Earth observation satellites mission and data management

CGI provides an end-to-end capability for Earth observation satellites and geospatial data.

CGI has been supporting the development of Earth observation (EO) since 1974.

Our mission control solutions help the European Space Agency (ESA) and European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) operate the Meteosat and MetOp satellites.

We also support the ESA Payload Data Ground Segment (PDGS), which processes and disseminates data from the ESA Earth Explorer satellites, as well as providing interfaces to NASA missions. Building on this experience with sophisticated geospatial data processing systems we have built cloud-based data processing and exploitation platforms and support the UK Met Office to deliver the tools and systems used to produce weather forecasts. Our solutions are used in multiple markets including government, defence, forestry, mining and telecommunications.

Our capabilities span the entire range needed to provide high volumes of geospatial data to users:

- System engineering for EO ground segments covering pre-phase A/ feasibility studies through to mission operations
- Mission control software for satellites in Low-Earth Orbit, including automation and simulators
- Systems engineering of Payload Data Ground Segment (PDGS), including PDGS architecture, integration, project and sub-contractor management
- Software development of mission components

- Instrument/payload data processing systems and data processors
- Cloud architecture and hybrid cloud integration, advisory for HPC procurement and implementation
- Web/cloud based data platforms and application development, including the implementation of OGC compliant interfaces
- Stream-based IOT processing
- Hosting in CGI's secure global datacentres
- On-board operational software Cyber security advisory and operations for EO operators

We are able to provide solutions based on Open Source components, our ecosystem of suppliers, our own CGI GeoData360 solution, QGIS, and ESRI. Our technology agnostic approach ensures that our customers benefit from best-of-breed solutions.

CGI GeoData360

CGI has developed a reusable data platform for processing and managing large data-sets. CGI GeoData360 is available under an Open Source license and provides a scalable cloud-based workflow management system, tailored to complex geospatial problems, as well as a complete set of data management components. CGI GeoData360 can be deployed on public or private cloud allowing users to develop custom algorithms and workflows, as well as acting as a data server and visualisation engine.

User applications and Digital Twins

CGI has developed a number of user applications using EO and Geospatial data including:

Wildfire monitoring | Crop yield | Forest extent and land cover | Flood monitoring

Case study

CGI is responsible for the ESA multi-mission PDGS for over 50 Earth observation missions and hundreds of datasets. We support a variety of missions, including the state-of-the-art Earth Explorers like the upcoming EarthCARE and Biomass; current and heritage ESA missions like Envisat; and Third-Party Missions (TPM) like Advanced Land Observing Satellite (ALOS) and Landsat.

CGI provides system engineering and maintenance services to ESA Earth observation directorate including advising ESA on their approach to future architectures and solutions.

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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