

Abstract

The goal of my thesis is to develop a wireless sensor network protocol, which can be used in a SmartMeter application.

SmartMetering is a technology in which the measurement of household consumption (i.e. electricity or gas) takes place using a unit capable of storing, displaying and transmitting data towards a central server.

The use of wireless communication, during which the meters co-operate through radio communication to provide their data to a remote central data processor, is more cost-effective and ergonomic than the use of point-to-point wired communication. A network such as the one described above shows many similarities to wireless sensor networks, therefore it can be viewed as a special application-specific case of such.

In this thesis I will present the data-link layer of the meter standard supported by the target hardware, wireless routing algorithms, and synchronization methods. Furthermore it is our goal to develop a secure system, therefore I am also going to cover the application of security procedures.

Finally, from the presented algorithms the most appropriate ones will be chosen and modified based on the specification, and the collective implementation of these will also be presented in a demonstration.