



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Land Management Suite (LMS)

Description of Research

The Land Management Suite (LMS) is a research effort of the U.S. Army Corps of Engineers (USACE) Engineering Research and Development Center (ERDC) to design, develop, support, and apply integrated capabilities for modeling and decision support technologies relevant to the Department of Defense (DOD) (and other agency) management of lands, seas, and airspace. The LMS research program has three objectives: (1) to provide an integrated computational framework that brings together relevant science and technology to DOD land managers in a more complete and responsive manner, (2) to maximize synergism between military and Army Civil Works technology initiatives, and (3) to improve the timeliness and effectiveness of technology delivery into land management business processes.

Problem

The Corps of Engineers technology programs annually design and develop dozens of new tools and databases for land and water resource management, traditionally implemented as “stand alone” products that support separate mission areas. Such well designed stand-alone products can become even more functional and cost-effective when they are taken integrated with other like products in software suites, and made available to a broad body of users. The challenge that LMS developers are working to meet is to bring all of these tools and databases together in a linked and interactive framework based on the Common Delivery Framework (CDF) to support multiple mission areas—to improve the DOD’s capabilities and effectiveness in both land and water resource management.

Products

The LMS program is developing five main classes of products and services:

1. Developing rules/protocols for interactions between tools
2. Cataloging computational tools
3. Building a suite of land management tools on the CDF of the Corps of Engineers
4. Expanding and linking capabilities of existing tools and systems
5. Conducting LMS field applications.

The LMS Protocols provide common procedures for linking existing computer-based tools and for developing new tools. The catalog provides a reference for tool seekers, advice on tool usage, advice on data suitability and tool combinations, and an interface to tool seekers and builders in other organizations. This catalog provides “metadata” about current and emerging tools, which can be accessed through LMS.

Users

Initial LMS field sites are the Upper Mississippi River System (UMRS); the Marine Corps Air Ground Combat Center (MCAGCC) at Twentynine Palms, CA; Fort Hood, TX; and Fort Benning, GA. The UMRS Field Application Projects incorporate a multifaceted ap-



proach and currently focus on: the Minnesota River (Redwood Basin), Pool 8 on the Mississippi River, and Peoria Lakes on the Illinois River. For all UMRS locations, the approach involves data collection and interpretation; the application of process-oriented research and development (R&D); mapping, monitoring, and modeling; and the development and application of numerical modeling/decision support systems to resource management needs.

The mission of the MCAGCC is to develop, administer, and evaluate the Marine Corps' Combined Arms Training Program. Some of the land and water resource management issues facing LMS at Twentynine Palms are: water and wind erosion, dust control, vegetation establishment, threatened and endangered animal/plant species, riparian area conservation, capacity of land for mission use, noise control, tank trail maintenance, and water and air pollution. LMS investments are focusing on extending the understanding of wind erosion processes and usage capacity at the combat center.

Fort Hood, TX, was the site for development of a prototype system (repository) that supplies a more centralized GIS solution. The repository at Fort Hood was designed to be compatible with the modeling application goals of LMS as well as with those of the Fort's stakeholders. At Fort Hood, GIS technology has been used extensively for military land management. In addition, a system has been designed for Fort Hood environmental and range use planners that provides real time weather, water level, and fire danger conditions across the installation.

In 2001, Fort Benning, GA was used as another LMS field site. Projects underway at Fort Benning, the home of the Infantry Training School (and other missions) include: (1) simulations of future land use trends in the vicinity of the base to identify areas of concern for mission sustainability, (2) integration of endangered species habitat and forest growth models, and (3) dynamic linking of installations lands with projects and monitoring activities. The LMS field activities at Fort Benning are designed to complement the SEMP efforts sponsored by the Strategic Environmental Research & Development Program (SERDP) and hosted at Fort Benning.

Benefits

The LMS framework will reduce duplicate development of land management tools. LMS will provide a development environment that will provide access to and information about all relevant tools and models for land management. This will combine the best available tools both within the Corps and from external users who decide to take advantage of LMS capabilities. User access to and information about the tools and models will be facilitated by the catalog and model advisor. Finally, software development and maintenance costs will be reduced due to a common software framework using a consistent interface and providing linkages to relevant data and models.

Program Manager

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