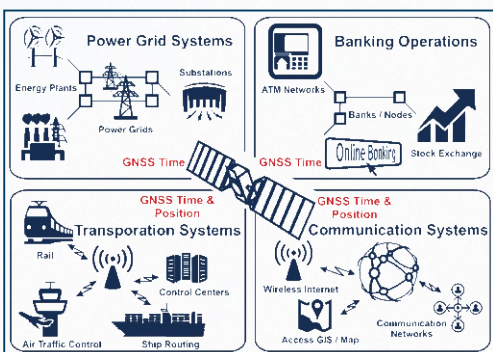




GIDAS

GNSS Interference Detection & Analysis System

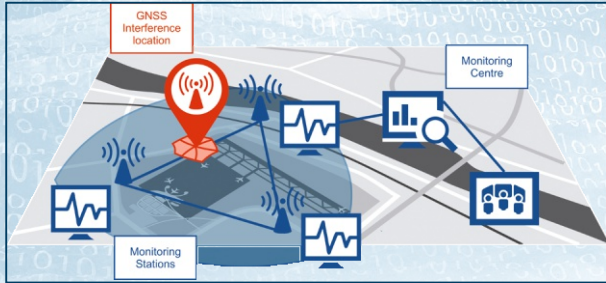
OH B Digital Solutions GmbH develops systems for monitoring the GNSS frequency bands as well as detection, classification and localization of intentional or unintentional interference sources.

Many stakeholders and applications as well as critical infrastructure providers rely on GNSS to provide their services. Global Navigation Satellite Systems (GNSS) are widely used in safety and value critical applications. In recent years, GNSS applications have become the target of intentional interference attacks, which clarifies the need for **GIDAS**. The system detects, classifies and localizes any GNSS interference signals and thus reduces the already existing threat of receiving worse GNSS accuracies or even denial of GNSS service.

GIDAS considerably improves safe and robust operation of GNSS receivers, terminals, and GNSS-based applications by offering the capabilities for reliable detection, classification and localization of GNSS jamming and spoofing attacks in real-time.

Supported GNSS signals	GPS: L1 C/A, L2C, L5 Galileo: E1B/C, E5a, E5b SBAS and regional systems on L1 (e.g. EGNOS, QZSS) GLONASS: G1, G2 BeiDou: B1
Bandwidth	up to 81 MHz
Dynamic range	up to 2 x 8 bit (complex)
Clock stability	Frequency stability 5 ppb (5*1e-9 stability)
Interference detection	Jamming, Spoofing
Monitoring features	Real-time interference detection and alerting (e.g. via e-mail) Classification of interference sources Localization of interference sources Detailed analysis in post-processing
Operating modes	Stand-alone monitoring (static / dynamic) for detection and classification Network monitoring (static) for detection classification and localization
Outputs	Interference alert Interference detection details Interference classification details Interference localization Automatic reporting Standard GNSS output formats (e.g. RINEX, NMEA) Recording of signal snapshots (incl. metadata description according to ION's GNSS SDR metadata standard) Log-Files (proprietary format)
Standards supported	ICAO Annex 10 - International Standards and Recommended Practices ICAO Doc. 8071 - Manual on Testing of Radio Navigation Aids RTCA DO-229D - Minimum Operational Performance Standards for Global Positioning System / Wide Area Augmentation System Airborne Equipment
Alerting	via GUI, TCP/IP, customizable
Alarm latency	< 6 seconds (avg. < 3 seconds)
Detection thresholds	User definable as well as predefined (e.g. ICAO, RTCA) threshold masks
Output update rate	1 to 10 Hz (configurable)
Detection probability	>99% for ICAO thresholds
Jamming classification	Classification regarding the spectral characteristics (power, pulsed/non-pulsed, type, modulation index, sweep rate, etc.)
Supported jamming signal types	Pulsed and non-pulsed Amplitude modulated (AM) Frequency modulated (FM) Continuous wave (CW) Swept continuous wave (SCW)
Time / spectrum resolution	Configurable Frequency resolution typically 1kHz Time resolution for classification typically 10µs
Localization	Requires at least 3 Monitoring Stations Techniques - Difference in received signal strength (DRSS) - Time difference of arrival (TDOA) Accuracy - Typically better than 20m
Graphical user interface	Multi-user web client
Interface between stations, monitoring centre and GUI	LAN Gbit interface TCP/IP SSH encrypted
Power supply	230 VAC
Dimensions	Monitoring Centre: 19" 1U rackmount system (483 x 45 x 683 mm) Monitoring Station: 19" 3U rackmount system (483 x 133 x 683 mm)
Operating environment	Temperature: 0° to +40°C , Humidity: < 85%
Connectors	TNC for RF antenna, LAN, USB 3.0, etc.

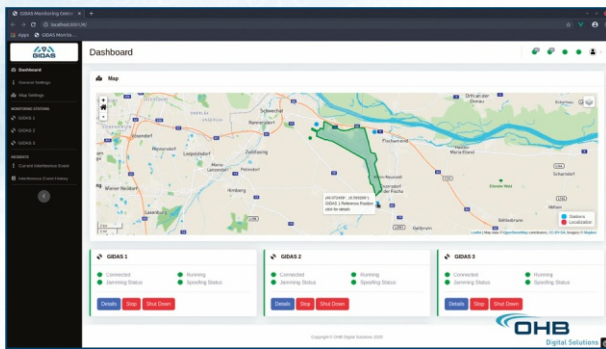
GNSS Interference Detection & Analysis System



GIDAS, developed by OHB Digital Solutions, is a scalable real-time GNSS Interference Detection & Analysis System, used as a standalone monitoring station for interference detection and classification. The system can be upgraded to a more complex network of standalone stations, which allows interference localization in addition.

The System Architecture consists of

- Monitoring Station
 - Antenna and monitoring receiver
 - Detection and alert generation
 - Classification
- Monitoring Centre
 - Localization (requires min. 3 Monitoring Stations)
 - Data storage and reporting
- Graphical User Interface
 - Monitoring station and user configuration
 - Visualization of monitoring results
 - Post-processing and detailed analysis features



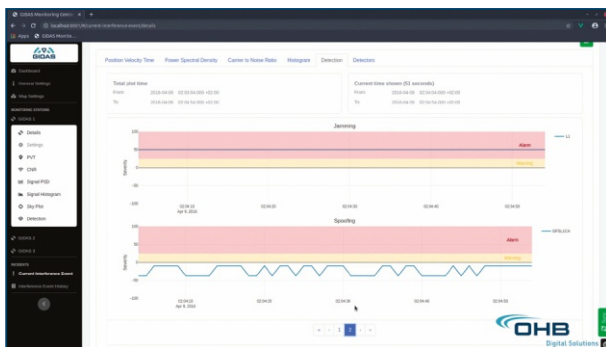
The product offers the following main features:

- Real-time GNSS signal monitoring (detection, classification and localization) and alerting
- Reliable, configurable, flexible and scalable system
- Multi-signal and multi-band monitoring
- GNSS interference detection (jamming and spoofing including automatic alarm generation)
- Classification of GNSS interference signals
- Analysis and comparison of interference events in post-processing
- Easily adaptable to new upcoming signals and systems
- User definable as well as predefined (e.g. ICAO, RTCA) threshold masks
- Graphical user interface and network solution



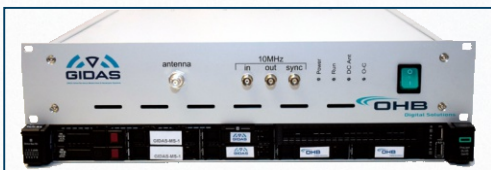
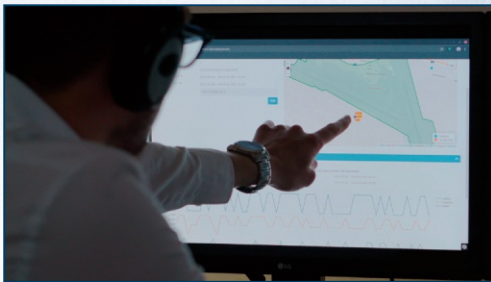
GIDAS will support both, safety critical and mission critical GNSS applications. Depending on the user needs and requirements three different main use cases are foreseen:

1. Static (regional) GNSS interference monitoring for safety critical GNSS applications with high demanding interference monitoring requirements
2. Static (regional) GNSS interference monitoring for safety critical GNSS applications with less demanding requirements
3. GNSS interference monitoring for mission critical (dynamic) GNSS applications



Two GIDAS Monitoring Station types are available for individual requirements:

- Monitoring Station Standard
 - Single frequency wideband monitoring (high signal dynamics)
 - Multi-frequency narrowband monitoring (low signal dynamics)
- Monitoring Station Extended
 - Multi-frequency wideband monitoring (high signal dynamics)



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WE ARE THE NAVIGATION EXPERTS



GIDAS

GNSS Interference Detection & Analysis System

GIDAS, developed by OHB Digital Solutions, is a scalable real-time GNSS Interference Detection & Analysis System, using a network of monitoring stations for interference detection, classification and localization.

GIDAS is addressing private companies as well as public and governmental authorities, which are involved in

- regulating safety critical infrastructures and/or operations
- operating safety critical infrastructures and/or operations
- operating systems or services where global navigation satellite system (GNSS) is key to achieve a required high quality of service (QoS)

Usability

- Designed for easy use and operations
- No need for extended specific training or extensive GNSS knowledge

Even small interruptions of GNSS can cause severe damages. **GIDAS** helps you to make your GNSS application more robust and reliable.