THE BUILDING OPERATING SYSTEM

Why Open Digital Infrastructure Will Define The Next Decade Of Smart Buildings Globally

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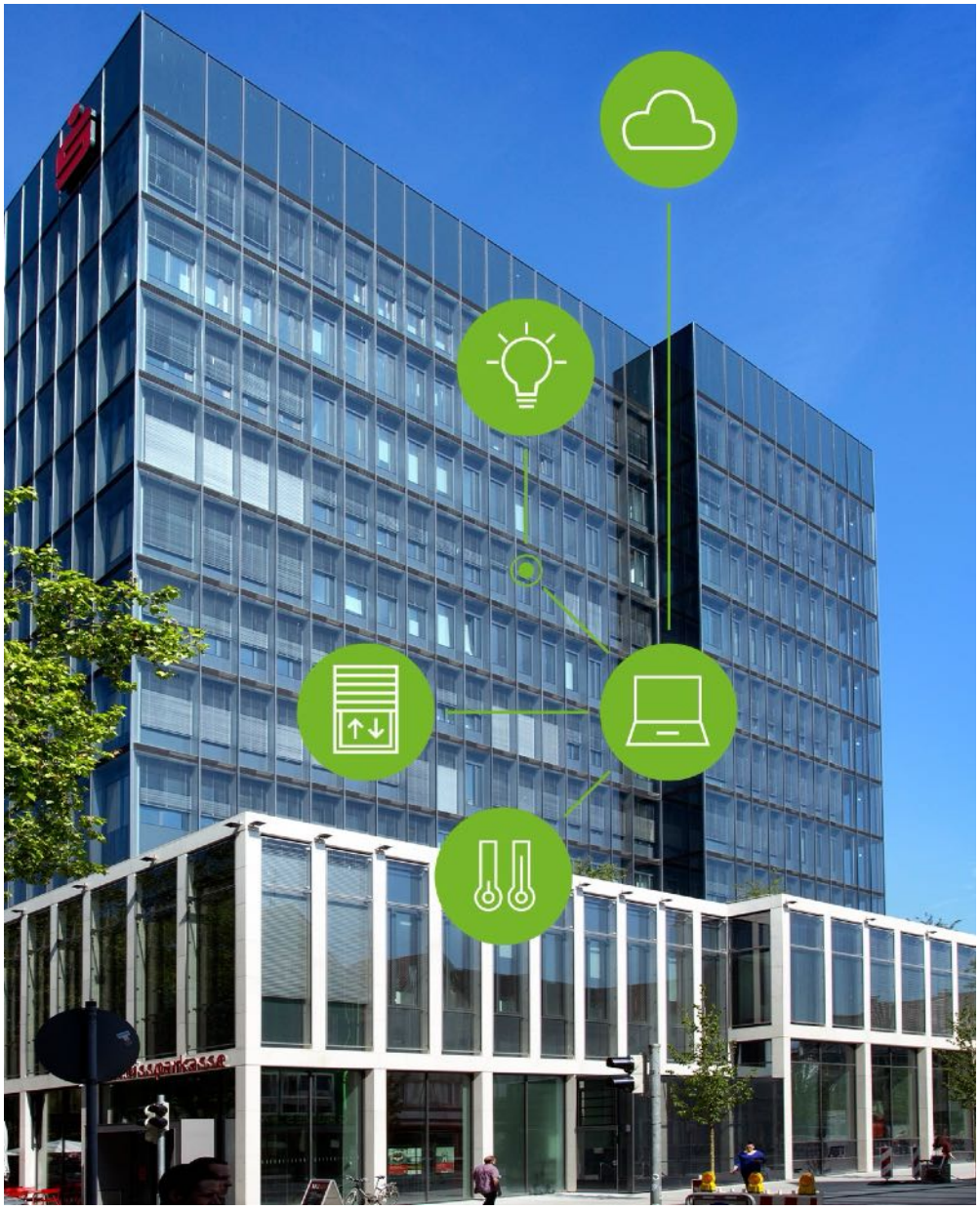
WAGO GmbH & Co. KG





LET ME INTRODUCE MYSELF

I'm John Mackey

THE STARTING POINT

The Industry Has Solved Connectivity… Now It Must Solve Performance

FOR 20 YEARS

How do we connect more devices?



THE NEXT 10 YEARS

How do buildings continuously improve?

Energy

Carbon

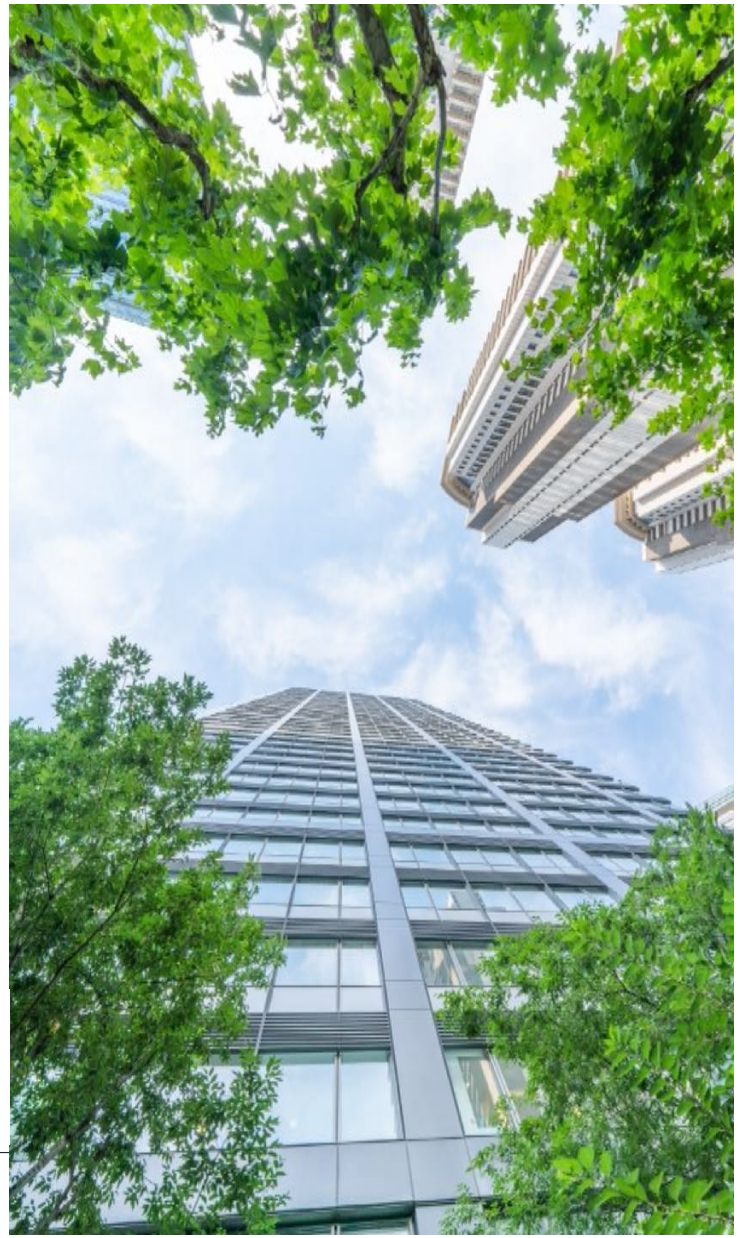
Comfort

Resilience

Cost

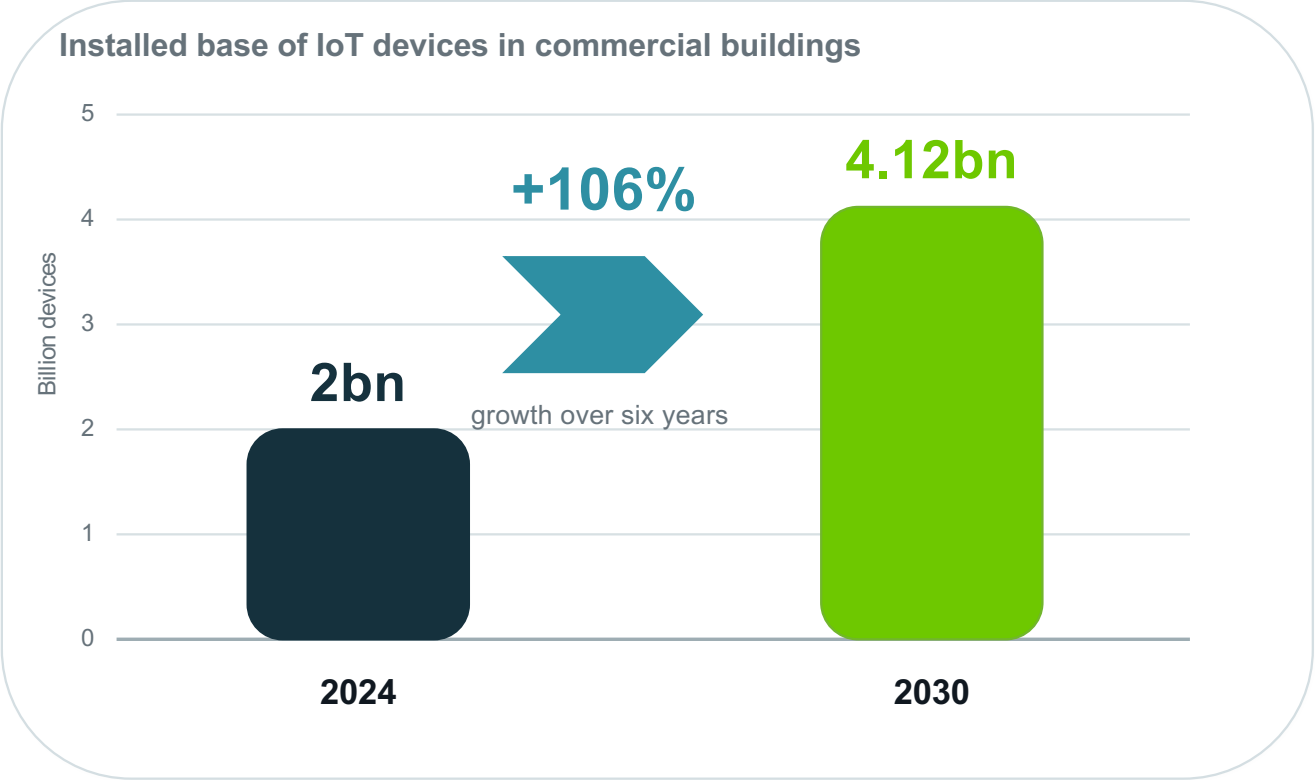
Five Forces Will Reshape Buildings By 2036

1	Regulation	From designed efficiency to measured performance
2	Retrofit	Legacy estates become the main opportunity
3	Data	A board-level operational asset
4	Interoperability	Freedom to change without starting again
5	AI	From alarms to prediction and optimisation



THE SCALE OF THE DATA CHALLENGE

Commercial-building Iot Devices Will More Than Double By 2030



THE IMPLICATION

2.12bn

additional connected assets forecast between 2024 and 2030

More assets produce more signals, integration effort and cyber exposure.

Source: Memoori Research, IoT Devices in Smart Commercial Buildings 2025–2030. Growth percentage calculated from published 2024 and 2030 values.

FORCE 1

Regulation is moving from efficiency to intelligence

UK

Operational data will increasingly support evidence, reporting and better decisions.

IRELAND + EU

EPBD places digitalisation, automation and data at the heart of zero-emission building performance.

THE DIRECTION OF TRAVEL

Measure

↓

Understand

↓

Act

Compliance Will Increasingly Depend On What Buildings Can Demonstrate, Not Simply What Was Installed.

FORCE 2

RETROFIT IS WHERE THE NEXT DECADE WILL BE WON

- Occupied Buildings
- Mixed Protocols
- Multiple Vendors
- Legacy Plant



FORCE 3

Data Is Becoming The Most Valuable Infrastructure In The Building

FORCE 4

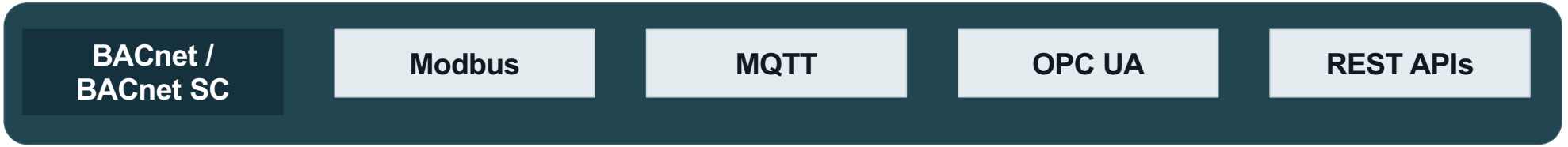
Buildings Last For Decades. Technology Cycles Do Not.

40+ YEARS
BUILDING LIFE

≠

5–10 YEARS
SOFTWARE CYCLE

OPENNESS IS RISK CONTROL



Specify The Ability To Change, Not Just The Feature Set Available Today

AI DOES NOT START WITH AN ALGORITHM….

… IT STARTS WITH DATA THAT IS

ACCURATE

ACCESSIBLE

CONTEXTUAL

TRUSTED



Poor Data
Scales
Poor Decisions

FROM REACTIVE TO PREDICTIVE

The Next Operating Model Is Continuous Optimisation

01
REACTIVE
Fault occurs
Respond

02
CONNECTED
Fault visible
Coordinate

03
PREDICTIVE
Drift detected
Intervene

04
OPTIMISING
Performance learned
Improve continuously

WHAT THE EVIDENCE SAYS

6%
Median annual whole-building savings
Existing-building commissioning

9%
Median annual whole-building savings
Fault detection and diagnostics

~9%
Average energy and peak-demand savings
Six MBCx programes

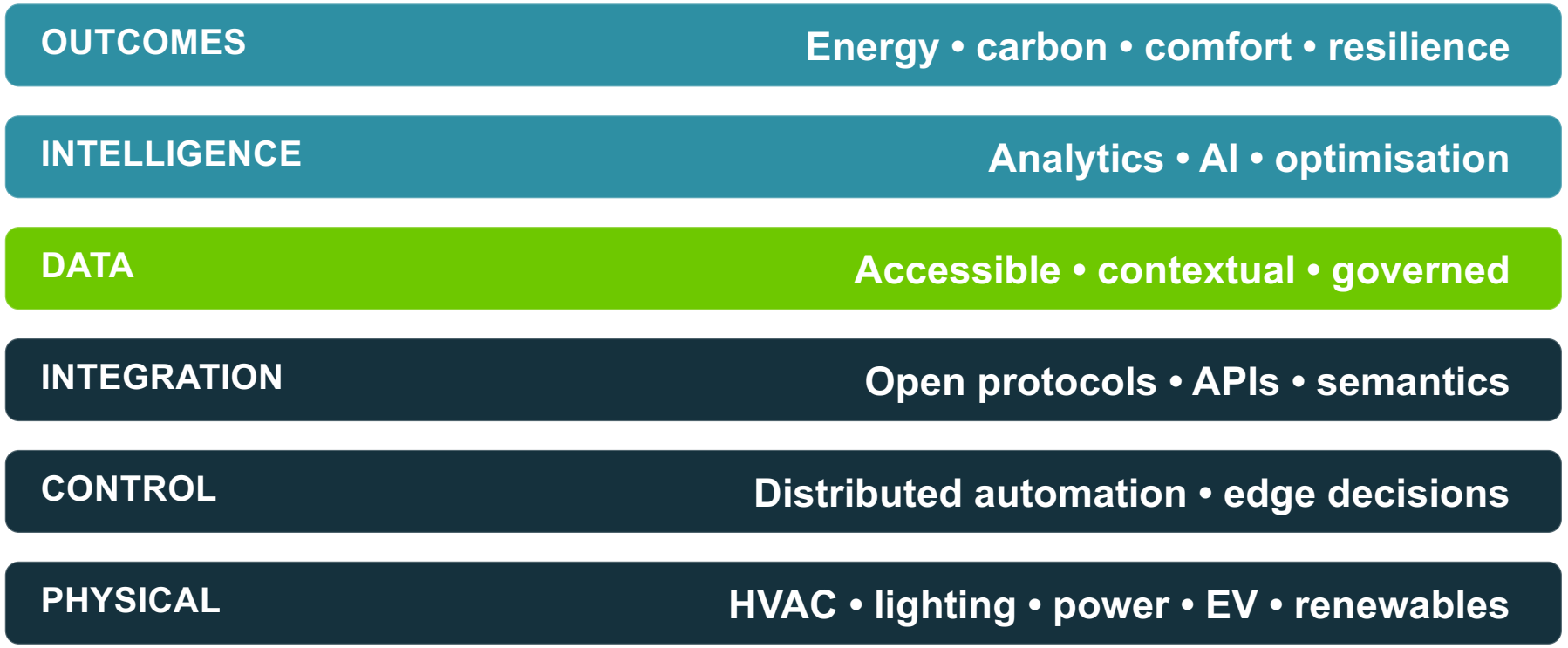
~2 yrs
Average simple payback in one study
Monitoring-based commissioning

Continuous Optimisation Is A Feedback Loop:
Monitor → Diagnose → Act → Verify → Learn

Evidence is from North American programs and building portfolios; outcomes vary by building, baseline and implementation.

Sources: Berkeley Lab existing-building commissioning fact sheet; ACEEE monitoring-based commissioning review.

The “Building Operating System” Is An Architecture, Not A Product



If The Data Layer Is Weak, Every Layer Above It Inherits The Weakness

Trust Engineered Into The Data Foundation

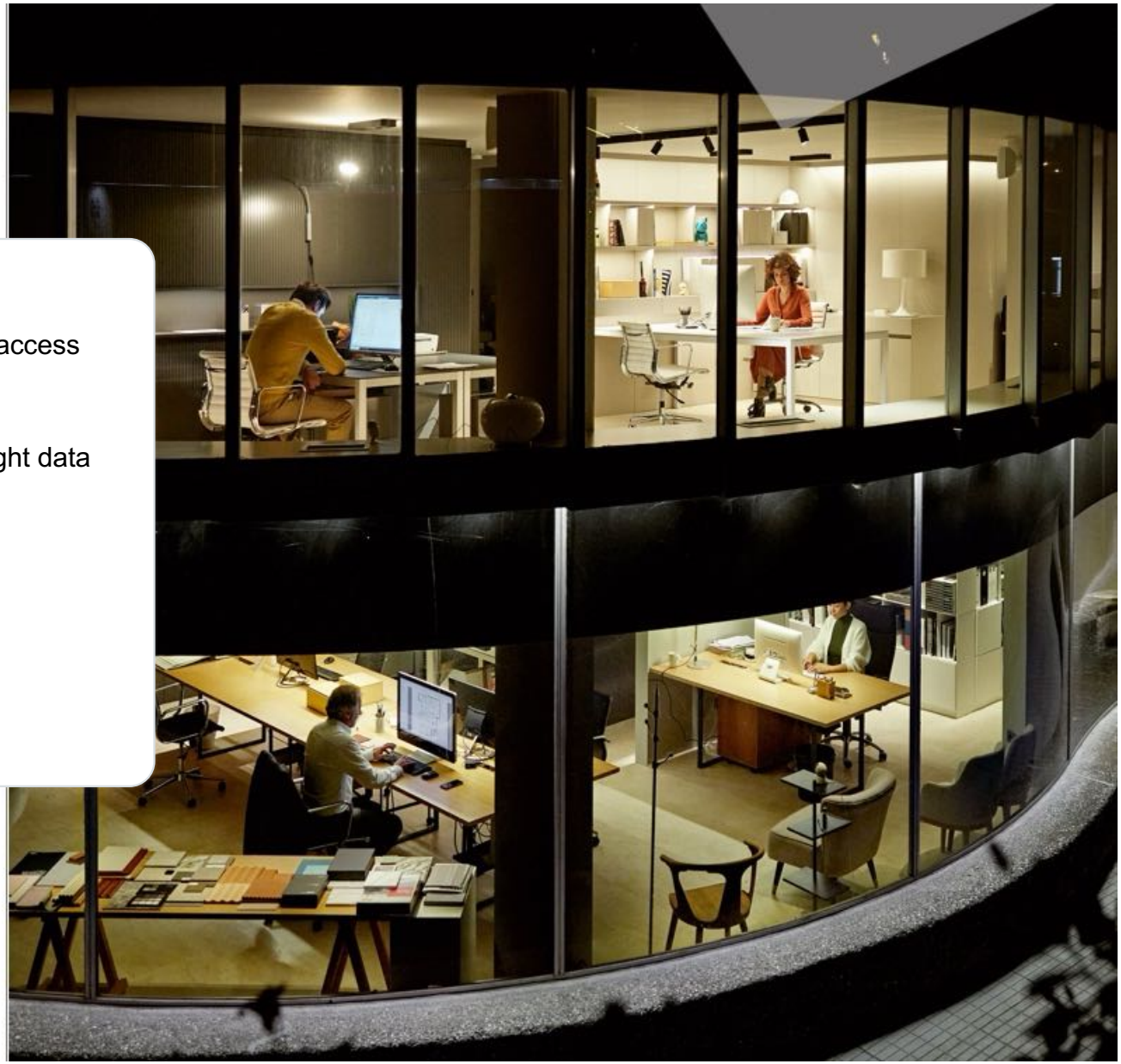
Secure communication
Encrypted building networks and secure remote access

Identity and access
The right person, system and service sees the right data

Lifecycle support
Long-lived assets require updates, evidence and accountability

Data ownership
Clear rights to use, share and retain information

Open Does Not Mean Unprotected. It Means Accessible By Design And Controlled By Policy.



FROM MARKET DIRECTION TO PRACTICAL ARCHITECTURE

WAGO’s Role: Provide The Open Foundation

FIELD + CONTROL

Modular I/O
Distributed control
Building applications

CONNECT + SECURE

BACnet / BACnet SC
Modbus • MQTT • OPC UA
Edge and network security

MANAGE + IMPROVE

Building management
Energy insight
Alarming and reporting

OPEN • INTEROPERABLE • SECURE • SCALABLE • VENDOR-INDEPENDENT

WAGO: MORE THAN CONNECTORS

Electrical interconnection, interface electronics and automation technology for data centres, energy, industry and buildings.



FOUR DECISIONS FOR THE NEXT DECADE

What Should Owners And Specifiers Do Now?

01 **Treat data architecture as core infrastructure**

02 **Specify openness, access and ownership**

03 **Design retrofit pathways, not technology resets**

04 **Build security and governance into the lifecycle**



START WITH THE OUTCOME



THREE QUESTIONS

1. Does the building generate data?
2. Can the organisation use that data?
3. Can the building improve because of it?

The Next Decade Belongs To Buildings That Can Learn, Adapt And Improve

Thank you | Questions

Visit Us For A Live Demo And For A Meaningful Discussion

Stand - D1

