Category: Computer Hard- and Software

Reference: TD-DE-1038

RODOS – Realtime Onboard Operating System

Description:
The system RODOS requires very few resources and offers preemptive multitasking as well as its own middleware for communication between threads on the same processor or on different processors. This makes RODOS distributed operating system that was originally designed for operating small sat-ellites.

Perpetually edited and enhanced the system is already run on several small satellites (TET-I, BIROS, BeeSat 1 & 2). RODOS was set up as multi-layer framework: while one layer pro-vides connection to the hardware the second layer represents the middleware. This middleware enables communication between different applications and components.
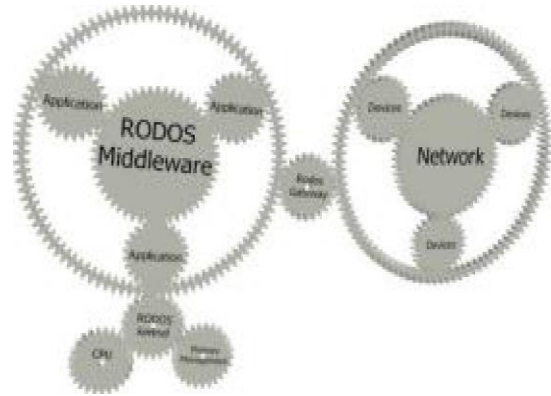
Innovative Aspects:
Main advantage of the system is its efficiency. ROODS enables to write real-time applications on variable platforms featuring an simple implementation of the components of the operating system.

The simplicity of the design allows for operations on comparatively small processors which leads to significant cost savings in space and terrestrial applications.

Application Areas:
The fact that RODOS is an efficient operation system for distributed operations makes it applicable to various terrestrial fields. For instance, the system was used for building up a network of beehives (project HoneyCloud). Another application is the set up of an autonomous quadrotor platform for indoor exploration.

Cooperation:
There is interest in direct cooperation with industry insiders in the respective application areas outside of the space.