

SPACETEIQ MCS

MISSION CONTROL SYSTEM

The **Spaceteiq Mission Control System (MCS)** is a complete management solution for small satellite missions. Applying experience from earlier missions and leveraging infrastructure of a connected world, the MCS is designed to link geographically dispersed ground sites for extended pass windows and robust communications.

Product Features

- Automated management of ground equipment during satellite passes
- Native support for popular rotator controllers, transceivers and demodulators
- Plug-in framework for easy integration of third party hardware
- Real-time display and persisted logging of ground and satellite telemetry and events
- Empirical determination of radio horizon for antenna locations
- Software communications links for configurable modulation schemes, bit rates and data protocols
- Aggregated ("digital diversity") downlink and seamless uplink handover between ground sites
- Priority based ground resource management for multi-satellite support
- Automated or operator driven satellite interaction
- History viewers for analysis of ground and satellite telemetry and events
- Mission planning tools, with integrated cloud cover prediction for imaging payloads
- Automated roll-out of updates to ground segment hosts
- Web service APIs for integration with third party applications
- Windows 10 supported

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Brief history, current operations & the future

The MCS is a software suite, comprised of graphical user applications and background services, established to support the Sumbandila satellite mission and written in the C# programming language.

Its development started in 2007, in parallel to hardware development of Sumbandila (launched in 2009), with an explicit goal of creating a software platform that would be reusable for future missions. It is third-generation software, built with experience gained from the preceding Saudisat-3 (2007) and Sunsat (1999) missions, which had ground software written in Java and Modula-2, respectively.

The MCS was later expanded to support operations of a number South African CubeSat missions:

- Tshepiso/ZACube-1 (2013), developed by the French South African Institute of Technology (F'SATI) at the Cape Peninsula University of Technology
- ZA-AeroSat (2017), developed by CubeSpace and the Electronic Systems Laboratory (ESL) at the University of Stellenbosch
- nSight-1 (2017), developed by Somerset West based SCS Space
- ZACube-2 (2018), developed by F'SATI

It is further developed to support the future EO-Sat1 mission, a corner stone project of the South African Department of Science and Technology (DST) and SANSA.

With the MCS already deployed at four South African ground sites (ESL, SANSA Space Operations at Hartebeesthoek, F'SATI, and Houwteq near Grabouw), approaching 10 years of continuous operations and controlling five South African satellites (as of February 2019), it has matured to offer the features and reliability required by international small satellite builders. Partner with us!