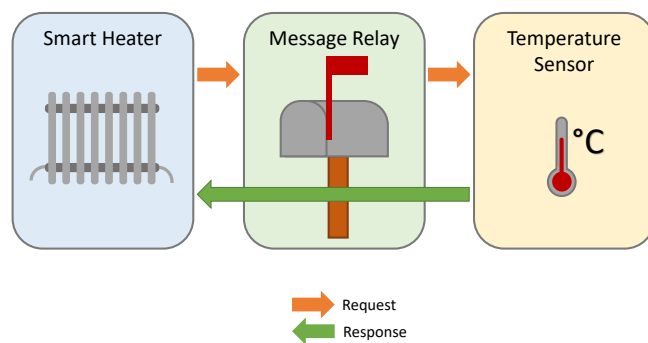


## Master Thesis

# Extending Battery Life in the IoT: A Message Relay for CoAP Nodes

### Motivation

The Constrained Application Protocol (CoAP) [1] brings the core concepts of the Web to the IoT: Features like the proven Request/Response Model used in HTTP as well as URIs, methods and status codes are adopted. By using a highly efficient binary encoding instead of the text based format used in HTTP, CoAP can be used for IoT devices at bottom end of the performance range. Therefore CoAP is considered to become the standard protocol for the IoT. Still, a CoAP server has to listen for new requests at any time. This prevents a device from turning off its transceiver and entering a sleep state to conserve battery power.



### Required Skills

- C99 programming experience
- Network programming
- Ideally having attended one of the ComSys software projects

Fig. 1: A smart temperature sensor fetching requests from message relay in its wake cycles

### Objective

- Implement a CoAP message relay that accepts request in behalf of a CoAP server
- Implement a CoAP server that fetches requests from that relay during wake cycles
- From a CoAP clients perspective this should be completely transparent
- Evaluate the performance regarding its impact on power consumption and response time
- A CoAP implementation will be provided by us

### References

- [1] Z. Shelby, K. Hartke, C. Bormann. The Constrained Application Protocol (CoAP). <https://tools.ietf.org/html/rfc7252>

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