Defense Information Systems Agency

A Combat Support Agency

Joint Spectrum Center

MAJ Tom Meccia
J3 Operations Officer
410.293.9802

Disclaimer

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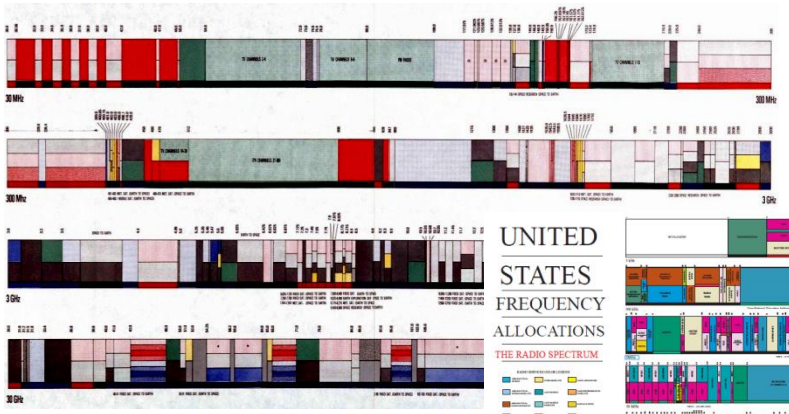

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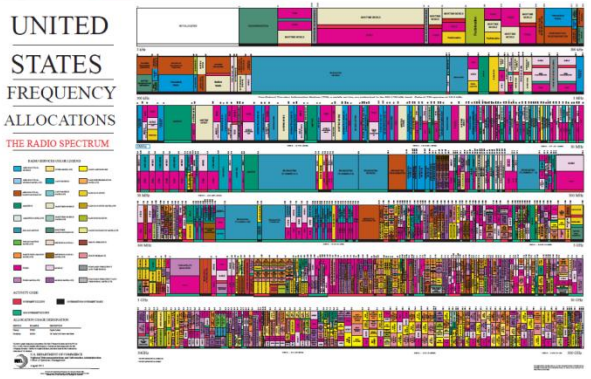
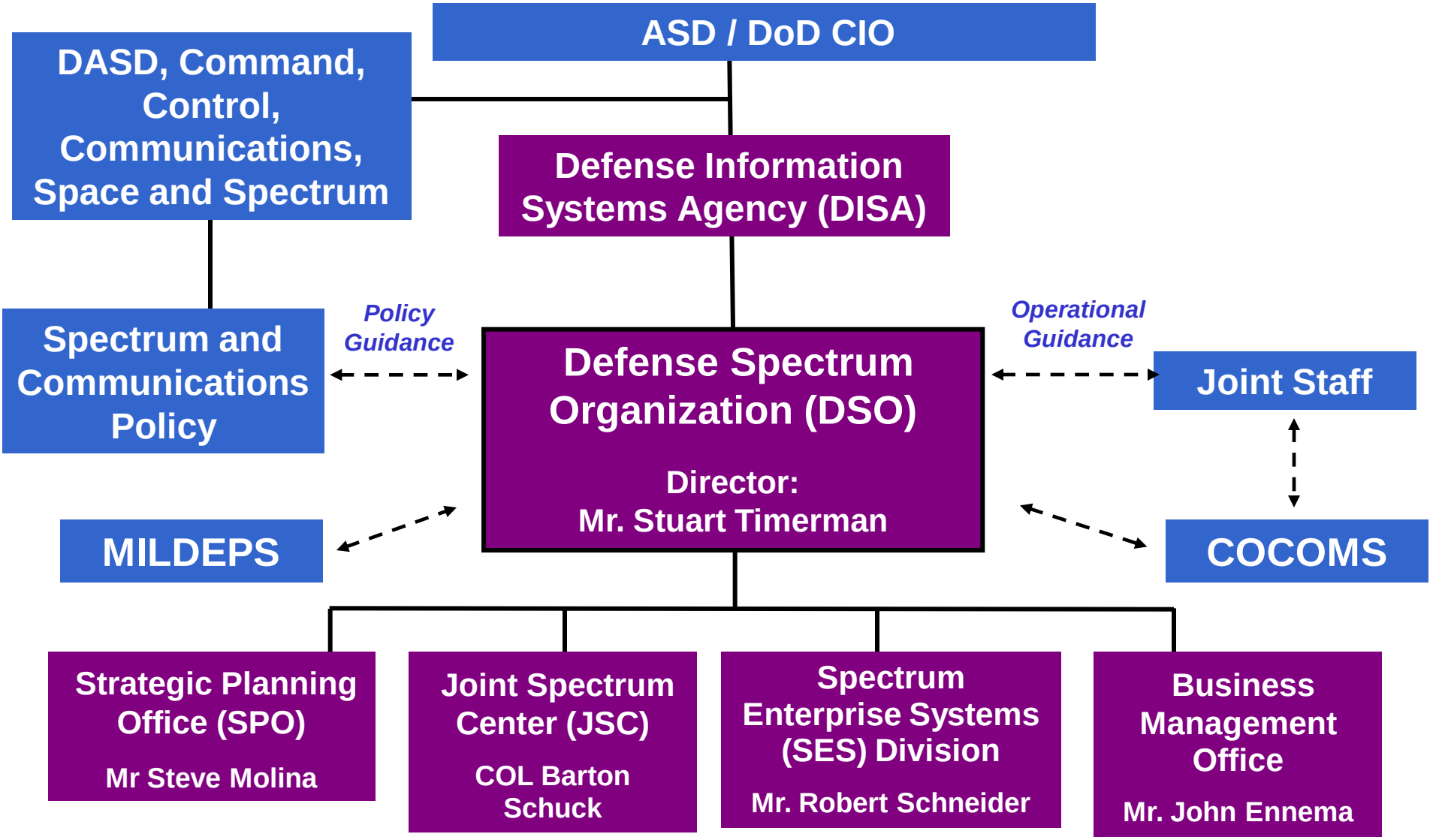


JSC Mission Statement

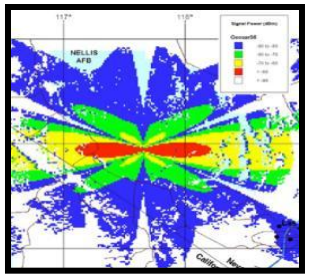
The Defense Information Systems Agency, Joint Spectrum Center provides direct support to Combatant Commanders and Department of Defense (DoD) Components to enable effective and efficient use of the electromagnetic spectrum and control of electromagnetic environmental effects in support of national security and military objectives.

DSO Organization



Primary JSC Support Tasks

- Provide direct support to the Combatant Commands and Joint Task Forces on spectrum matters
- Manage the Joint Spectrum Interference Resolution (JSIR) program and resolve operational interference problems
- Provide spectrum management support for the Electronic Warfare, Information Operations, and Intelligence Community



JSC Activities

Warfighter Support

- Deployable Spectrum Management Teams
- Provide On-call interference resolution support
- Support Information Ops/Special Technical Ops (IO/STO) and Electronic Warfare
- Hazards of Electromagnetic Radiation on Ordnance (HERO) assessments
- Provide regional Electromagnetic Environment (EME) data
- Conduct Battlefield SM Training

Spectrum Information Management

- Collect and maintain SM, E3, and HERO data
- Develop DoD E3 technical standards (Lead Standardization Activity)
- Operate and Maintain the DoD Frequency Resource Record System (FRRS)
- Manage the configuration and maintenance of SPECTRUM XXI Joint frequency assignment tool used in support of all Joint Operations

Acquisition Support

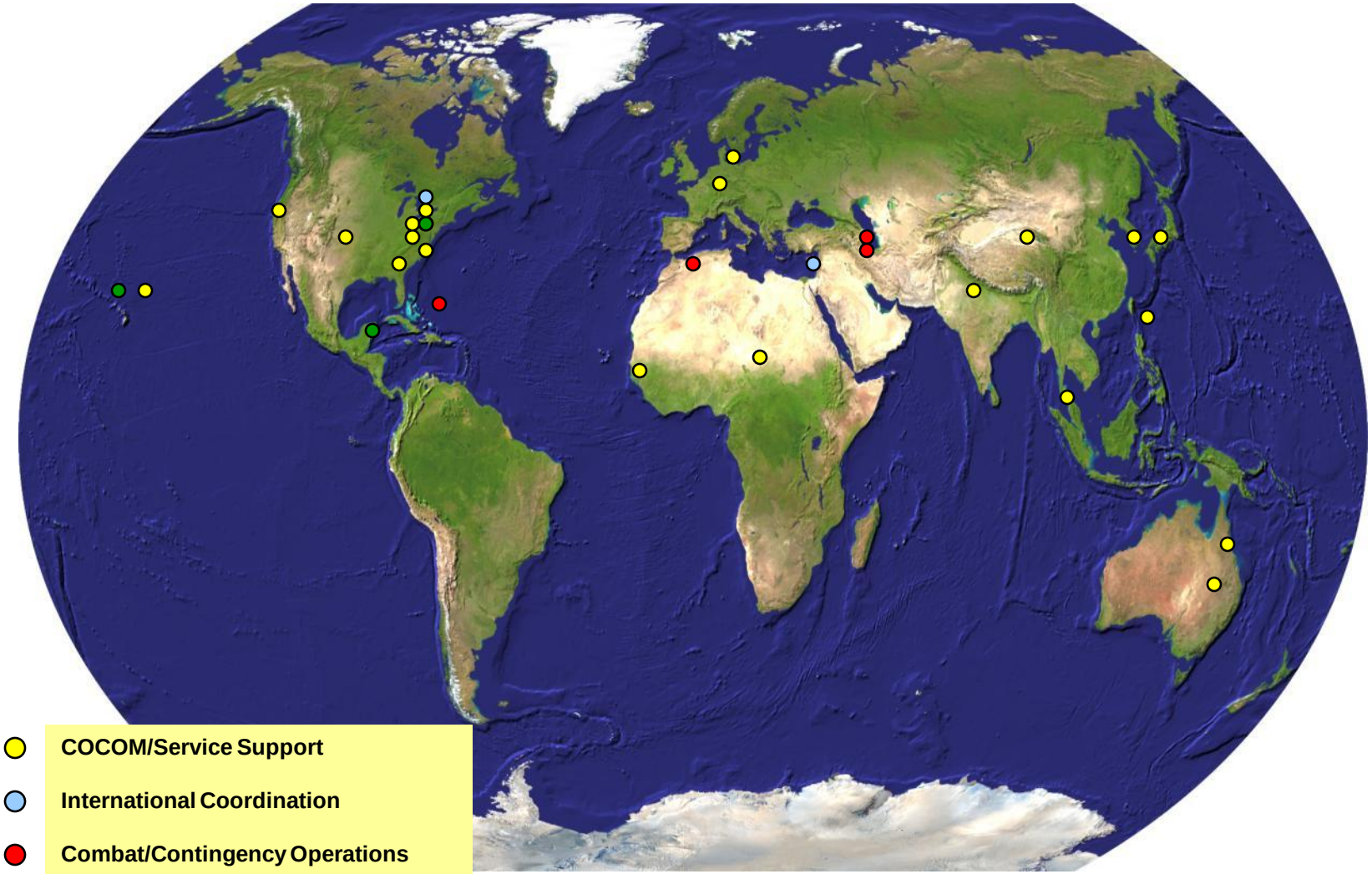
- Provide E3 Assessments and Spectrum Supportability Risk Assessments (SSRAs) for DoD acquisition & test communities
- Review requirements and acquisition documents for SM and E3 adequacy
- Provide Measurement and testing support
- Conduct Spectrum and E3 training
- Provide Electromagnetic Compatibility (EMC) analyses, on a reimbursable basis, to DoD Agencies, Federal Agencies and Industry

Research and Development

- Develop Spectrum Management and E3 information systems
- Develop Spectrum Modeling and Simulation Capabilities
- Develop analytical E3 algorithms and tools to support spectrum and E3 engineering
- Research spectrum efficient technologies

SM – Spectrum Management
E3 – Electromagnetic Environmental Effects

DSO Global Deployments



- COCOM/Service Support
- International Coordination
- Combat/Contingency Operations
- Technical Support
- Software Training

Emerging Spectrum Tools

- **Joint Spectrum Interference Reporting Online**

- **Spectrum Monitoring**
  - Multi-spectral Ambient Noise Collection and Analysis Tool (MANCAT)
  - OBSERVER, networked spectrum monitoring

- **Networked Monitoring Capability**
  - monitoring against authoritative data – licensed vs. the real world
  - compatible with current and future data structures
  - real time measurements over map data

- **Mercury**

- **SXXI Online**
  - Spectrum Management Transition Initiative
  - Provides near-real-time report on spectrum use
  - enhanced Algorithms
  - enhanced user interface

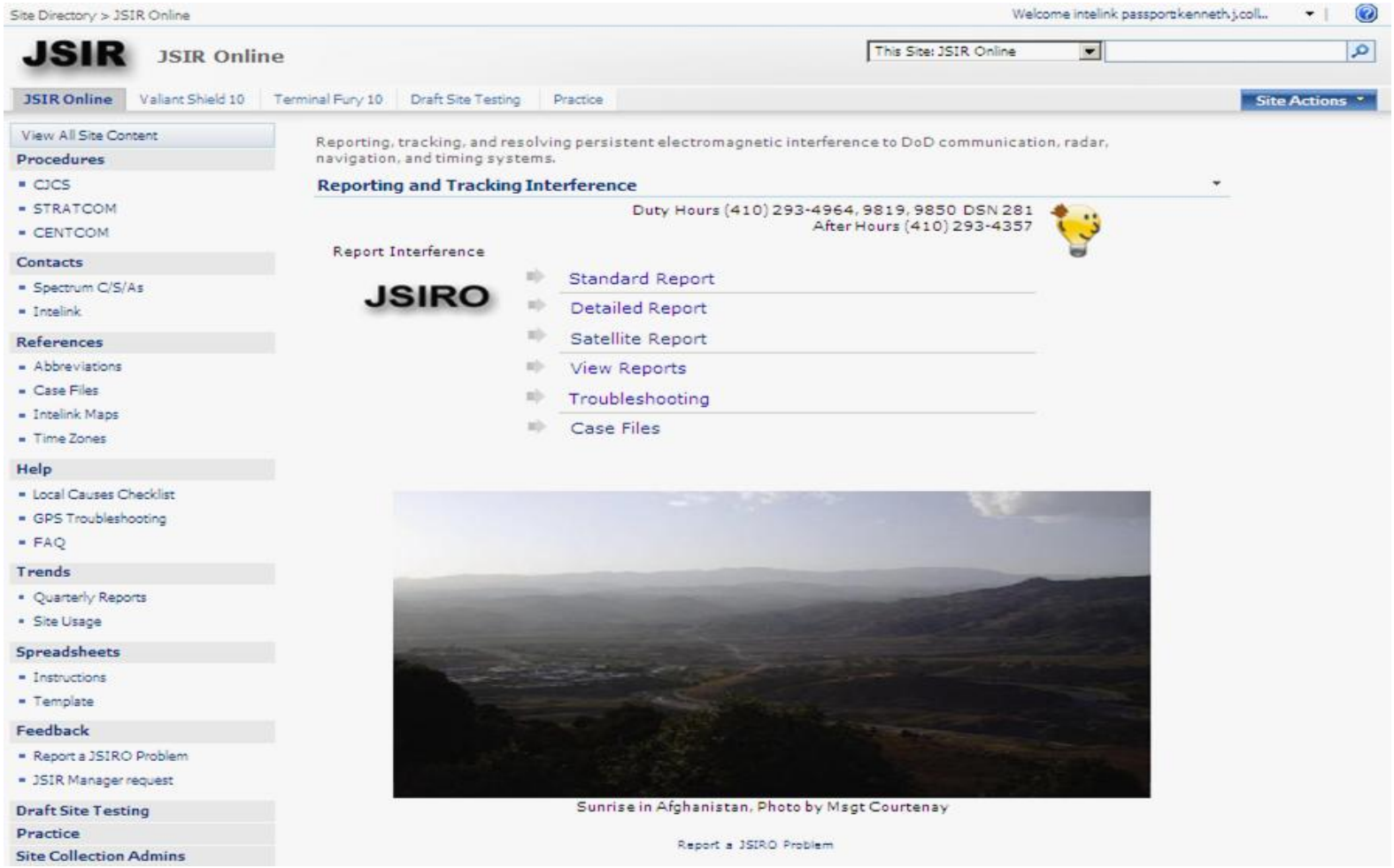
Joint Spectrum Interference Resolution (JSIR) Program

- Combatant Command & Service responsibilities
  - Resolve at lowest feasible level – Report up and input to database for lessons learned.
  - Establish local procedures
  - Training
  - New JSIR Online (JSIRO) Portal

- JSC responsibilities
  - Program manager
  - Analytical, technical, and field measurement/resolution support
  - Maintain historical incident files (1970 to present)
  - Interference emergency response team

- Authority:
  - JSIR Instruction: Chairman Joint Chiefs of Staff Instruction 3320.02B (Policy & Responsibilities)
  - JSIR Manual: Chairman Joint Chiefs of Staff Manual 3320.02 (Procedures to report, identify, analyze, resolve & catalog interference

JSIR Online



(CJCSI 3320.01) Manage the DOD JSIR program and the JSIR collaboration portal in accordance with guidance from the Assistant Secretary of Defense (Networks and Information Integration) and the Director for Command, Control, Communications, and Computer Systems (J-6), Joint Staff.

Spectrum Monitoring

WHY?

- Spectrum Surveys
  - Establish Baseline RF Environment
  - Determine Spectral Occupancy
  - Compare assignment databases to reality
- Spectrum Monitoring
  - Monitor specified regions of spectrum during operations
  - Spectral Occupancy to validate spectrum usage and identify unauthorized transmissions.
  - Unless the ambient environment is continuously monitored during operational execution ***there is no way to prove RF Interference***
- System Under Test (SUT) Monitoring
  - Monitor specific signals for power & frequency stability and record their Duty Cycle for post-ops analysis
  - Correlate SUT signals and anomalies with test events and performance data based upon accurate GPS time.

MANCAT/S2AS

• The S2AS systems

- R&S PR-100 portable Receiver

- US Army Electronic Proving Ground Multispectral Ambient Noise Collection & Analysis Tool (MANCAT) Software

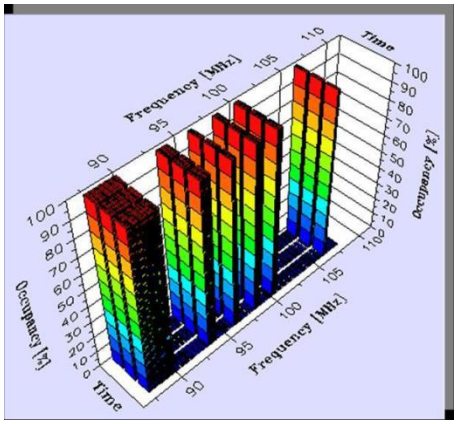
- autonomous, scripted, continuous measurement of ambient RF Spectrum over time

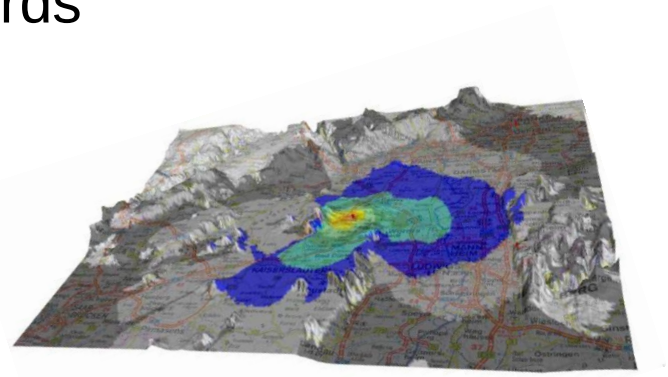
- the capability to sense the EMS, analyze the data for decision making, and share the data for situational awareness

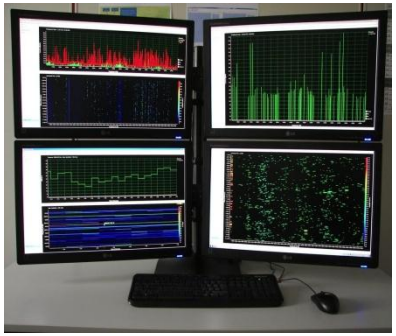
- man portable interference resolution

Observer

- Imports DoD data standards
- Compliments DoD Tools
- Comparative analysis
  - percentage of use
- Way Forward
  - connectivity between tools
  - real time vs records



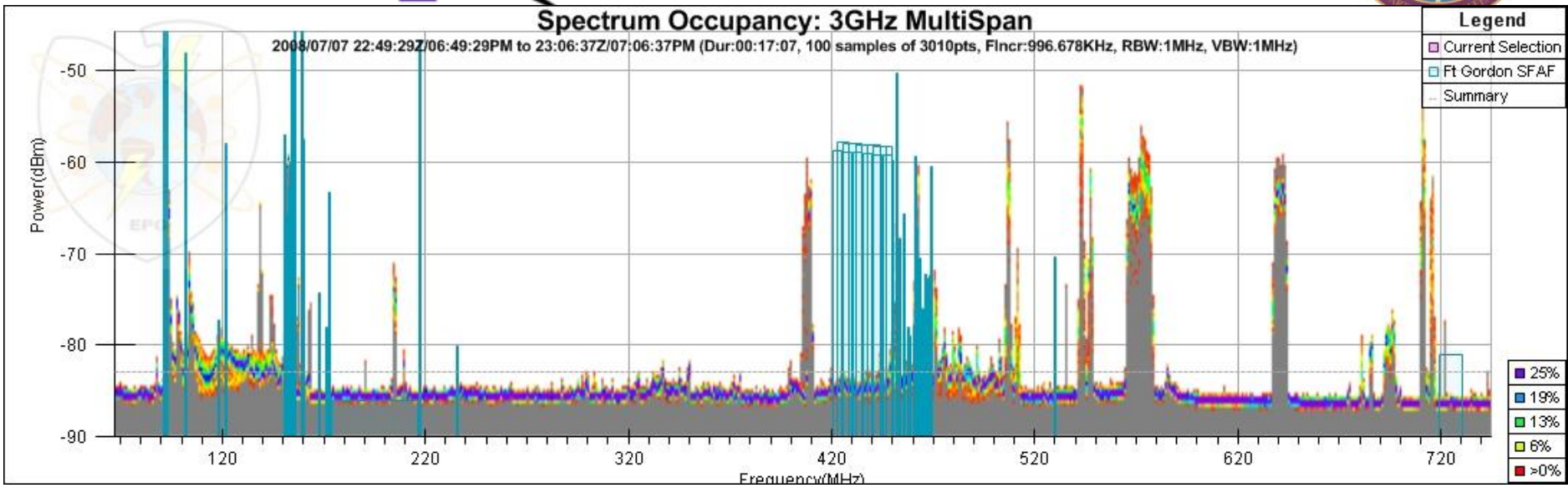


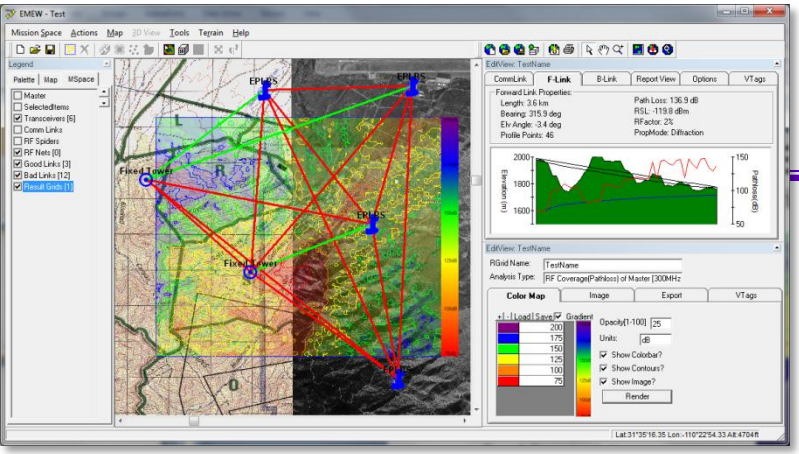


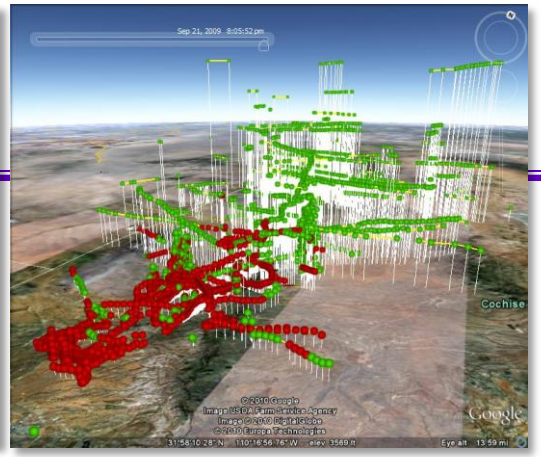
UNCLASSIFIED

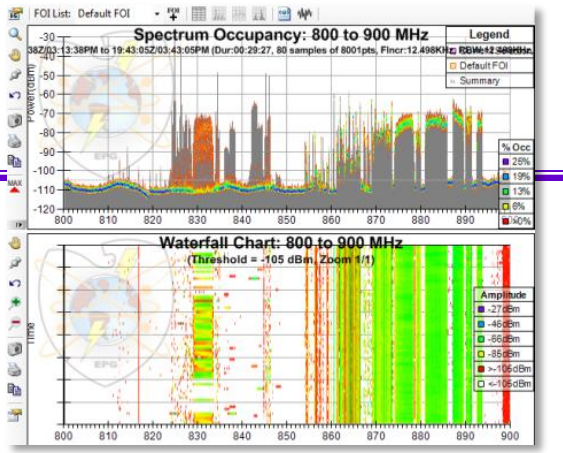
SIMULATED DATA

Visualization









User importsl records or other spectrum source data (text), or inputs manually – overlays on top of collected scan.

Mercury Background

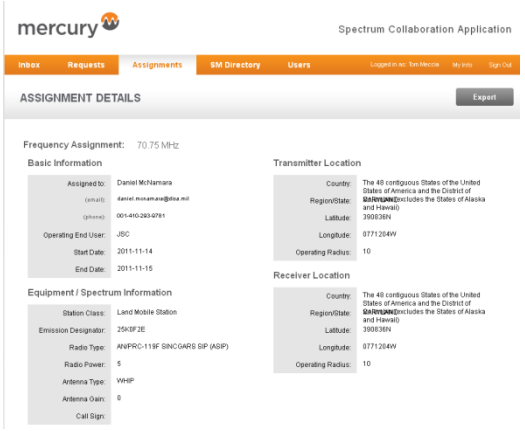
- Mercury was developed to meet a DoD capability gap – ”coordinate spectrum use with host nations during Humanitarian and Disaster Relief (HADR)

- Mercury is a spectrum coordination application- NOT a spectrum management tool

- Mercury allows users to request and receive frequency assignments via an unclassified web-based environment.

- Compliant with DoD Data
  - interoperability with US tools

- Basic Spectrum Management Functions



Mercury Characteristics

- Cloud-based application accessible by any web browser
- Simplified frequency request form for ease of use by non-spectrum managers
  - Contains drop-down menus, limited help features and auto and pre-populate features
- Text message boxes for ease of coordination
- Language translation feature for cross-border coordination

Way Forward

- Mercury is an operational prototype and is available for current use

- New features will be added to Mercury in FY12 and FY13

  - Geo-spatial location choosing to more accurately request and receive assignments during HA/DR events

  - Format application for use with mobile devices

  - Line-of-Sight profiling to assist in communications planning, reducing workload and redundancy for devastated host nation

- Pursuing discussions with GEMSIS and working on future CWP funding

- User feedback and suggested enhancements to Mercury are encouraged

Our Services

- ***Informal contact/requests*** can be made directly to JSC/J3 Operations for:
  - General questions pertaining to spectrum operations
  - JSIR
  - Country Studies (Frequencies, HF Propagation, Area Plots)
  - Spectrum Background data
- ***COCOM and JTF assistance*** (contingencies, exercises, operations)
- **Interagency coordination and support**
- ***Information briefs***
  - COCOM conferences
  - Service conferences
- ***Technical advisor for a variety of programs***
  - JACS, SXXI-O, HNSWDO,JDAWS, GEMSIS

Contact information

Spectrum Operations Support Center

Ph: 410-293-4357(HELP)
DSN: 281
SOSC@disa.mil
jscoperations@disa.smil.mil

Joint Spectrum Center J-3

http://www.disa.mil/jsc/operational_support_j3.html

QUESTIONS?

www.disa.mil