



## SWITZERLAND LAUNCHES FIRST SATELLITE

*Ecole Polytechnique Fédérale de Lausanne (EPFL) Space Center launches the SwissCube-1, the first Swiss CubeSat satellite, with the aid of EATOPS*

(Lausanne, Switzerland) September 23<sup>rd</sup>, 2009 - Ecole Polytechnique Fédérale de Lausanne (EPFL) Space Center, the first student satellite manufacturer in Switzerland, has designed, assembled and launched into orbit the first Swiss satellite. EPFL modeled their satellite, *SwissCube-1*, after the CubeSat design, a 10-centimeter-cubed picosatellite with a mass of up to 1kg.

Originally introduced in 2000 by California Polytechnic State University and Stanford University, the CubeSat has since revolutionized academic institutions and their Engineering curriculum worldwide. CubeSat's unparalleled technical aptitude, such as accessing low orbit Space (between 300km and 350km of altitude), combined with its relatively low production costs, has unlocked the Cosmos and made Space science and exploration accessible on a fundamental level. Now, students and professors from every corner of the world and from such disparate fields as microelectronics, software and mechanical engineering are combining their skills and expertise to collaborate on the design, assemblage and launch of their own CubeSat, not to mention the development and implementation of their own Space mission. Thus far, more than 15 engineering universities, such as University of Delft and University of Berlin, have launched their own satellites, a part of a new curriculum requiring every engineering student to complete a Do It Yourself satellite mission. EPFL Space Center is the latest addition to these ranks.

**Ergonomics Applied to Operations (EATOPS)**, the French-Dutch SME, was contracted to develop the *SwissCube-1's* control room. EATOPS specializes in control room design with a focus on streamlined operator/software interfacing. **RIVOPS**, a monitoring and control console, was especially designed by EATOPS with enhanced software ergonomics to optimize the efficiency of the *SwissCube-1's* operators. The RIVOPS' improved software ergonomics will allow the operator to visualize the *SwissCube-1's* alarm system as an alarm list on a 3D-schematic view of the satellite. This cause-analysis representation of the spacecraft alarm list becomes necessary as soon as the alarm rate over exceeds one alarm per ten minutes. Traditional displays, list alarm in columns of alpha-numeric which is not self-explanatory thus reducing the operator's response and reaction time in the event of a crisis. Additionally, the software interface was made highly

intuitive, requiring only three weeks of training. Each operator is responsible for monitoring 40 telecommands, 15 telemetry and 215 housekeeping parameters during the five-minute pass of the satellite over the EPFL ground station. All in all, EPFL Space Center managed to make a smart assembly of software technologies applied to operations – Opstools – ranging from telemetry displays and command schedulers to alarm grouping visualization techniques – 3DMet.

For the next 3 to 12 months, Science will benefit from the results gathered by *SwissCube-1*'s on-board payload and photographic material. The on-board camera will focus on the air-glow permanent phenomenon taking place at the frontier between the atmosphere and Space (100km). However, the true beneficiary of the successful *SwissCube-1* mission is EPFL Space Center and its incredible team of students responsible for the creation and implementation of the *SwissCube-1* and its mission.

“Those young engineers will surpass themselves in many ways now that they have learnt how to work as part of a responsible engineering team. In other words, the *SwissCube-1* team could be seen as a preliminary step to a larger satellite project,” said Maurice Borgeaud, Director of EPFL Space Center.

With the success of *SwissCube-1*, EPFL Space Center has demonstrated the close collaboration between Swiss Academia and Industry. The next step? Perhaps, a 10-20 kg satellite mission monitored from EPFL Space Center. Either way, EATOPS, and its new generation of monitoring consoles, is well positioned to assist in the next phase of Swiss satellite development.

#### **ABOUT EATOPS**

A French-Dutch SME founded in 2006 by Operation Engineer and Director, Alexandre Van Damme, EATOPS manufactures cutting-edge, cost-effective monitoring consoles (from the stylus-driven displays - Wacom embedded technology - to sharp monitoring & control software – RIVOPS) for Space and non-Space industries. In addition to *SwissCube-1*, EATOPS' consoles have already been used for Earth observation satellite missions – TSX and Proba. Despite its applications in the Space sector, EATOPS is based at the European Space Agency – ESA Technology Transfer Office to promote its techniques in the non-Space sectors. EATOPS has also worked closely with the TOTAL EP Group and the AGBAR Group. For additional information, please contact: [info@eatops.com](mailto:info@eatops.com)

#### **PRESS CONTACT**

EATOPS – Riadh Abdelhedi      [info@eatops.com](mailto:info@eatops.com)

