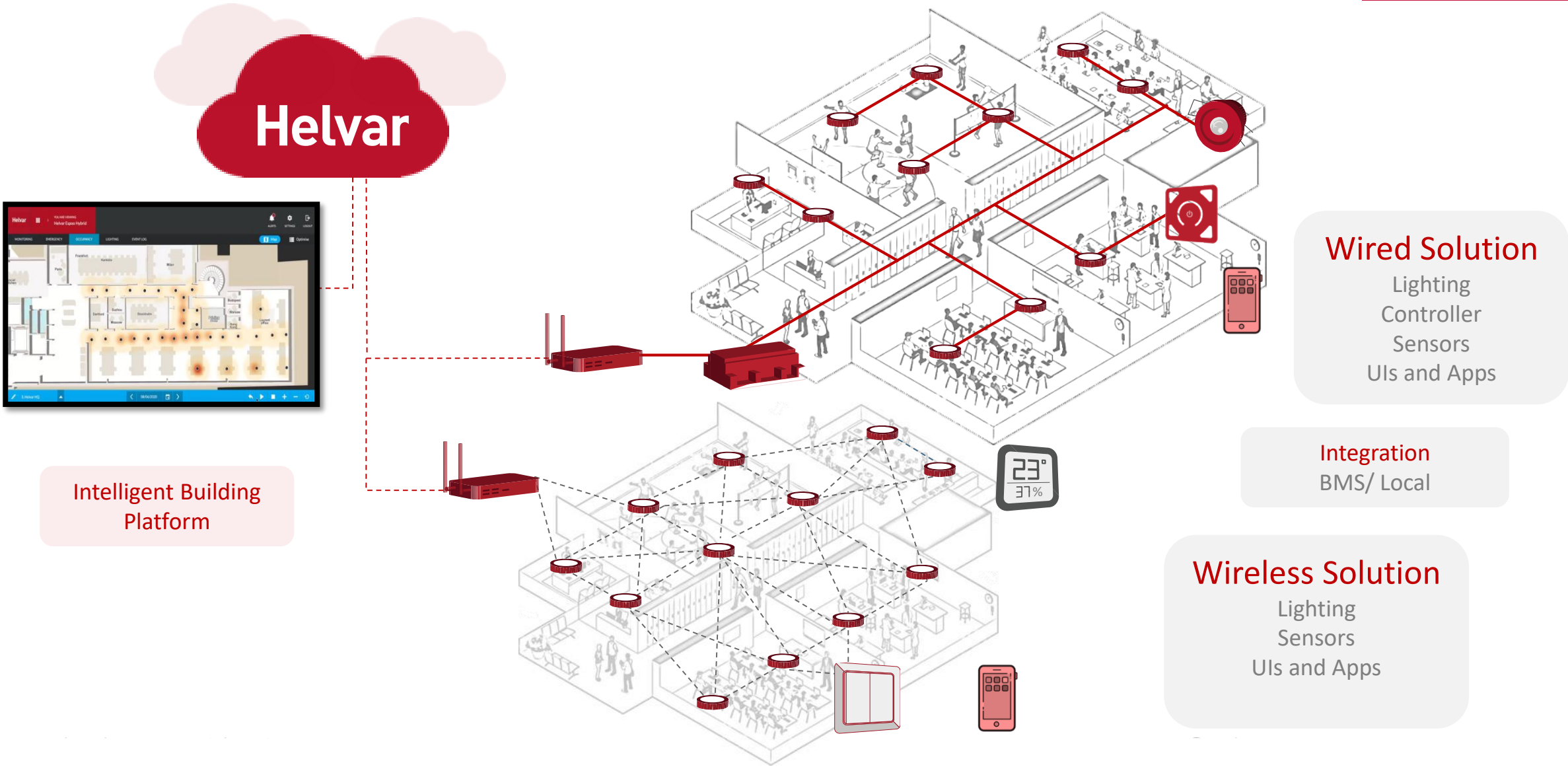
Intelligence at the cloud – lighting & beyond

Omar Nasir, Helvar Oy

Lighting control & intelligence at the edge

Henri Juslen, Helvar Oy
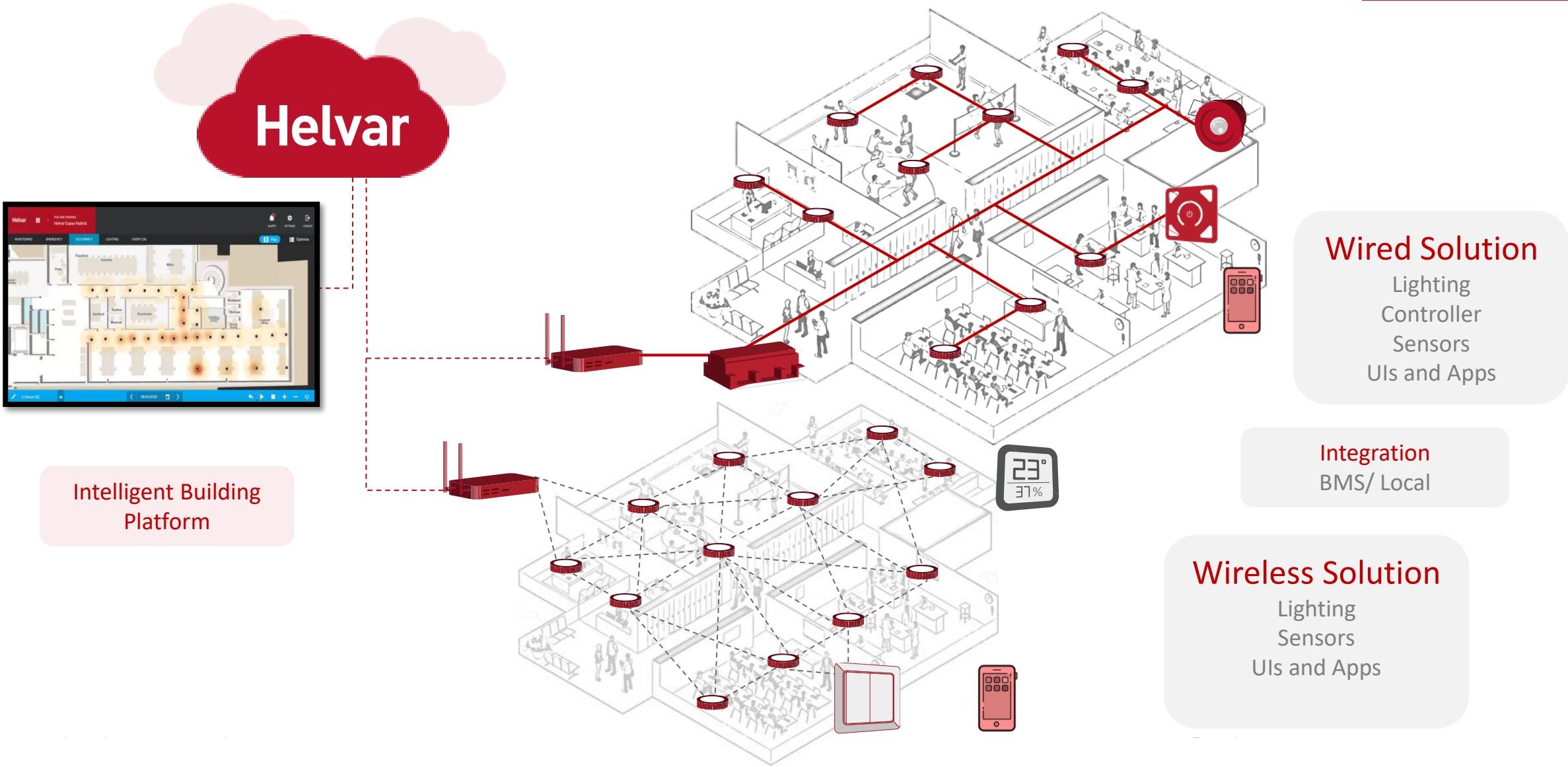
Turning Everyday Places into Brighter Spaces

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Intelligent Building Platform

Wired Solution
Lighting
Controller
Sensors
UIs and Apps

Integration
BMS/ Local

Wireless Solution
Lighting
Sensors
UIs and Apps

Why Lighting is the logical home for intelligence?

Imagine room without Lighting

- Lighting is everywhere
- Lighting needs electricity

How "fast" lighting should work?

- Immediate response required
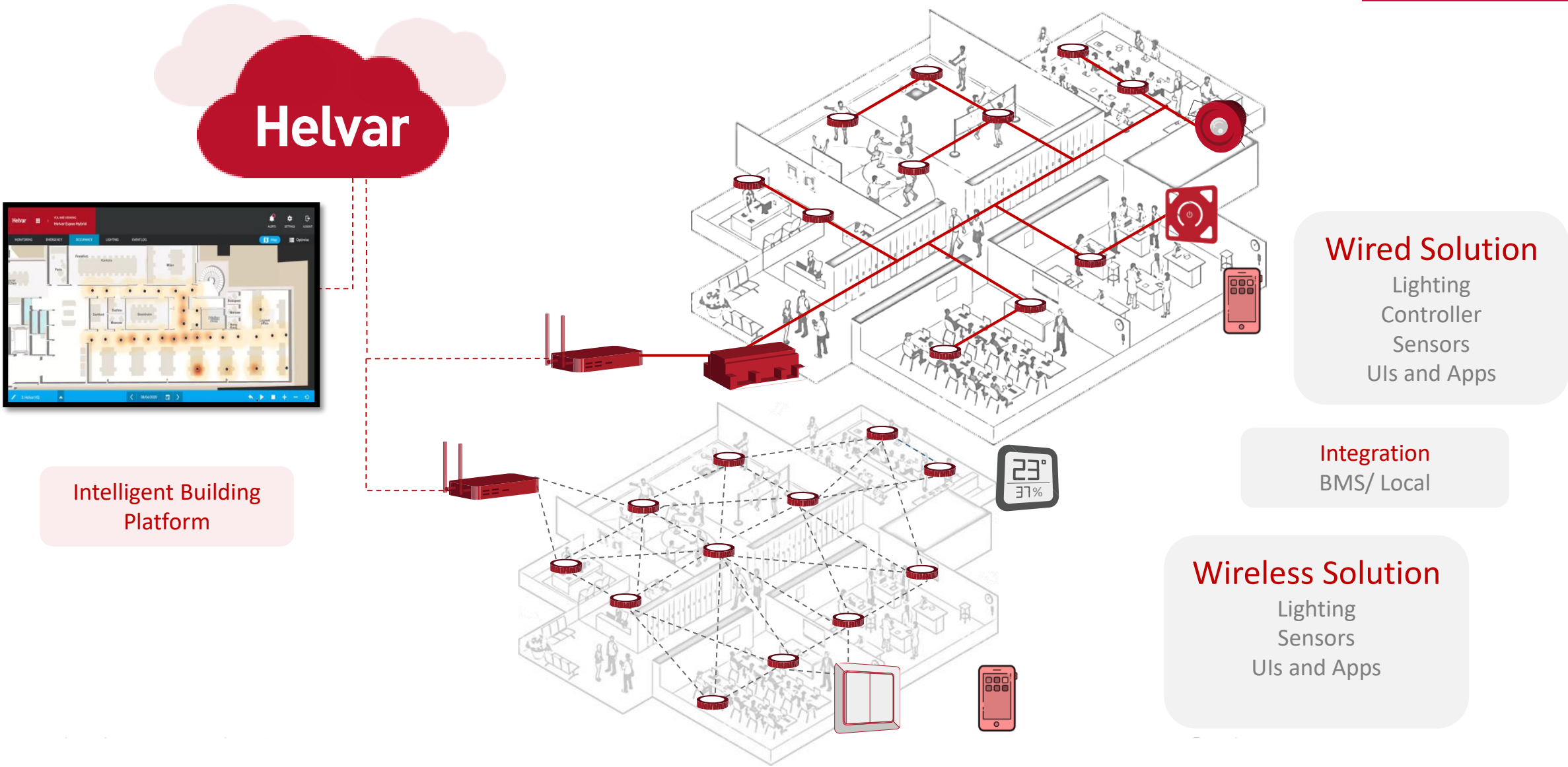- Sensors are needed to control lighting

Wired Solution
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Intelligent Building Platform

What is intelligence?

Freedom to specify system?

Data = Intelligence?

Learning system?

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Where "intelligence" should be?

Cloud – what cloud?

Fog – Building, Floor?

Edge – Sensors luminaires?

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Intelligent Building Platform

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Integration
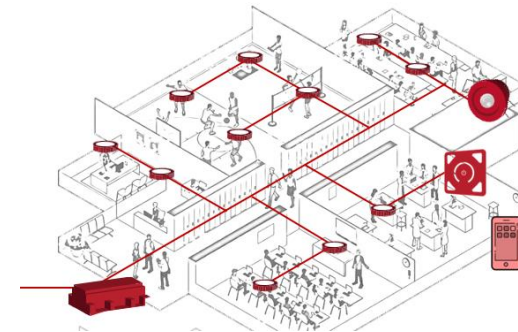BMS/ Local

Wireless Solution
Lighting
Sensors
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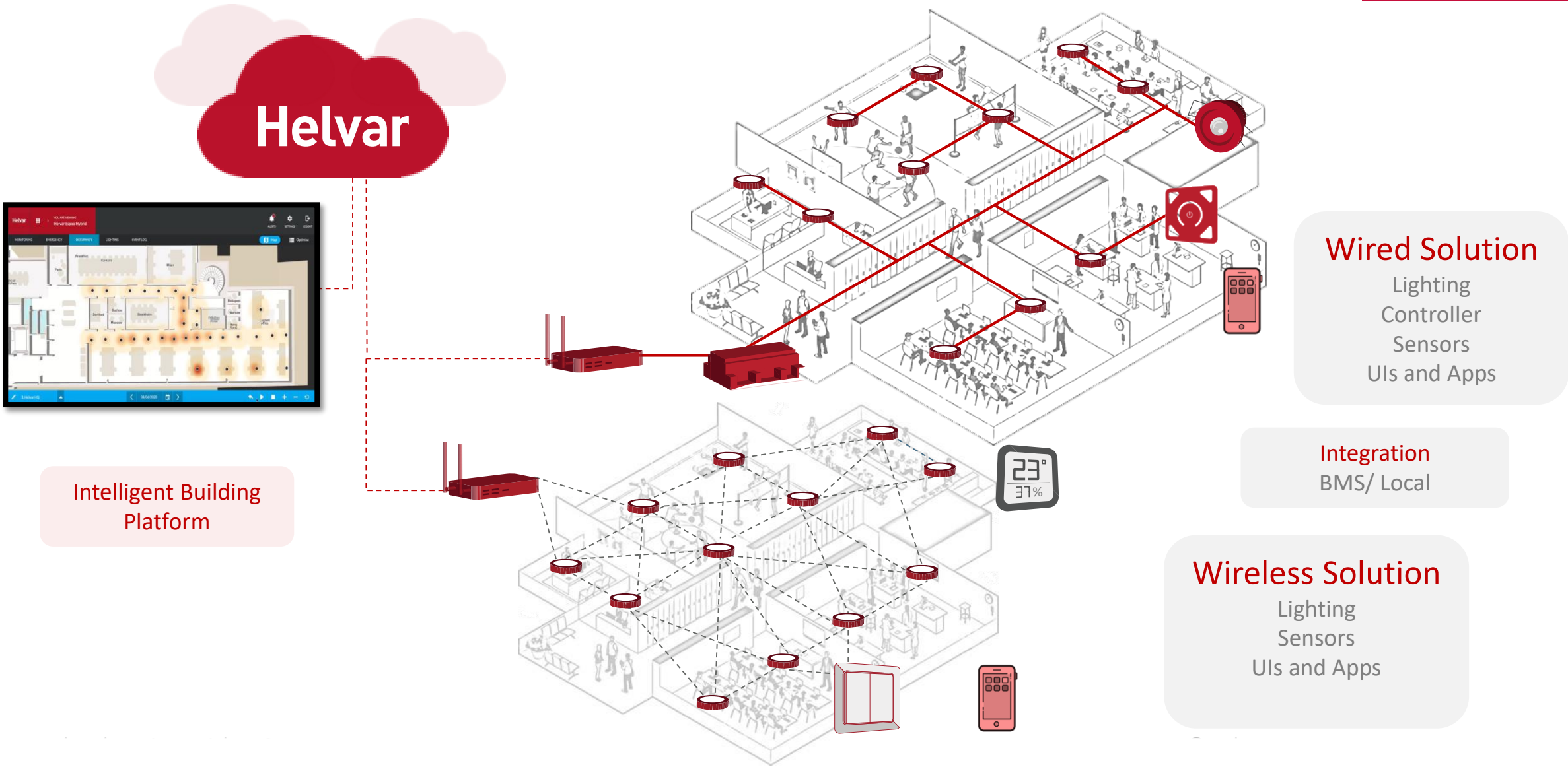
DALI is THE wired Lighting standard
DALI 2 is the newest version

Improved Quality (via certification)

Standardized DALI controls

Added features & functionality

Wired Solution
Lighting
Controller
Sensors
UIs and Apps

Brought to us by…..

Digital Illumination
Interface Alliance

Entire Imagine Sensor Range

	Light only	Presence only			Light + Presence		
General Areas	329	318	313	320	321	IR Quattro HD	HF360
Corridor		341	314				Dual HF
High Bay					322	IS 3360 MX	IS 345 MX

ActiveAhead Gen2
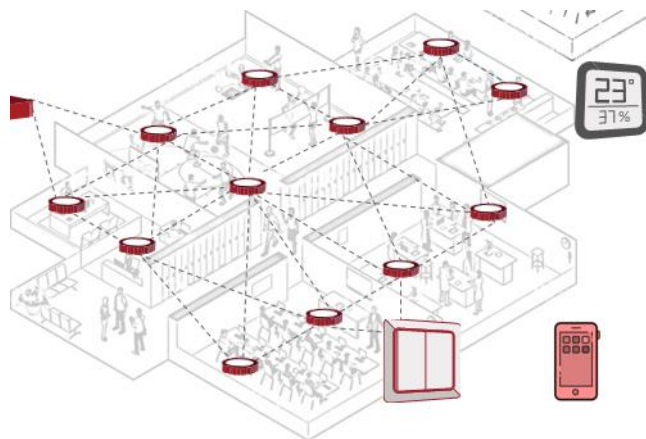
1 Choose your Node

5652 ActiveAhead Node
Small, powerful, self-learning ActiveAhead Node to build into a luminaire.
Product page

5609A ActiveAhead Node Advanced Broadcast
Extends ActiveAhead capabilities to standard DALI luminaires. Super easy to install e.g. in the ceiling.
Product page

ActiveAhead Nodes – Standard or DALI
Always looking, always learning. ActiveAhead Nodes communicate to each other through Bluetooth Mesh network, predicting where light is needed next. An ActiveAhead Node starts learning from the moment it's powered up and it never stops.

2 Choose your Driver

ActiveAhead Freedom LED Drivers
The selection of Freedom LED Drivers are optimised to work with the ActiveAhead Node.
Product page

DALI LED Drivers
Helvar DALI LED Drivers are designed to be energy efficient, long lasting and high quality.
Product page

ActiveAhead Drivers – Freedom or DALI
The Helvar LED Driver offering is designed for energy efficient, long lasting, high quality and professional lighting applications. When selecting a DALI system, you can bring your DALI light fittings into an ActiveAhead network to give them the power to learn and predict.

3 Choose your Sensor

5630 ActiveAhead Sense

Indoor Sensor
Small and capable — and easily mounted inside the light fitting — ActiveAhead with PIR motion and light sensing doesn't need a separate power supply.
Product page
Circular sensor holder
Rectangular sensor holder

5632 ActiveAhead Sense Outdoor

Outdoor Sensor
This luminaire-mounted IP65-rated Sensor takes ActiveAhead outdoors.
Product page

ActiveAhead Gen2

Control Panel

Stick on and start

With no wires or cables, this optional self-powered Panel sticks straight to the wall and is ideal for meeting rooms. It speaks to ActiveAhead Nodes, so you can select from four different lighting scenes.

Product page

ActiveTune Personal Lighting

Set the lights at your desk how you like them or for the job you're doing. You can save your light settings and access them through the ActiveTune App. Download the free app, scan the QR code on your desk and get the right light for you.

Product page

Mobile App

Easy to customise

ActiveAhead's beauty is that it learns by itself – but you can tell it what to do too! Install the ActiveAhead Mobile App, and with just a tap, you're in charge.

Product page

See ActiveAhead's unique benefits

Helvar ActiveAhead Experience

AI Delivering True Intelligence

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ActiveAhead is a self-learning and wireless lighting solution.

It works by using a standard Bluetooth mesh network which allows the luminaires to communicate with one another.

The system utilises sensor data and AI to recognise and remember space usage, and adapt to changing human behaviour and space usage over time.

LUX Awards 2020

**Controls Product of the Year**

WINNER: ActiveAhead Generation 2 – Helvar

The judges praised Helvar's ActiveAhead Generation 2 for its ability to solve multiple issues with one intelligent wireless platform. They were particularly impressed by its unique self-learning algorithm. This cuts operational costs by maintaining light at the level to which it is needed. ActiveAhead Generation 2 is scalable and self-commissioning and can be connected to a cloud monitoring and maintenance service.

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Wireless Lighting

- Flood-based mesh network; all nodes hear all messages within the max hop limits

- Duplicate messages are not processed
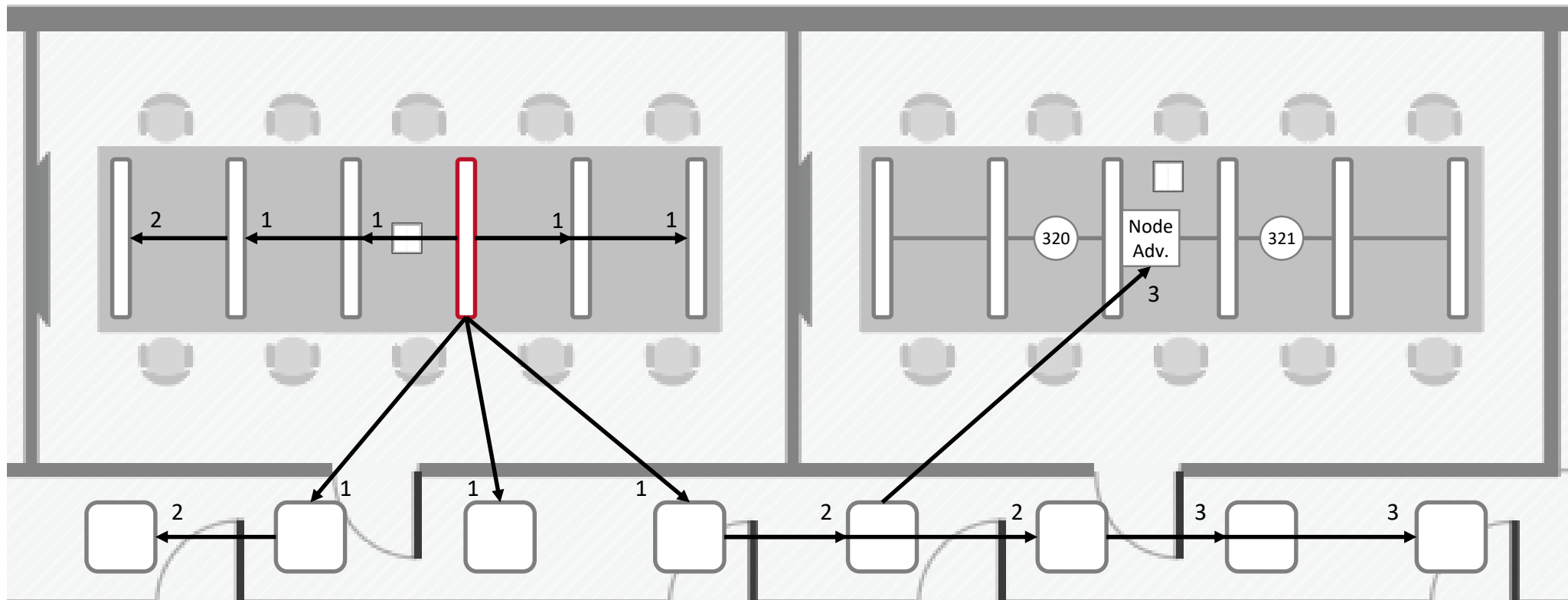
Nodes Analyse Who Are Their Neighbours

- Neighbour list gives the basis for the learning; whitelist potential subjects to learn from

- Nodes do not care about floorplan; their view to the world is one-dimensional

- Nodes look at the other Nodes as individuals

- The list grows exponentially the further you go

Will not learn from ⟶
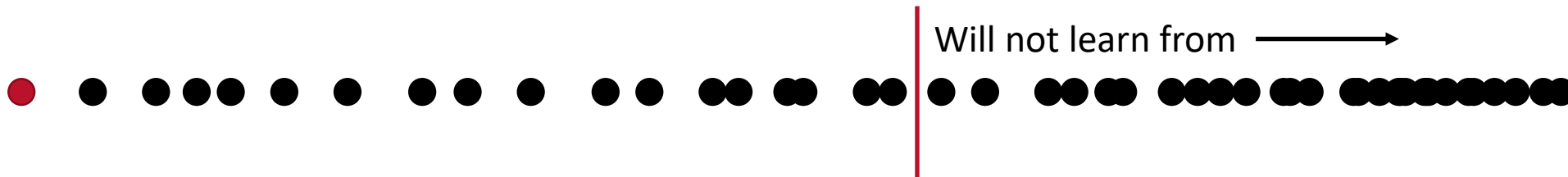
Nodes Analyse from Whom Should They Learn from

- Node will only learn from a Node which is on the neighbour list
- Node analyses the correlation of its and another Node's patterns based on the sensor data
- Outcome is a follow strength for each of the Nodes on the neighbour list
- Follow strength translates into dim level based on the set light ouput level parameters
  - In between 10 % and occupied light output level
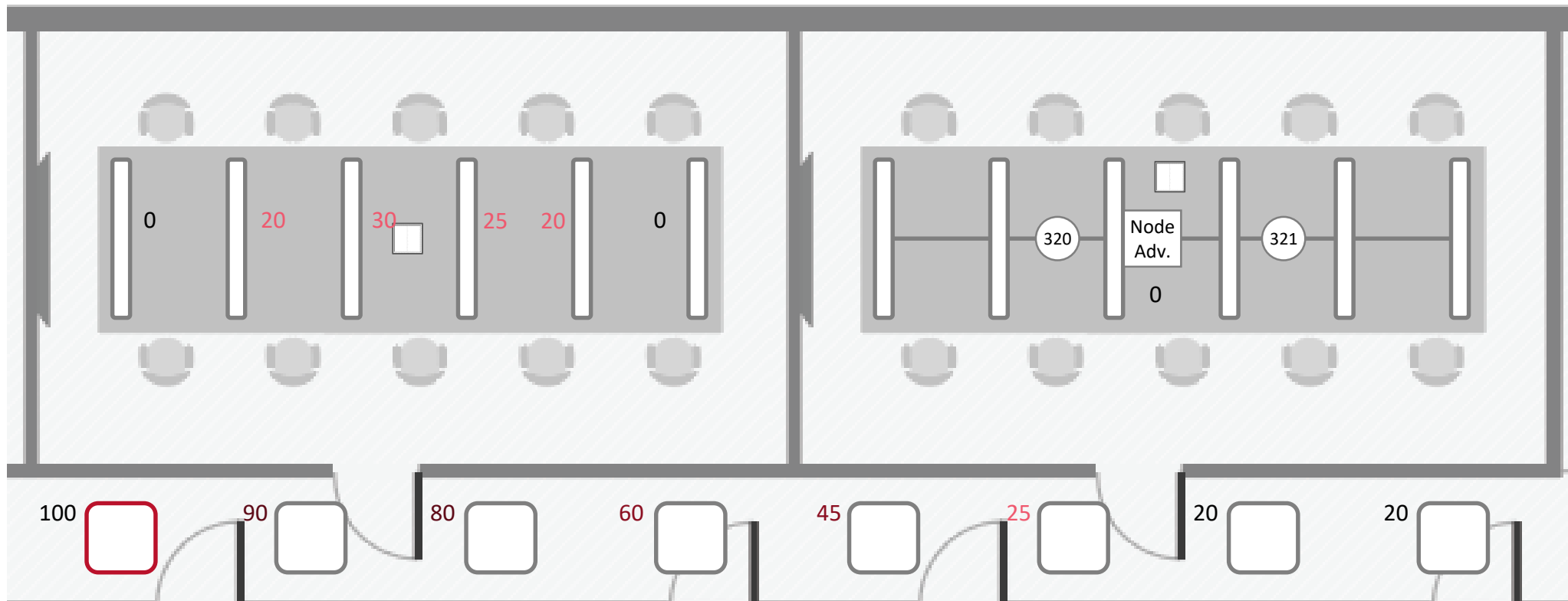
Will not learn from ⟶
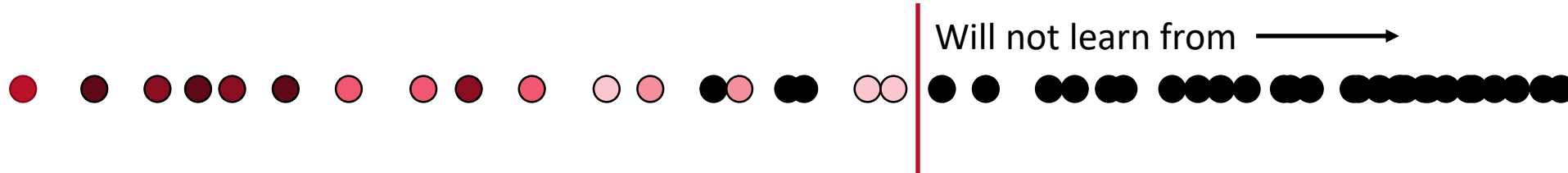
Outcome Is Predictive Lighting

- In the below picture, the number next to a Node shows imaginary example on what dim level the red Node would go to when the other Node detects movement
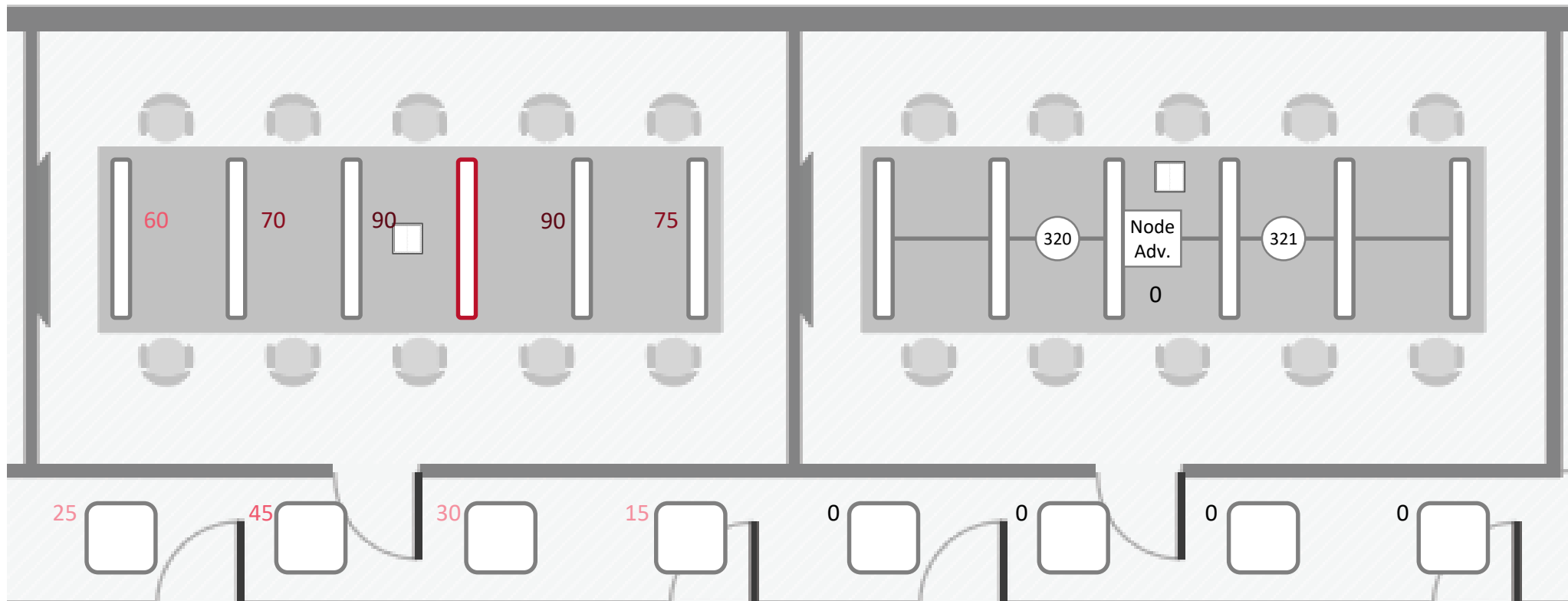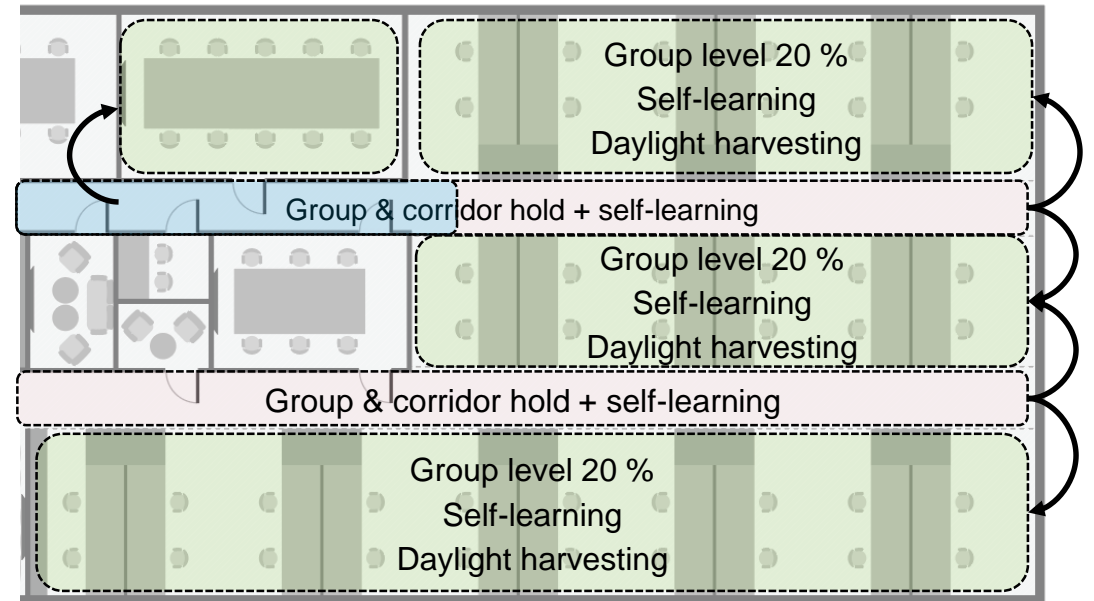
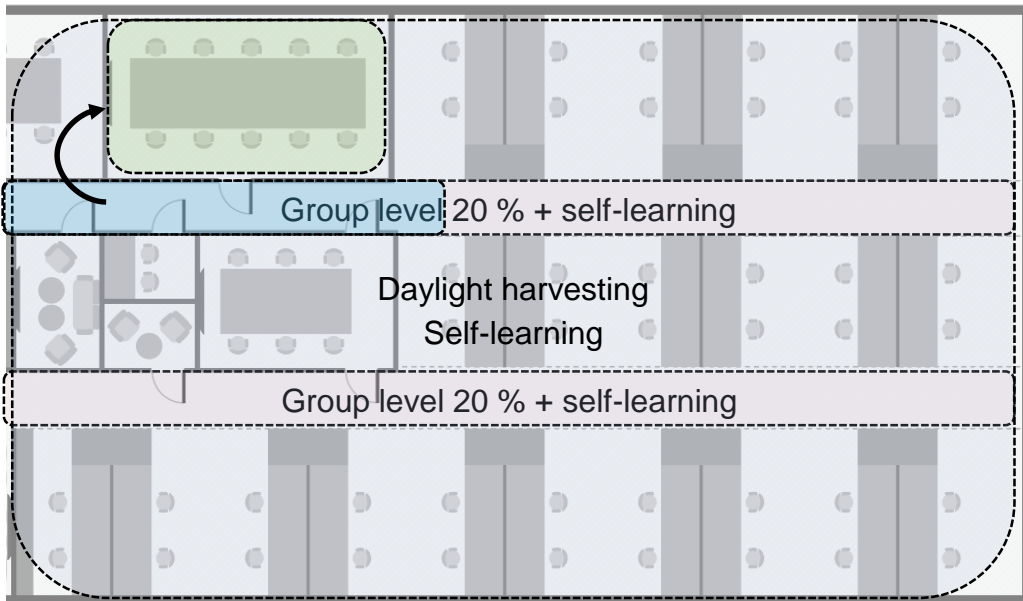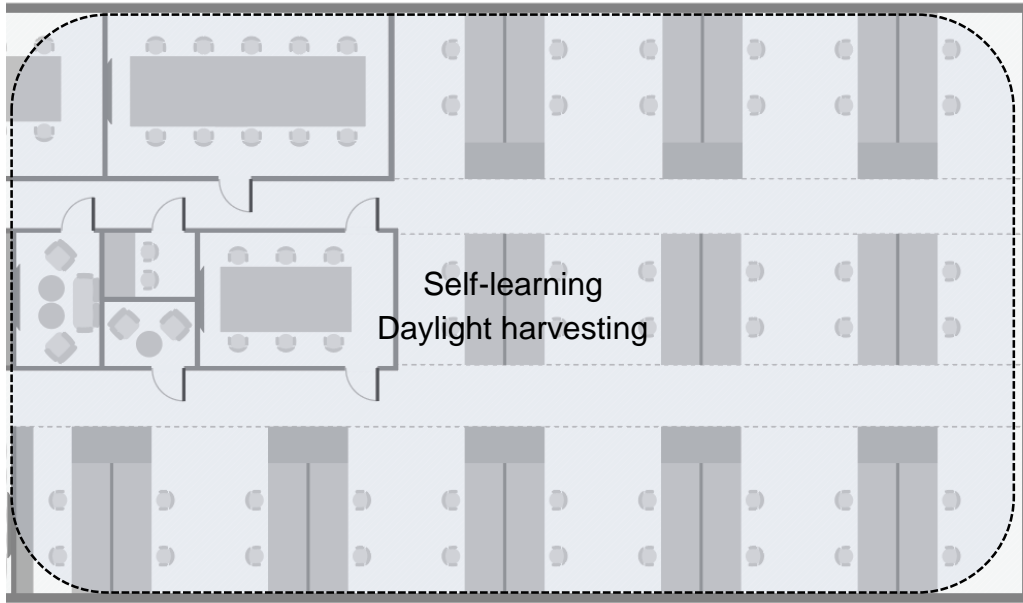# Learning Supports Configuration

- In the below example corridor is a group with 20 % light output level
  - Learning offers higher light ouput levels near the Node which triggers
  - Lights go typically on also in the adjacent room so that the person will not enter a dark room

Flexible Configuration

- Based on user and space needs

- Comfort vs. energy

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Self-learning
Daylight harvesting

Group level 20 % + self-learning

Daylight harvesting
Self-learning

Group level 20 % + self-learning

Group level 20 %
Self-learning
Daylight harvesting

Group & corridor hold + self-learning

Group level 20 %
Self-learning
Daylight harvesting

Group & corridor hold + self-learning

Group level 20 %
Self-learning
Daylight harvesting

Summary

Intelligence

- Lighting is the logical "place" fo intelligence

- Definition of "intelligence" varies

- Intelligence could be at … edge, fog, cloud

ActiveAhead

- Wireless lighting control solution

- All Nodes sit on the same network; grouping can be done freely

- Each Node learn from the others individually

- Self-learning supports configuration

Question?