CGI

Satellite Operational Support Systems (OSS)

CGI's focus is on the technical challenge of efficient network control and the underlying commercial need to deliver competitive benefits to its customers.

CGI builds OSS systems for Satellite Operators helping them to optimise and automate network operations providing enhanced performance and reduced costs.

Modern SatCom operators have complex satellite fleets comprising multiple geostationary platforms, hundreds of LEO satellites, or a combination of both. Managing all the satellite resources, gateways, user links, and terminals is increasingly complex. We help operators to overcome these challenges by:

- Providing advisory for overall OSS architecture and integration

- Selecting and integrating off-the-shelf network management systems

- Developing bespoke service and network orchestration

- Building advanced demand and resource management systems able to optimise supply/demand across a fleet

- Building simulators to analyse and debug constellation performance

- Developing terminal management software and over-the-air update systems

- Building network infrastructure and providing operations support

- Providing advanced data analytics and machine learning solutions to support automated operations

- Cyber security support to assess risk and support operations, including a managed security operations service

- Providing on-prem and cloud infrastructure management and migration, as well as our own secure datacentres

- Providing managed IT services

Towards more efficient and flexible operations

As demand for satellite capacity grows and new revenue opportunities are created CGI, as a large end-to-end systems integrator, is able to bring a full spectrum of capability to support SatCom operators. Over the last two decades we have built up a deep expertise in solving some of the most complex problems in the SatCom industry from resource optimisation to global spectrum allocation. We are able to provide a full range of engineering and managed services, as well as delivering solutions to be supported by clients in-house.

Typical projects which we deliver for customers cover the complete span of OSS:

- **Network Management:** Monitoring and Control of Ground equipment is an important part of maintaining a robust system capable of maintaining operations on a 24/7 basis. CGI has provided and integrated ground equipment and process monitoring functionality into missions using a variety of methods. Typically, this involves integrating existing COTS solutions and providing bespoke code for mission specific features.

- **Service Planning:** On Skynet 5 we developed a bespoke planning system considering the various constraints and mission modes required. This included the service planning, payload configuration management and the associated security management.

- **Configuration planning and OTA:** We have developed a suite of applications to plan, configure, and instantiate services to provide the secured communications links to the end user. CGI has also provided over-the-air update and configuration systems for terminals, including update planning and configuration control.

- **Resource/Capacity Management Systems:** Allocation of bandwidth and frequencies to users and services including optimisation of the solution using constraint-based optimisation to provide maximum network capacity at all times to maximise the revenue opportunity for clients.

- **Real-time monitoring:** Real-time monitoring of payloads, satellite health, earth stations (RF equipment, modems, hardware), network performance, link performance, spectrum monitoring, WAN and servers, building facilities.

- **Satellite and frequency bands management:** CGI has delivered satellite and frequency bands management solutions as part of the Skynet 5, OneWeb and other LEO/GEO systems. Alongside this we have implemented spectrum monitoring systems (including the integration of RF receivers and analysers), to raise alarms as well as detect interference which could affect overall performance, either on the user or gateway ends. Finally, CGI is responsible for the UK MOD Spectrum Management system which enables defence spectrum planning, engineering, and enforcement.

CGI works with a range of partners and supports across the SatCom eco-system to provide a best-of-breed approach to our clients, making sure that they receive the best solution for their problems. We implement projects using an agile management philosophy enabling us to work closely with the operators and internal stakeholders and create solutions which improve everyday operations.

"A transformation in Satellite Network Control to match the advance in satellite capability."

About CGI

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are an IT Systems Integrator working to advise, build and operate bespoke, technically complex, mission-critical information systems. Bringing innovation to our clients using proven and emerging technologies, agile delivery processes and our expertise across space, defence, intelligence, aerospace and maritime, all underpinned by our end-to-end cyber capability.

For more information
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