

## "Cubesat development in a University lab - lessons learned"

### **Abstract:**

Back to 2007, the Universitat Politècnica de Catalunya (UPC) president asked me to start two tractor projects on in aeronautics, and one in space, to add the expertises and efforts in different engineering schools. After these nice and encouraging words, but no financial support whatsoever!, I started the development of 3Cat-1, the first nanosatellite mission in Catalonia, and the second one in Spain. I was about to start one of the biggest challenges I have ever faced in my professional career, not only on the technical side, but on the human side as well, a very complex problem from all perspectives, but also full of personal satisfaction. In this talk, I will explain my personal experiences and the personal and technical lessons learned. I hope they will be useful for your projects.

### **Biography:**

Adriano Camps was born in Barcelona, Spain, in 1969. In 1993 he joined the Electromagnetics and Photonics Engineering Group, Department of Signal Theory and Communications, UPC, as an Assistant Professor, Associate Professor in 1997, and Full Professor since 2007. In 1999, he was on sabbatical leave at the Microwave Remote Sensing Laboratory, of the University of Massachusetts, Amherst. His research interests are focused in microwave remote sensing, with special emphasis in microwave radiometry by aperture synthesis techniques (MIRAS instrument onboard ESA's SMOS mission), remote sensing using signals of opportunity (GNSS-R), and nanosatellites as a tool to test innovative remote sensors. He has published over 189 papers in peer-reviewed journals, 6 book chapters and 1 book (860 pages), and more than 409 international conference presentations, holds 10 patents, and has advised 22 Ph. D. Thesis students (+ 9 on-going), and more than 125 final project and M.Eng. Theses. Adriano Camps has been 2017-2018 President of the IEEE Geoscience and Remote Sensing Society. According to Publish or Perish (Google Scholar) / Scopus his h-index is 42 / 35, and his publications have received more than 6939 / 5229 citations. He co-led the Remote Sensing Lab ([www.tsc.upc.edu/rs](http://www.tsc.upc.edu/rs)) and co-leads the UPC NanoSat Lab (<http://www.tsc.upc.edu/nanosatlab>). He is the principal investigator of the first four UPC nano-satellites: 1) 3Cat-1, a 1U CubeSat with 7 small technology demonstrators and scientific payloads, 2) 3Cat-2, a 6U CubeSat with the first dual-frequency dual-polarization GNSS-R payload, launched on August 15th 2016 using a Chinese LM-D2 rocket, 3) 3Cat-4, a 1U Cubesat with a software defined radio to implement a microwave radiometer, a GNSS-Reflectometer, and an AIS receiver, and 4) FSSCAT, a tandem mission formed by two 6U CubeSats, winner of the ESA Sentinel Small Satellite challenge and overall winner of the Copernicus masters competition 2017.