

SWISSCUBE GROUND SOFTWARE



Problem – Challenge

To control a satellite in space the European Space Agency (ESA) utilizes a ground segment software (GSS) that has been developed over many years. The GSS is a monitoring and control system, its role is to send telecommands to the satellite, and to manage the telemetries received. For this task, ESA uses the system SCOS 2000 developed by ESOC/ESA and industrial partners. SCOS 2000 is a generic system, functionally adequate and complete, but it is complex to configure and not well adapted for small satellites and relatively simple missions.

For the SwissCube project, first student pico-satellite launched by a consortium of Swiss academic institutions, the GSS had to be portable, simple but with all needed functionalities to control the space operations.

Solution

The Institute for Information and Communication Systems of the HE-ARC (ISIC-Arc) developed a tailored version of SCOS 2000 in a new and efficient environment. The GSS architecture was implemented with the Microsoft .NET Framework 3.0 and especially its Windows Communication Foundation (WCF). That environment enabled the elaboration of a strongly distributed architecture very easily.

The SwissCube GSS uses the ESA standards and protocols, which is a must for such educational satellite missions. This GSS has now been used successfully for 4 years. It allows the control of the SwissCube satellite from several ground stations spread in Europe. Its use is accessible via a combined HE-ARC/EPFL license. A Swiss company, Solenix, is considering commercializing this software very soon.

