CGI

CGI SignalSense

"GNSS interference is listed as the root cause of 10% of drone crashes within our UK databases."

Leading Drone
information provider

CGI SignalSense

A UK network of thousands of sensors able to notify when GNSS spectrum is under attack affecting your PNT dependent operations. Routing and plans can be formed based on quantified data. CGI SignalSense data can be delivered via:

- Application Programming Interface as a feed to your operations software

- Cloud or on-prem hosted application

Global Navigation Satellite Systems (GNSS) are core to delivering operations. CGI SignalSense provides operators with an understanding of GNSS availability and reliability so you can operate safely and with confidence.

Understand the Risk

The strength of a GNSS navigation signal, such as that delivered by Galileo and GPS, is relied on by society for positioning, navigation and time (PNT). GNSS signals are comparable to the power emitted by a 60-watt light bulb, 20,000 km away. This weak signal can be easily disrupted by interference. CGI SignalSense helps keep GNSS- services safe by:

- Similar to the way weather forecasts inform the route planning process, CGI SignalSense highlights areas with a higher likelihood of GNSS interference

- CGI SignalSense can notify your operations team in near real-time when significant GNSS degradation is detected in your area of operations

Guided by experts, tailored for you

The development of CGI SignalSense has been guided by expert users of GNSS from Air Traffic Management, Maritime Safety and Emergency Services; and supported by the UK and European Space Agencies. Data can be provided via API to your operations software or via user accounts providing access to our platform.

Notifications can be tuned to the performance of your chosen GNSS receiver and CGI can offer testing services so that the performance of your operations can be understood in the face of GNSS interference.

Dense Receiver Network

Our dense network of thousands of CGI SignalSense receivers gives you the coverage you need to understand GNSS performance and gather intelligence on operational risk across the UK. We can increase the density of our network at your sites to bolster safety at landing, highways or ports. Private CGI SignalSense receiver networks can be set-up should this be required.

Scalable and cloud ready

CGI SignalSense is built on a containerised platform able to process terabytes of radio frequency data daily. This architecture enables the system to scale or contract depending on the number of spectrum monitoring locations. CGI SignalSense can be deployed to public or private cloud and be right sized for a private network whilst enabling us to scale for UK wide coverage.

Returning operations to normal

Should interference occur, separate to CGI SignalSense, CGI has equipment available to enable GNSS interference sources to be localised so safe operation of your route or port can be resumed as quickly as possible. Such localisation equipment can be backpack, vehicle or drone- mounted to enable quick identification and return of operations.

Multipath interference fused with ambient interference

Through our partners, CGI can communicate expected nominal GNSS performance to measure if this is within tolerance or if activity which could affect your operation is understood. Urban environments are a highly complex spectrum environment as GNSS performance is impacted by urban canyoning and impact from building materials. Fusing this expected performance with historic and near real-time GNSS interference performance provides a complete spectrum picture of the GNSS environment in urban and non-urban environments.

GNSS interference is everywhere

According to IATA, GNSS interference is now affecting over 5% of commercial flights within Europe, impacting key aerospace services such as ADS-B, ground proximity instruments and radar. In 2021, CGI completed a survey of GNSS interference across the UK. Every sensor detected GNSS interference in some form, and sensors in urban environments detected over 50k events during a 2-month period that could affect safe operations. GNSS Jammers are available to buy on the open market, but illegal to use. Despite this legislation, jammers are increasingly being exploited due to the opportunity such technology offers to provide privacy to users.

An example 100w jammer legal to buy, but illegal to use in the UK (at time of print) able to impact GNSS and communication spectrum over wide areas impacting safety of operations

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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