



# Defense Spectrum Organization SPECTRUM & E3 ENGINEERING ANALYSIS



## **DSO Provides Spectrum and Electromagnetic Environmental Effects (E3) Engineering Analysis**

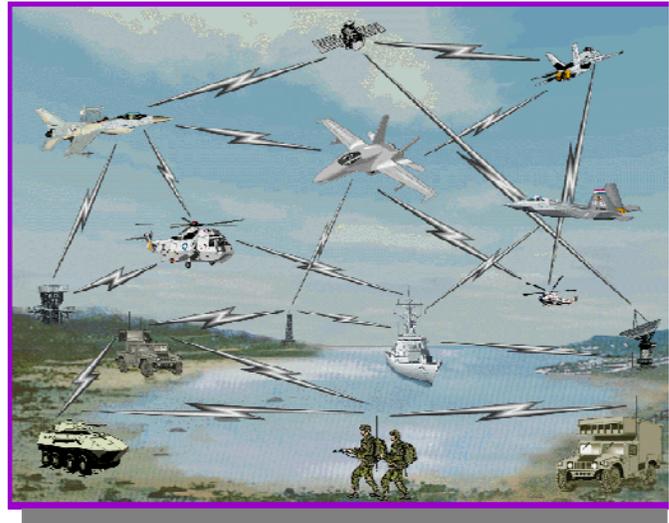
The DSO is the engineering center of excellence with the subject matter experts, experience and tools required to address the complex and operational issues associated with spectrum operations and electromagnetic interference control. DSO provides technical E3 and spectrum engineering support to the combatant commands, their components and the Military Services.

### **DoD E3 Program**

E3 is the impact of the electromagnetic environment upon the operational capability of military forces, equipment, systems, and platforms.

At DSO, we provide operational electromagnetic engineering support to the Joint Chiefs of Staff and the combatant commands for contingency operations and exercises as required, develop, maintain, and distribute E3 analytical tools to predict, assess, and mitigate E3 problems, and develop a net-centric capability to facilitate sharing of E3 data with other DoD components.

We serve as the electromagnetic compatibility Lead Standardization Activity and provide E3 engineering support services to DoD components. We also manage the Joint Ordnance E3 Program, provide E3 and Spectrum professional development, and provide E3 training and education to DoD components.



### **Spectrum Engineering**

Proper management and use of the spectrum available to the DoD shall be an integral part of military planning, research, development, testing, and operations involving spectrum-dependent (S-D) systems.

Evaluation is required to be performed by DoD components on *all Spectrum-dependent systems*. A spectrum supportability risk assessment (SSRA) identifies and assesses *electromagnetic spectrum* and *E3* issues that can affect the required operational performance of the overall system based on the mission needs defined by the combat developer and/or Joint Staff. Risks are reviewed at acquisition milestones and managed throughout the system's lifecycle.



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## Spectrum Supportability Risk Assessments (SSRAs)

The purpose of an SSRA is to identify and assess *electromagnetic spectrum* and *E3* issues that can affect the required operational performance of spectrum-dependent systems based on the mission needs defined by the combat developer and/or Joint Staff in the Initial Capability Document (ICD), the Capabilities Development Document (CDD), and Capabilities Production Document (CPD). The DSO is leading the development of DoD policy and guidance on SSRA content, and performs Regulatory and Technical assessment components of SSRAs.

## Unmanned Aerial Systems (UAS)

Operation and integration of UASs requires access to the radio spectrum for command and control and sensor downlinks, compatibility with civil air traffic control systems, and electromagnetic compatibility with platform communications-electronics equipment and the operational electromagnetic environment.



DAS Phase	Concept Refinement	Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Spectrum Supportability Assessment	Initial Regulatory SSA Component(s)	Initial Technical SSA Component(s) Initial Operational SSA Component(s)	Detailed Technical SSA Component(s) Detailed Regulatory Component SSA(s)	Updated Detailed Regulatory SSA Component(s) Updated Detailed Technical SSA Component(s)	Operational SSA(s) for specific missions, new host nation deployments, system modifications, etc.

## Environmental Analysis

Compatible operation of a system in its intended electromagnetic environment is a critical factor in both system acquisition and operational planning. The DSO provides complete environmental E3 analyses that incorporate worldwide frequency assignment databases, equipment technical parameter databases, and sophisticated analysis computer tools and models that can evaluate when, where, and how interference may occur for terrestrial, airborne, and space-borne systems, and actions that may be taken to minimize or mitigate adverse E3 effects.

## Additional DSO Expertise

- Spectrum Management Data Standardization
- Spectrum Planning Guidance
- Spectrum XXI
- Advocating DoD's Objectives and representing the Department's interests in international and regional forums

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