Monitor and Classify
Identify Interference

About Digital Global Systems

Digital Global Systems focuses on automated and intelligent spectrum management solutions. Digital Global Systems has over 30 patents focused on analyzing wireless environments and delivering knowledge in near real-time. Additional information can be found at www.digitalglobalsystems.com

Wireless Optimization and Security
Spectrum Monitoring for Transportation

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Intelligent Wireless Monitoring

**ENHANCING EFFICIENCY AND SECURITY**

Whether it is passengers or freight, the transportation industry must deliver cargo at the right place and time, in a secure manor. Maintaining wireless connectivity for the mobile workforce, critical systems and devices is critical. With consistent end-to-end connectivity, logistics and security efforts are simplified.

The transportation industry keeps nations moving

DGS assist by delivering knowledge regarding:

- **Usage and Occupancy**
- **Gaps in Coverage**
- **Interference Detection**
- **Illicit Activity Identification**

**use case - network coverage analysis**

**INTERMITTENT COMMUNICATION DISRUPTIONS**

DGS transportable SigBase™ placed on a freight train, to measure RSS and signal quality across a geography.

**Observances**

- Highlight locations with low or no signal strength.
- Identify locations where measurements are different than the expectation.

**Results**

Data, complete with time stamps and location information are displayed on a map, to assist the operator with identifying areas in need of service, or with interference.

**use case - spectrum mapping**

**FIND OPPORTUNITIES FOR REFARMING, REALLOCATION AND COLLABORATION**

Semi-permanent SigBase™ systems were placed at multiple towers to gather information over a 30 day period.

**Observance**

- Occupancy, RSS and Modulation information for multiple operators

**Resolution**

Metrics utilized to determine which channels (and at what times) were available for utilization. Modulation type, along with radio ID’s (when available), were provided to confirm the observed activity was consistent with communications.

**Spectrum Utilization & Incident Response**

- Load a channel plan and identify open channels which are available for use
- Detect network outages for expedient remediation
- Highlight illicit activity, such as drones and wireless jammers
- Locate drones and their associated controllers, to eliminate surveillance and reduce threat

**Interference Detection & Classification**

- Engage learning engines to identify typical vs. anomalous activity automatically
- Compare channel plans (center frequency/bandwidth) to real-time activity, with automated alarms identifying issues
- Demodulate Analog FM, P25, NXDN, DMR, DSTAR and TETRA, to identify quality issues and the presence of unauthorized radios

**MOBILE, SEMI-PERMANENT NODES**

- **SETUP AND CONFIGURE IN MINUTES.**
- **RUGGED SOLUTIONS FOR VEHICLE AND TRAIN MOUNTING.**
- **INTERACTIVE AND REMOTE OPTIONS.**

**FIXED NETWORK MONITORING (40 MHZ TO 6 GHZ)**

- **DISTRIBUTED NETWORK IDENTIFIES INTERMITTENT AND CHRONIC SOURCES OF INTERFERENCE.**

**IDENTIFY ILLICIT ACTIVITY**

- **IDENTIFY THE PRESENCE OF WIRELESS JAMMERS AND DRONES.**
- **LOCATE AND DISABLE DRONE • CONTROLLER COMMUNICATION.**

**Long-term Distributed Monitoring**

- Fixed, distributed sensors provide an unparalleled view into a network environment
- Access information at a network operations center from multiple nodes, on a single pane of glass.
- Remote spectrum analysis capability, reduces time required at site

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Use case - network coverage analysis

PREVENT INTERMITTENT COMMUNICATION DISRUPTIONS
DGS transportable SigBASE™ system was placed on a freight train, to automatically measure RSS and signal quality across a geography.

Observances
- Multiple locations were observed with:
  - low/no signal strength
  - measurements different than the expectation

Results
Data, complete with time stamps and location information was displayed on a map, to assist the operator with easily identifying areas in need of service, or with potential interference.

Use case - spectrum mapping

FIND OPPORTUNITIES FOR RE Farming, Re allocation and Collaboration
Semi-permanent SigBASE™ systems were placed at multiple towers to gather information over a 30 day period.

Observance
- Occupancy, RSS and Modulation information for multiple operators

Results
New channels were identified for licensing and utilization, with opportunities highlighted for increased utilization of existing assets.

MOBILE, SEMI-PERMANENT NODES
- SETUP AND CONFIGURE IN MINUTES.
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