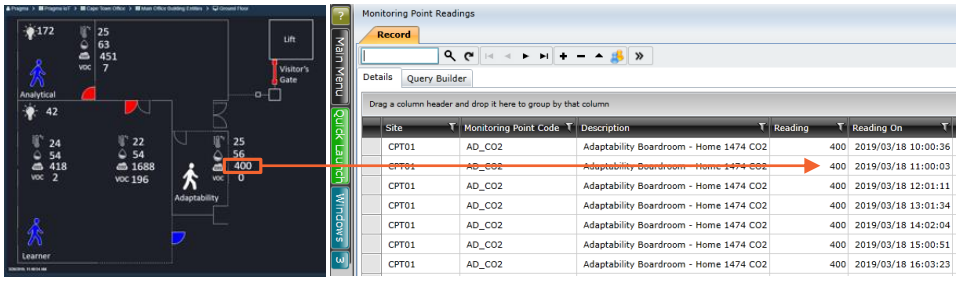
Proof of Concept
Smart Building

Project background

We are an engineering company that delivers enterprise asset management solutions to asset-intensive industries. Our software tools and management practices help organisations perform at their peak while balancing asset performance, cost and risk.
Pragma's head office houses various call centres, training facilities, meeting rooms, an IT server room, a canteen and general office space. Facilities management (FM) plays an integral role in ensuring that employees are set up to perform at their peak.
We challenged our R&D and FM teams to come up with an intelligent FM solution to improve our FM practices and illustrate our Maintenance 4.0 capabilities. As part of the project, Pragma's R&D team assisted with the digital transformation of various business processes. An ecosystem of technologies was used to digitise the monitoring of rooms, electrical energy and water usage, to name a few.

Key challenges

- Identifying use cases that will add the most value.
- Procuring sensing hardware that was cost-effective, but still fulfilled the requirements.
- Integrating various platforms and technology for acquiring raw data.
- Migrating existing technology into our central data acquisition platform.
- Installing IP based devices onto Pragma's IT infrastructure due to strict ICT policies.
- Scope creep due to internal misalignment on the agreement of value-add use cases.
- Insufficient network coverage.

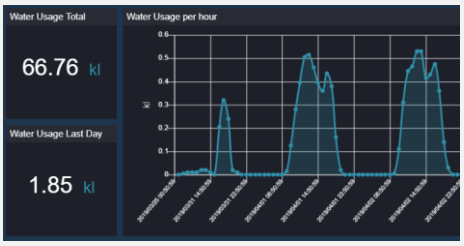


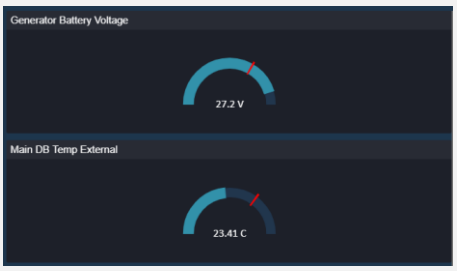
Project activities

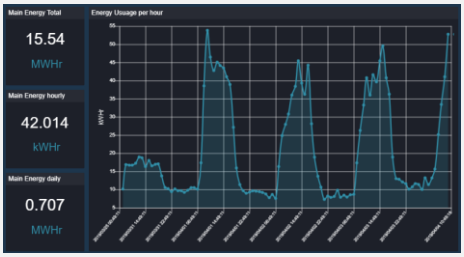
- The project team (FM and R&D) identified the business case that includes the objectives of the digital transformation strategy, use case scoring and technology specification required to fulfil the strategic goals.
- R&D designed, developed and implemented an IIoT solution to acquire, filter, decode and aggregate data. They developed real-time dashboards for displaying live data received from sensors that include temperature, humidity, CO_2, Volatile Organic Compounds (VOC), motion, door status, battery level, electrical energy, water consumption, light, flood, and generator On/Off status. For the visualisation of analytical data, the team built Business Intelligence (BI) models. Lastly, the team developed an integration component to export data from the sensors into Pragma's On Key Enterprise Asset Management Software (EAMS) to automate work management and store aggregated data.

Value add

- Electrical energy savings
- Improved air quality
- Reduced costs for the measurement of CO_2 and luminance levels which are a statutory requirement for facilities
- Increased operational efficiency through the use of automated generated work orders on some tasks.







Tools and technology

- Wireless room sensors - LoRa
- Light sensors - LoRa
- I/O device for measuring analogue voltages, digital inputs and digital temperature probes - LoRa
- IoT Gateways with IoT.nxt Raptor software installed.
- IoT.nxt Commander product
- IoT.nxt Portal product
- Azure SQL database, serverless functions and Logic Apps
- LoRa Network Server (LNS)
- On Key 5 EAMS