# Visualization of Collector Status with Interaction Triggering in a Dynamic Floor Map (BA/MA)

Over several years a big IoT network called SecureWSN was established and continuously expended towards a trustworthy environmental monitoring framework for constrained networks. The network itself consists of 3 parts: (1) Data collection via constrained devices, (2) gateway component handling incoming data and managing the network called CoMaDa, and (3) a framework realizing backend and front-end for the end-user called WebMaDa. Several theses are available in those parts of SecureWSN.

Once a network is deployed it is assumed that everything runs smoothly. But in reality this might not be the fact. Imagine a node has broken hardware, measures unusual values, or runs on a limited power
In all this cases the network owner should be informed to investigate the problem. Therefore, this thesis looks on a warning mechanism to be integrated into SecureWSN by giving the network owner a possibility to set thresholds for accepted value ranges and to integrate an announcing process reporting the problem to the owner forcing him to react and including the incident in the logging system.
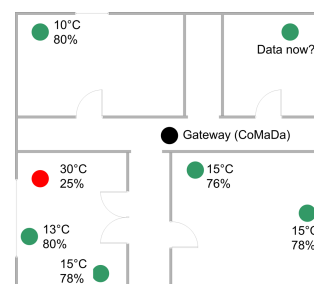
The following things are requested to be designed, implemented, and evaluated (most likely via proof-of-concept) in this thesis:
- Analysis of the existing system and components to identify modules for reuse
- Design an interactive solution for floor map visualization
- Specification of incidents and processing workflow giving visual feedback about node status
  - Just reading received values
  - Inform if measurements fail the trust check → highlight node
  - Interaction with the node (i.e. offering pull request, direct visualization of data – overlay)
- Integration and support into WebMaDa
  - Activation of notification system
  - Rules for incident response mechanisms in fine-grained manner
  - Logging system updates (incident, reporting, solving)

Finally, the report needs to be written, as well as a detailed documentation and handing over a running VM with the complete project with all sources. Depending on the chosen thesis type the content will be adapted. Depending of the results we will try to publish it on high ranked conferences and workshops.

Knowledge in SQL, PHP, JavaScript, and AngularJS would be an advantage.

We will offer you:
- Access to existing source code in different operating systems (TinyOS and Contiki)
- Access to written theses of SecureWSN
- Virtual machine running Ubuntu and CoMaDa including a link to WebMaDa and the backend
- Initial literature
- Smart working environment
- Deep contact to supervisors and a lot of discussions and knowledge exchange

As this work is based on different works and research results, a willingness to familiarize oneself with the existing system is expected. Based on the results of the work, further work will be put out to tender, so that detailed documentation is required at all levels, as well as close cooperation with the supervisors.

If you are interesting in this thesis contact us and let's discuss:

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