

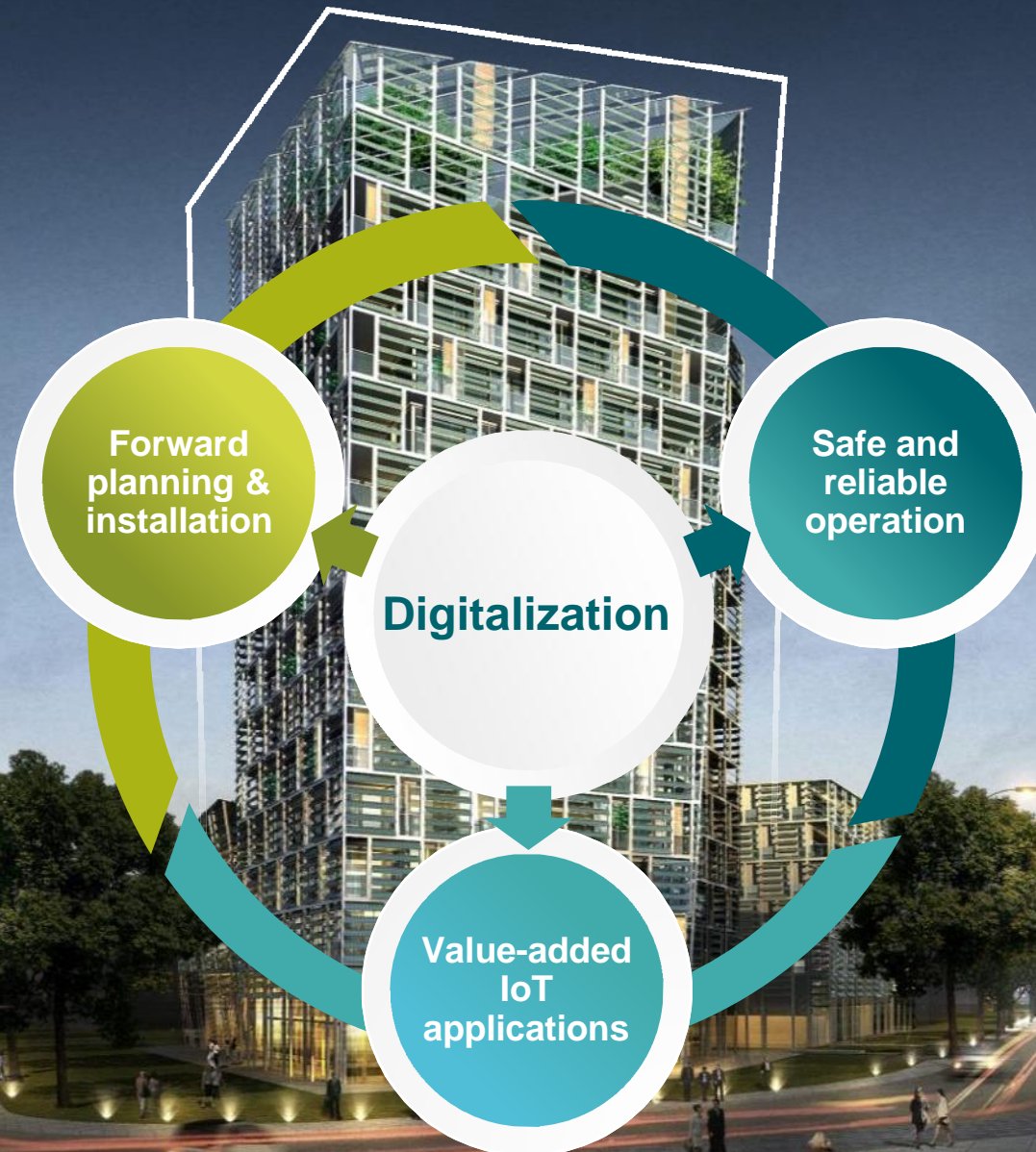
Digitalize your Building

Siemens Press Day, March 20, 2018

Light+Building | Frankfurt/Main, March 18-23, 2018

The Smart Building

The technical challenges are increasing



Building and energy management in times of change



41%

of worldwide energy is consumed by buildings

21 trillion kWh

Worldwide energy consumption today



34 trillion kWh

Worldwide energy consumption in the year 2040

80%

of the overall life-cycle costs of buildings occur during operation

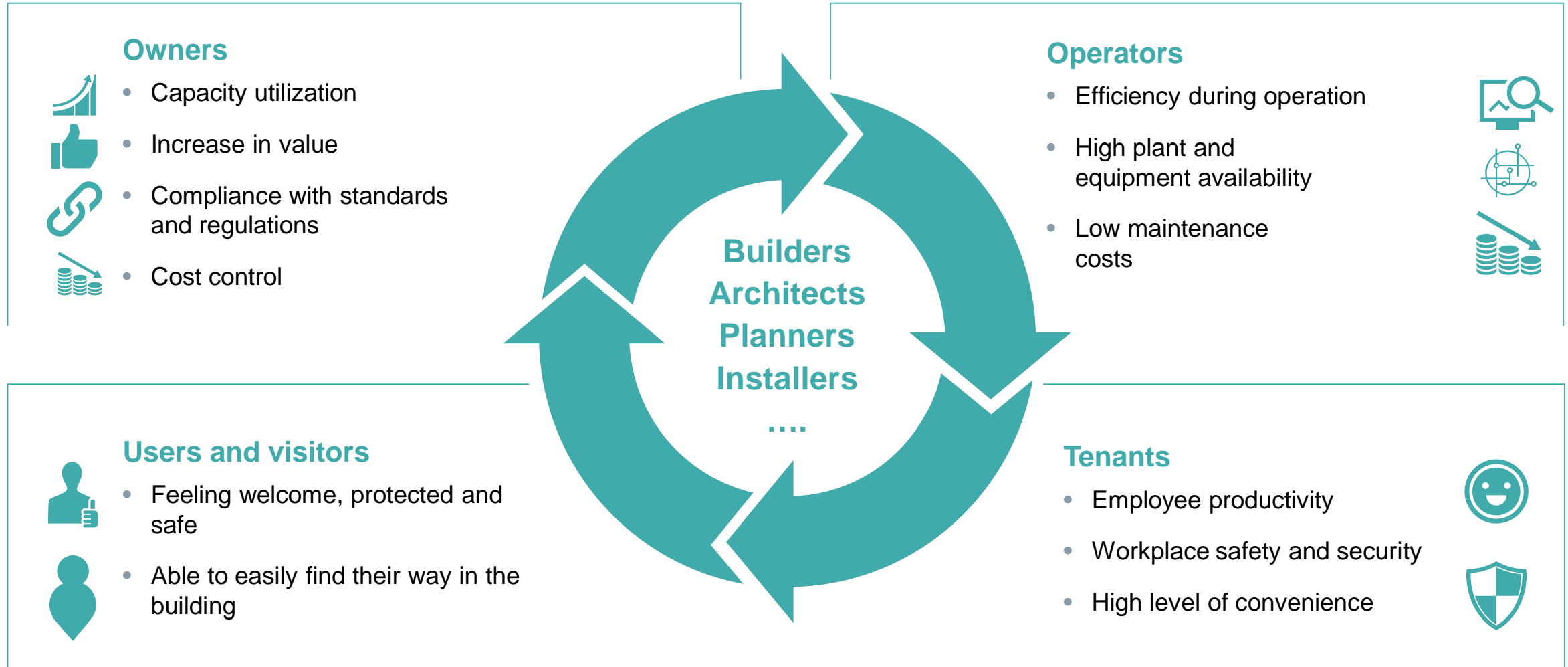
90%

of our lives is spent in buildings

30%

of the operating real estate portfolio will consist of flexible office space

Various roles – different requirements



"Digitalize your building"

We provide answers to questions on
Digitalization in buildings & infrastructures

– and thus on the fundamental changes in
the energy world and building management

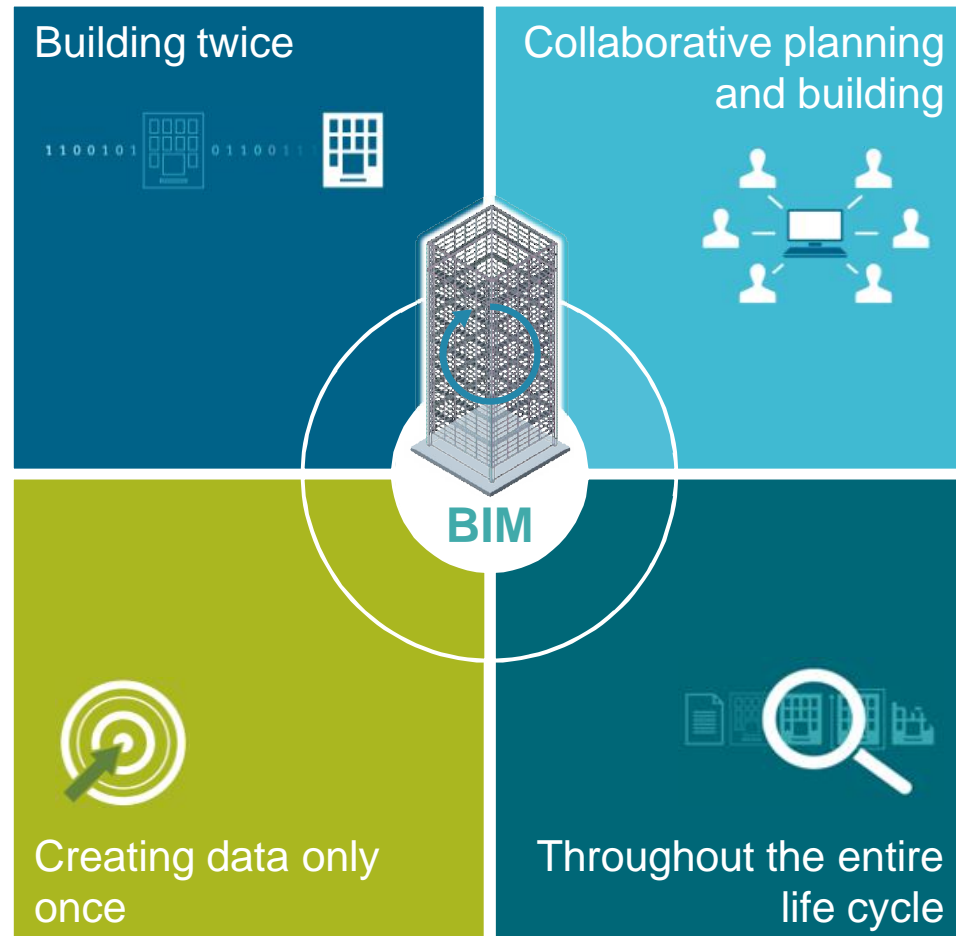


Planning



Buildings as digital twins

Increased added value with Building Information Modeling (BIM)





Earlier conflict and
fault detection


Fewer accidents
at construction
sites


Higher building
quality


Faster project
delivery


Foundation for
life-cycle cost
optimization


More reliable
budget planning

Up to **40%**
fewer change requests

Up to **10%** cost savings
thanks to collision
management

Up to **9%**
lower operating costs

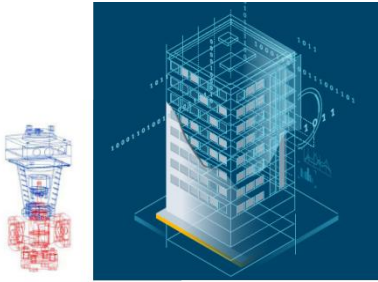
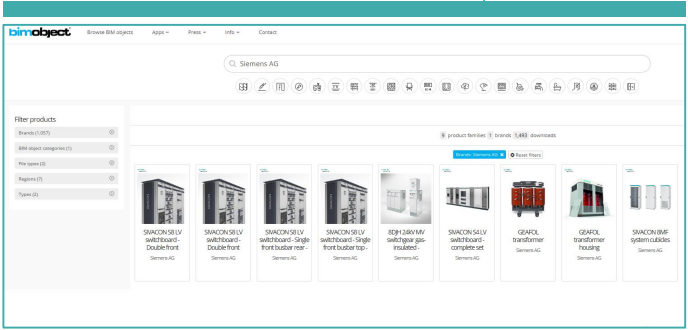
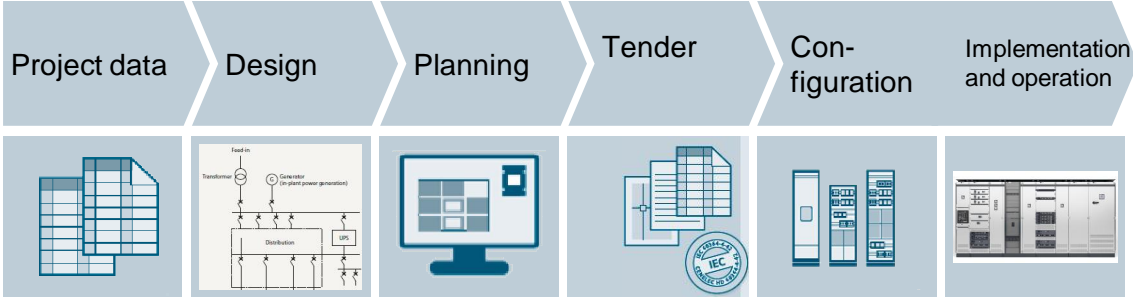
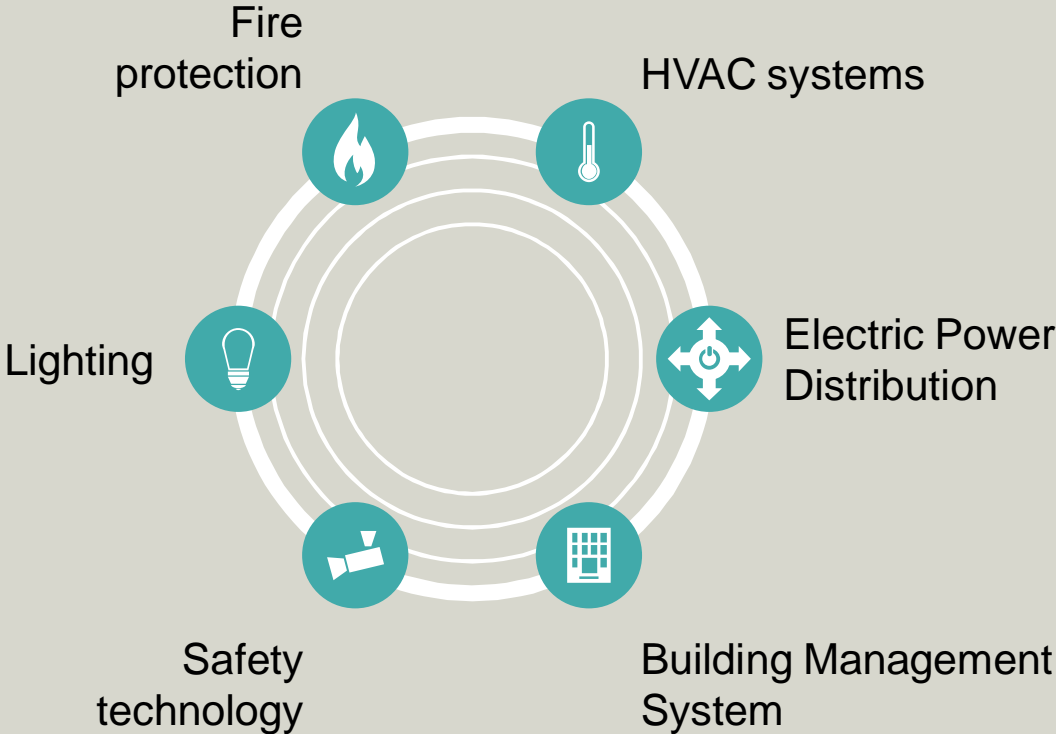
Up to **7%**
shorter project schedule

Source: CIFE, Center for Integrated Facility Engineering, Stanford University

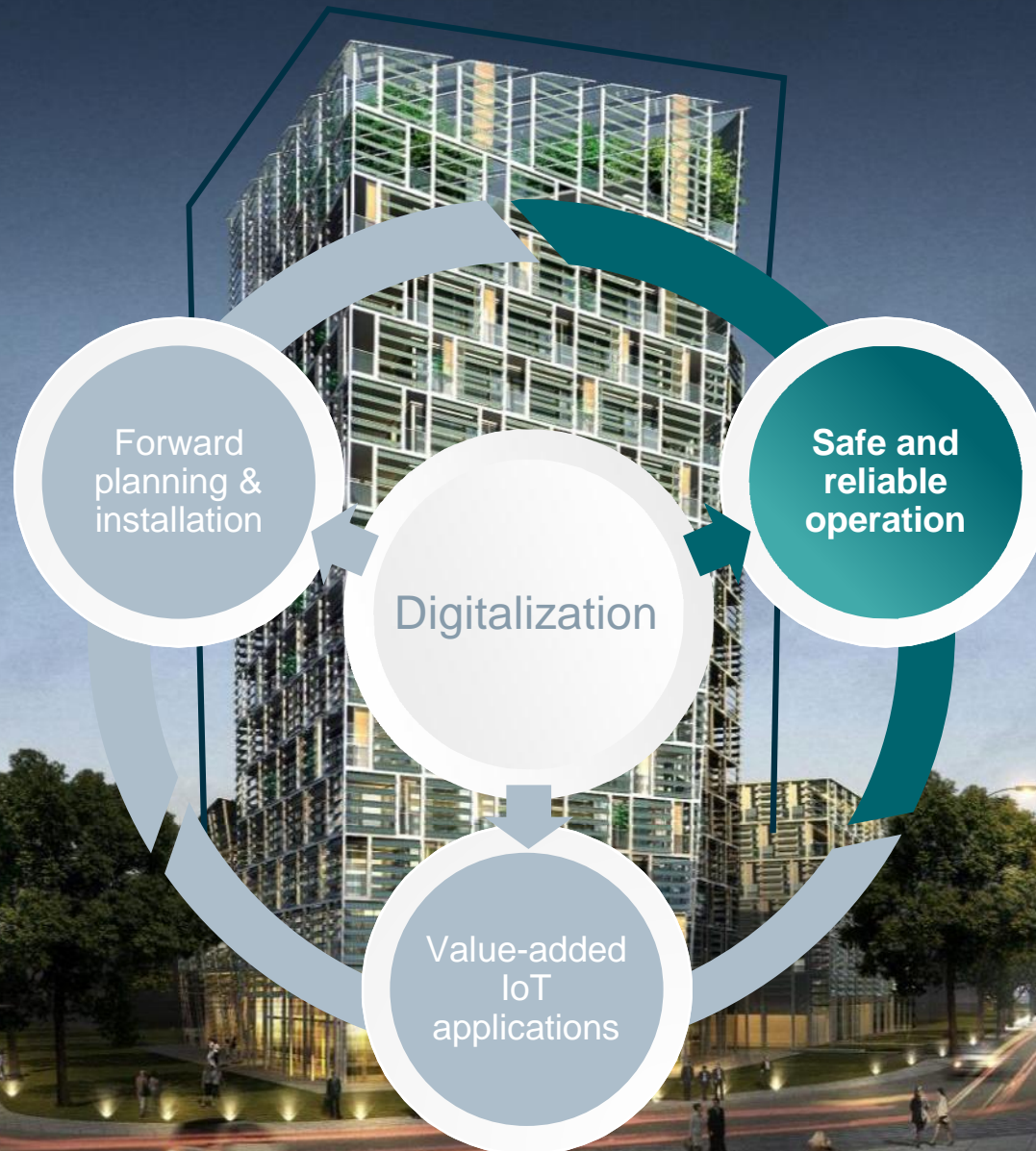
Unrestricted © Siemens AG 2018

Integrated support along the building life cycle

BIM data for building control and power distribution



Operation
Safety
Efficiency
Convenience



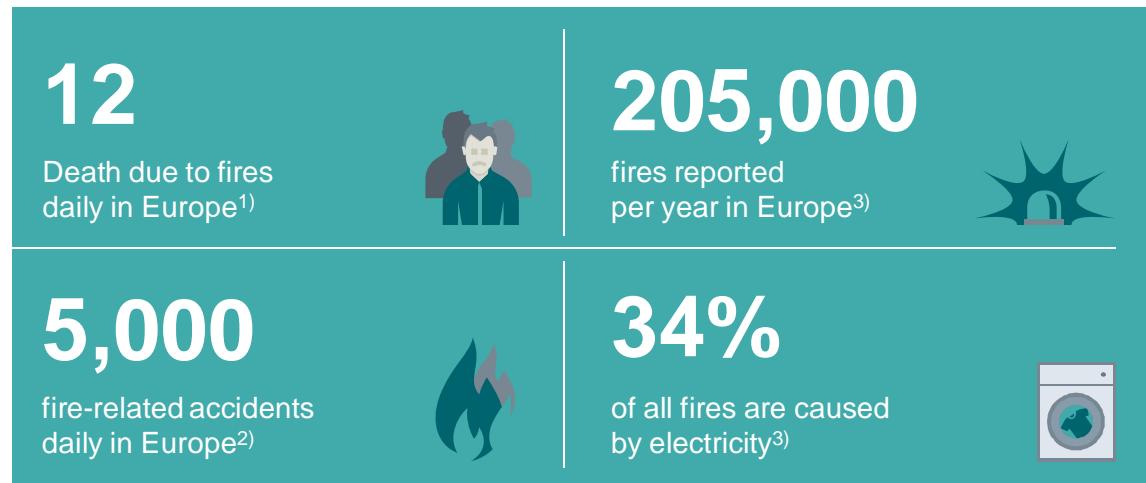
Safe power supply in buildings

SENTRON Protection Concept

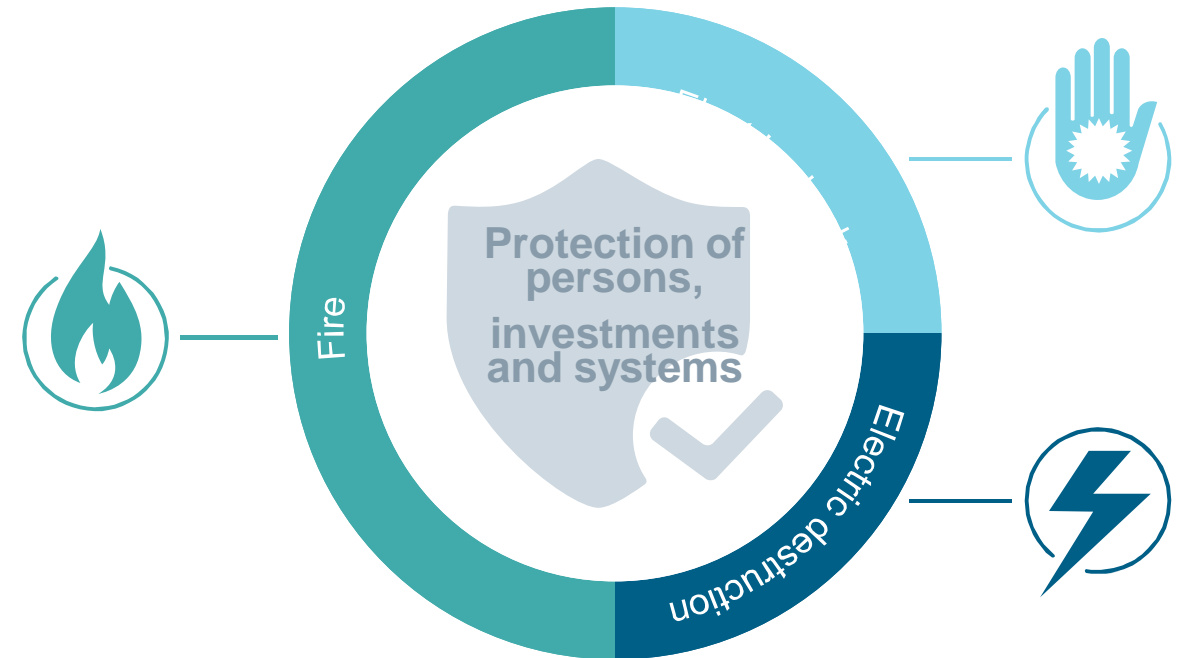
Integrated portfolio

- Protection against short circuits
- Protection against overloads
- Protection against overvoltage
- Protection against residual current

Preventive fire protection



Sources: 1) Fire Safe Europe (2014) 2) Report No. 10 of CTIF Centre of Fire Statistics, World Fire Statistics (2006)



DIN VDE 0100-420

AFFD as accepted principle of engineering

Arc fault detection devices (AFDDs) are mandatory for the following applications (in Germany):

1. in **bedrooms or recreation rooms in care homes or daycare centers for children, disabled and old people**
(e.g. child daycare centers and retirement homes)
2. in **bedrooms or recreation rooms in apartments with unhindered access** according to DIN VDE 18040-2
3. in rooms and other locations
 - posing a **fire risk due to processed or stored materials**
 - with **combustible building materials**
 - where **irreplaceable goods are endangered**



First AFDD with integrated line protection in 1 MW: 5SV6 arc fault detection devices

- Standards-compliant preventive fire protection
- Space-saving and easy to install – in new and existing buildings
- Third product generation



Integrated portfolio for safety and fire protection technology



Video surveillance

Access control

Fire protection

Voice alarm systems



Siveillance Viewpoint
danger management
system

TranslinerPro –
the intrusion detection
system

Perimeter protection

Intelligent response

Extinguishing systems

Increased energy efficiency by transparent energy flows

Costs



- Energy costs **significant cost factor**
- Reduction of **energy costs** (e.g. streamlined energy procurement)
- Reduction of **energy consumption**
- Avoiding **downtimes**

Laws Regulations



- **Energy audit** according to EN 16247
- Energy management according to **ISO 50001 / 50003**
- Government **subsidy** of energy management systems and measuring technology

Corporate responsibility



- **Environmental protection** and conservation of resources
- Utilization of **renewable energies**
- A green **image** is a decisive buying argument for many customers



Data transparency



Overview of
energy flows and costs

Simplified energy management in buildings

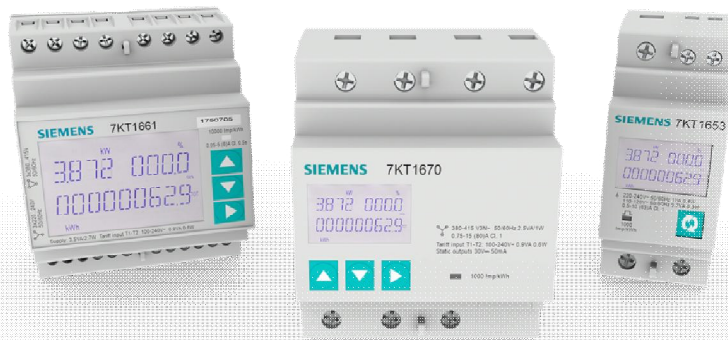
SENTRON power monitoring system

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Ingenuity for life



SEM3 multichannel current measuring system

- Scalable and ISO 50001 compliant system with current transformers, measuring modules and the central controller for the main power distribution
- Capture of up to 45 measurement points the building
- Visualization in the Web server or powermanager software
- Direct comparison of individual loads and identification of current peaks

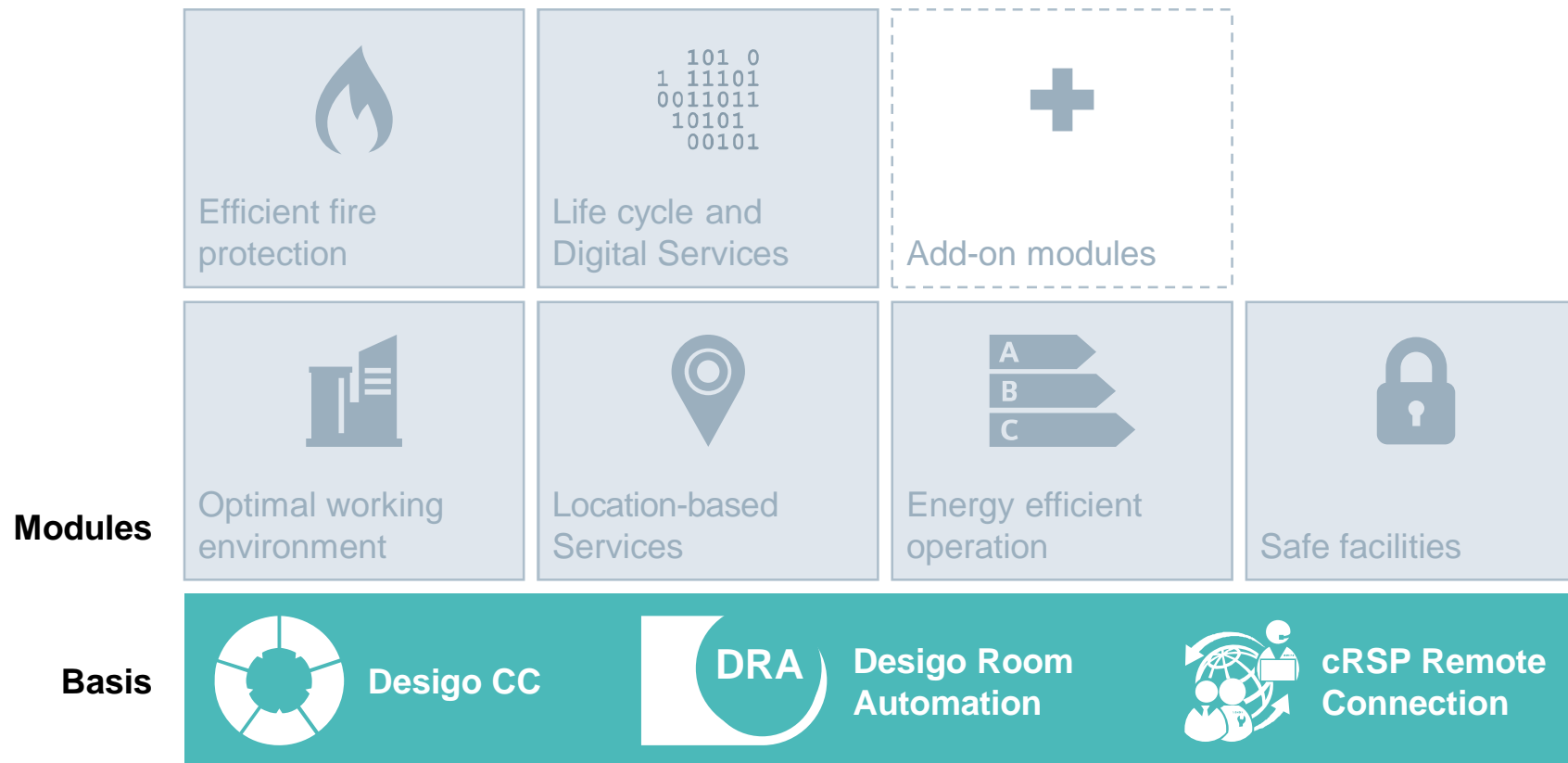


7KT PAC1600 measuring devices

- Space-saving use in power distribution boards and distribution boards
- Values shown directly on the display of the measuring device
- European Measuring Instruments Directive (MID) testing
- Integrated Modbus RTU and M-bus interfaces

"Premium Office" creates perfect working conditions

Modular concept for the "Premium Office" in office buildings



Integrated Base

- Designo CC brings together all disciplines into an efficient, flexible building management system
- Designo Room Automation combines all control elements in the room
- The data of Designo Room Automation are directly visualized and processed via the Designo CC platform
- The Siemens Remote Service platform provides for secure data transmission and enables a large selection of services

Higher energy efficiency and streamlined operation

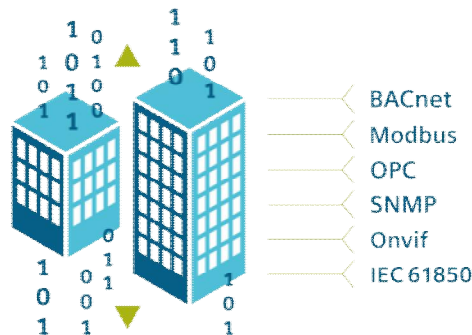
Designo CC – integrated building management platform



Designo CC

Open Platform

- **Open Standards** (BACnet, OPC, Modbus etc.)
- **Web Services** (northbound)
- **Driver SDKs** (southbound)
- **Ecosystem**



Modular and flexible

- **Single or multiple systems**
- **Scalable** to size
- **Modular and expandable** with respect to applications and features



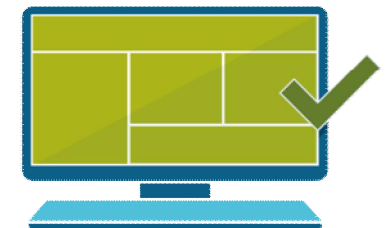
Efficient

- **High-performance workflow concept**
- **Assisted handling of events**
- **Simple engineering**
- **Remote access**

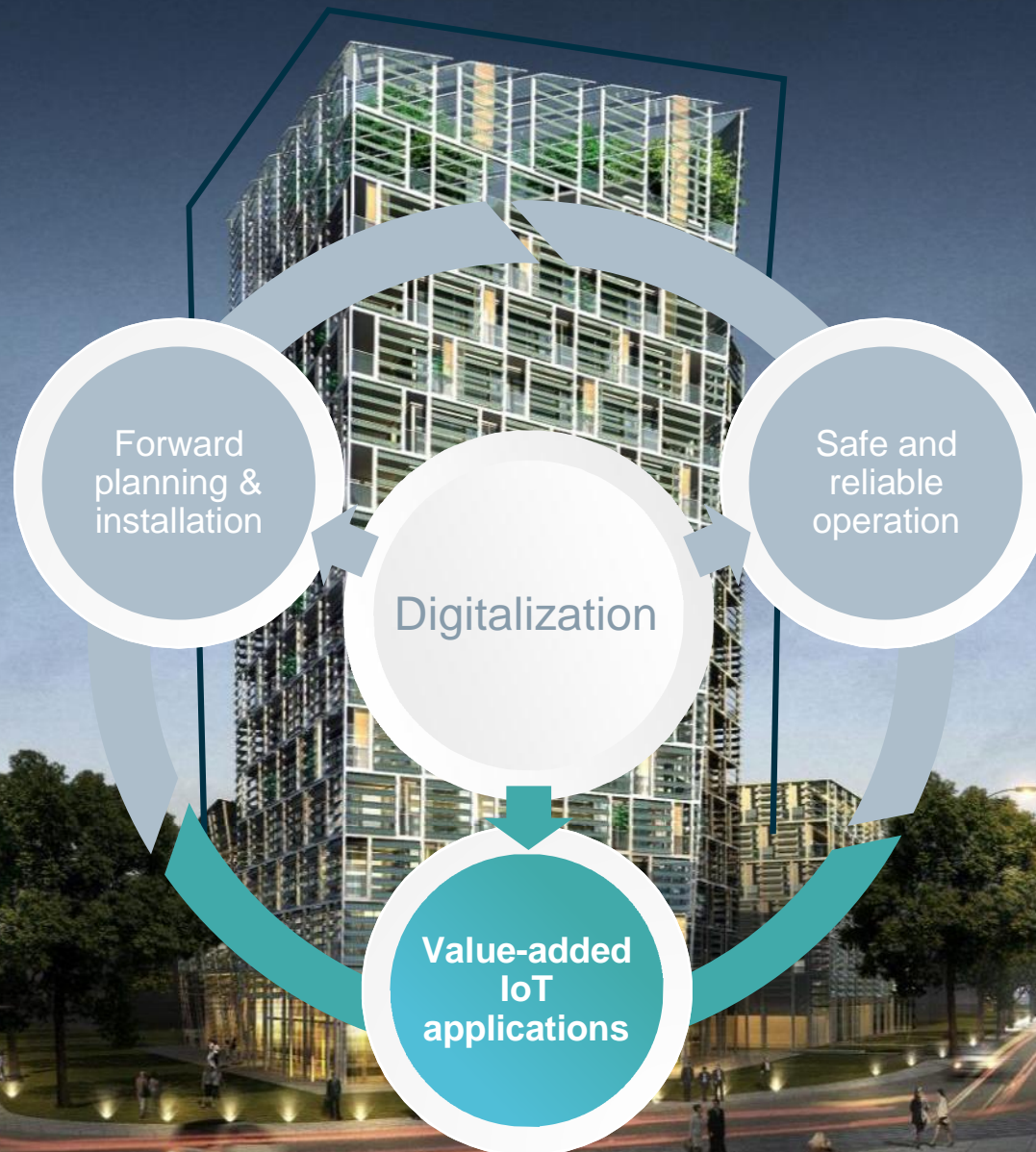


User-friendly

- **Unique state-of-the-art UI design**
- **Only one platform** for learning and operating
- **Multiple-window screen**
- Advanced **vector graphics**

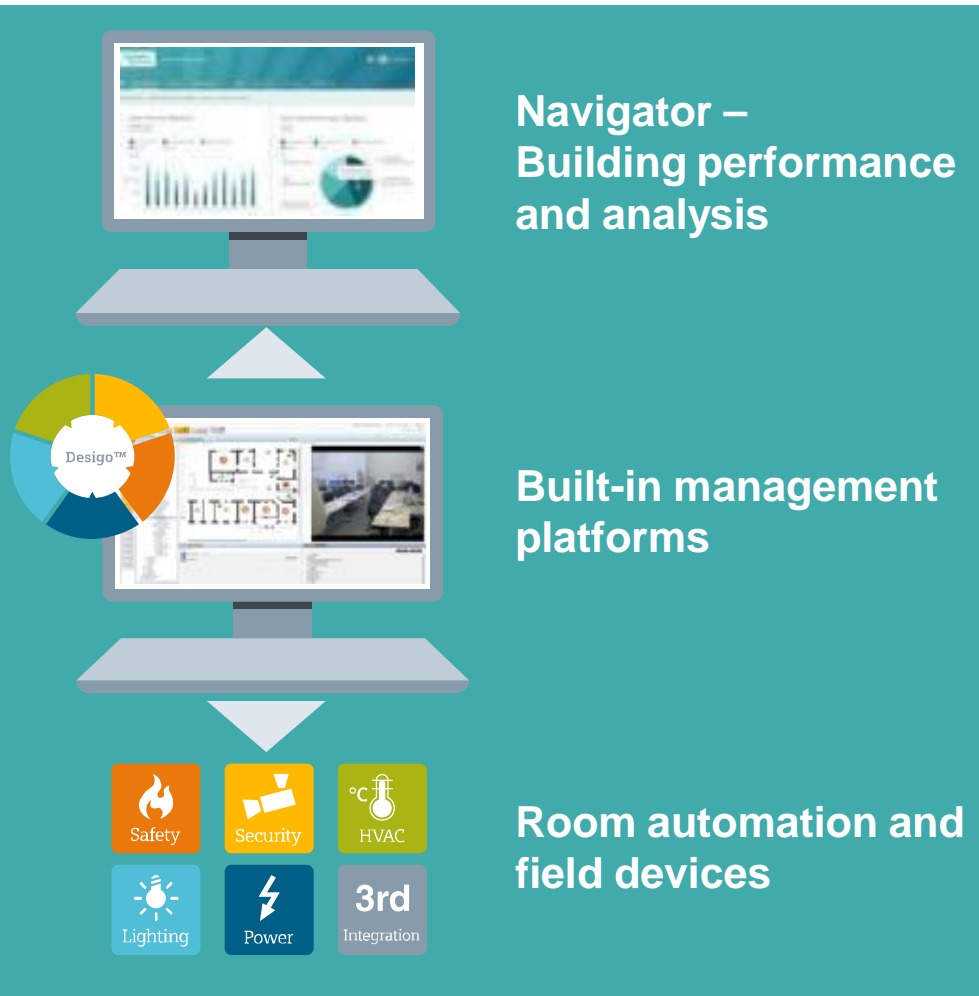


IoT applications



Data-based services for streamlined building operation

Navigator – the energy and sustainability platform



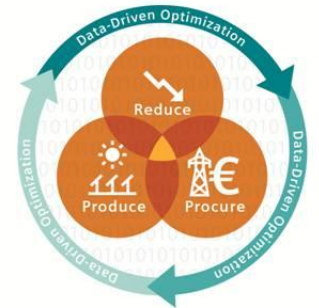
Technical building performance

- Better understanding of the technical infrastructure
- Reduction of OPEX
- Basis for better investment decisions



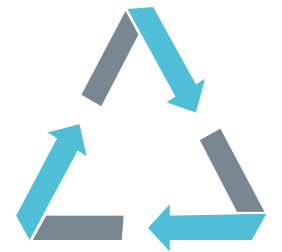
Total energy management

- Energy consumption reduced to what is absolutely necessary
- Energy buying at a fair price
- Generation and storage of energy on-site
- Continuous improvement of building performance with data-based analyses



Advisory services

- Development of a plan for reaching individual sustainability and energy objectives
- Measuring and analyzing the most important KPIs



Building management goes MindSphere

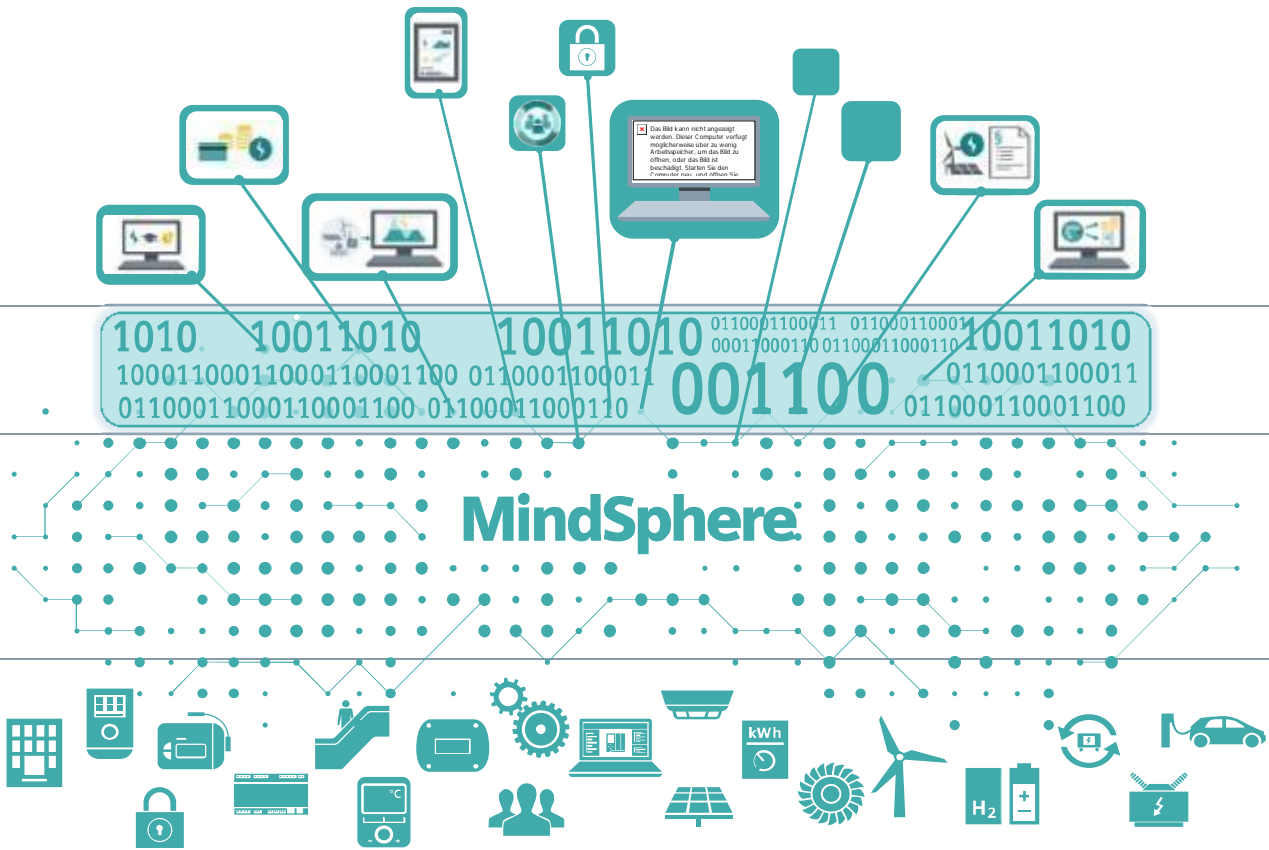


Applications and services

Digital Twin

Operating system

Networked devices on the field level



MindSphere Application Center (MAC)

New business models

Streamlined building and energy management

Analysis of vast data volumes across a wide range of disciplines

... spanning a wide range of disciplines... Buildings Infrastructure Energy Networks ...

Digital buildings in practice

Sello Shopping Center near Helsinki, Finland



Solution: Building Control

- Connection of 1,500 data points
- Error detection and diagnostics
- Cloud-based transparency and reports
- Dedicated Operations Manager

Solution: Electrical engineering

- Energy store integration (1.68 MW)
- Energy from solar (0.5 MW)
- Building automation system
- Micro Grid Controller, Demand Response

Customer Benefit

- 50% reduction in district heating
- €118,000/a energy savings
- 470 MWh/a own production
- 281 fewer tons of CO₂/a in emissions

Challenges

Boosting efficiency per square meter during modernization of the building and simultaneously increasing the satisfaction of visitors and tenants



MindSphere in practice

Electrical wholesaler REXEL near Linz, Austria

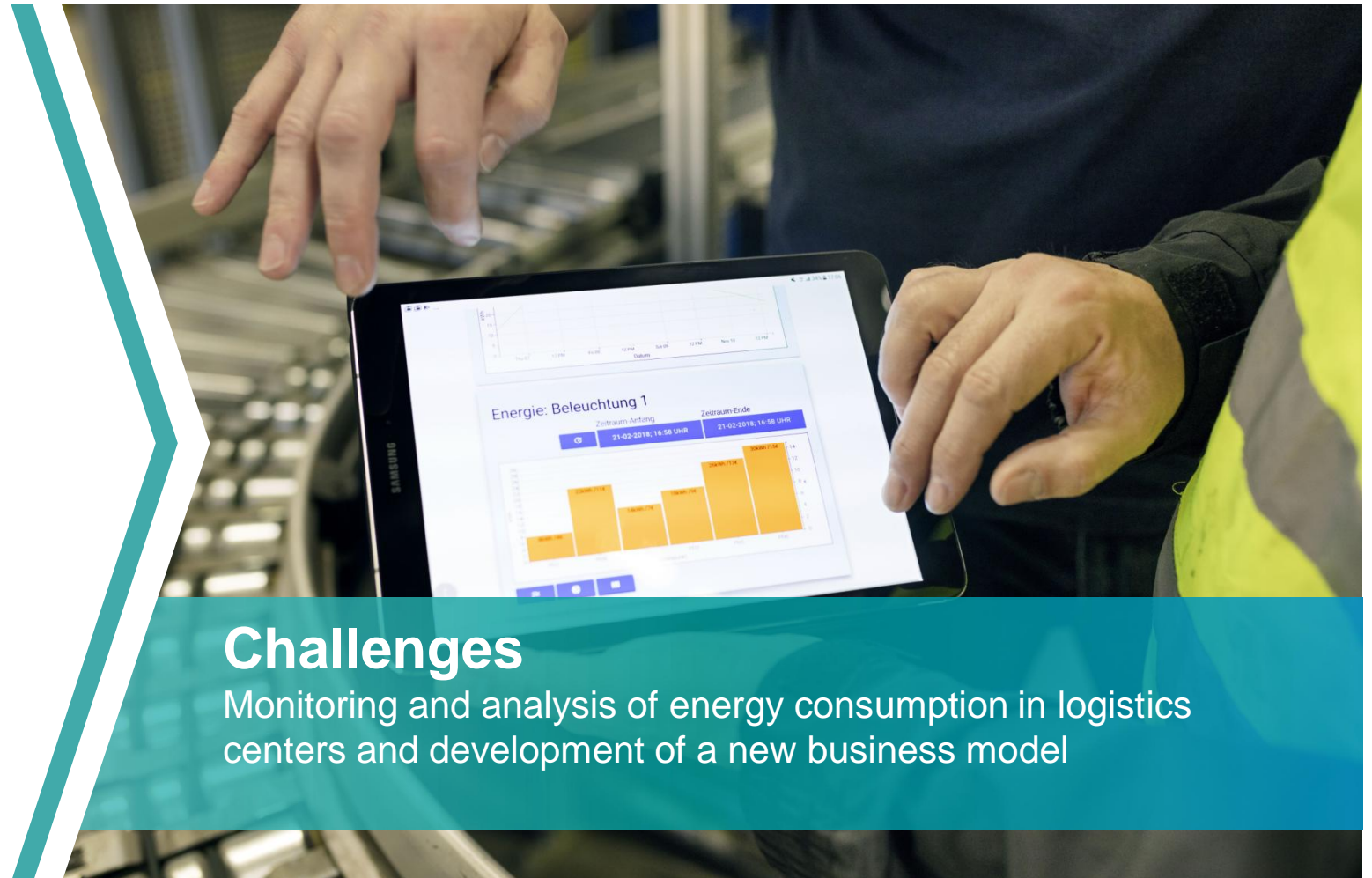


Solution

- Energy management according to ISO 50001 in the central warehouse of Regro, the subsidiary of REXEL in Austria
- Sentron power monitoring system with connection to MindSphere
- Development of a specific MindSphere application

Customer Benefit

- Savings potential: 150,000 kWh electrical energy p.a., 60 tons of CO₂ p.a.
- Development of new services for customers on the basis of MindSphere



Product innovations for electrical power distribution

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Power monitoring

New 7KM PAC1600 and SEM3 measuring devices



Protection concept electrical installation

- Arc fault detection device with integrated line protection in 1 MW
- RCBOs in 1 MW



SIVACON S8 low-voltage power distribution boards

- SIVACON S8 plus
- SIVACON S8 Technology Partner



Switching devices

Integrated switch disconnector portfolio



Electromobility

VersiCharge charging unit for electric vehicles



Medium-voltage components

Vacuum circuit breaker SION 3AE5

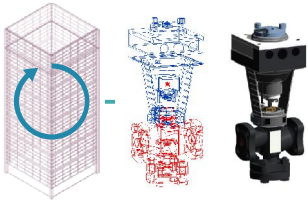


Product Innovations for Building Management

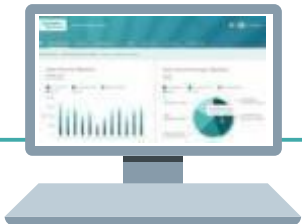


Digital Twin

Virtual images of a product or a system



Data Driven Services with Navigator



MindSphere

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Designo CC

Integrated building management platform for controlling all building services



Premium Office

Perfect working conditions based on room automation



Thank you for your attention



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siemens.com/light-building

Next in our schedule



12:30 – approx. 2:00pm

Moderated stand tour
followed by lunch

Your contacts



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