## 2.29 Minutes of Meeting

We had around two meetings a week with our customer. We have written minutes for some of these.

**Customer Meeting 6. April 2021. 4:30-5.45 pm (Ger. Time zone)**

Museum has started to collect data on January 2021

- Use the data to see what is running & what is not running: for equipment (hitting, cooling, temperature, usage of electricity). In Grafana you can see spikes, but not a cause
- Want to know what is working, what is working on time, what stopped working and if alarms go off -> what is exactly the problem
- There was/is a “Zwischenstelle” between FMs and data – a Service provider. So every time when FM wanted to know (for example whether the air conditioning is working on time) he/she could get this information through the Service provider. But the information had always delate and was not precise. FM Service Provider are not interested in helping the museum. When they asked the service provider and SP gives an answer, FM has to believe in it. But SP is not interested to give the real information. The hope is to reduced costs with Grafana
- Now that’s to Grafana FMs can have and see these data by themselves. They don’t see much data, only 40 points.
- The point of collecting data was to be able use the data by themselves and don’t ask every time the other company.
- BMS (building managements system) - the software is created for and by engineers, is very unfriendly. FMs can’t understand it.
- Not all data is recorded in BMS
- Some recorded data is a mess: for example Space Temp repeats a couple of times, although it is the same thing
- From our product they expect something user friendly, not only dashboards, but some processes have to stay on the background and be automated
- FMs want to see the building through the 4 seasons
- FMs want to see the building as the whole (what is running, what is using how much energy at what time, ...)
- FMs don’t want to pull together graphs. They want to understand the health of the building. They don’t want any surprises.
- Would be good: to monitor things (like you’ve got 2 weeks to change sth). FMs would like to have confidence
- Look at patterns: compare fault in the pump with the good pump. Why and what is different. Forecast a problem
- Detect differences and unusual behavior. Why it occurs? 3 Types: fault, human, degradation
- Museum doesn’t want to replicate alarms from the BMS system

- Priority in alarms was not properly organized. Do I suppose to take a look or ignore it? -> If we can improve the notification system, that would be great. Maybe it could compare (the system has change during this time), look back (history), design a path (if the value is too high, what do you need to check. How far do we need to look)
- If temperature and humidity go outside the range -> problem
- Johns provided flow chart for AHU's and MCC flow

**Customer Meeting 7. April 2021. 3:00-4:20 pm (Ger. Time zone)**

He wants an overview about the building. A status about the current situation in the building and the condition of the building.

There is a normal operation of the building and an event operation (you can book the museum in the evening for example – interesting nobody really knows how much the costs are for running the building for those events). 10 – 12 electricity matters in the whole building

- At least One/two hours one way to get to work
- Normal Shift Facility Management: (Mo-Fr. 9-5), Engineers: 4 days on, 4 days off
- An emergency team/contact exists. The communication happens via telephone/telephone list. 3-4 people get the information.
- In Museum of London WALL there is a 24 h Security Service. In the Museum Docklands are light detection devices installed
- FM Team: Engineer, Security (5-6 people)
- Contractors (Extern): New Installation, Repair, Maintenance
- If a problem occurs, first the inhouse engineer looks at it. If he can´t solve it he forwards the case to extern. MoL has a lot of use of external forces
- Facility management would like to know, when external forces are inhouse in which room for maintenance or other work. I already told them, that this is not a ideal case for automation, because it is very individual. They should use a calendar.
- Conservation department tell you, what are the target figures. Most data is for evidence. There are two rooms with high priority because of loans.
- 1-2 emergencies per week
- Problem patterns: Rise of energy efficiency
- Largest cost pools in the outages: Energy and Gas are making 50 percent of the budget. Probably Gas is more expensive
- GAS: heating, warm water, restaurant (cooking)
- Most problems occur when the museum is closed. They switch many systems like light off, to save costs. But due the shutting down process, issues occur. Sometimes also the shutdown brings problems to. Single lights can´t be

switched off like this. Depends on the modus the lights are running on. Can be set by the guy who is handling it.