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WATER LEAK DETECTION USING COMMERCIALLY OFF-THE-SHELF IOT SENSORS

Situation Summary:

Water leaks represent a significant threat to property and irreplaceable assets. The priority is to prevent water leaks by monitoring the moisture in specific areas as well as the trends in humidity and temperature that could be a precursor to potential maintenance that are overdue, or moisture ingress problems waiting to happen.

If the prevention of a potential leak fails, then swift response to locate the leak and repair it is vital to limit the water damage, and thus saving valuable assets and property.

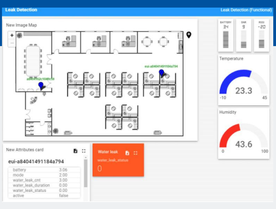
Solution

Using low cost, low power, reliable, battery powered wireless devices to monitor temperature, humidity, and moisture that can in the event of a leak, generate an alert to facilitate swift response to limit damage.

Water contact sensors measures moisture level between the two metal probes, and when there is a water leak event, it will send an uplink alert to the IoT server via a LoRaWAN network.

Temperature and Humidity sensors measure the surrounding environment temperature and relative air humidity precisely at pre-programmed intervals and upload the measurements to the IoT server via a LoRaWAN network.

Battery powered sensors comes with different sizes of batteries, but they are all designed for long term use. Devices unless triggered by an out or range sensor measurement are in "sleep" mode for majority of the time and only wake up at pre-programmed intervals to update status and to confirm that it is still operational (i.e., daily check-ins). Realistic expectations are for devices to deliver 5,000 or more uplink transmission events, which translates to 10+ years operation under normal use cases.

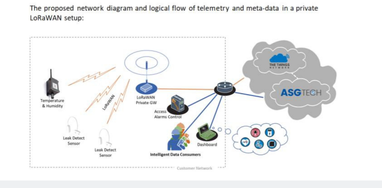


The wireless nature of the sensor network, and the limited number of transmissions from each sensor results in an easy to deploy and scalable solution.

Visualization of sensor data and associated sensor metadata is delivered on a IoT Server with customizable dashboard. Generally different dashboard for functional, operational, and statistical purposes will be developed.

Visualization platforms can be used as stand-alone systems, but there are multiple options for integration of the different visualization dashboards into existing business systems, access control and video management platforms via low-level (physical IO) devices, API integration or embedded HTML to deliver a single-pane-of-glass view of the IoT network.

The proposed network diagram and logical flow of telemetry and meta-data in a private LoRaWAN setup:



Assumptions

This solution description is based on the following assumptions:

- Radio propagation is negatively affected with Electromagnetic interference and metallic structures that attenuates the radio signal. For this solution outline, it is assumed that there is minimal interference from electric motors and unscreened mains cables.
- Power and data connectively are required where LoRaWAN gateways are installed, unless it is a Solar-powered, LTE enabled LoRaWAN gateway.

Typical Scope of work

This proposed scope of work to be further discussed and defined:

- Supply of solution hardware (Sensors, LoRaWAN Gateways)
- Installation of solution hardware
- Configuration of solution hardware and software
- Provisioning of devices (initially, ongoing basis/longer term)
- Integration into Access Control, Video Management, or Standalone platform (Customer IoT strategy dependent)
- Maintenance and support of the total solution.

Next Steps

Proof of concept

Limited Device Trial

Deployment

GET IN TOUCH TO DISCUSS YOUR NEXT STEPS