



Pacific Northwest National Laboratory

Engined Systems

The Engined Systems Group utilizes the systems engineering approach to analyze, characterize, and present information to decision-makers at all levels of the organization to optimize problem solving and action.

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Orchestrating Complex Processes

Organizations encounter complex systems in all aspects of their daily existence. Complex systems require comprehensive planning to successfully charter and optimize a path forward. PNNL has recognized experience in leading critical and complex management activities by calling upon a diverse group of systems capabilities to support a wide venue of analysis:

- Coordination plans for dependent organizations
- Subcontractor tracking and optimization
- Stakeholder interaction and communication
- Shepherding technology from design to deployment.

Staff members organize and facilitate the strategic planning of large organizational processes and specialize in several areas:

- Requirements assessment
- System integration and optimization
- System conflict resolution
- Options analysis and optimization
- Threat and vulnerability assessment.

Examples of Our Work

Cleanup Challenges and Constraints Team (C3T). PNNL pioneered the C3T process for the U.S. Department of Energy at the Hanford Site in fiscal year 2000. C3T was initiated to rebuild the trust and improve working relationships among agencies at a point where top-level communication had come to a standstill. PNNL served as an independent technical team at the request of DOE to use operations research techniques to collect, characterize, and represent perspectives on major constraints to Hanford Site cleanup. The Hanford Site is a 586-square mile, former-production facility for the Manhattan Project. DOE spends approximately \$2 billion per year on environmental management and restoration activities at Hanford's 78 operable units. There are over 3,000 distinct contaminated sites at Hanford, including nearly 1,500 facilities.

Counter-Drug Interoperability Training Program. This program is intended to develop and implement a computer simulation-based interoperability training system that can improve multiagency operation planning and execution. The simulation system capabilities and training infrastructure will then be extended to provide capabilities for:

- Analysis and promulgation of lessons learned
- Mission rehearsal
- Operations research and technology assessment.

Teaming with Fluor Hanford, Inc. (prime) and General Dynamics Corporation, PNNL is providing technical support in requirements development, technology management, program development, and client/user interface. The current operational requirements document was developed based on intensive PNNL staff interaction with field agencies conducting drug interdiction activities along the southwest border. From those findings, an exercise-driver simulation was developed to create interoperability scenarios for training.

The National Counterdrug Center is envisioned to become a principal law enforcement agency resource for training, information, and research that will reduce the effects of the existing barriers to cross-agency communication and cooperation.

