DAEDALUS

Modular, energy independent trackingtags

Architectures and sensor data processing for energy-efficient control of self-powered tracking systems

Due to their high energy needs, their size and their limited field of application, existing tracking solutions do not offer a satisfactory solution to the long-term tracking of (small) objects.

The aim of the DAEDALUS project is the development of technologies for low power tracking systems. A modular, adaptable tracking system for various applications, which can satisfy the most diverse requirements in a modular principle, shall be implemented.

Besides the localization and transmission of the current location, external sensors shall provide additional information about the object for transmission. Depending on the application, such information may vary. Typical parameters include the temperature of a food transport, the pulse rate of a patient or the state of the housing of dangerous goods.

The configuration and control of the individual components of the tags shall be accomplished via a central control unit. For different applications and for means of minimizing energy consumption, the control unit shall be able to deactivate individual components. An additional value can be obtained from the available information using multi-sensor data fusion algorithms. On the one hand reasoning algorithms are used to identify faulty components in the sensor network. On the other hand, the location of the tags is used to spatially arrange the existing multimodal data and draw conclusions about the environment of the tags, which in turn can trigger a reaction or communication.

The main goals of the DFKI Robotics Innovation Center in DAEDALUS can be summarized as follows:

• Creating a software platform that enables energy-efficient operation and interaction of all system modules such as localization, communication, sensors and sensor data processing

• Development of algorithms for intelligent and energy-efficient control of the system components on the basis of sensor data processing and reasoning processes and the creation of an application-specific value for sensor cards

• Providing sensor data for all sensor modules components of the tag

• Demonstrating the viability of the technologies developed in a space demonstrator

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