Master's Thesis

« Evaluation of MAC-protocols for a multi-gateway wireless sensor network »

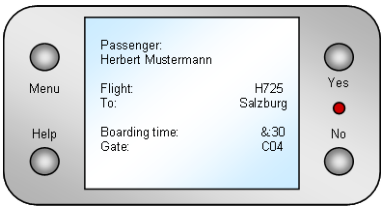
Background

The goal of the project Airport2030 is the optimization of the ground processes at the airport by integrating the passenger directly into the data processing in the terminal. The Institute of Telematics develops a mobile proof of concept device for the localization and interaction with the passenger. This device is based on on the IRIS sensor node and *TinyOS*. The requirements of the system are to inform the passenger by sending messages, the acknowledgment of received messages and localization of the passenger. A back-end of multiple gateway nodes forwards the data of the wireless network to a central server.

Wireless data transmission is used to localize the passenger and to communicate with the user. Concurrent wireless transmissions from different devices cause collisions and data loss by interference at the receiving devices. Thus, medium access control (MAC) is necessary to avoid collisions and allow for a reliable communication.

Work Description

In this thesis different MAC-protocols are evaluated in simulations using *ns-2*. Based on existing MAC-protocols and a model of the expected data traffic a MAC-protocol has to be found which fulfills given requirements of the system. Important evaluation criteria are



- latency until passenger receives a message
- time accuracy of localization
- communication overhead
- availability of the services provided by the system
- scalability of the system

Requirements

- interest in sensor networks
- programming in C++ and Tcl
- willingness to become familiar with *ns-2*

Contact: Björn Greßmann

gressmann@tu-harburg.de Phone: +49 40 / 428 78 – 3529 Room: E 4.074

Institute of Telematics
Hamburg University of Technology
TUHH