

Client Application Suite



teamSOIGNE®

Robust signal mining, analysis and monitoring tools for Espy's teamSENTINEL® wideband recording RF sensors

The teamSOIGNE Client Application Suite is distinguished by its ease-of-use and effectiveness. Highly optimized around typical signal mining and signal development workflow, all applications share common GUIs which provide rapid access to signals of interest stored on a teamSENTINEL® sensor with a minimum of menu and mouse clicks. Renowned in the SIGDEV community for its intuitive and easy to use GUI, interactive response and extreme signal fidelity, teamSOIGNE has become the recognized leader in SIGINT development.



Remotely access and analyze terabytes of recorded digital RF by teamSENTINEL wideband below-HF, HF, V/UHF sensors

Interactively view, search, interrogate, geolocate, and analyze emitters of any modulation scheme or bandwidth

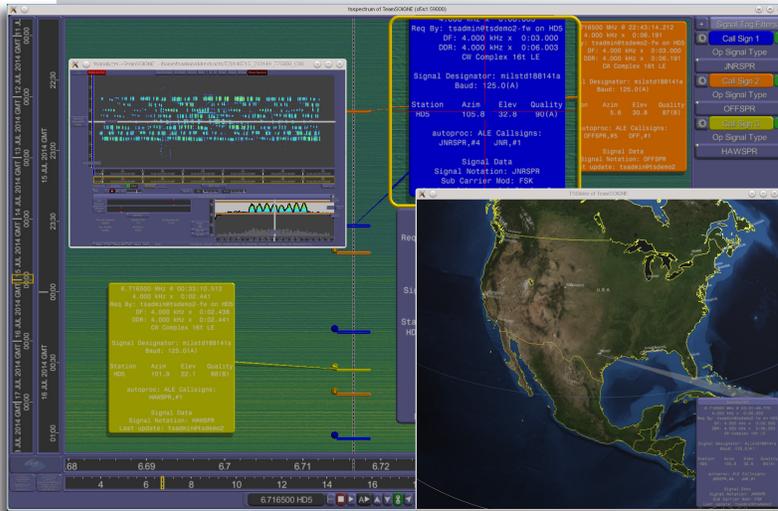
Simultaneously access and task multiple network connected teamSENTINEL sensors from anywhere in the world

tsSpectrum

TeamSOIGNE's tsSpectrum application provides a *satellite* view of data collected by a wideband sensor. Signals Analysts (SAs) can interactively:

- View/explore very large areas (Hours/Days by MHz) of recorded RF
- Play audio from any emitter simply by boxing it
- Automatically monitor, DF and record multiple narrowband channels using FreqWatch
- Pan, zoom and select energy of interest for extraction and prosecution (create and IQ file or optionally request a DF)
- Select prosecuted SOIs to view using the espyGLASS® and tsAnalyzer
- Filter SOI results using metadata parameters such as signal type, bandwidth, duration, azimuth, fix, etc.
- Coherently view, correlate, analyze and DF signals of interest from multiple networked sensors using teamVIEW®

Signals Development With tsSpectrum, analysts can visually search the entire recorded spectrum to locate and identify new transmissions of interest. Signals can be easily recognized (CW, USB, LSB, PSK, FSK, radars, frequency agile). Energy can be further characterized by extracting narrowband files for a variety of signals analysis, including audio, spectral, DF and signal recognition and demodulation.



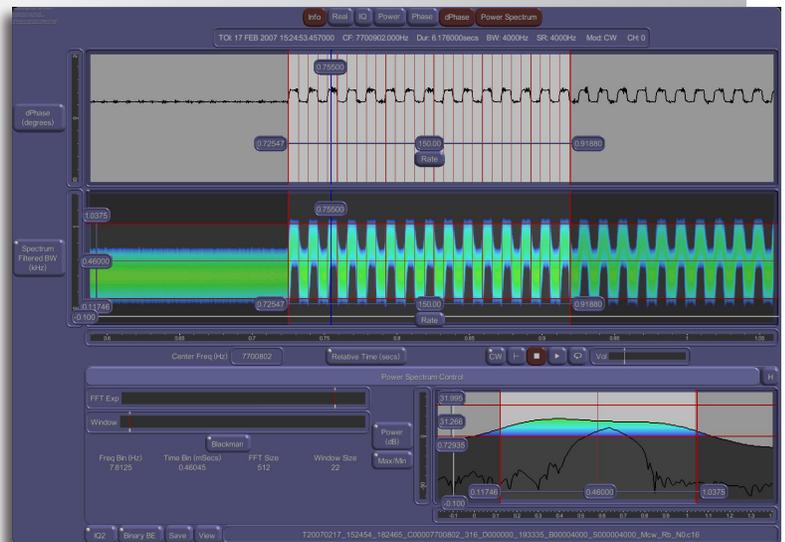
Information Assurance SOIs collected from a variety of automated SIGINT sensors can be coherently displayed on tsSpectrum and compared with teamSENTINEL's recorded spectral data. Automated results and actual energy can then be scrutinized to identify undetected, but related transmissions. Retroactive prosecution of overlooked energy results in more complete collection of related transmissions. Immediate analysis and feedback of this collected data can be used to improve the accuracy and resource allocation of automated SIGINT collection systems.

tsAnalyzer

tsAnalyzer is the signal waveform *microscope* of the teamSOIGNE signal mining tool kit. Using tsAnalyzer, analysts can examine, measure and analyze waveform, frequency and audio characteristics of a high-resolution time domain sample file. This highly interactive application GUI helps analysts quickly determine if the selected sample file is relevant to a survey and decide whether to ignore it, catalog it or forward it to a more specialized signals analyst for further analysis.

Analysts can use tsAnalyzer to interactively:

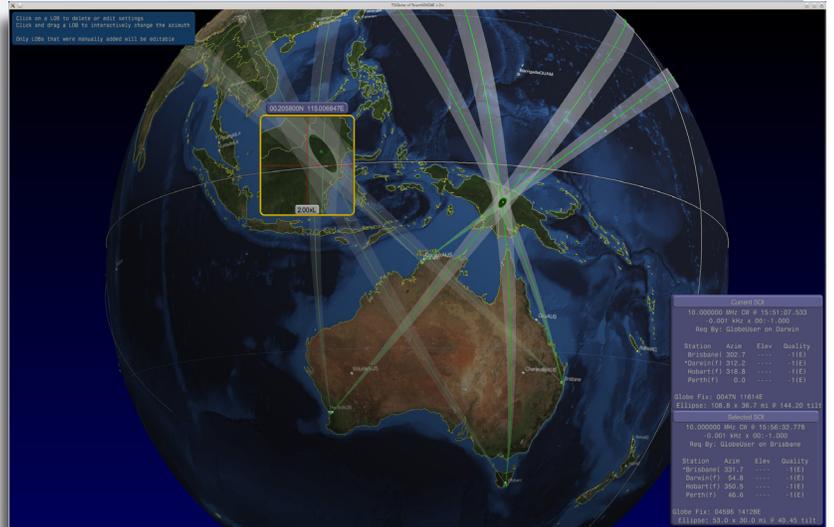
- Examine power, phase and spectral characteristics of a signal from real or complex data
- Make quantitative measurements of signal characteristics, i.e. baud rate using a variety of variable scale measurement tools
- Modify FFT characteristics, contrast and zoom to better visualize the frequency components of a signal
- Tune and listen to a variety of modulation types including CW, LSB, USB and FM
- Convert files to a variety of standard IF file formats
- Save and submit precisely tuned files to external signal recognition, demodulation and decoding packages



tsGlobe

For HF/DF-enabled SIGINT sensors, teamSOIGNE's tsGlobe application provides an interactive 3D map/globe interface to display OpenStreetMap® geospatial data. Lines of bearing (LOBs) and computed geo-fix results are interactively linked from the SOI shown in tsSpectrum to the tsGlobe 3D viewport. The tsGlobe display can be independently manipulated to allow analysts to pan/zoom, change display parameters, such as points of interest and political boundaries, and make measurements.

- tsGlobe uses a true spherical coordinate system to accurately represent the underlying OpenStreetMap® database and sensor metadata.
- LOBs and interactive measurements are projected using great circle paths.
- The espyGLASS® provides continuous feedback on latitude/longitude for any point on the globe.
- User-defined points of interest can be added.



tsAdmin and tsControl

TeamSOIGNE's tsAdmin application provides a interactive 3-dimensional graphical interface for provisioning, monitoring and control of networks of local and remote teamSENTINEL sensors. Using tsAdmin, a sysadmin can administer individual teamSOIGNE clients and teamSENTINEL sensors, and the operational relationships (access) between and among sensors and clients. Click on the module of interest, and drill in to monitor that component, view log files, or interactively reconfigure the the module or sensor.



Using tsControl, operators and system administrators alike can monitor all the vital operational parameters of all teamSENTINEL sensors configured to their operational domain including:

- System up time
- Recorded data life
- Tuner Channel Sample Rates
- Number of Virtual Channels

- Channel CF and bandwidth
- Gain/attenuation and power
- Instantaneous power spectrum

TeamSOIGNE client software application suite runs on high-end commercial workstations including Dell Precision® T5810 desksides, R440 rackmount workstations and 7720 portables, all Powered By CentOS.

Advanced data-management and compression algorithms developed by Espy ensure that teamSOIGNE operators experience rapid screen updates, even across low-bandwidth/high-latency network connections so often encountered in remote operational environments.

Collaboration between distributed operators is intrinsic and intuitive, allowing close coordination and minimal overlap between mission elements working together side-by-side or remotely.

"With these tools, just an hour of stick-time and you're productive."

- Anonymous, Technical Director

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