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Please visit the site at <http://tsc.wes.army.mil/news/bulletins/Spring2001/index.html>.

Online *CADD/GIS Bulletin* Users: Characteristics, Perceptions, and Motivations¹

by Terri L. Prickett, Coastal and Hydraulics Laboratory,
Engineer Research and Development Center

In the last 5 years, online publishing has become the newest technology transfer tool for dissemination of Corps of Engineers technical information. The Corps has shifted from paper to electronic publication because of the Internet and software that creates online, printable files in a portable document format (PDF), which maintains the look and quality of the printed page. The rationales for shifting from print to online publications were to accelerate publication promulgation, satisfy customer needs faster, and reduce printing, storage, and distribution costs. In 1999, the Corps mandated online publication of technical information — and the cessation of printed publications.

Little research exists to determine whether an electronic publication like the online *CADD/GIS Bulletin* (now *CADD/GIS Insights*) is an effective technology transfer mechanism. The lack of research can be mainly attributed to the rapid evolution and mainstreaming of computerized publishing since the advent of the World Wide Web in 1991. A study of online *CADD/GIS Bulletin* users was conducted last year, first, to help the CADD/GIS Technology Center determine the effectiveness of the online version of the bulletin, and second, to add to the body of research literature related to online publishing.

Theoretical Background

The study was developed using two theoretical approaches: diffusion of innovations (Rogers 1995) and uses and gratification (Katz, Blumler, and Gurevitch 1974). Rogers' approach stresses the significance of a user's awareness of an innovation (e.g. the user must know about the online availability of the *CADD/GIS Bulletin*), although awareness alone does not necessarily constitute use or adoption. Rogers also describes three innovation attributes that serve as predictors of innovation adoption: advantages of an online over hardcopy version of a publication, compatibility of an online bulletin with users, and complexity in accessing and using the online version. Of these

attributes, advantage and compatibility positively influence adoption, and complexity negatively influences adoption. In this study, adoption of the online *CADD/GIS Bulletin* was studied using Rogers' awareness stage in the innovation-decision process and the three diffusion attributes as a framework. Figure 1 illustrates the possible relationships between the dependent variable, adoption, and the independent variables of

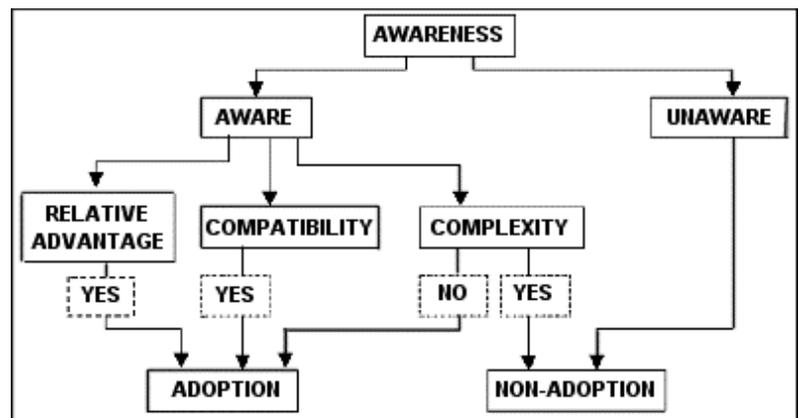


Figure 1. Model of relationships between the dependent and independent variables.

¹ From a thesis submitted to the Academic Faculty of Colorado State University in partial fulfillment of the requirements for the degree of Technical Communication.

awareness, relative advantage, compatibility, and complexity.

Additionally, Katz, Blumler, and Gurevitch's uses and gratifications approach was applied to determine the needs that motivate professionals to seek and continue to use the online bulletin. This theoretical communications approach focuses on what the receiver does with the media rather than what the media does to the receiver. Motivation was measured in two dimensions: incentive to use the bulletin and satisfaction with online bulletin access and content. Previous literature suggests that user motives and satisfaction affect the level to which an individual will use/adopt an innovation.

Methodology

In March 2000, a random sample of 60 CADD/GIS professionals in the Corps and Tri-Services (U.S. Army, Air Force, and Navy) (Figure 2) were surveyed by telephone to determine their awareness of the online *CADD/GIS Bulletin*, perceptions of online document retrieval and usage, motivations to read online technical publications, and satisfaction with online bulletin access and content. For data analysis purposes, the participants were divided into three groups:

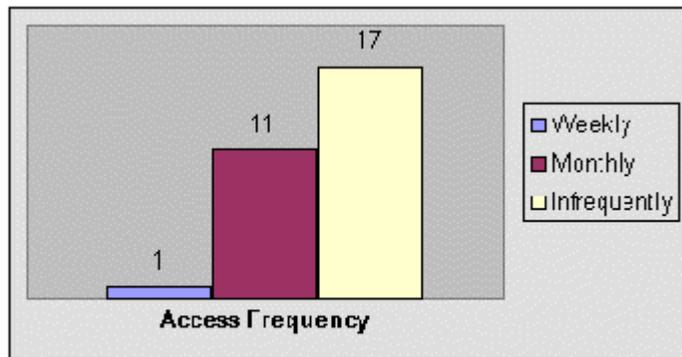


Figure 2. Online bulletin adopter access frequency.

- Online bulletin adopters: those who used the online bulletin with any frequency (daily/weekly/monthly/infrequently) (n=29).
- Non-adopters: those who were aware of the online bulletin's existence but had never accessed it (n=7).
- Unaware subjects: those that were unaware of the online bulletin's existence (n=24).

Overall, the study participants were fairly homogeneous and consisted of mainly older, college-educated supervisors or administrators with considerable computer experience. The survey indicated that online bulletin adopters had more CADD/GIS responsibilities than did the non-adopter/unaware subjects. For example, 21 percent of the adopters indicated that they had 10 percent or less CADD/GIS activities in their jobs, compared to 61 percent for the combined non-adopters/unaware subjects.

Survey Results

Tests of significance, frequencies, and frequency cross tabulations were calculated to compare survey results from bulletin adopters, non-adopters, and unaware subjects. Highlights from analyses of each of the study variables are provided in the following sections.

Adoption. Online bulletin use or adoption was measured by how frequently the subjects accessed the online bulletin. The 29 online bulletin adopters were subdivided into regular and infrequent users. Regular users were those who accessed the bulletin weekly or monthly. With the exception of one subject, regular users accessed the online bulletin monthly. Figure 2 shows the frequencies for bulletin access.

Awareness. The subjects were asked if they were aware that the CADD/GIS Technology Center was publishing the bulletin online. Forty percent of the sample indicated that they were not aware that the online *CADD/GIS Bulletin* existed. Based on this simple statistic, awareness was found to be a major barrier to adoption of the online bulletin. Use of different sources for Center information may be one reason for the lack of awareness. The aware subjects most frequently cited the Center's Web site, which also provides access to the online bulletin as a source for Center information. In contrast, unaware subjects most frequently cited the published paper version (Figure 3) which has not been widely distributed since 1997.

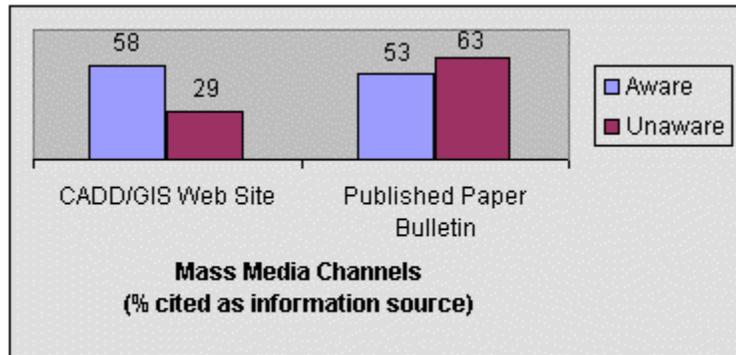


Figure 3. Percentages of top channels used for CADD/GIS Technology Center information.

Relative advantage. Perceptions of relative advantage were measured in two ways: (1) agreement with the advantage of retrieving and reading an online versus a printed document and (2) importance of the relative advantages of having computer access to obtain online documents, easy access, and the ability to print or save online documents to other software applications. An independent samples *t* test indicated that the relative advantages of the online bulletin were not significant factors in this study. A possible explanation for this result is that the Corps is still transitioning from print to online publications and its publication audience may still value printed documents as much as online documents.

Compatibility. The 29 online bulletin adopters were questioned about the compatibility of the online bulletin with their work needs. Significant results from an independent samples *t* test indicated the online bulletin was more compatible with the work needs of regular users than with infrequent users.

In addition, all 60 participants were asked whether they preferred to get the bulletin or similar documents through the mail, online access, an e-mail attachment, or other source. Specified responses to the "other" category were all e-mail related and included distributing the bulletin with a notification e-mail, through e-mail with an embedded hyperlink, or an e-mail with bulletin highlights (i.e. like an executive summary). Figure 4 shows the response frequencies for each distribution method. Overall, almost half (n=29) of the participants preferred to get the bulletin through an e-mail attachment or other variations of e-mails.

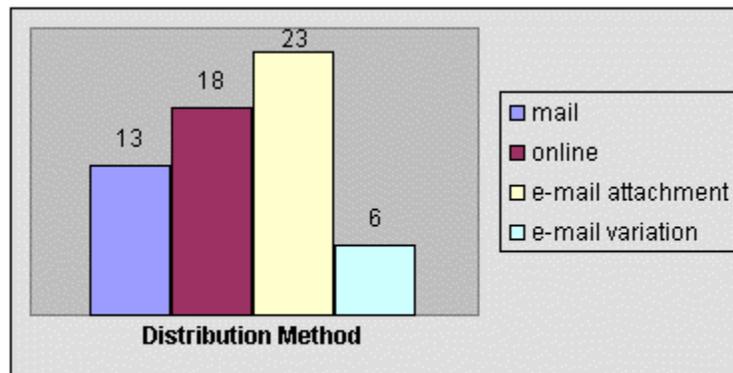


Figure 4. Preferred bulletin distribution method frequencies.

Complexity. Survey participants rated the ease or difficulty of completing five tasks involved with obtaining online PDF documents. These tasks included the complete online and retrieval

process: installing Acrobat Reader (required to retrieve any PDF document), accessing the online document, reading the document onscreen, printing, and reading the printed document. Statistical analysis indicated a significant difference between the responses of the bulletin adopters and non-adopters. On the average, adopters rated the process related to obtaining online PDF documents as easier than did the non-adopters. These findings indicate that the complexity of the process to access and obtain the online bulletin is a significant factor and negative influence on online bulletin adoption. Overall, most participants rated each task as easy to very easy. However, participants gave twice as many neutral ratings for the task of reading PDF documents onscreen than for any other task, in addition to one “difficult” rating and one “very difficult” rating.

Motivation and satisfaction. The results of the study show that the survey participants were motivated to read publications like the online *CADD/GIS Bulletin* for information utility rather than for entertainment, as was expected. According to the study, CADD/GIS professionals use technical publications to hear about advances in industry and for specific information rather than to make work decisions or to have something to talk about with people. When asked to rate information types typically found in the *CADD/GIS Bulletin*, participants ranked the importance of items as follows:

- Lessons learned about CADD/GIS technologies.
- Articles that solve CADD/GIS problems.
- Updates on the Center’s CADD/GIS products.
- Information on projects using CADD/GIS technologies.
- Articles by CADD/GIS field users.
- Calendar of CADD/GIS-related events.

While the rating for “Lessons learned about CADD/GIS technologies” was higher (85 percent) than any other category, all content categories received high ratings (74 to 76 percent as important or very important). These findings indicate that information about the latest CADD/GIS technologies and practical information for using CADD/GIS technologies are more useful to CADD/GIS professionals in the Corps and Tri-Services than other information types.

When asked to rate their satisfaction level with bulletin content and the mechanics of access, most bulletin adopters indicated that they were satisfied or very satisfied with bulletin content and the mechanics of access (69 and 83 percent, respectively). Two bulletin adopters indicated that they were dissatisfied with accessing the online bulletin because of the registration page they must complete before they download the bulletin.

Satisfaction was statistically tested to determine whether this factor could be considered a factor for regular and continued use of the online bulletin. This analysis provided significant results, indicating that more frequent users of the bulletin gave higher satisfaction ratings than the less frequent users.

Conclusions

This study of CADD/GIS professionals in the Corps and Tri-Services provided mixed results concerning online *CADD/GIS Bulletin* awareness and adoption, and perceptions of relative advantage, compatibility, complexity, motivation, and satisfaction. Awareness was found to be a major barrier to adoption of the online bulletin. The innovation attributes of compatibility and complexity were significant factors of bulletin adoption for this study. Also, satisfaction was found to be significant for continued use of the online version. Thus, CADD/GIS professionals who will demonstrate the highest levels of accessing and using the online *CADD/GIS Bulletin* will be those who are more likely to have the following qualities and perceptions:

- Awareness of the online bulletin.
- Work needs that require information in the online *CADD/GIS Bulletin*.
- Little difficulty with the process required to access and use PDF documents.
- Satisfaction with bulletin access and content.

Study Recommendations

The online *CADD/GIS Bulletin* provides important information about CADD/GIS technologies to the audience of CADD/GIS professionals. Recommendations to increase awareness and use of the online *CADD/GIS Bulletin* are provided below.

- Distribute the online bulletin to CADD/GIS professionals as an e-mail attachment. Increased awareness of the bulletin may be prompted by changing the technique through which the bulletin is distributed, from the current pull technique of online access to the push technique of sending the bulletin as an e-mail attachment. It is felt that the e-mail with an attachment is more similar to the older, push technique of mailing the printed bulletin and reduces the effort involved by the user to obtain access of the bulletin.
- Conduct periodic telephone interviews of randomly selected CADD/GIS professionals to monitor awareness and interest in products and information from the CADD/GIS Center.
- Conduct Web site usability to enhance the effectiveness of the CADD/GIS Center Web site (e.g. make the publications link easier to locate) and help increase traffic to the Center's publication page.
- Increase the amount of practical CADD/GIS information (i.e. lessons learned about the Center's products and other CADD/GIS technologies) and advances in CADD/GIS technologies, products, and services.

A complete description of this study is found in Prickett (2000). For further information about this study of the online CADD/GIS Bulletin, please contact Terri Prickett at 601-634-2337 or by e-mail Terri.L.Prickett@erdc.usace.army.mil.

References

Katz, E., Blumler, J. G., and Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. G. Blumler and E. Katz (Eds.), *The Uses of Mass Communications*, Beverly Hills, CA: Sage Publications, 19-32.

Prickett, T. L. (2000). *Using the online CADD/GIS Bulletin: Audience awareness, innovation attributes, and motives*, Thesis, Colorado State University, Fort Collins, CO.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: The Free Press.



From the Center Chief

*by Harold L. Smith, Center Chief
The CADD/GIS Technology Center for Facilities, Infrastructure, and
Environment*

New Members and a New Look

In his keynote speech during the U.S. Army Engineer Research and Development Center (ERDC) activation ceremony, MG Russell Fuhman focused on the theme, "The whole is greater than its parts." This maxim is particularly true for today's CADD/GIS Technology Center. Within the last few months, with the addition of the National Imagery Mapping Association (NIMA) and the Environmental Protection Agency (EPA) to the Center's Board of Directors (BOD), the Center is solidifying its leadership role throughout the Federal Government and private industry. Recognizing the Center's expanding role and influence, other agencies including the Federal Aviation Administration (FAA), Department of Energy (DOE), and National Institute of Standards and Technology (NIST) have expressed an interest in participating in the Center's CADD and GIS standards activities.

Our membership is not the only thing changing at the Center. As you can see - our newsletter has a new look and new name. The new format reflects our commitment to the Web and our continuing effort to meet the needs of our CADD/GIS customers. In this issue of the CADD/GIS Insights, we feature articles discussing the results of our latest online newsletter survey, preparing an Integrated Natural Resource Management Plan, application of remote sensing and GIS to Corps business practices, and the latest Center tech transfer support for the Innovative Technologies for Flood Damage Reduction Program.

Center Developing Blanket Purchase Agreement (BPA) with ESRI

I am pleased to announce that the Center is very close to completing a multi-year BPA with ESRI including all of their current products included on their General Services Administration (GSA) contract schedule (i.e., software, software support, and support services). The BPA will afford substantial discounts off the current GSA schedule prices with even greater savings on quantity purchases. The Vicksburg District Corps of Engineers' Consolidated Contracting Office (VCCO) will be awarding this contract and delegating procurement authority to other qualified contracting offices affiliated with the Center.

May 22-24 Joint Meeting of the Corporate Staff and Filed User Groups

Don't forget our joint May meeting of the Corporate Staff and the Field User Groups. Starting on Tuesday morning, May 22, with our Meet the Vendor's morning session, representatives from Bentley Systems, Intergraph Corp, and ESRI will be presenting demos and providing one-on-one technical assistance. Visit our Web site for more information and a full agenda as it becomes available.

One final note, Field User Group members should be sure and review the FY02 Proposed Projects prior to the May meeting. There are more than 60 projects this year, so the selection process will be intense. See you in May in historic Vicksburg!

Building an INRMP

by Amy A. Lee, Wetlands and Coastal Ecology Branch, Environmental Laboratory
Engineer Research and Development Center

Faced with the task of implementing Department of Defense (DoD) Directive 4700.4, Natural Resource Managers are required to prepare Integrated Natural Resource Management Plans (INRMPs). For uniformity in INRMP development, each branch of the service has developed general guidelines. Army Regulation (AR) 200-3, Environmental Quality Natural Resources - Land, Forest and Wildlife Management, outlines specific guidelines for INRMP preparation on Army installations. Air Force Instruction 32-7064, Integrated Natural Resources Management, implements the Air Force Policy Directive (AFPD) 32-70, Environmental Quality. In September 1998, the Navy issued a Naval Facilities Engineering Command (NAVFAC) guidance publication titled "Guidelines for Preparing INRMPs for Navy Installations." Each service outlines a process for INRMP development that is similar to "The Model Process" developed by the Nature Conservancy (Leslie et al. 1996). The steps of "The Process" are:

1. *Presentation of context.* Biodiversity characteristics of each installation are analyzed.
2. *Mission statement.* Basic parameters for managing biodiversity are defined.
3. *Conservation priorities.* Parameters for managing biodiversity, including a systematic organization of systems and their functional level, at each installation are established.
4. *Objectives and strategies.* Concise management objectives and measures are developed.
5. *Pre-management monitoring.* Baseline conditions are described.
6. *Management actions.* Routine and experimental management practices are employed.
7. *Products and services.* Management actions will result in the implementation of a range of products and services.
8. *Analysis, model validation, adaptation.* As results of management strategies are determined, these strategies are revisited regarding effectiveness.
9. *Measuring and reporting results.* Results are measured and reported for accountability, reproducibility, and communication.

Of particular interest is Step 5, Pre-management monitoring. At this point in the INRMP development process, natural resources at each installation must be quantified using scientific methodology including soils identification, floral and faunal surveys, regulated waters delineation using Corp procedures (Figure 1), cultural heritage inventory and the quantification of characteristics unique to each installation.

Under an Interservices support agreement between the Army National Guard and the U.S. Army Engineer Research and Development Center (ERDC), the Wetland Delineation Team, under the direction of Dr. Morris Mauney, is tasked to develop digital and hard copy reports of various installation's regulated waters. The first step in developing the reports is to gather data for various GIS coverages. Sources include: installation provided data layers; GIS clearinghouse

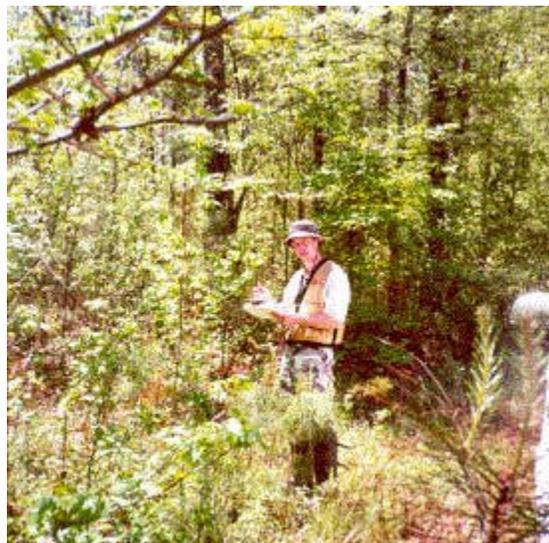


Figure 1. Delineation of regulated waters.

Internet web sites; and digital products developed or purchased from the United States Geologic Survey, i.e., roads, railroads, elevation contours, digital raster graphic (DRG) data, digital orthophoto quarter quad (DOQQ) image data. Second, a field map is developed utilizing these coverages. The third task is field verification of the map by a team of biologists utilizing the Corps of Engineers delineation procedures that meets tri-services standards. At the installation, the team collects data regarding hydrology, flora, soils, and natural features at sample points along with digital imagery of regulated waters. The fourth step is incorporation of the field data as GIS coverages. The final product is a summary report with full and complete metadata for all layers developed. All coverages are compliant with Spatial Data Standards (SDS). The report is delivered in multiple coordinate/projection systems to accommodate older Geographic Information System products as well as addressing the mandate for all Department of Defense developed digital data (Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure"). Thus far, over 60 bases have been delineated under this agreement. See a sample report at our website www.wes.army.mil/el/wetlands/delineation/.

This project provides an integral INRMP component, a delineation of jurisdictional waters, including wetlands, at the installation. Equally important, the electronic data provide a platform for the development of an Ecosystem Management Strategy (Figure 2). In the planning stages, the visual representation of data can guide managers in locating crucial ecosystem components. As the metrics are collected and entered with geospatial attributes into the system, a holistic image of the installation's natural resources emerges. Finally, the visual representation of temporal changes in data is an important tool for analyzing the success of management strategies. This dynamic electronic product can become the heart of Natural Resources Management planning, implementation, and evaluation.

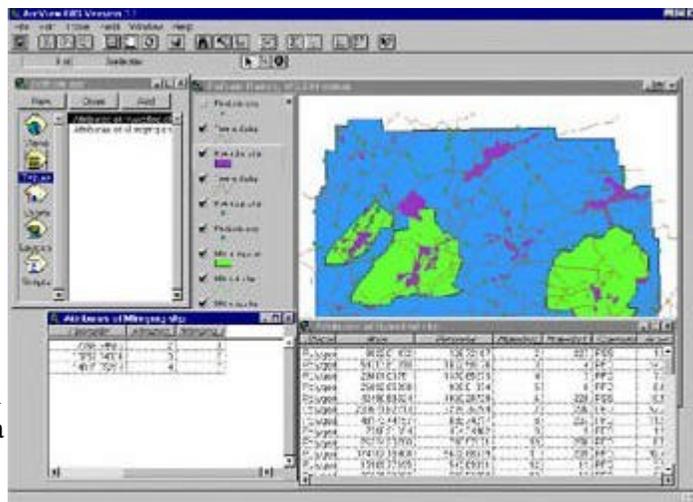


Figure 2. Electronic data used for development of an Ecosystem Management Strategy.

For additional information, contact Amy Lee at 601-634-2068 or Amy.A.Lee@erdc.usace.army.mil.

Reference

Leslie, M., G.K. Meffe, J.L. Hardesty, and D.L. Adams. (1996). *Conserving Biodiversity on Military Lands: A Handbook for Natural Resources Managers*. The Nature Conservancy, Arlington, VA.

Related Links

Department of Defense Directive 4700.4. [4700.4 - Natural Resources Management Program](#)

Army Regulation 200-3. [Army Regulation 200-3](#)

Air Force Instruction 32-7064. <http://www.afbca.hq.af.mil/handbook/basis/guidance/afi/af327064.htm>

NAVFAC Guidance Publication. [N45D DEMO-- Natural Resources -- Default](#)

USACE-WES-EL Planning Level Delineation. www.wes.army.mil/el/wetlands/delineation/

Application of RS/GIS to Corps Business Practices

*by Andrew J. Bruzewicz, Director, Remote Sensing/GIS Center
Cold Regions Research and Engineering Laboratory*

The Remote Sensing/GIS Center (RSGISC), located in Hanover, NH, provides the U.S. Army Corps of Engineers (USACE) access to a wealth of remote sensing (RS) and geographic information systems (GIS) expertise. Chartered in 1992, the RSGISC is the Corps' Civil Works Center of Expertise for Remote Sensing and Geographic Information Systems (see sidebar). The focus of the RSGISC is to assist personnel at Corps projects, Districts, and Divisions in making the best use of the technologies of RS/GIS in the nine civil works business program areas:

- Navigation.
- Flood and coastal storm damage reduction.
- Hydropower.
- Regulatory.
- Environment.
- Emergency management.
- Recreation.
- Water supply.
- Work for others where that use is appropriate.

This support is provided through multiple pathways.

Research and Development

Responsible for managing RS/GIS civil works research and development (R&D) programs, the RSGISC assures that the work in these programs is responsive to the needs of the field and shows an appropriate balance between strategic and more immediate requirements. A significant part of this responsibility is coordination with other civil works R&D programs to move the Corps forward strategically while avoiding duplication of effort

Applications Development

The RSGISC works with Corps Districts and Divisions to apply RS/GIS tools to specific Corps business practice needs. This work has been as varied as developing databases for individual projects for the New England District to the development of a corporate approach to GIS with the North Atlantic Division to the development of decision support software for water control and for emergency management (Figure 1).

Working with the Information Technology Laboratory, Vicksburg, MS, the RSGISC has developed a GIS interface for the national database of all Formerly Used Defense Sites and for access to data from sampling wells. ENGLink Interactive Geospatial and the National FUDS project are applications using Internet Map Server (IMS) software, which permits national (and worldwide) users access to the power of GIS but requires only that an Internet browser be present on the client machine.

The RSGISC also supports the Corps' wetlands regulatory program through the integration of RS, GIS, mapping, environmental analysis, and the development of implementing software.

The U.S. Army Engineer District, Los Angeles, and the RSGISC examined alternatives to traditional survey methods to determine loss in the storage capacity of the Painted Rock Reservoir on the Gila River, AZ, as the result of flooding in 1993. Using a sequence of Landsat Thematic Mapper images, RSGISC researchers were able to demonstrate that storage loss was only 157,000 acre-feet, not the 500,000 acre-feet that had been feared. Using this method saved the District more than \$500,000.

The RSGISC has also been actively involved in an effort with the U.S. Army Engineer District, Sacramento, to operationally monitor the snow pack in the Sierra Nevada Mountains to improve snow water equivalent estimation and runoff modeling (Figure 2). The success of this effort has led to a new initiative for the Great Plains with the Corps' Northwest Division.

Direct support during disasters is provided through provision of: modeling services that help estimate wind damage from hurricanes; tables of expected damage to mobile, single family, and multifamily homes; maps of Corps missions such as provision of potable water, ice, and temporary roofing; and special products such as orthophoto-based maps of flooding. Radarsat imagery has been used to determine flood extent in comparison to aerial photography (Figure 3), and airborne digital imagery examined to evaluate its use in measuring damage from hurricanes.



Figure 1. ENGLink interactive geospatial display with baseline roads and post-disaster tornado touchdown information provided by Tulsa District. This is an online Web-based GIS application.

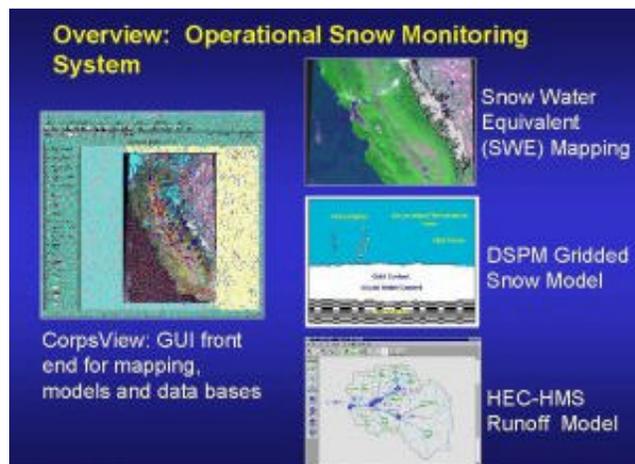


Figure 2. The process of snow water equivalent mapping and runoff modeling uses satellite imagery, estimation of snow water content by map grids, and input into an HEC runoff model.

Technology Transfer

Technology transfer is fostered in multiple ways. Through the PROSPECT program the RSGISC is responsible for training Corps and Army personnel in the use of both RS and GIS. The RSGISC staff have developed and taught the Introduction to GIS class for the past 6 years. This course has grown from annually offering three sessions to five with 28 students per session. The RSGISC has also led the development of an intermediate course

taught the last 2 years; two sessions will be offered in FY 01. Instructors come from Corps Districts, USACE Headquarters, and other laboratories to broaden the range of GIS expertise and uses taught to the students. All classes are taught in the RSGISC's state-of-the-art training room with one computer for each pair of students. The courses offer both lecture and hands-on segments to reinforce the key principles being taught. With the successful orbiting of Space Imaging's IKONOS sensor and the proliferation in airborne digital sensing systems, the RSGISC is anticipating an upsurge in the demand for the Introduction to Remote Sensing course, which the RSGISC has also offered and taught.

Publications are another key element in the tech transfer process. RSGISC staff members publish frequently in symposium proceedings, journals, and magazines. They are involved in producing Corps manuals and reports and publishing on the Internet.

Demonstration programs provide another opportunity to transfer the results of R&D to the field. The Inland Waterways Remote Sensing Demonstration Program was developed by the first Director of the RSGISC, and the RSGISC presently is involved with development of an enterprise approach to GIS for the North Atlantic Division and its Districts. At present the RSGISC, in conjunction with the Topographic Engineering Center, Alexandria, VA, the Coastal and Hydraulics Laboratory, Vicksburg, MS, and the Mobile District is developing a demonstration project that shows the use of the IKONOS sensor.

Support for Others

As part of its support for others, the RSGISC has been involved in three significantly different types of activities. Working with the Defense Special Weapons Agency and Nunn-Lugar funding, the RSGISC worked in Belorussia to establish an RS/GIS center with laboratory facilities and an aircraft-mounted photogrammetric sensing system. A training program was developed to prepare personnel to monitor the status of clean-up activities at former defense sites. A similar project was conducted in St. Petersburg.

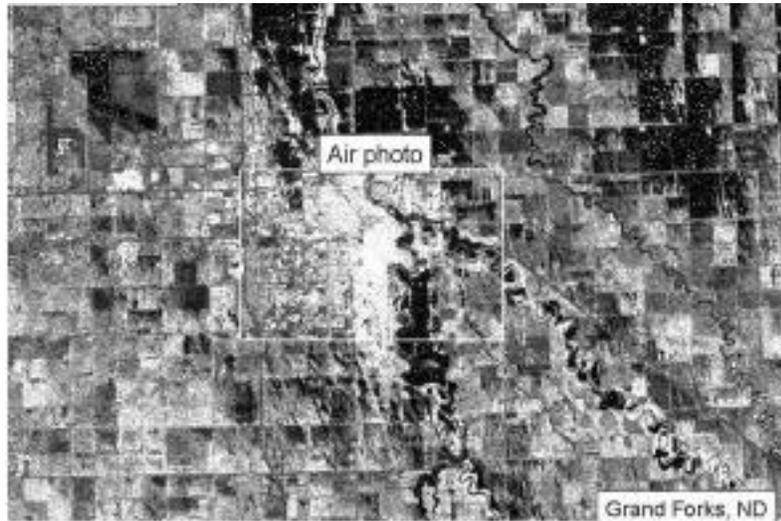


Figure 3. Radarsat image of Grand Forks, ND, during the flood of the Red River of the North in 1997.

The RSGISC staff has been involved in work with the Partnership for Peace program assisting new members of NATO in the development of geospatial databases, integration of imagery, and use of Internet-enabled GIS to better manage natural disasters. This work has involved support to Hungary (Figure 4), the Ukraine, Slovakia and Romania and is being expanded to the Baltic states and Moldova. The RSGISC also acquired and processed Landsat Thematic Mapper imagery to demonstrate the effects of reservoir development in Cote de Ivoire.

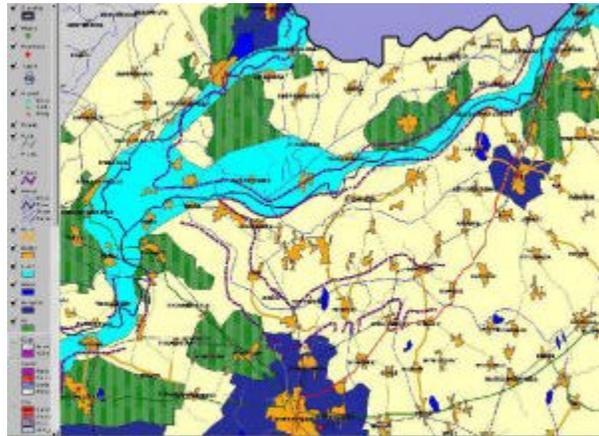


Figure 4. Web-based map showing the Tisza River flood extent in Hungary, spring 2000.

One Door to the Corps

Committed to customer service and product excellence, the staff of the RSGISC works with RS/GIS experts at CRREL, the other Engineer Research and Development Center laboratories, other Federal agencies, universities, and the private sector. In combining this expertise with that of subject matter experts in environmental studies, water control, coastal processes, emergency management, cold regions processes, and other fields relevant to Corps missions, the RSGISC is able to leverage resources to meet the needs of the field.

As the one door to the Corps for civil works RS/GIS, the RSGISC sees that Corps Districts and Divisions get the assistance that they need by linking the field with the most appropriate source of help and through no cost short-term assistance. Through management of the Corps' civil works R&D programs in RS/GIS, the RSGISC also helps assure that the operating capabilities that are necessary for the Corps in the future will be in place.

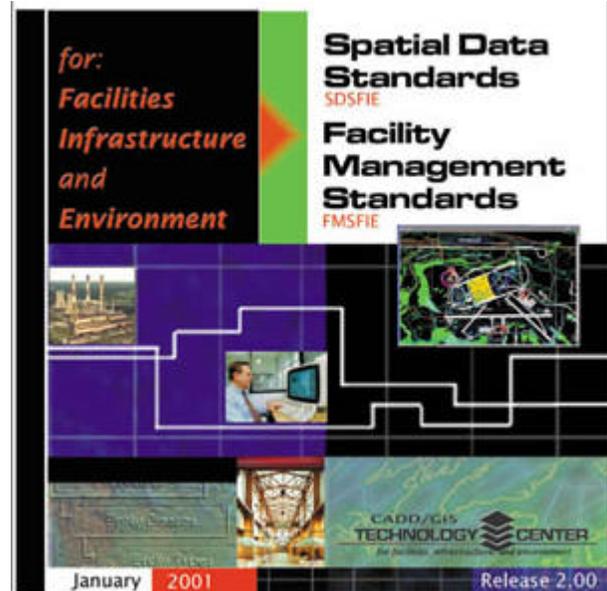
For additional information, please contact Andrew J. Bruzewicz at 603-646-4372 or Andrew.J.Bruzewicz@erdc.usace.army.mil.

Enhancements to SDSFIE/FMSFIE in Release 2.00

by Bobby Carpenter

The CADD/GIS Technology Center for Facilities, Infrastructure, and Environment

Release 2.00 (completed in January 2001) provides dramatic enhancements to the collection of SDSFIE/FMSFIE (Spatial Data Standards and Facility Management Standards for Facilities, Infrastructure, and Environment) software applications (i.e., Toolbox). These include significant enhancements to the "Browser," "Filter Maker," and "SQL Generator" (formerly called "Generator") applications and development of "Filter Eraser" (permits the deletion of User-defined custom filters), "Access Builder" (permits the construction of SDSFIE/FMSFIE compliant Microsoft Access 97 database tables), and "Data Creator" (provides a data entry form for use with a Microsoft Access 97 database).



Release 2.00 also provides a substantial expansion to the Standards content with 11 new Entity Classes, 57 new Entity Types, 73 new Attribute Tables, 269 new Attributes, 71 new Domain Tables, and 216 new Domain values. The most notable additions/changes include:

1. Incorporation of a new data type "M" for long, unstructured text fields (memo fields).
2. Increase in the field lengths for 20 "Common General" Entity Class table Primary Keys, which permit users to input more descriptive or recognizable names as Primary Keys for such fields as "owner_id", "project_id", etc.
3. Total revision of the Communications Entity Set.
4. Integration with the U.S. Army Corps of Engineers' (USACE) SEEMS (Survey Engineering and Monumentation Management System).
5. Development of a new Entity Class entitled "Buildings_Space" to address building space management considerations.
6. Incorporation of additional real-estate-related features (Entity Types, tables, and attributes from the USACE REMIS (Real Estate Management Information System) database.
7. Incorporation of additional airfield-related features (Entity Types), tables, attributes, and domain values from NIMA and DISA (National Imagery and Mapping Agency and Defense Information System Agency) data models/standards.
8. Incorporation of additional environmental compliance- and utility-related features (Entity Types, tables, attributes, and domain values).
9. Changed the acronyms to SDSFIE/FMSFIE. Prior to July 1999, the SDSFIE and FMSFIE were called the Tri-Service Spatial Data Standards (TSSDS) and Tri-Service Facility Management Standards (TSFMS), respectively. From July 1999 until January 2001, the acronyms SDS (Spatial Data Standards) and FMS (Facility Management Standards) were used.

Several SDSFIE/FMSFIE users (e.g., Cherry Point Marine Base, Patuxent River Naval Air Station, USACE Mississippi Valley Division and Districts, and numerous GIS development contractors) submitted comments that were incorporated into Release 2.0.

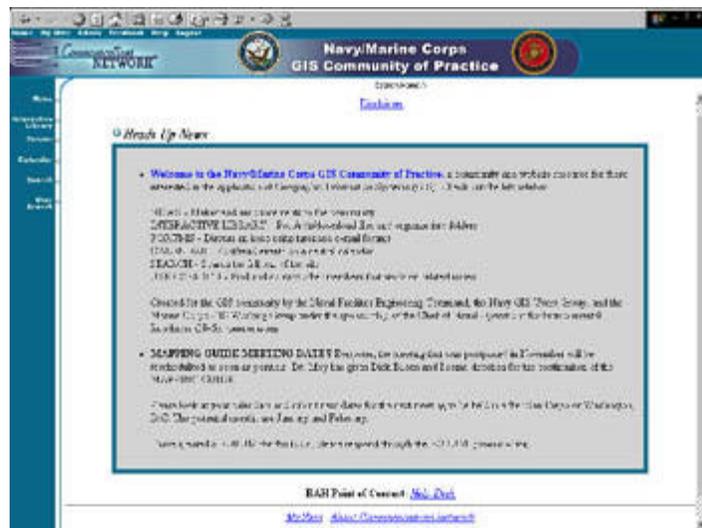
SDSFIE/FMSFIE Release 2.00 software applications, guidance, symbol sets, and other information are available for downloading under the "Products" area at <http://tsc.wes.army.mil>.

For additional information, contact Bobby Carpenter at (601) 634-4572 or Bobby.G.Carpenter@erdc.usace.army.mil.

Navy/Marine Corps GIS Communications Network

by Linna Manomaitis, Naval Facilities Engineering Command

The Naval Facilities Engineering Command, in collaboration with the Navy GIS Users Group and the Marine Corps GIS Working Group, has implemented a communication network for the Navy and Marine Corps GIS Community of Practice. The network, which serves as a communication and collaboration tool, is a community and website resource for those interested in the application of GIS. The network is open to all Navy and Marine Corps GIS users and sponsored individuals.



Its components and features include a directory of users with contact and other information, the mechanism to establish a group for users with a common interest, and a news feature for posting and reading announcements to the entire community or a selected group. It also provides a library for posting and downloading files that can be organized into folders, forums for discussing an issue using threaded e-mails, a calendar for posting and reading events, a search capability, and an e-mail link for receiving automatic e-mail notifications. For more information contact Linna Manomaitis at navy_gis@bah.com or 703-917-2278.

To subscribe log onto <http://www.navy-mc-gis.org> and select "Subscribe."

Technology Transfer Initiative

*by Lee T. Byrne, Information Technology Laboratory
U.S. Army Engineer Research and Development Center*

The CADD/GIS Technology Center will provide technology transfer (TT) services for the Innovative Technologies for Flood Damage Reduction (ITFDR) Program. Beginning in FY 2001, this 5-year initiative will focus on developing methodologies to reduce coastal storm and inland flood damage, ensure environmental protection and quality, and improve emergency management.



Ms. Wipawi Vanadit-Ellis of the Geotechnical and Structural Laboratory (GSL) is the ITFDR Program Manager. The mission of the program is to improve the efficiency and reliability of levee and related elements of the Corps' flood-protection infrastructure by providing future operating capabilities to:

- Conduct real-time condition surveys and improved condition assessment.
- Perform real and near real-time modeling, simulation, and mapping.
- Improve forecasting methodologies and flood-warning systems.
- Perform expedient and cost-effective flood fighting and other emergency operation.

This program is a collaborative effort that involves personnel and facilities from the Information Technology Laboratory, Coastal and Hydraulics Laboratory, Topographic Engineering Center, Cold Regions Research and Engineering Laboratory, and GSL. The primary users of program-developed products and technologies are Corps districts and division, local and state agencies, and other Federal agencies.



Mr. Harold Smith, Chief of the CADD/GIS Technology Center, states, "This initiative will give The Center, GSL, and other ERDC [Engineer Research and Development Center] labs involved in this program a unique opportunity to tap the expertise of all organizations. The Center will be responsible for setting in place the mechanisms for rapid and effective transfer of developing technologies to the field. To be effective, tech transfer should be as interactive as possible, allowing more than sending information to the customer. There should also be the capabilities for the investigators to receive timely feedback from the customers. There should be a continuous give and take from both sides -- the PIs [Principal Investigators] who are developing the technologies and the field personnel who will be using them. We at The Center have the facilities

and proficiency to provide this type of mechanism, and look forward to working with everyone involved in this significant research effort."

Ms. Vanadit-Ellis adds, "Rapid and effective technology transfer is a major goal of the ITFDR Program. In the past, achieving this has been very difficult for the PIs. To minimize delays, we will be streamlining the review process by using electronic approval procedures. In addition, the program's Web site will be designed to allow faster transmission of information, such as updating the status of projects or describing technologies being implemented. The CADD/GIS Technology Center has the experience and facilities to set in motion the necessary chain of events that are needed for this effort to be fully successful."



The Center received the Director's Award for Technology Transfer in 2000 and will bring many of the same processes cited in that award to this new endeavor. The driving force in this TT venture will be the ITFDR Web site, which will include among other things a database of ITFDR projects and their current status, biannual bulletin, users' forum, and immediate access to relevant publications. The Center has developed a Technology Transfer Plan, currently under review, which clarifies the modes of TT that are available and outlines responsible agents.



For additional information about the ITFDR Program, please contact Ms. Vanadit-Ellis at 601-634-3183 (Wipawi.Vanadit-Ellis@erdc.usace.army.mil). For information about technology transfer, please contact Mr. Harold Smith at 601-634-4190 (Harold.L.Smith@erdc.usace.army.mil).

Upcoming Events

Conferences

June 18-20, 2001

GeoSpatial World - Intergraph GeoSpatial Users Community International Conference. Renaissance Waverly Hotel, Atlanta, GA. POC: Arlen Reimnitz, (256) 730-2080, iguc@intergraph.com <http://www.intergraph.com/geospatialworld>

July 9-13, 2001

21st Annual ESRI International User Conference. San Diego Convention Center, San Diego, CA.
POC: ESRI, Inc., uc2001@esri.com, <http://www.esri.com/events/uc>

August 7-9, 2001

USACE Infrastructure Systems Conference. Reno, Nevada.
POC: Joe Hartman, Joseph.P.Hartman@HQ02.usace.army.mil

Training

August 7-9, 2001

GPS/GIS Prospect Course. ERDC - ITL, Vicksburg, MS.
POC: Diane Hollingshead, Diane.Hollingshead@HND01.usace.army.mil

August 7-9, 2001

SDS Implementation Workshop. The next Spatial Data Standards (SDS) Implementation Workshop will be offered at the Information Technology Laboratory, Vicksburg, MS, August 7-9, 2001. The workshop will provide training in the organization and implementation of the SDS using commercially available geographic information system (GIS) and relational database software. The primary purpose of the workshop is to provide instruction on the SDS data model structure, browser, and "filter maker," "SQL Generator," "Filter Frames," "Access Builder," and "Data Creator." Other topics include GIS concepts, database concepts, data resources, metadata, GIS planning, and data input and management. Hands-on lab demonstrations accompany slideshow presentations by instructors. Attendees should have working knowledge of a Windows 95, 98, NT environment, as well as some general knowledge of GIS and database concepts. For additional information, contact Bobby Carpenter at Bobby.G.Carpenter@erdc.usace.army.mil or (601) 634-4572.

Meetings

May 21-24, 2001

Annual FUG/CS Meeting. Vicksburg, MS. POC: Toby Wilson, wilsonj@wes.army.mil, <http://tsc.wes.army.mil>

Related Links

Site Name
Description
URL Address

SAME

A professional engineering association focused on current and emerging capabilities and needs of government, military, and private sector engineers. <http://www.same.org/>

Foundation Knowledge Portal

Site dedicated to Facilities Management and Information updates. <http://www.foundationknowledge.com/>

Federal Geographic Data Committee

Promotes data sharing, standards, data documentation, and maintains a national clearinghouse for geographic data. <http://www.fgdc.gov>

Corps of Engineers Geospatial Data Clearinghouse

Central Site for the Corps with links on policy/documents, POCs, and research and development. <http://corpsgeol.usace.army.mil>

GeoBase

GIS resources site supporting U.S. Air Force installations. <http://geobase.org>

Integrated Training and Management GIS

GIS resources site to support the Army military training and testing mission. <http://www.army-itam.com/gis/page1.asp>

Navy/Marine Corps GIS Network

Serves as a communication and collaboration tool for GIS. Subscribe at: <http://www.navy-mc-gis.org>

GIS Café

Commercial, online site featuring latest news, articles, resources, jobs, and free downloads <http://www.giscafe.com/>

Corps of Engineers Knowledge Base CADD

Supports the Corps design, engineering, and construction missions using state-of-the-art CADD systems and one industry-wide, National CADD standard. <http://ckb.wes.army.mil/>

Interior Design

Provides links to various Interior Design, Corps of Engineers, and Department of Defense sites http://tsc.wes.army.mil/ID_Resources_DoD/index.htm

Virtual Center of Expertise from Civil/Site Design

A one-stop site for locating resources that may assist Civil/Site engineers in their design tasks <http://cadlib.wes.army.mil/CivilSite/index.asp>

Open GIS Consortium

Builds consensus on interoperability of GIS software and related technologies. <http://www.opengis.org/>

Electronic Cultural Atlas

An interactive electronic atlas of the world from which selected data from regions, eras, and disciplines can be instantaneously accessed. <http://www.ecai.org/>

TimeMap Project

A methodological approach to recording cultural data in time and space.

http://www.archaeology.usyd.edu.au/research/time_map/tmoverview.htm

Object Management Group

Establishes industry guidelines and detailed object management specifications to provide a common framework for application development. <http://www.omg.org>

International Alliance for Interoperability in North America

A global standards-setting organization, promoting effective means of exchanging information among all software platforms and applications serving the AEC+FM community. <http://www.iai-na.org>



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