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Author: Mr. Ahmed Farid
Telespazio VEGA Deutschland GmbH, Germany, ahmed.farid@dlr.de

Mrs. Evelyn Schaible
Duale Hochschule Baden-Württemberg, Germany, schaible.evely-tle@it.dhbw-ravensburg.de
Mr. Dennis D'Argento
Airbus Defence and Space, Germany, dennis.d-argento@airbus.com
Prof. Karl Trottler
Duale Hochschule Baden-Württemberg, Germany, trottler@dhbw-ravensburg.de

PRELIMINARY SYSTEM DESIGN OF A "SWEET" CUBESAT

Abstract

Due to the exploding development of the world's population within the last century and the ongoing grow of the industries polluting the environment the access to drinkable water will soon become more than a distant trouble. Even today there is about 30 percent of the world's population without secured access to clean water as stated by the International water Management Institute. This deficit on the most basic human need contributes to around 3 million deaths every year. The situation in South-America and Africa is especially bad. For example 40 An interesting approach supporting the solution of this problem is the mission concept "SWEET - CubeSat Constellation". The main idea is to use space bound, low cost hyperspectral imager to monitor Syanobacterial blooms "cHAB" in water lakes in endangered countries. A feasibility study has shown that the spatial resolution of the instrument would be similar to earlier flown, more expensive instruments such as MODIS. The paper in hand compromises a preliminary design of the satellite architecture as well as first requirements for the most important subsystems. Besides the already developed imager, the design incorporates other innovative technology approaches such as a reusable software framework, an open source communication link as well as a new storage concept based on commercial of the shelf SSDs and RAID configuration.