Vejen til datadrevet dimensionering og bygningsdrift

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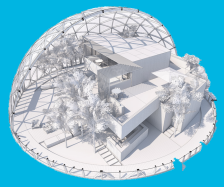
NCC Building Danmark

Why this Proof-of-Concept..?

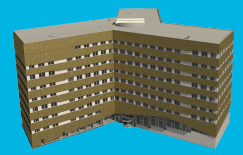
- Dome of Visions 3.0, a experimental techlab. 2017-18



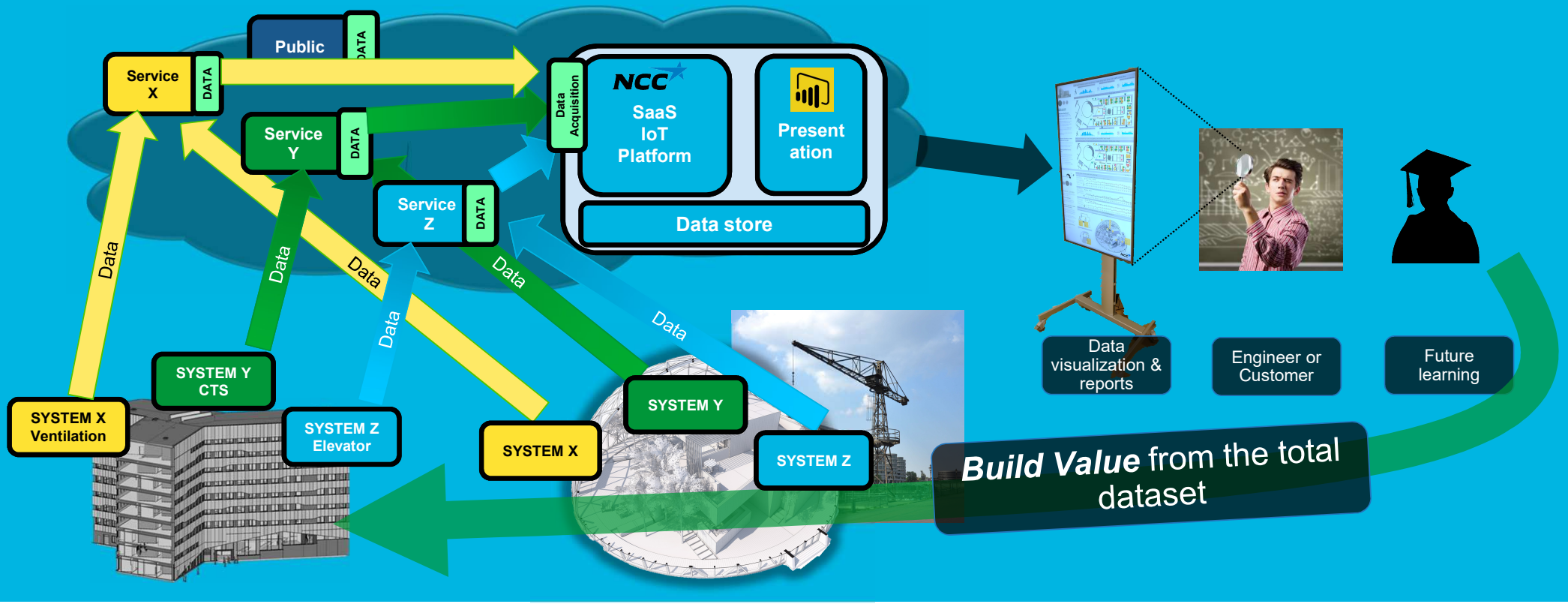
- A Massive potential for improvement, yet by default data is not being collected and analyzed

- Data + Knowledge = Insight → Intelligent and sustainable action ?

- Many technical systems are becoming data driven, someone need to care of this at a building level.

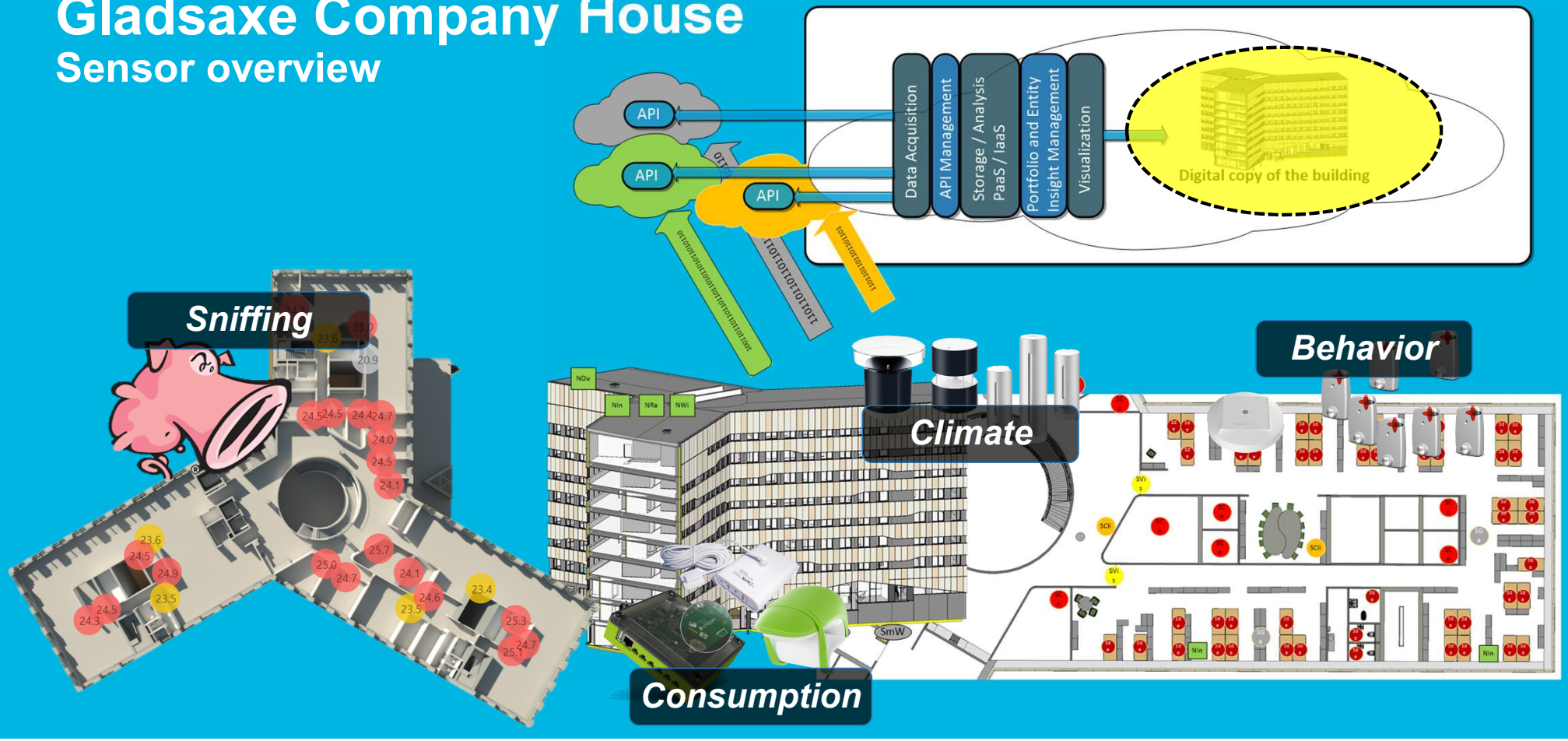


Platformen


Public
DATA
Service X
DATA
Service Y
DATA
Service Z
DATA
Data Acquisition
NCC
SaaS IoT Platform
Present ation
Data store
Data
Data
Data
Data
Data
Data
SYSTEM Y CTS
SYSTEM X Ventilation
SYSTEM Z Elevator
SYSTEM X
SYSTEM Y
SYSTEM Z
Data visualization & reports
Engineer or Customer
Future learning
Build Value from the total dataset

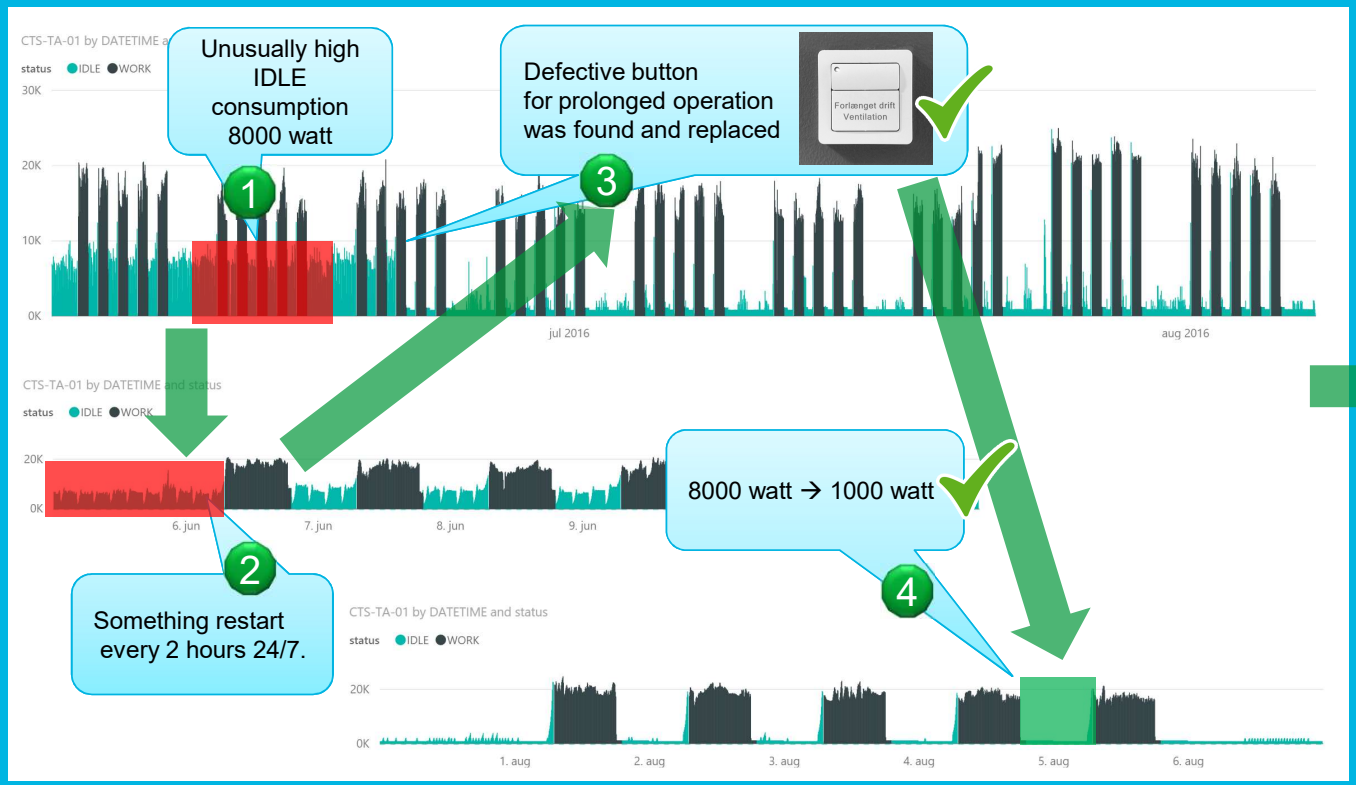
Gladsaxe Company House

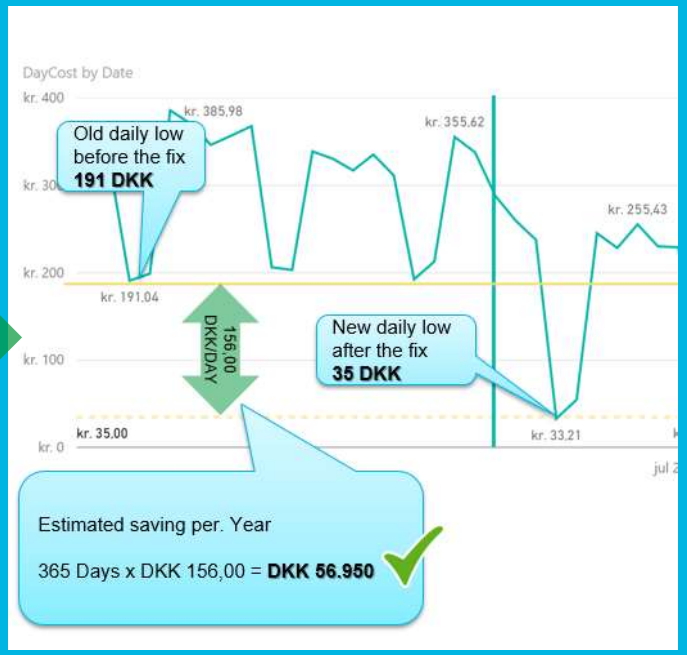
Sensor overview



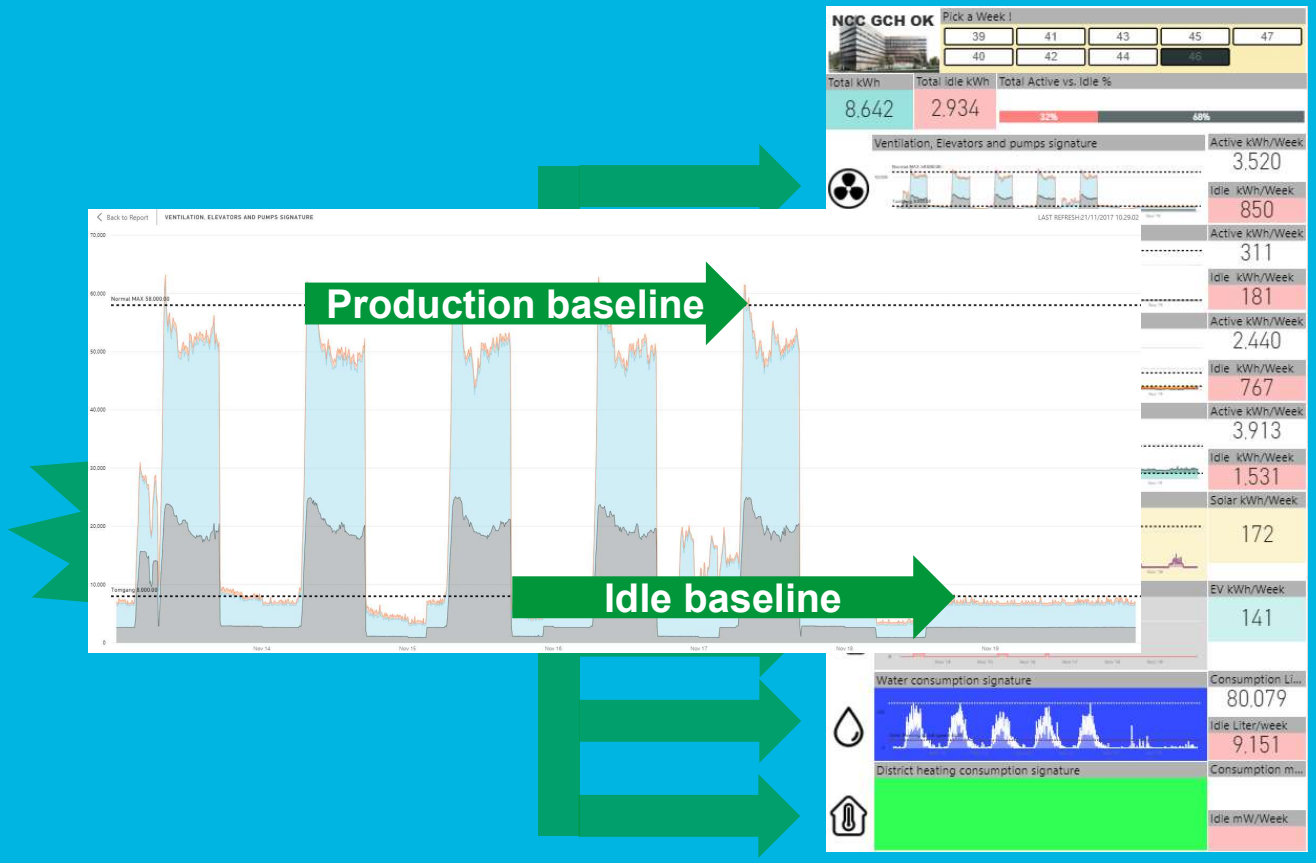
Use-Cases: Troubleshooting Based on Data Visualization

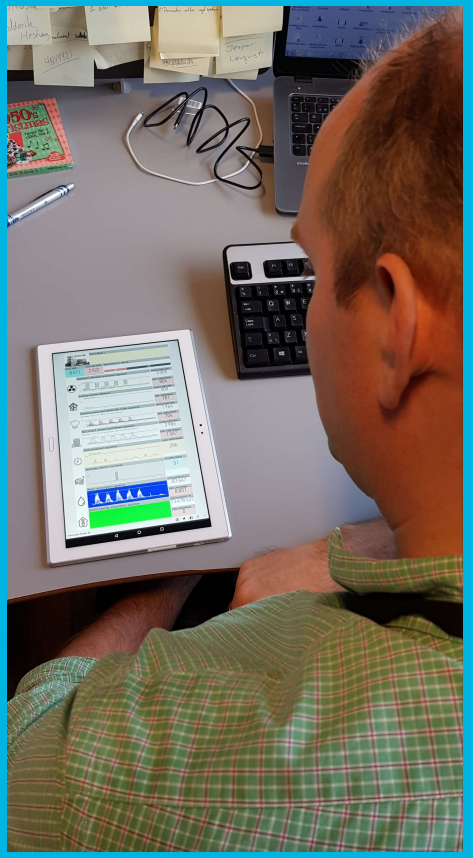
- Use data patterns to find anomalies or sustainability issues





Use-Cases: Consumption Baselining

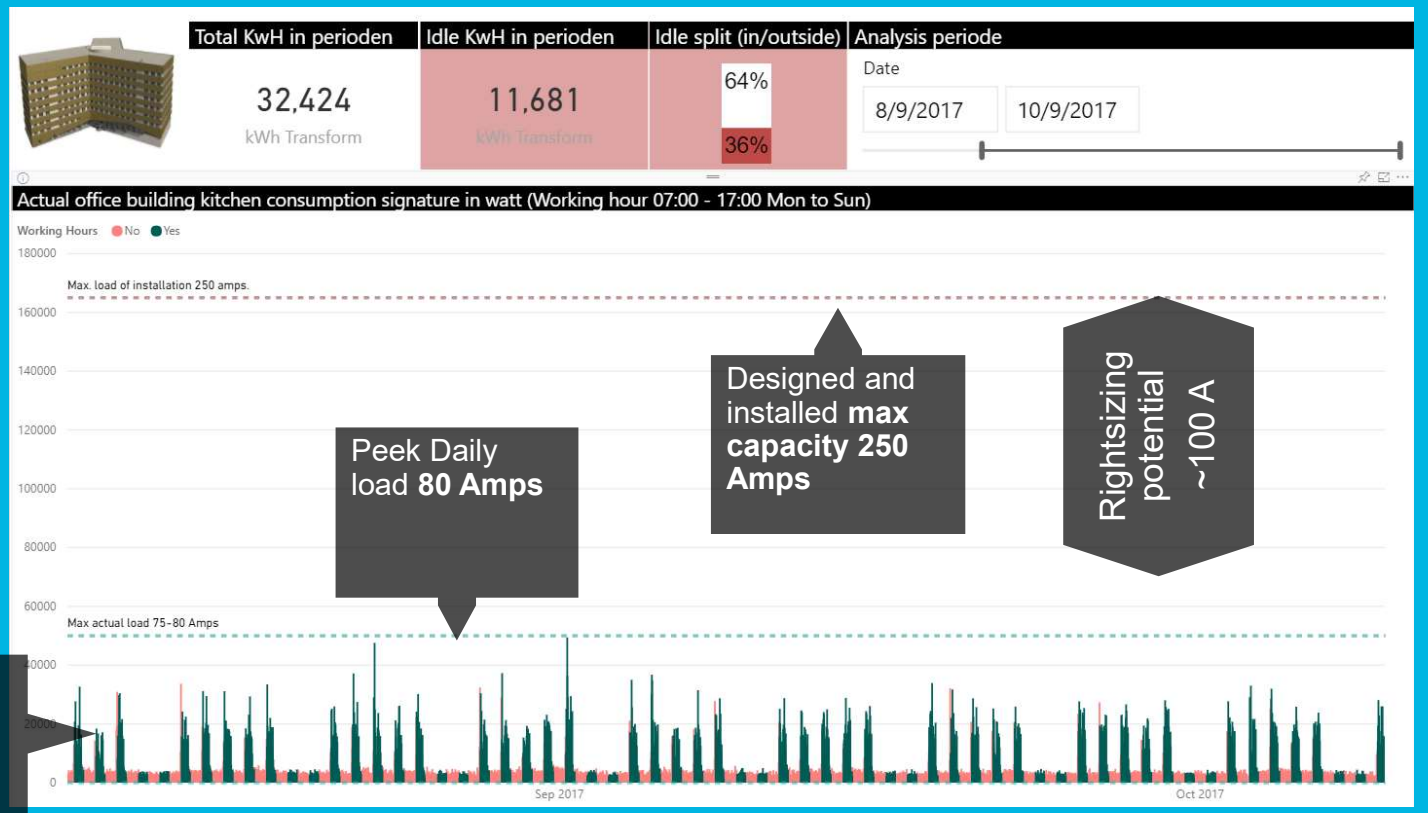




Use-Case: Installation rightsizing

Data to feed the learning loop.

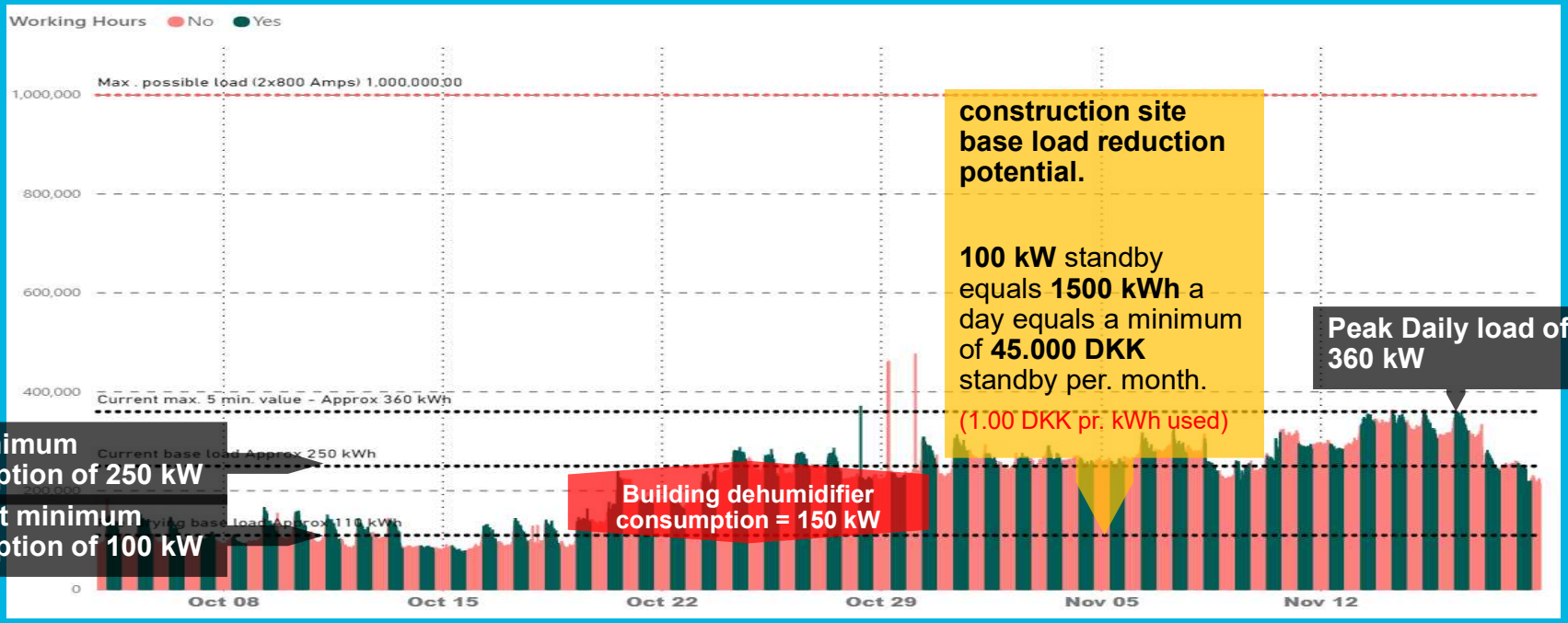
- Rightsizing:
  - Utility connection cost
  - Electrical equipment investment
  - Overall material use



2 months of detailed consumption data from **Gladsaxe Company House Kitchen**

Use-Case: Construction site installation rightsizing and behavioral input.

Case data acquired by two Smappee Pro devices on actual construction site 4/10-18/11-2017



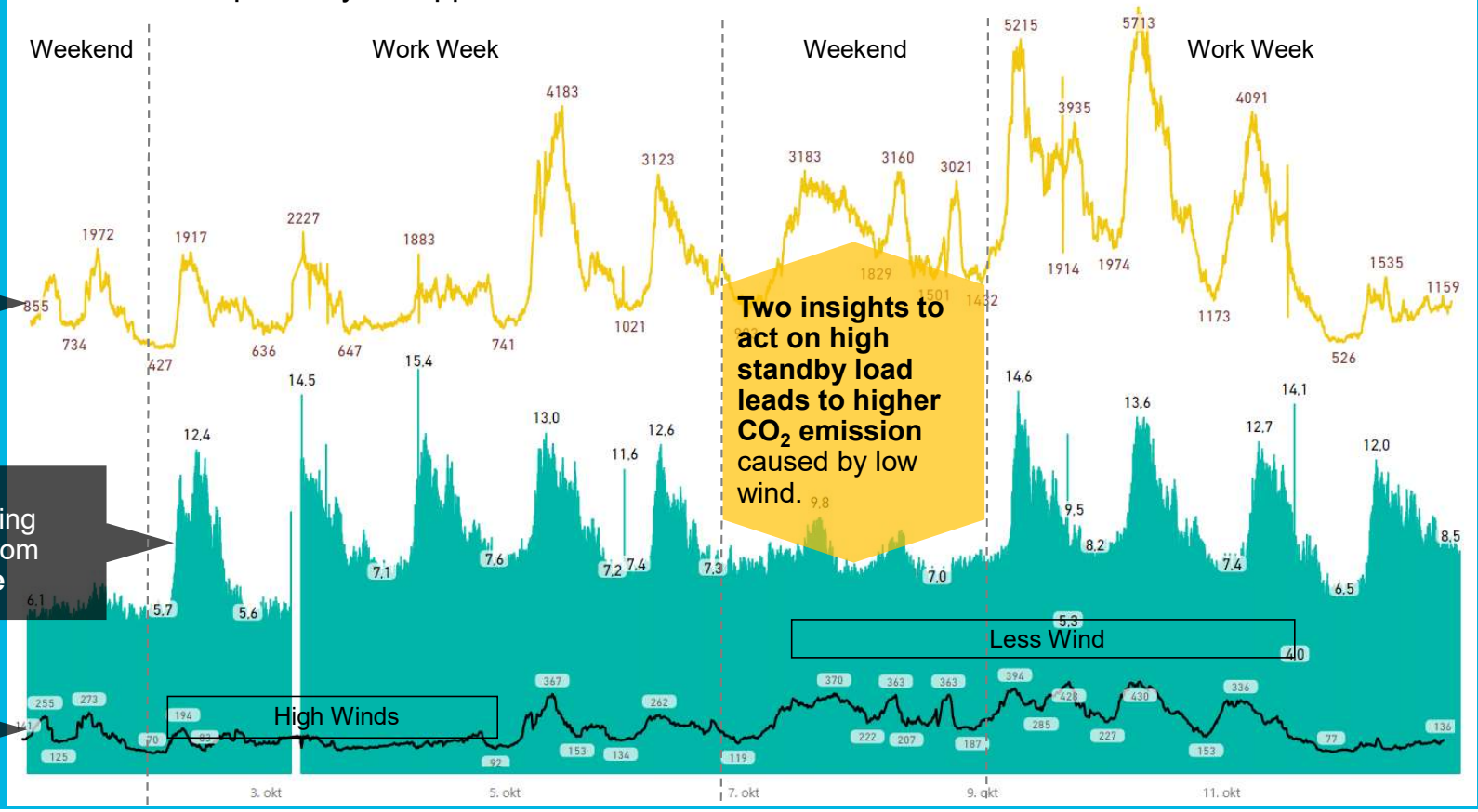
Food for thought

Realized CO_2 cost g/CO_2 per 5 min.

14 days of detailed consumption data showing actual kWh per. 5 min from **large construction site**

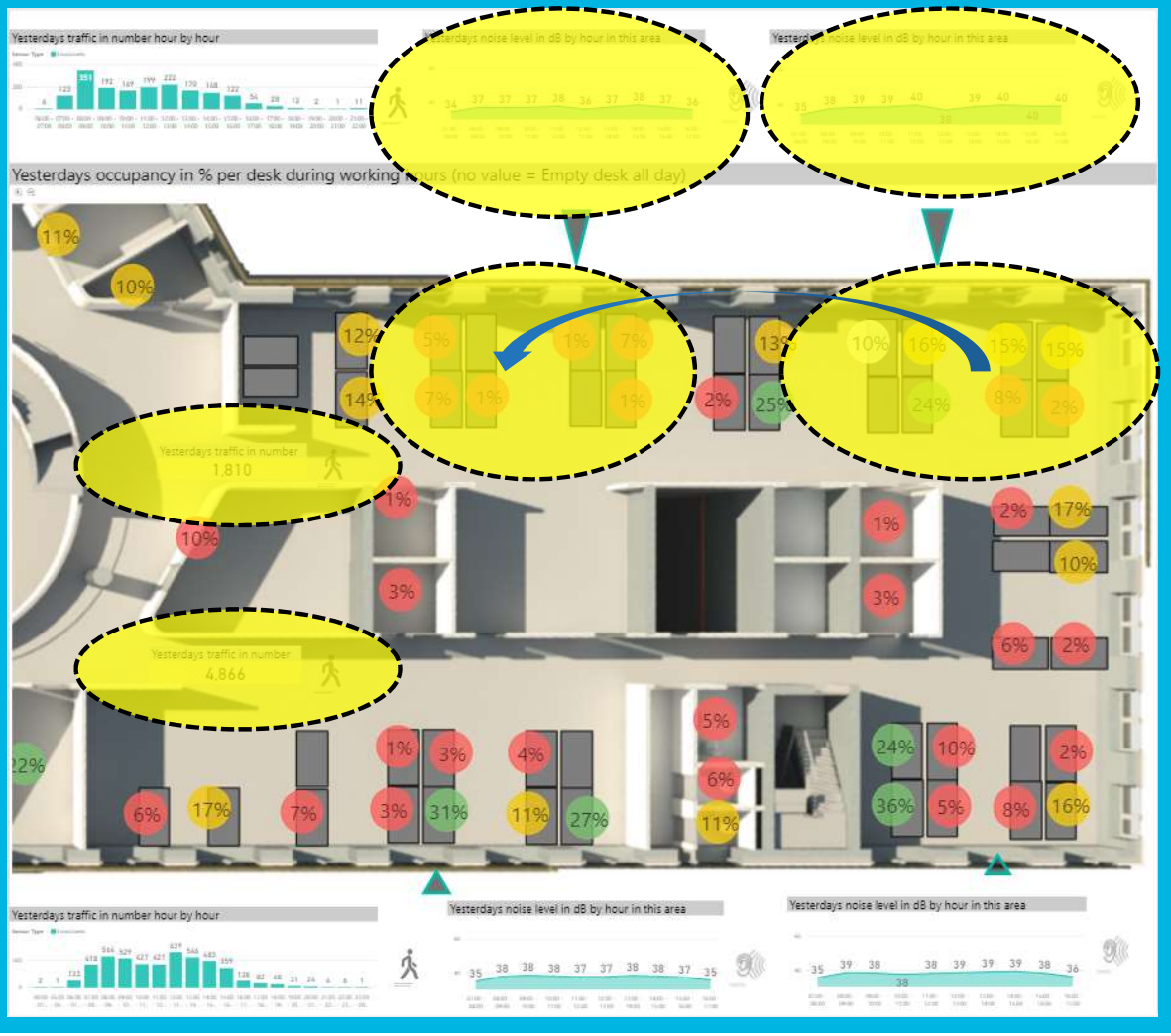
Danish CO_2 emission per. kWh

Case data acquired by Smappee Pro devices on actual construction site 1-13. Oct/2017



Example:
Acting on data

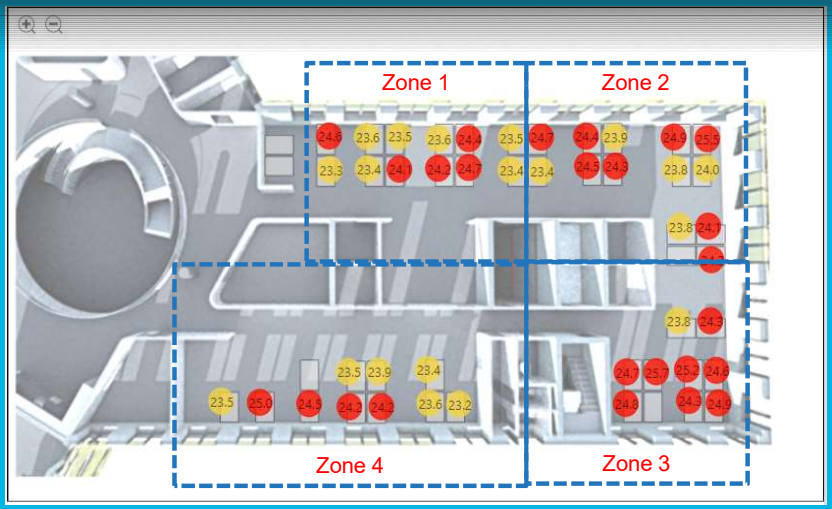
- Lower occupancy in area
- Higher occupancy in area
- Average noise difference
- Act on data
- Act on office traffic

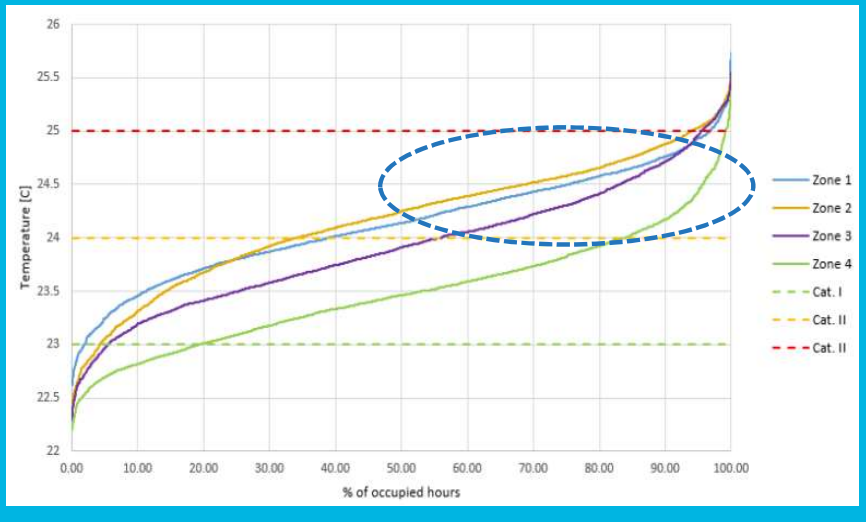


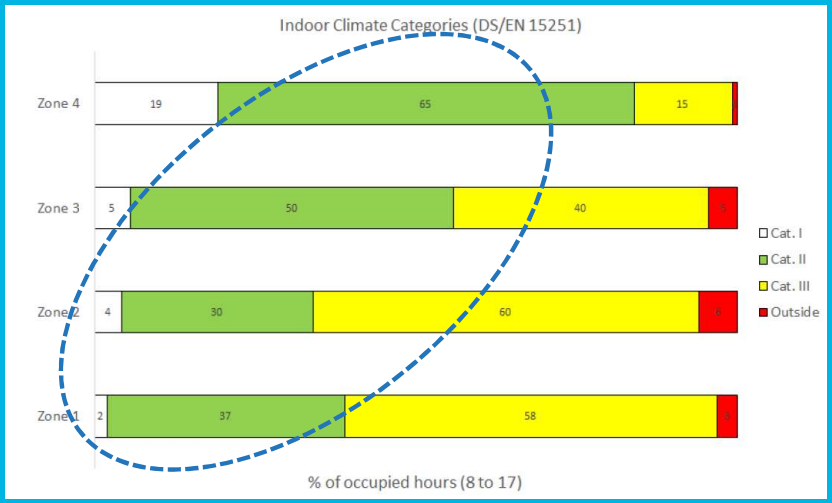
Using live data to develop functionality..

Use-cases – Thermal indoor climate

- Intention of the building design is the keep the office area within indoor climate class II 95% of the usage time.. No really the case here…







Use-cases Ventilation

- Operational insights
  - Scatter plot showing energy consumption from ventilation vs. outdoor temp….
- System rightsizing
  - Ventilation system is maxing at 75% of max effect but ony 3% of the time !

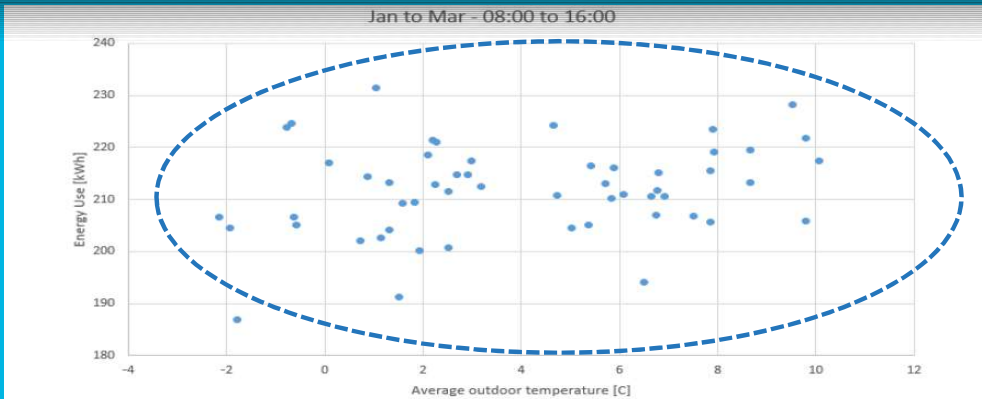
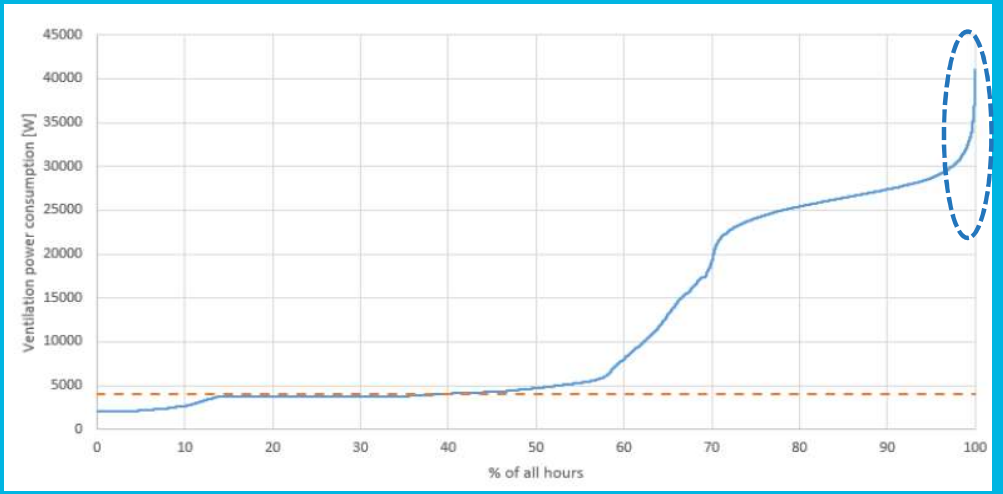
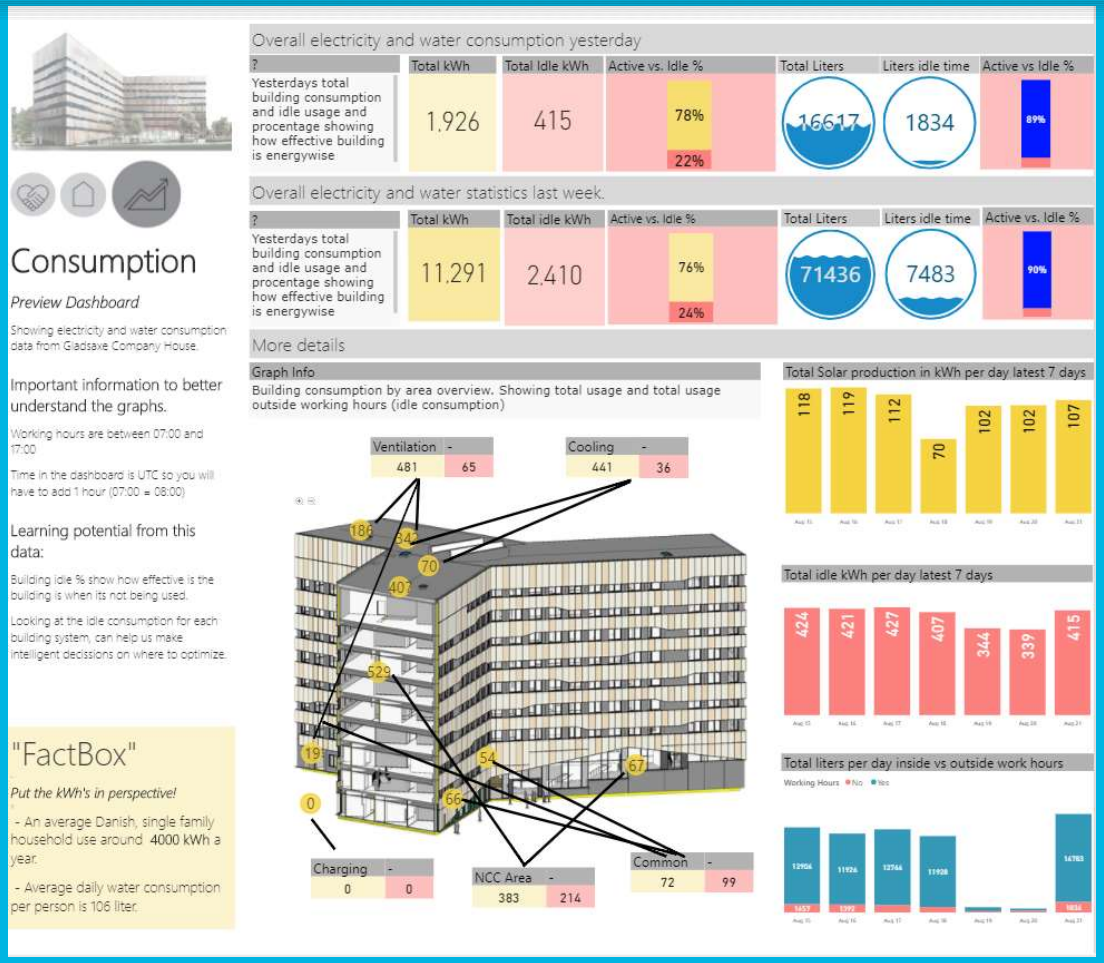


Figure 8.4: *Relationship between outdoor average temperature and ventilation energy use from 08:00 to 16:00.*

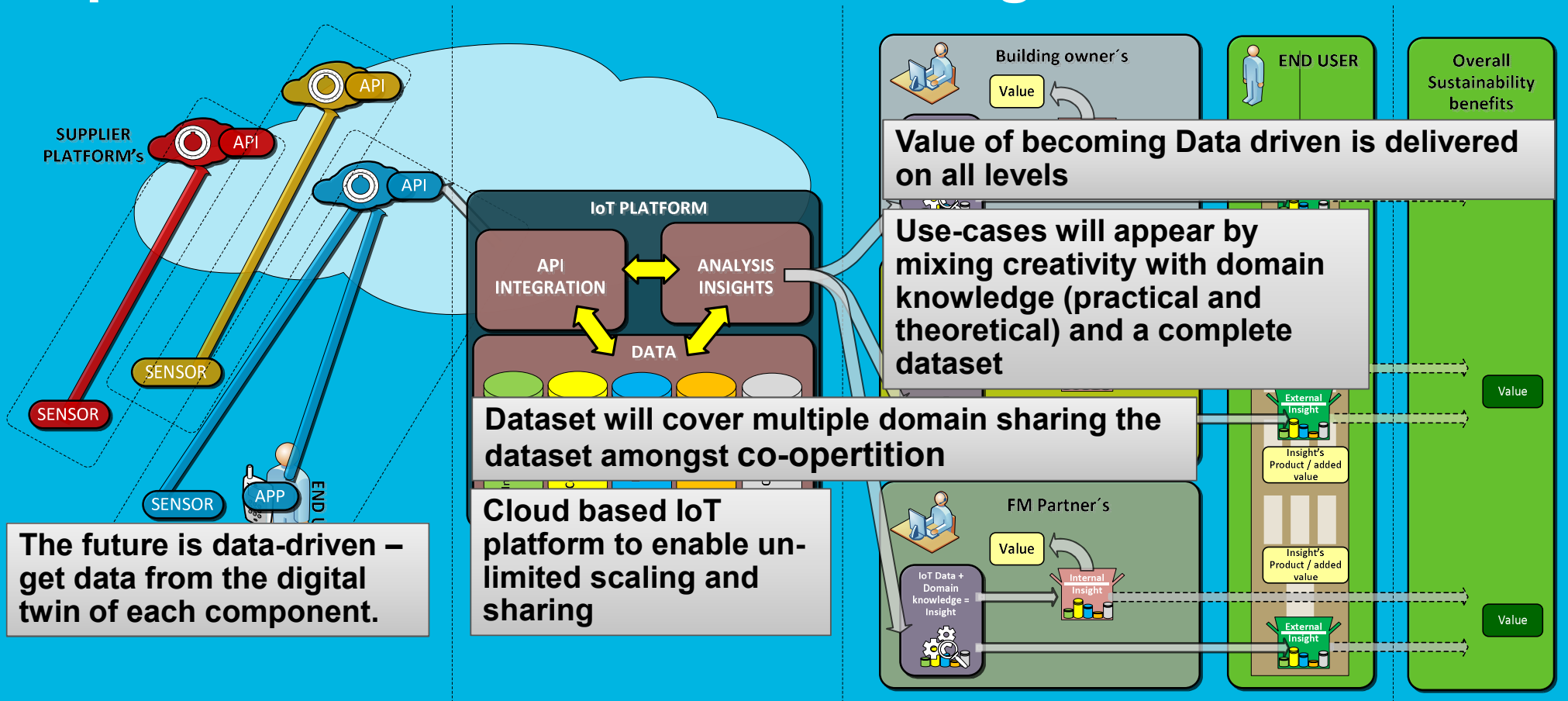


Use-cases

- Traditional KPI Dashboard's



Open, modular and scalable design

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