September 11, 2020
Five years from now – Key Scenarios and Emerging needs in Edge IoT in Smart Energy
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With billions of devices in a complex energy infrastructure the traditional approach to IoT needs to be revisited...

The need for intelligence increases and will be distributed differently: parts move into the cloud, parts into the far edge.
For this to be realized large scaling IoT solutions like in the Energy utility sector need a strong foundation at their core...

**IoT Communication Backbone**
(Device Integration, Connectivity, Gateways, Cloud Integration, Network Management & Security)

Assets & Devices

UX/UI, Backend, Data Analysis, Value Add
For device integration and gateways hardware independence is key and promoting European players can reduce security concerns.

- Lemonbeat is a strong contributor to the Zephyr project which is also supported by many European HW vendors like Nordic, NXP, etc.
Standards for protocols reduce uncertainties which holds back necessary investments

- To not lose speed agreeing on standards on the various levels of a protocol stack is better than waiting for the worldwide "gold standard" for everything.

- Lemonbeat tries to build its stack as modular as possible and has published the specification of the parts which were necessary to bind those modules together.
For the most critical parts of the energy infrastructure a reserved radio frequency @450Mhz is superior to other cellular networks

- High range due to the low frequency
- Good penetration of radio signals from outside to inside
- In combination with low power hardware and protocols (NB-IoT + LTE-M) suitable for brown out cases
- Lemonbeat has a long standing experience with communication protocols and battery powered devices and an infrastructure to serve this
GAIA-X for a European cloud infrastructure is a good approach – however...

- Still in its infancy
- Very large interest group which might slow down progress
- For the time being Lemonbeat tries to be as cloud agnostic as possible so that the communication architecture can switch easily from one cloud to the other
- With this we can ensure data sovereignty as much as possible until the GAIA-X cloud services are available on a broader basis