CGI **GeoData360**

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Industrialise your Application

Our ability to observe the Earth has transformed in the past few years. Substantially more satellite imagery and a geospatial data explosion are fuelling big data-driven opportunities to better monitor and manage across multiple industry sectors. CGI GeoData360 solves common technical challenges for those aiming to exploit these new opportunities and deploy their applications at scale.

Reliable monitoring solutions that can run efficiently at scale require substantial processing resources and more sophisticated data processing capabilities which can be complex and costly.

Cloud-based resources have enabled the deployment of new approaches that make full use of large, multi-tenant infrastructures. This enables solutions to benefit from massive quantities of processing resources that would otherwise be unattainable for individual users.

CGI GeoData360 is a state-of-the-art data processing platform to enable the implementation of complex processing workflows on large volumes of Earth Observation (EO) and Geospatial (Geo) data. It supports deep customisation and extension, enabling production workflows that consume EO and Geo data (to produce valuable business information) to facilitate cost efficient, long running, large scale production pipelines.

Earth observation as a business resource

Earth Observation data is fundamental to tackling many of today's issues relating to climate change, contributing to sustainable exploitation of the Earth's natural resources and mitigating the impact of the natural environment on our businesses and infrastructure.

Imagery acquired from satellites can be used to monitor and manage. Application examples include: oil spill response, resilience for utilities infrastructures, intelligent crop production and land management. Users of such data are extremely diverse - from scientists to governments, meteorologists, forecasters, insurers, geologists, planners, oil & gas companies, utilities and defence.

This is where CGI can help. We have substantial capabilities in data processing and developing data-enabled services. We help turn Earth Observation data into information you can trust and act upon.

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What CGI GeoData360 delivers

The provision of production-ready offerings presents many challenges related to reliability, repeatability, trackability and monitoring. To solve these challenges, GeoData360 has been developed with the following characteristics at the core of its design philosophy:

- **Scalability** – dynamic, optimised use of infrastructure resources available from commercial cloud providers. Reduces elapsed processing times.

- **Portability** – deployable within different cloud environments
(both public and private).

- **Operational** – designed for production enabling reliable, consistent performance for commercially viable services.

- **Geospatial++** – big data production capabilities applicable to services based on imagery and/or other geospatial data (climate data, meteorological data, points, lines, polygons etc.).

- **Secure** – designed to run securely in cloud infrastructures.

- **Cost effective** – applications use only the resources that are required.

Our solution solves the scaling issues inherent in batch processing large volumes of bulky data and decoupling the algorithms from the underlying infrastructure.
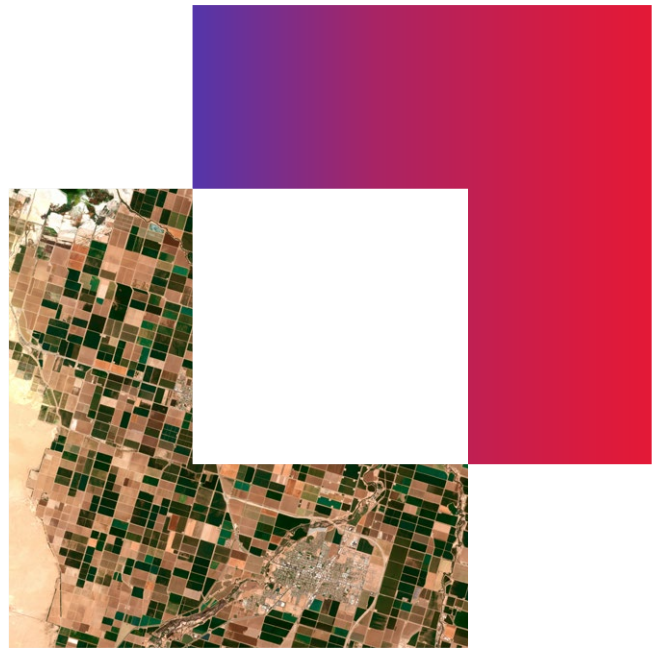
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Features of CGI GeoData360

CGI GeoData360 hides the complexity of the data processing behind an easy to use application, through the following features:

- **Access to data** – delivers efficient in platform access to online archives and modifiable to ingest data from any feed. Default ingestion from CREODIAS provides access to 22PB of EO data.
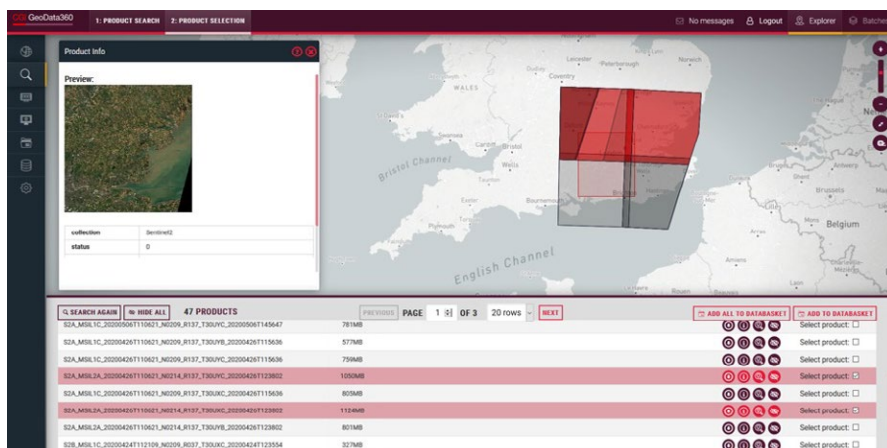
- **Configure Workflows** – select pre-defined services and configure them with parameters published by the developer of the service

- **Systematic Processing** – set-up and configure systematic workflows allowing data to be processed as it becomes available

- **Monitoring Feedback** – graphical feedback dashboards provide transparency on system performance, necessary to maintain system control for highly automated workflows.


- **Geospatial visualisation** – render geospatial data outputs in the GeoPortal via OGC WMS standards.

- **Publish and Discover** – GeoData360 functionality is also extended via integration of another CGI geospatial solution, GeoApp, to bring cataloging and a more natural way for users to publish and discover/search products on the platform.

Benefits of CGI GeoData360:

Through a cloud-based approach using containerisation technology and open source components, GeoData360 provides fundamental benefits:

- **Granularity** – containerisation at the level of the individual processing step. Increased flexibility, more efficient testing and implementation, re-use of individual processing steps in multiple workflows, improved optimisation potential for dynamic scaling.

- **Standardisation** – centralised repository of standardised processing steps enabling efficient re-use for rapid prototyping.

- **Orchestration and Automation** – linking process steps into complete processing workflows. Required to enable granular approach. Reduces operational costs.

- **Dynamic scaling** – for processing resources and for storage. Improved processing times and pay only for the resources that are required.

- **Inbuilt monitoring** – automatic monitoring of system performance and traceability functionality to easily track failure sources. Necessary to maintain system control for highly automated workflows.

- **Security** – access control and protection for third Party Intellectual Property. Secures system and shields third Party Intellectual Property.

Data access

Granularity

Standardisation

Orchestration
and automation

Security

Inbuilt
monitoring

Dynamic scaling
and portability
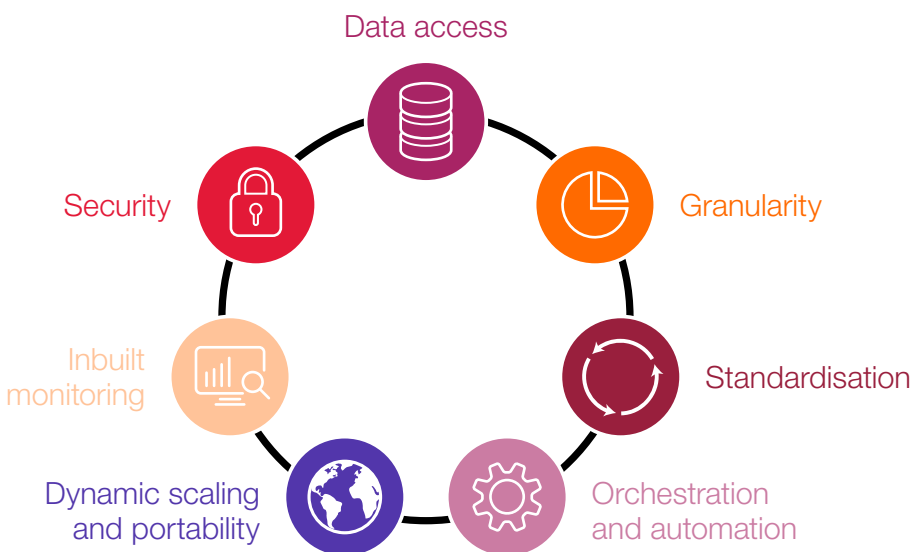
Tailor to your need

CGI GeoData360 is designed for the deployment of your own processing algorithms and data, allowing you to suit a specific use case. For example, it is already being used as an enabling technology on EO and non-EO initiatives with services designed to:

- Systematically map peatland condition in Indonesia and Malaysia to monitor water levels and improve hydrology in these areas
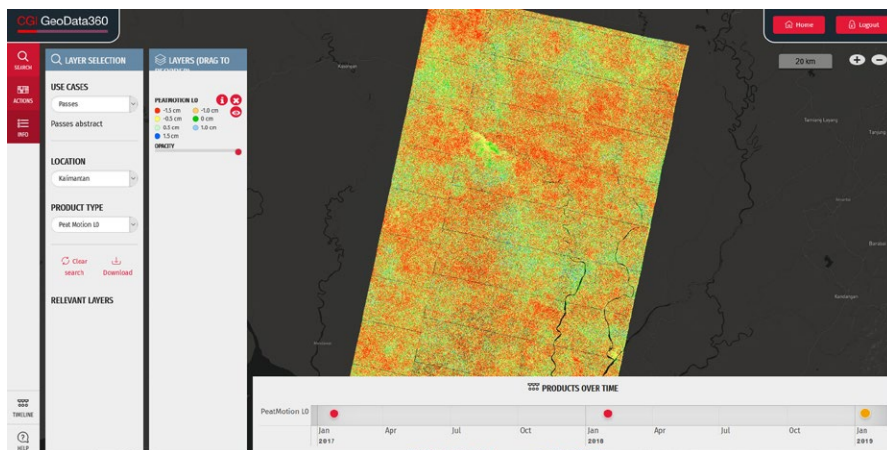
- Ingest multiple data sources to map regions of flooding in Mozambique allowing for prediction of impacts on road or rail infrastructure
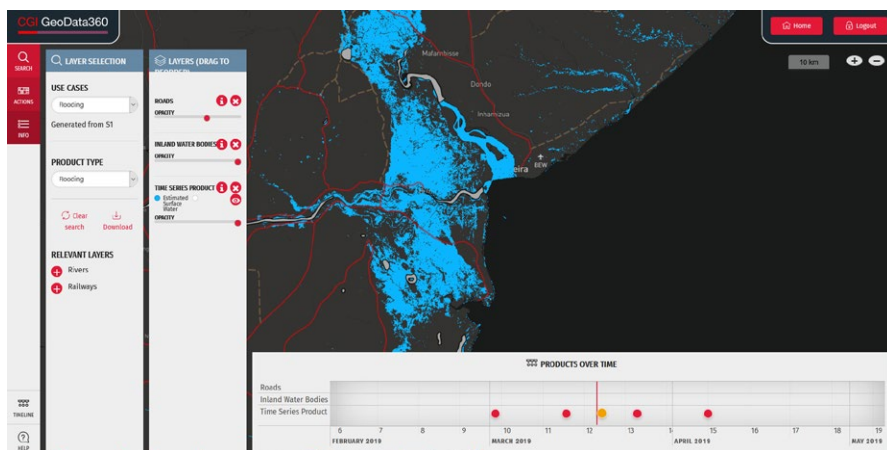
- Provide pre-processing to streamline and automate ingestion of large data streams into AI/ML algorithms determining future maritime satcoms demand.

- Provide the infrastructure to underpin visualisation and analytics capability in determining the impact of extreme weather on food systems in the Digital Twin Earth precursor
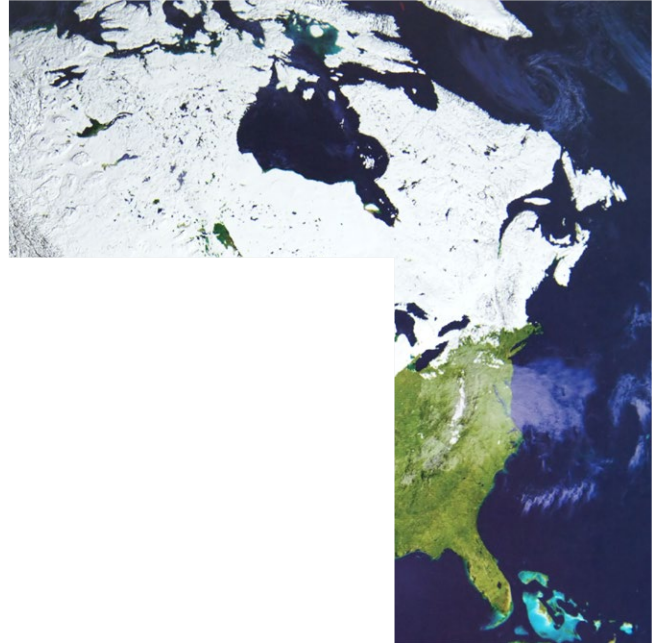
Which CGI GeoData360?

- **Platform-as-a-Service:**
  - Work with CGI to industrialise your application.
  - Include GeoData360 as the production platform solution in your development initiative.

- **Platform-as-a-Product:** a stand-alone platform solution that can be operated by a third Party, allowing full control over the operation of and deployment of services.

- **End-to-End services:** order access to a specific service on the platform, either your own service to be run at scale or one of the existing services.

In each case CGI will provide platform level support and the required on-boarding services

About CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. We are insights-driven and outcomes-based to help accelerate returns on your investments. Across 21 industry sectors in 400 locations worldwide, our 76,000 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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 about CGI, visit cgi.com/uk/space, or email us at enquiry.UK@cgi.com