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Author: Mr. Noël Mombazet
Institut Supérieur de l'Aéronautique et de l'Espace, France

Mr. Daniel HERNANDEZ
Devil-Hop, France

PEEP-HOLE : A CONSTELLATION OF SMALL EARTH OBSERVATION SATELLITES AIMING AT NEW APPLICATION AND CUSTOMERS

Abstract

Many Earth remote sensing satellites and constellations concepts have been developed, and continue to be operational, such as DMC, Rapideye, e-corse, A-train, Pleiades. These systems provide ground resolutions that range from 100 m to about 1m for specific Earth observation services and user requirements. Many new "national" competitors start launching their own satellites. This participates in the opening the Earth observation market to the masses. The demand of Earth observation data has increased these last 20 years. The main customers are generally security and defence but nowadays, governments and private customers are also heavy purchasers. The satellites images operators try to capture this new tendency. To do so, it requires seeing how providers of commercial data adapt their business models, product offering, and distribution to respond to the user demand. It is easy to understand that the value of satellite data images increases when the geometric resolution is better and when the age of the images is lesser. The PEEP-HOLE system is a constellation of small and agile Earth observation satellites designed to minimize the time to get a first new image and the delay between two observations of any given zone ("rapid response"). The line of sight of PEEP-HOLE satellites may be commanded directly by users in real time through their own ground stations or via a network of stations in visibility. The system will provide high resolution and multi-spectral snapshot images and will offers a "video capability" in real time of any zone with a rate of 1 image per second. The students and teachers of the Aerospace master of ISAE (ENSAE/Supaero) are contributing to the study currently conducted by Devil-Hop. In the paper we will briefly describe the project and we will give details on the organization of study at ISAE through three phases: economic intelligence, bid for tender and definition. Most of the aspects of the program have been or are currently being covered: markets analysis, strategy definition, system study, satellite architecture and subsystems definition, ground segment, user segment, commercialization, public relations and communication, business plan.

Keywords: Constellation, small Earth observation satellite, agile, line of sight, Video, Real time