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TRAINING FOR SMALL SATELLITE MISSION OPERATIONS

Abstract

Small Satellite missions are, of course, different from 'classic' mission types. The approach to satellite design is different, the approach to integration and test is different and the approach to operations is different. By their very nature, small satellite missions must be low cost, efficient and focused on their mission goals. Timelines for small satellite missions are usually measured in months rather than years. Due to this intensive focus, small satellite customers and designers alike tend to put their emphasis on the space system engineering and payload. Satellite Operations tends to be put in the background and only considered just prior to launch. For developing organisations without much prior experience in operating satellites this can be disastrous. Within developed space organisations there is now a tendency to consider operations concepts much earlier in the lifecycle of a mission. Training and preparation for launch and post-launch operations is considered extremely important and is also considered earlier in the lifecycle. Clearly within the context of small satellite programmes the schedule and cost of preparing for operations earlier must be taken into account. Here the timelines are shorter and the costs lower. A solution is required which allows the mission team to take the benefits of preparing operations earlier without adding significantly to the mission development effort. VEGA has developed over recent years a set of engineering toolkits and a training concept to support satellite operations and design. The approach is both cost-effective and adaptable to small satellite missions. The Spacecraft Operations Training Centre (STC) consists of a mission control system and generic spacecraft simulator together with a detailed training approach. This allows the users to gain valuable experience in operations and satellite engineering, earlier during the development of the satellite. It is an ideal supplement to the small satellite operator. The paper describes the issues facing small satellite operations, how to effectively prepare and train for operations, and how the Spacecraft Operations Training Centre can support developing organisations realise their goals in operating satellites.