



NAVAL SURFACE WARFARE CENTER
DAHLGREN DIVISION



Presented by:

Ms. Margaret Neel

*E³ Force Level Interoperability
Branch (Q54)*

Tel: (540) 653-8021

aesop@navy.mil

aesop@navy.smil.mil

<http://cnl.phdnswc.navy.smil.mil/aesop>

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DEPARTMENT



Afloat Electromagnetic Spectrum Operations Program (AESOP) Spectrum Management Challenges for the 21st Century

3 March 2010

Approved by Q54

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AESOP Mission



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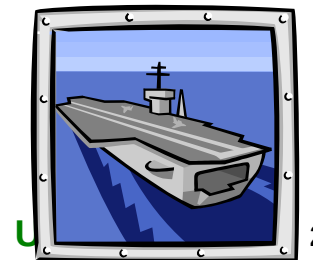
AESOP is the US Navy tool for Strike Group Radar and Communications Planning for coordinating spectrum interoperability in afloat operations worldwide.



- AESOP uses previously allocated frequencies to generate optimal Radar Plans and OPTASK COMMs that adhere to laws and numbered fleets' emission policies.



- AESOP integrates and de-conflicts the spectrum requirements of all acquired systems in the global operational electromagnetic environment (EME).





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Communication, Radar, NAVAID, EW Military Equipment
Commercial Spectrum Use

Host Nation Agreements

Table of Allocations

NTIA

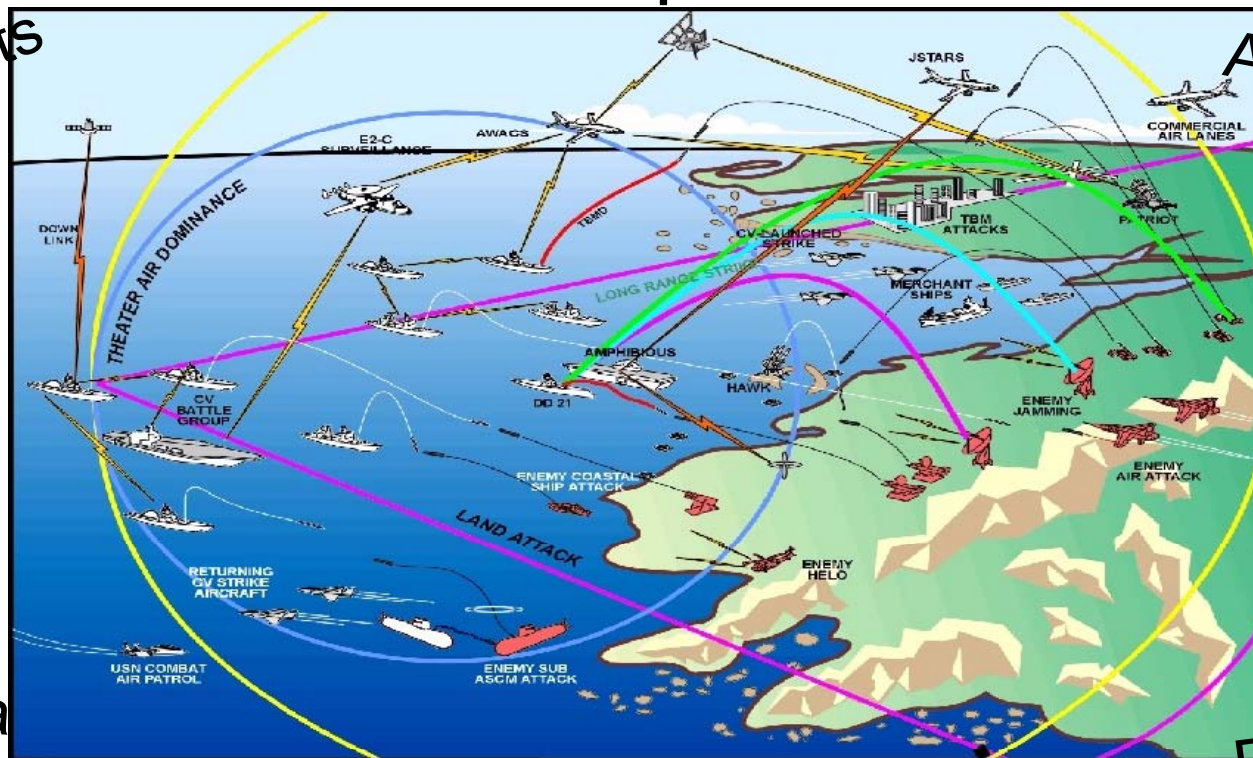
ITU

DD-1494

JRFL

Local Area Assignments

Radiation Restrictions



Afloat Users Need Simplicity



... Afloat Spectrum Planning – Not Complicated



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⚡ Afloat Spectrum Planning Involves

– Process

- Automation to Simplify Task
- Compliance with Military Doctrine
- Utilizes Chain of Command
- Effectiveness

– Tool

- Accuracy
- Compatibility
- Efficiency
- User Friendliness



Process - Automation



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✦ Afloat Electromagnetic Spectrum Operations Program

- ✓ Integrated Spectrum Planning Tool
- ✓ Automated Information Flow of Spectrum Planning
- ✓ Automated Frequency Assignment Generation
- ✓ Analysis of EMI Involving SG and Shore Based Emitters
- ✓ Complete Deployment Frequency Plans and Operational Guidance
- ✓ Compliant with Navy Certification and Messaging Standards
- ✓ Version 2.1, October 2008

***Mandated by ALCOM 33/05,
ALSECONDFLT 18/04 / ALTHIRDFLT 06/04***



Process – Military Doctrine



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⚡ Supporting Documents

- TM 3.13.2-04, Afloat Electromagnetic Spectrum Planning and Management (defines NSME roles and responsibilities)
- NTTP 3-51.1, Navy Electronic Warfare
- NTTP 3-13.2, Navy Information Operations Warfare Commander's Manual
- NTA 5.5.6, Perform Spectrum Management

⚡ Navy Spectrum Management Element (NSME)

- Responsible for spectrum planning and execution of plan
- Involves all SG spectrum users

⚡ Supports Information Warfare (IW) Requirements

- Centralizes the spectrum management process
- Afloat staff performing strike group radar and communications planning



NTA 5.5.6

Perform Spectrum Management (March 2009)



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- ✓ Does the Strike Group (SG) have a valid OPTASK COMM and Radar Plan for the intended Op-Area?
- ✓ Are all SG COMMS and radars operating in compliance with the published OPTASK COMM and Radar Plan?
- ✓ Are unit Spectrum Management (SM) personnel familiar with EMI interference restrictions for assigned operations area?
- ✓ Spectrum Management software updated with current ship board communications, radar and weapons systems?

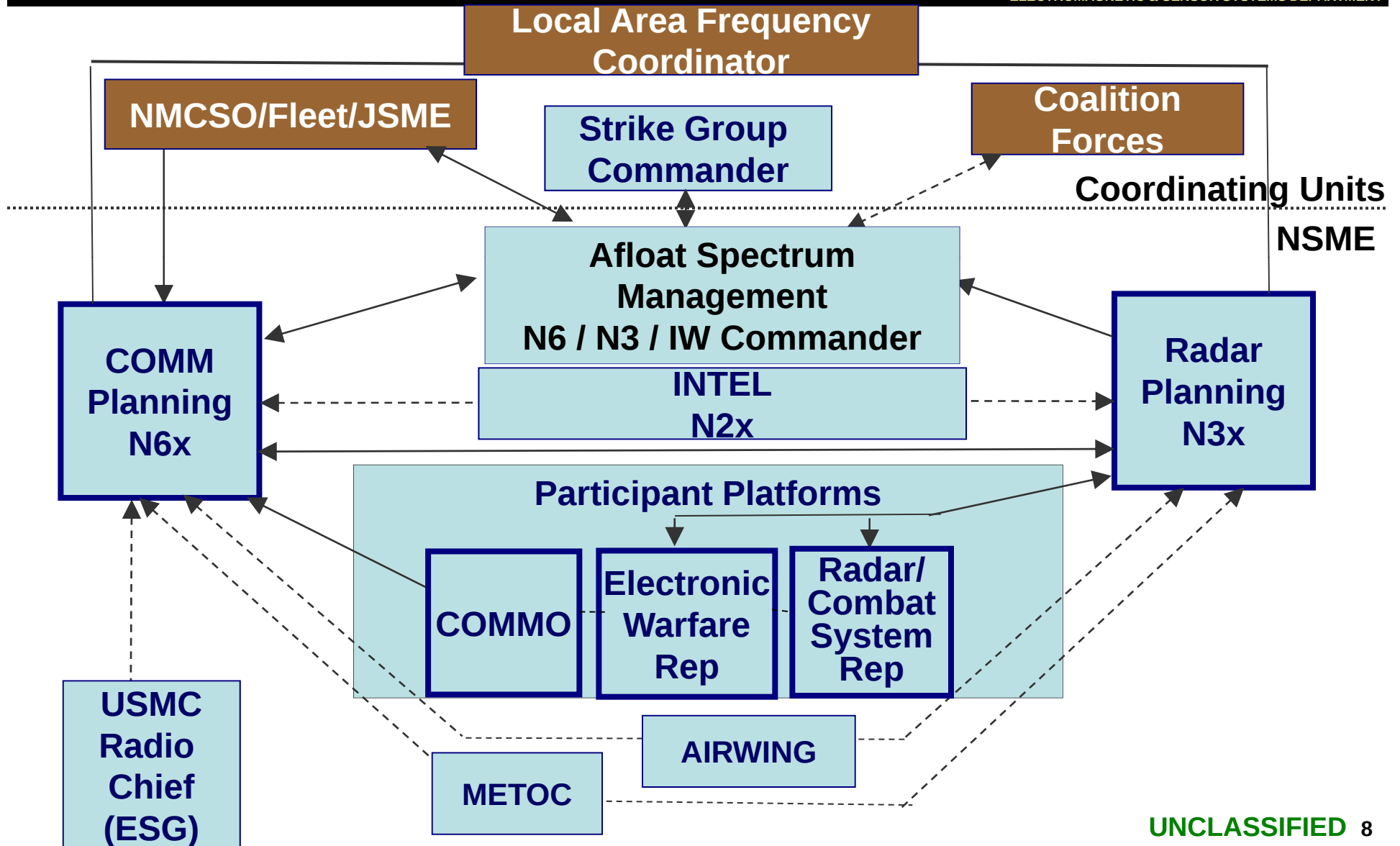
AESOP-Related Task Measures



Process – Chain of Command Comprehensive Plan



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Process - Effectiveness



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- ✓ **Better Defined Roles and Responsibilities**
- ✓ **All Spectrum Users Considered**
 - Communication Systems (COMMs)
 - Navigation Aids (NAVAIDs)
 - Electronic Warfare Systems (EW)
 - Local Area Assignments
- ✓ **Supported by Navy Doctrine**
 - TACMEMO
 - NTA 5.5.6
- ✓ **External Time Constraints Met**
 - NMCSO Standing Plan Request
 - Frequency Request
 - Participant Request Message



Tool - Accuracy

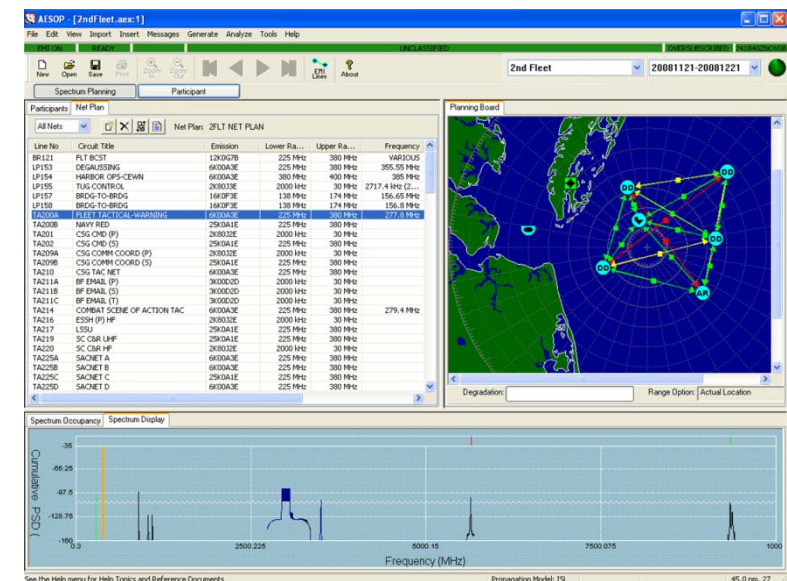


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⚡ AESOP Implements

- Validated Analytical Models
- Standard DoD Propagation Models
- Interference Prediction Between

- Radar
- COMM
- EW
- NAVAIDS
- Local Area Assignments



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Tool – Compatibility



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⚡ Current Interfaces

- MCEB Pub 7 Standard Frequency Action Format
- Registered XML Schema
- Frequency Resources - JACS

⚡ AESOP 3.0 (2010) and beyond

- MCEB Pub 8
- True RF Environment eXtractor (T-REX),
Production Grade Spectrum Sensor – Data
Interface
- SPEED / AESOP



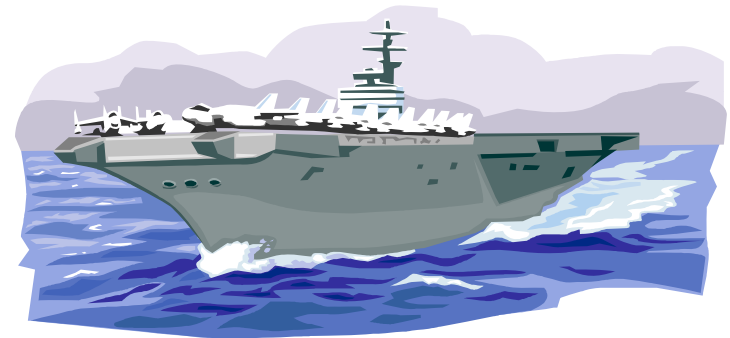


Tool – Efficiency and User Friendliness



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- ⚡ **Automatically Incorporate Frequency Restrictions**
- ⚡ **Populated Database Minimizes Data Entry**
 - Strike Group
 - Platform
 - Equipment Inventory
 - System Data
- ⚡ **Import of Critical Planning Information**
 - Net Assignments
 - Participant Data
- ⚡ **Plan Entire Deployment**
- ⚡ **Automated Message Generation**
- ⚡ **Intuitive Graphical User Interface (GUI)**



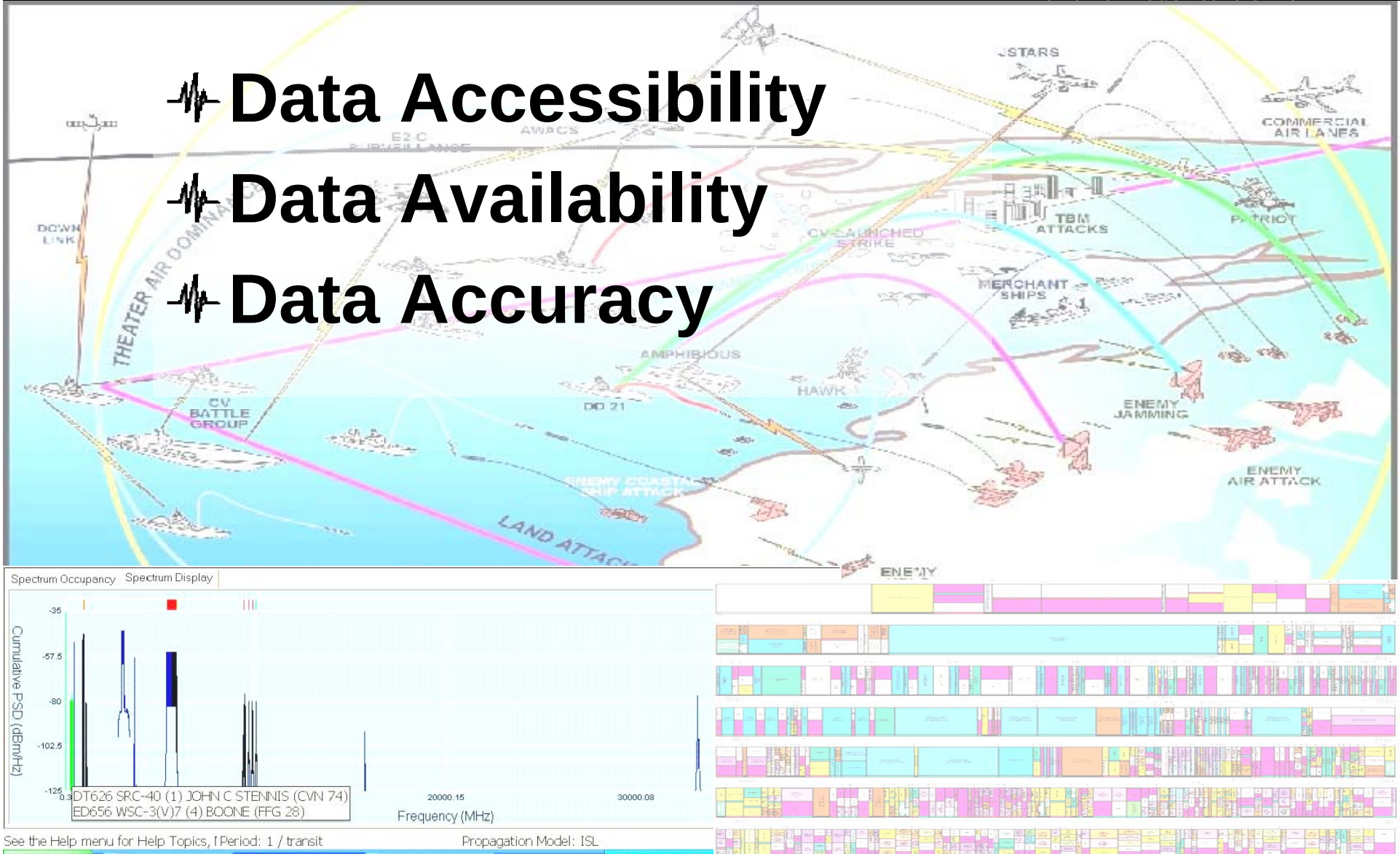


Spectrum Management Challenges for the 21st Century



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- ⚡ Data Accessibility
- ⚡ Data Availability
- ⚡ Data Accuracy





AESOP Efforts



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- ✦ **MCEB Pub 8**
- ✦ **Services Oriented Architecture**
- ✦ **Web-Based**
- ✦ **DD-1494 Measurement Techniques**
- ✦ **Electronic Warfare Data Format**
- ✦ **NATO Version “NEOP-2007”**



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Questions?

Comments?

aesop@navy.mil
aesop@navy.smil.mil

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