European Ventilation Industry Association

Smart and connected: What does this mean for fans and ventilation?

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- Jürgen Albig, ZIEHL-ABEGG
- Karl Heinz Belser, Johnson Controls System & Service GmbH
- Roland Ullmann, Siemens

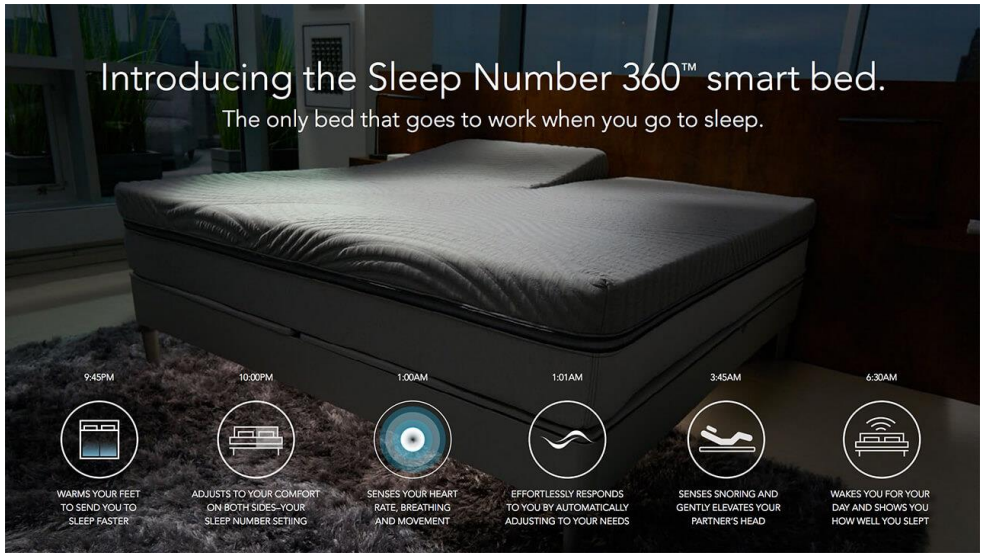
Moderator: *Yves Lambert, EVIA*

Industry views
On
“Smart & Connected”

Yves Lambert, Renson/EVIA

EVIA
European Ventilation Industry Association

Smart items in our daily life ?



Smart ventilation in SRI

Smart Readiness Indicator - SRI

Measure the technological readiness of your building

1 **Readiness to**

adapt in response to the needs of the occupant

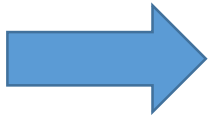
2 **Readiness to**

facilitate main-tenance and efficient operation

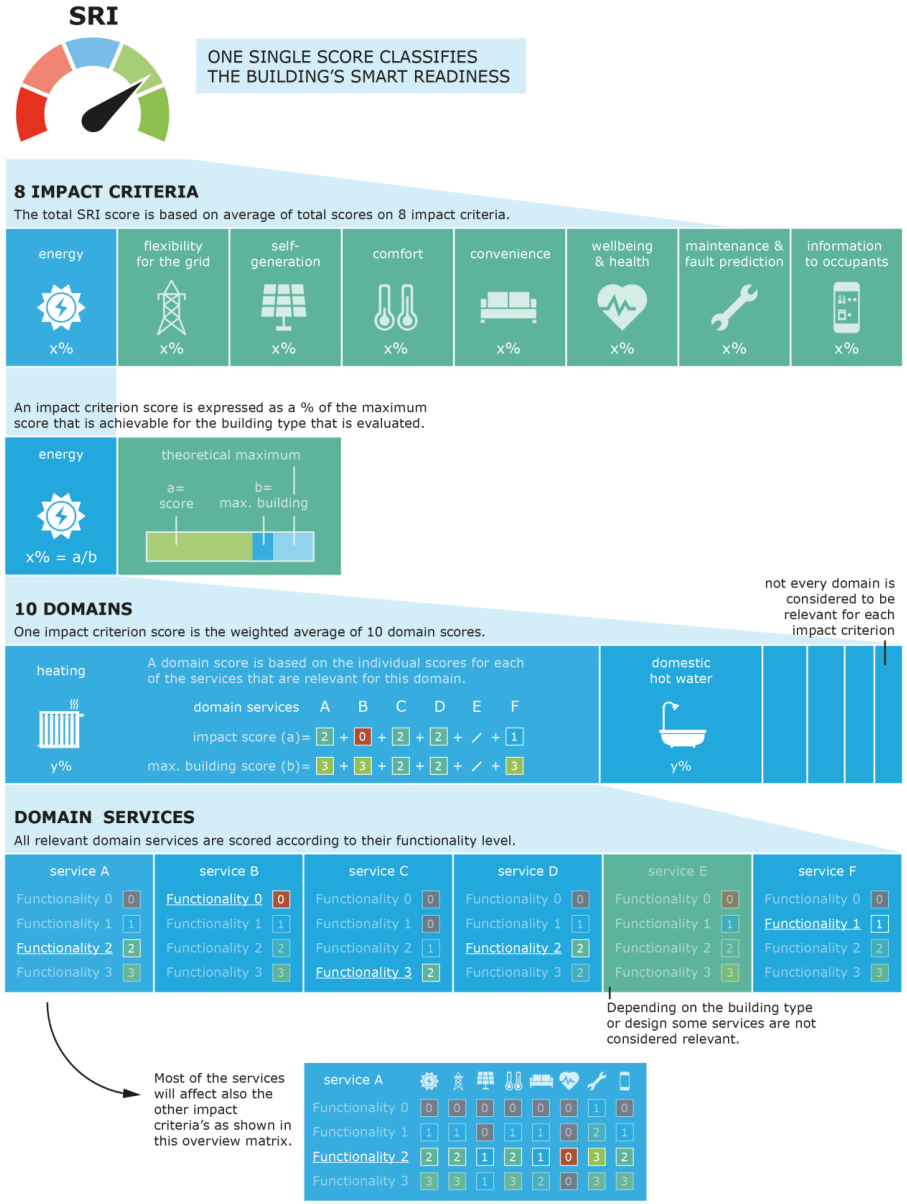
3 **Readiness to**

adapt in response to the situation of the energy grid

Current SRI-procedure

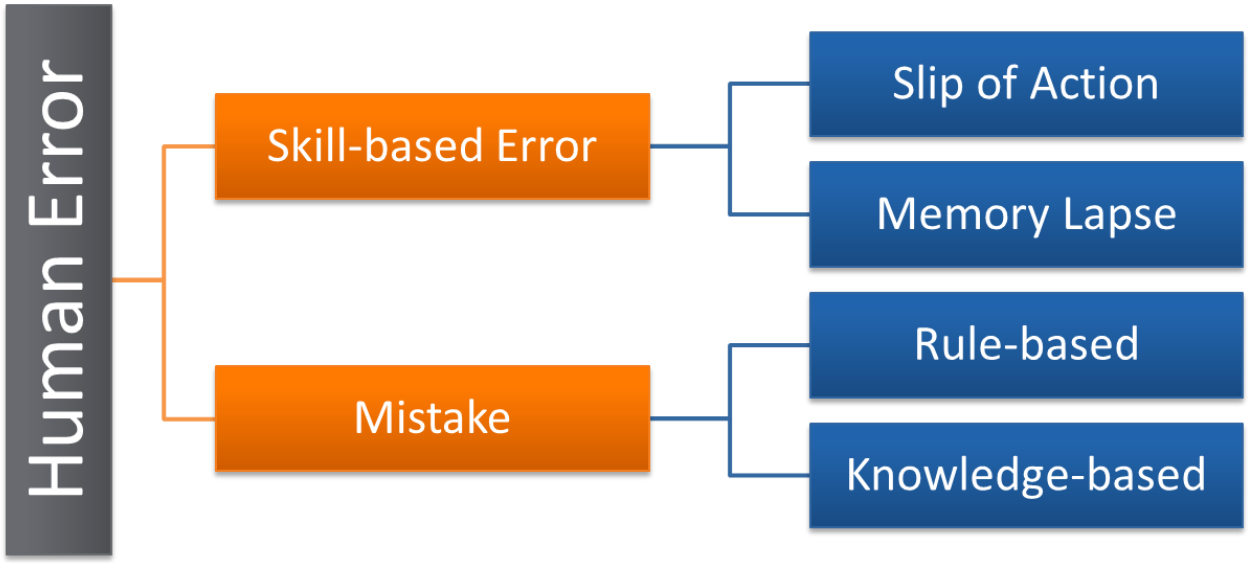


Complex calculation



Top Down Approach

Other weaknesses : “expert”



Other weaknesses : “price”

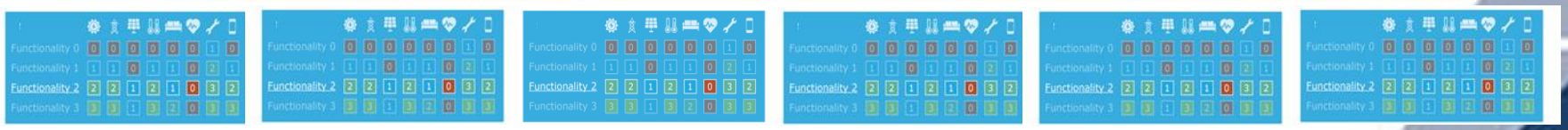
Other weaknesses : “voluntary”

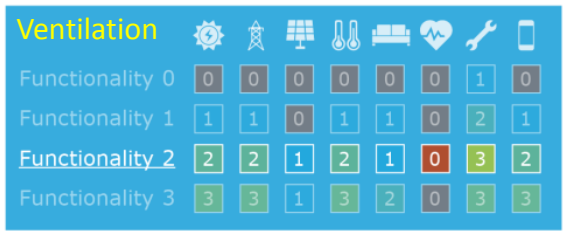
EVIA proposal

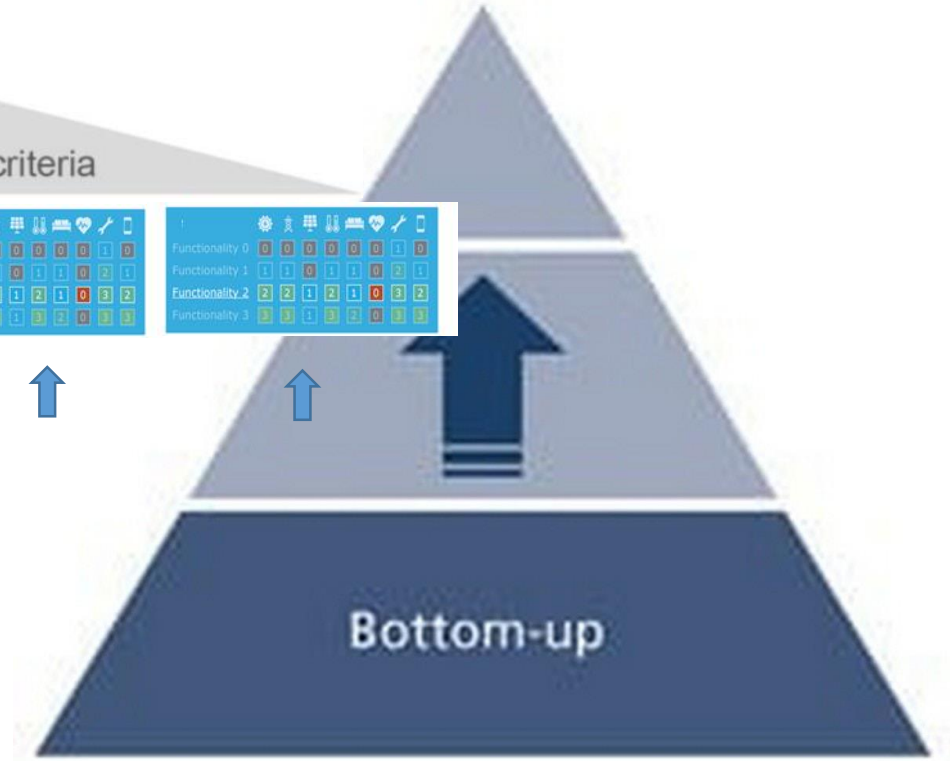
SRI

total score is based on average of total scores on 8 impact criteria

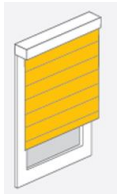
Result = productscore







Evaluation of the 8 impact criteria on product-level by manufacturer



etc...

Advantages

- Supported by the industry = push into the market (potential for differentiation)
- Selfdeclaration (cfr Ecodesign)
- Included in EPREL database (?)
- Fast & cheap
- Reliable (less risk for human error)
- No requirements for “experts”, can be done within app of calculation software

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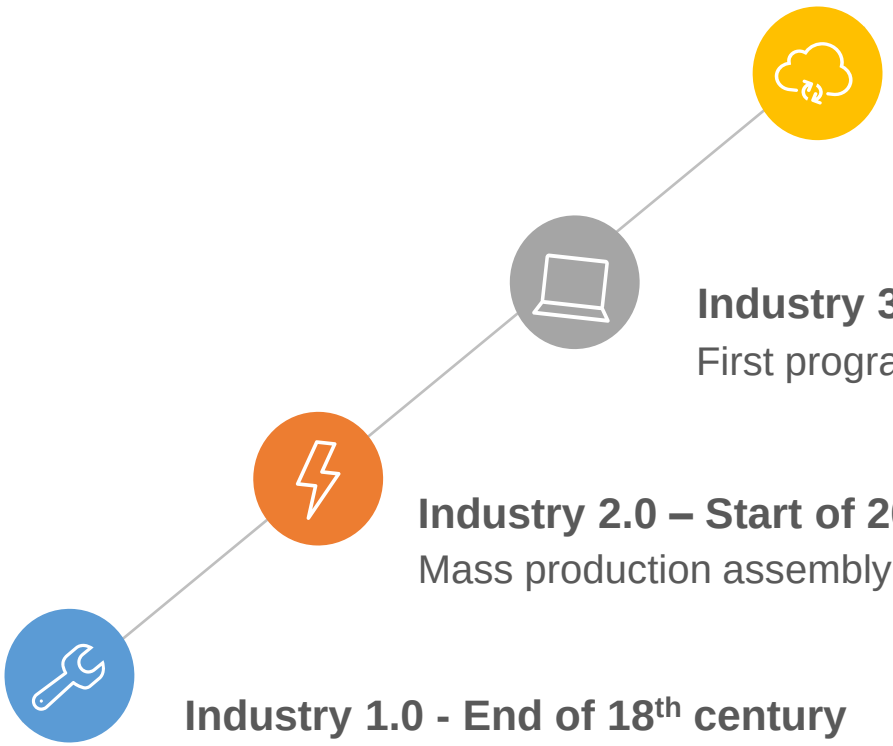
Juergen Albig, Ziehl-Abegg SE
Chair of the Connectivity Taskforce

Mega Trend – Industry 4.0 / Industrial Internet of Things



Industry 4.0 – Since 2010
Cyber-physical-systems linking real with virtual objects via information networks (Internet) → Artificial Intelligence (AI)

Industry 3.0 – Start of 1970s
First programmable logic controller, computer, automation and IT

Industry 2.0 – Start of 20th century
Mass production assembly line and electrification

Industry 1.0 - End of 18th century
First mechanical loom and steam engine

Digital Development

1926

1963

1980

1999

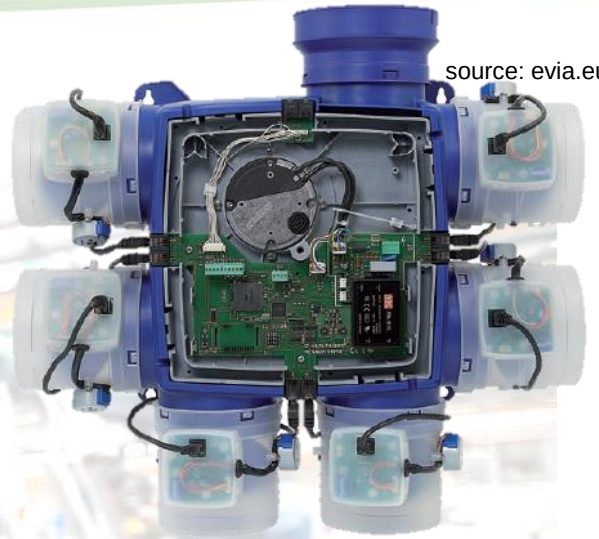
Spotify®

2011

What does it mean for Ventilation Industry?

source: evia.eu

Non-Residential Unit

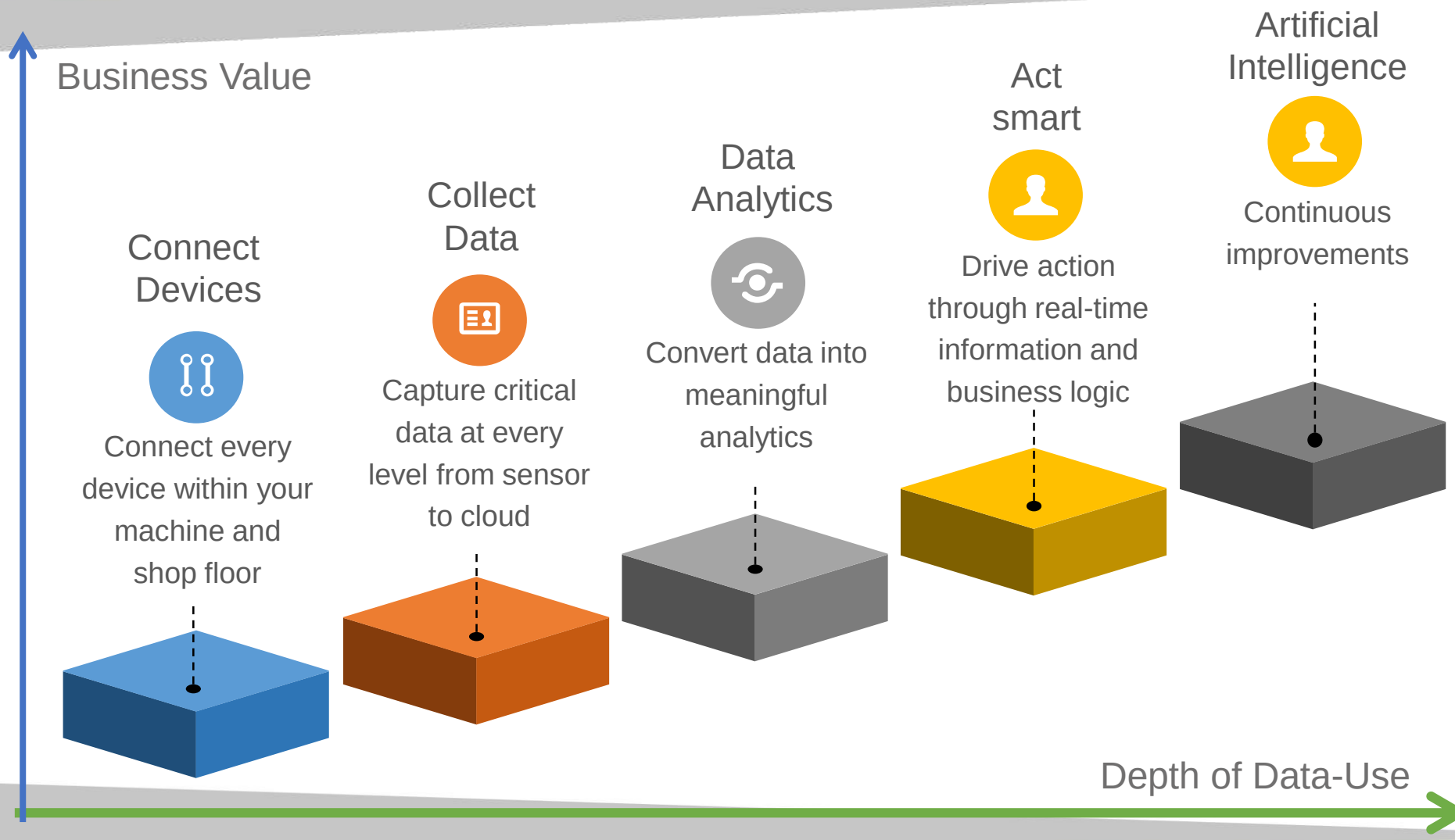


source: evia.eu

Residential Demand Controlled Unit

Connected
Fans & Sensors

What does it mean for Ventilation Industry?



Intelligent Buildings – Digitalization changes everything

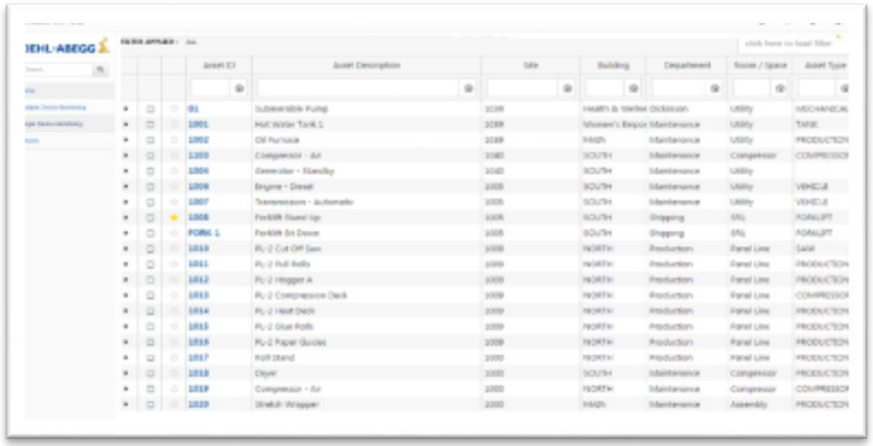
Innovation in HVAC business

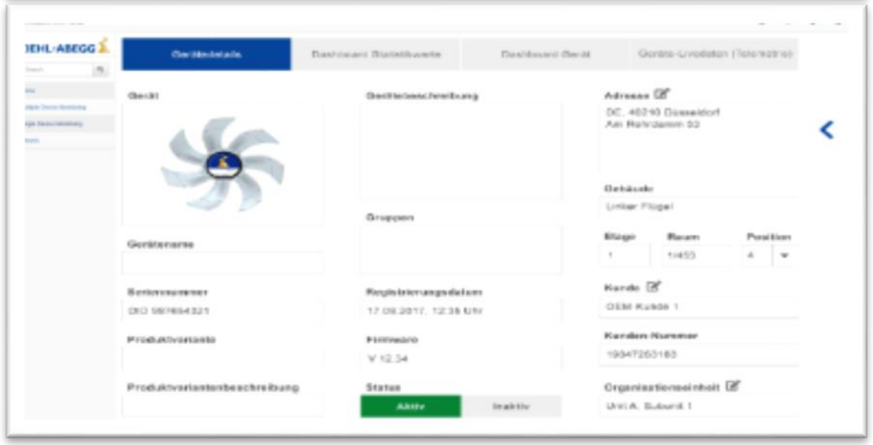
Innovative solutions are accelerated customer’s around the globe to enable digital transformation.

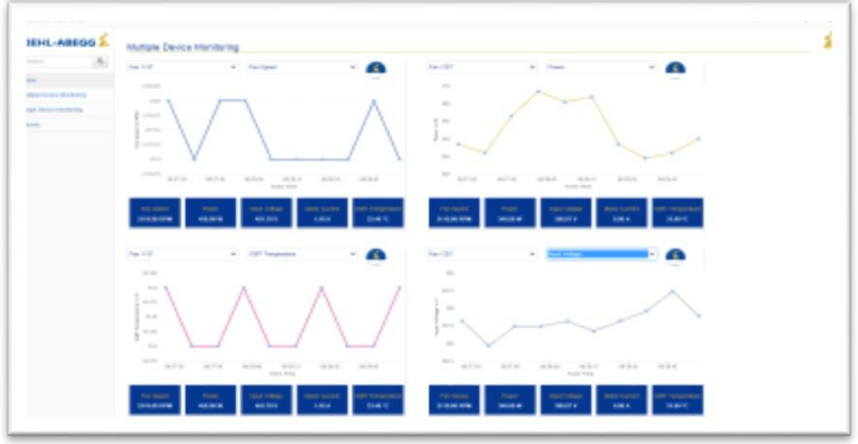
IIoT platform collect the data for hundreds of thousands of connected devices, analyze it, and provide the required business intelligence and real time insights.

IIoT analytics provide visibility to help understand product performance patterns under real-world conditions (e.g. predictive maintenance).

Visualize your Facilities, Units or Components







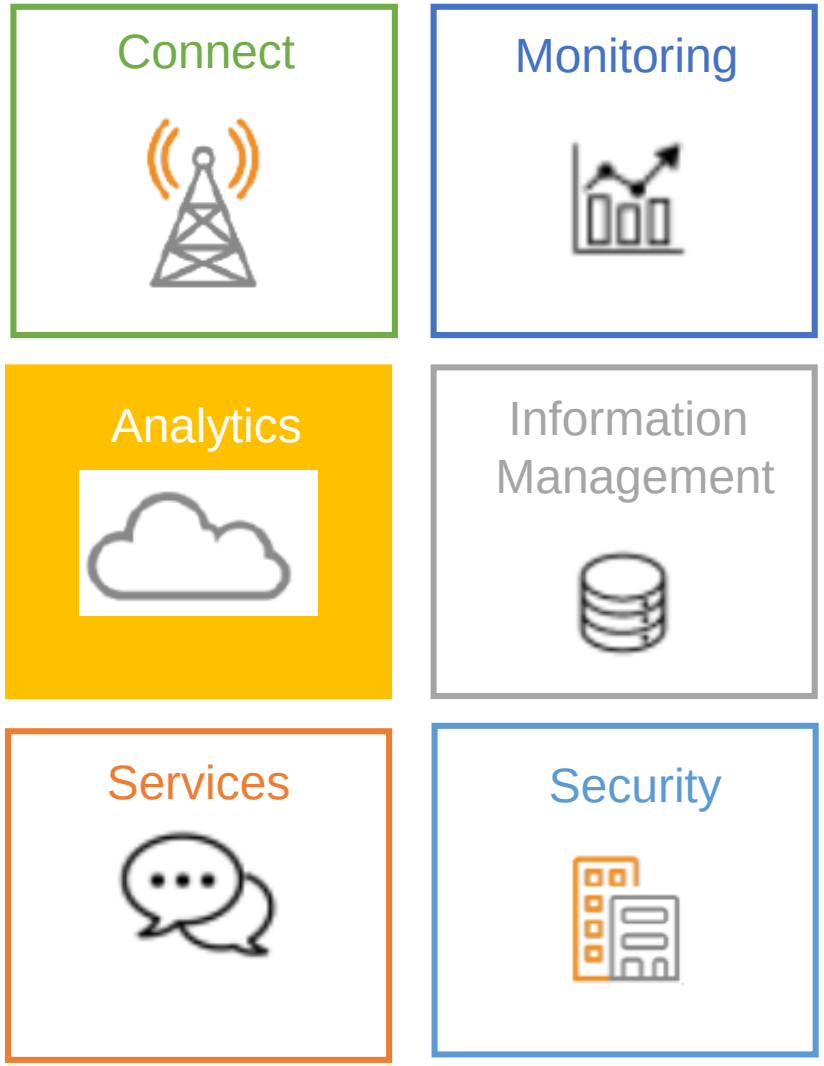
See all insights from a single device to multiple devices within your equipment

Visualize your Facilities, Units or Components

1. Simple, highly secure and scalable platform designed for IIoT.

2. Solve business problems with industry-specific expertise, applications and solutions.

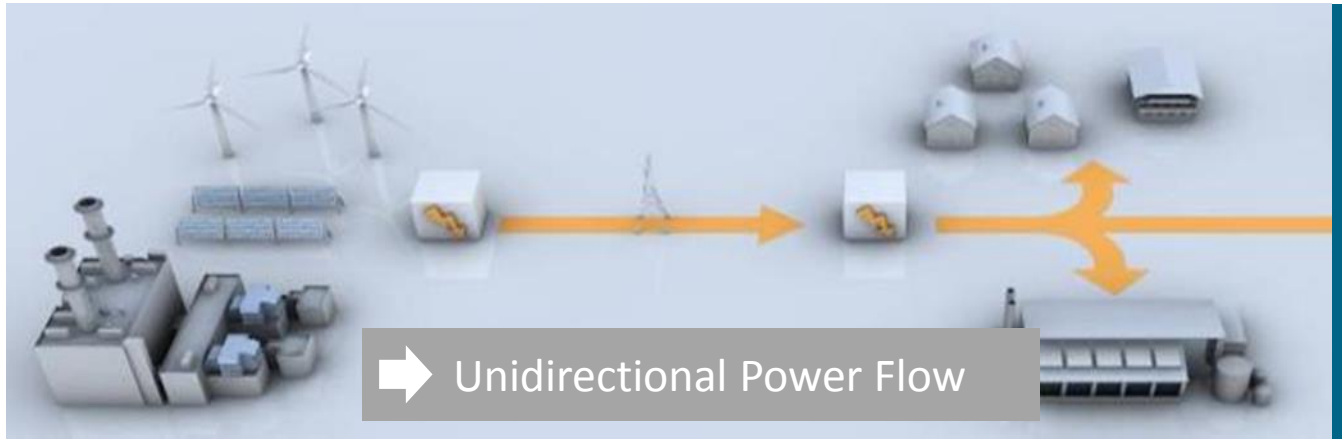
3. Build your IIoT strategy based on 6 main topics.



Karl Heinz Belser, Johnson Controls System & Service GmbH

Roland Ullmann
Director Industry Affairs Siemens Building Technologies

Smart Buildings in Smart Grids



Generation follows demand

- Pure consumer
- Little adaptations to system (e.g. Peak Demand Limiting)

Demand follows generation (driver = energy cost)

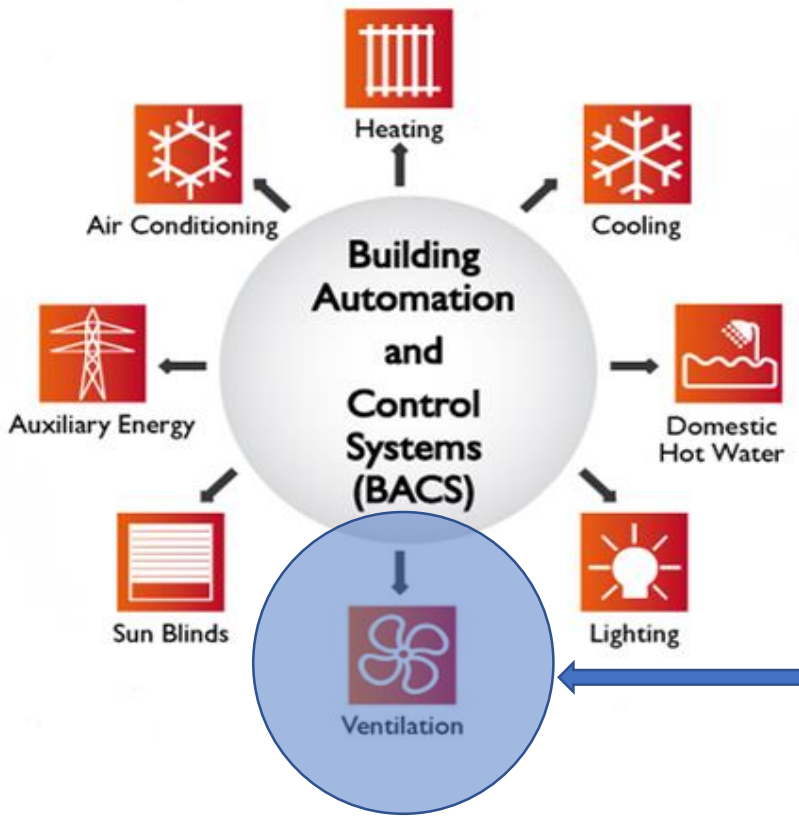
- Demand / response
- Forecasts
- Storage
- Intelligent consumption

Smart Buildings & Ventilation

Demand – Response:
Pricing signals
e.g.
24 h ahead to optimize operations

Demand side management:
directions to optimize flexibility

CEM (customer energy manager)



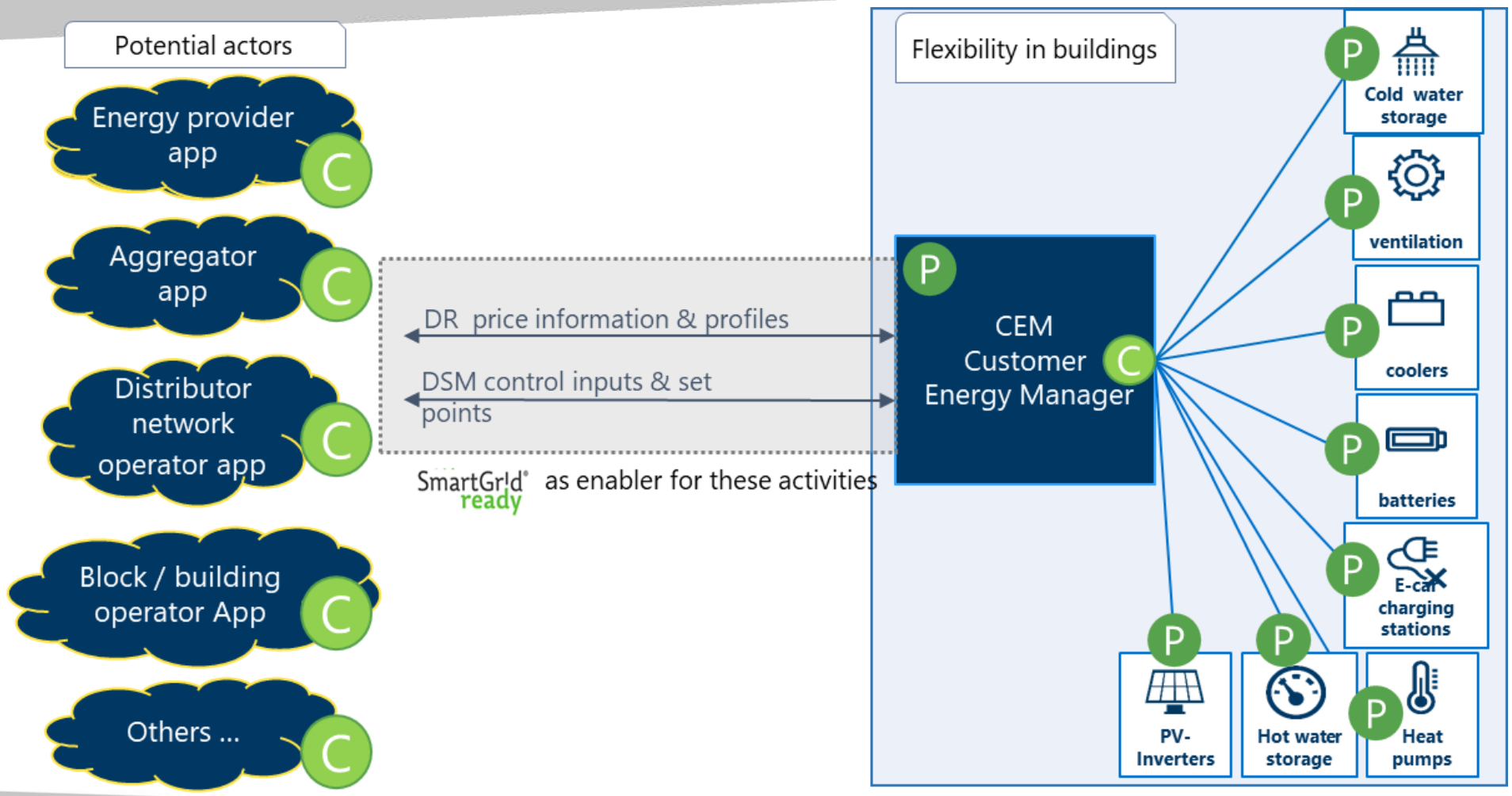
On-site generation - & nearby renewable energy
Maximize own use
Forecast operation

Energy Storage Systems

Energy use behavioral change

Indoor Environment Quality
- modulated to demand
- ideally forecasted
- Synchronize controls among all emissions to avoid e.g. concurrent heating / cooling

View of Equipment in ongoing IEC / CENELEC discussions



EPBD: 2018 Impact (part of «clean energy for all Europeans»)

Two drivers put equipment and ist controls / monitoring like air handlers / ventilation in focus:

- §15
- **1.** Member States shall lay down the necessary measures to establish regular inspections of the accessible parts of air-conditioning systems or of systems for combined air-conditioning and ventilation, with an effective rated output of over 70 kW. The inspection shall include an assessment of the efficiency and sizing of the air-conditioning system compared with the cooling requirements of the building and, where relevant, consider the capabilities of the air-conditioning system or of the system for combined air-conditioning and ventilation to optimise its performance under typical or average operating conditions.

- **6.** Buildings that comply with paragraph 4 or 5 (**Building Automation Integration and Efficiency Monitoring**) shall **be exempt from the requirements** laid down in paragraph 1.";

EPBD: 2018 BACS Requirements that influence Equipment

The building automation and control systems shall be capable of:

1. continuously monitoring, logging, analysing and allowing for adjusting energy use;
2. benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; and
3. allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers.

Challenges for the ventilation industry in regard to digitalized buildings

- Ability of the product channel to express the richness of the integration in digitalized world while keeping cost limited
- The communication channel itself (e.g. BACnet, Modbus) is NOT the question
- Some example:
  - Monitoring, no integration in systems like BACS
  - Functional integration in BACS and smart building environment via e.g. CEM's
  - Simple controls – first delivery while functional integration follows later (e.g. hardware / firmware that offers standardized functional integration (e.g. EN 15232 – types)
  - Market label that supports meaningful declaration of:
    - Traditional BACS integration / commanding, feedback, warnings, alarms
    - Monitoring capabilities supporting e.g. EPBD requirements
    - others

Ventilating Europe