



**DEPARTMENT OF THE ARMY**  
**U.S. ARMY CORPS OF ENGINEERS**  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

CECW-CE (1110)

2 July 2004

MEMORANDUM FOR MAJOR SUBORDINATE COMMANDERS

SUBJECT: Watershed Management and the Implementation of Enterprise Geographic Information Systems (eGIS) in the USACE 2012 Environment

1. One of our guiding principles under USACE 2012 is one Corps capable of operating virtually as a learning organization, with emphasis on Regional Business Centers. To meet this goal, it is necessary to share planning, engineering, design and associated technical work efforts between districts within each MSC and even between different MSCs. Sharing technical information and data with our sponsors and partners is also the foundation of USACE watershed management approach as outlined in the Civil Works Strategic Plan. It is recognized that using geospatial technologies as the foundation for managing water resources is the only viable solution to effectively: integrate vast amounts of disparate data needed to manage the nations water resources; and enable an entire watershed community to participate in watershed decisions.
2. In addition to our Civil Works customers, Army Chief of Staff for Installation Management (ACSIM) and Information Management Agency (IMA) are requiring USACE to standardize the support we provide them to better address their corporate activities rather than individual projects. Finally, Office of Management and Budget and Office of Secretary of Defense are demanding USACE develop strategies to ensure that funds are not spent in duplicative development efforts ensuring our geospatial Information Technology investments are integrated with other Federal and DoD geospatial investments.
3. For this sharing to become seamless, engineers and scientists at all levels need to use a common architecture, data standards, and file management software for geospatial technologies. The concept of defining an integrated geospatial infrastructure for GIS technologies to more effectively manage and deliver spatial information products, services and standard datasets to all business elements throughout USACE is the Enterprise GIS concept. Enterprise GIS (eGIS) includes Computer Aided Design and Drafting (CADD) data. While there exists good reason for CADD and GIS applications to be managed and incorporated into the business process separately, the infrastructure supporting the technologies (computer hardware, data and platforms) needs to be integrated for USACE to realize efficiencies and produce the best scientific analysis possible.

CECW-CE

SUBJECT: Watershed Management and the Implementation of Enterprise Geographic Information Systems (eGIS) in the USACE 2012 Environment

4. Enclosure 1 outlines steps your MSC shall take to initiate eGIS. There are potential costs associated with the transition to eGIS; however, we can no longer afford to do business as usual. USACE is already making significant investments in stand-alone and partially integrated GIS systems. The realignment of these ongoing GIS hardware, software, and data investments into compatible, reusable regional assets will provide significant strategic advantage and long-term cost savings to USACE. One of the most critical and contentious steps MSCs must take is to implement eGIS data standards. Implementing data standards is not a new requirement. There have been several previous directives addressing this issue (Enclosure 2).

5. The attachments provide an implementation plan for compliance to the Standard. An 18-month transition period is provided to reduce the impact of this requirement on districts and divisions not currently complying with the Standard. The plan also provides compliance reporting metrics for recording USACE progress in completing the implementation. I request that these metrics be monitored by your Project Review Board (PRB).

6. There is an internal requirement as well as demand from customers, sponsors, partners, and oversight bodies to standardize, document, and make geospatial data more easily accessible. These requirements and demands are only going to grow over time. Managing our geospatial assets at a regional level will not only help ensure USACE realizes the goals of 2012, but immediate payoffs will be achieved through efficiencies and better partnering opportunities with our sponsors and other federal agencies. The steps outlined here will enable engineers and scientists at all districts and laboratories to become corporate resources for both Regional Business Centers and to support USACE-wide efforts, such as the reconstruction of Iraq and watershed management.

FOR THE COMMANDER:



ROBERT H. GRIFFIN  
Major General, USA  
Deputy Commander

Encl

CECW-CE

SUBJECT: Watershed Management and the Implementation of Enterprise Geographic Information Systems (eGIS) in the USACE 2012 Environment

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CECW-CE (1110)

SUBJECT: Watershed Management and the Implementation of Enterprise Geographic Information Systems (eGIS) in the USACE 2012 Environment

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Commander, Tulsa District  
Commander, Vicksburg District  
Commander, Walla Walla District  
Commander, Wilmington District

<b>STAFF ACTION SUMMARY</b> (HQUSACE)	<b>CONTROL NUMBER:</b> <i>06-557</i>	<b>SUSPENSE:</b> 1 Jun 2004 <del>2004</del> <i>CGS 60-14</i>
		<b>DATE:</b> 20 May 2004 <del>2004</del> <i>CGS 60-14</i>

**SUBJECT:** Watershed Management and the Implementation of Enterprise Geographic Information Systems (eGIS) in the USACE 2012 Environment *CGS 60-14*

<b>OFFICE SYMBOL:</b> CECW-CE	<b>ACTION OFFICER:</b> Nancy Blyler	<b>TELEPHONE NUMBER:</b> 761 7755	<b>E-MAIL:</b> nancy.j.blyler@usace.army.mil
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**ROUTING:**  CS       CSM       DCG       CG

**FOR:**  INFORMATION       DECISION       READ-AHEAD       APPROVAL       SIGNATURE

One of our guiding principles under USACE 2012 is one Corps capable of operating virtually as a learning organization, with emphasis on operating virtually as Regional Business Centers. To meet this goal it is necessary to share planning, engineering, design and associated technical work efforts between districts within each MSC and even between different MSCs. Sharing technical information and data with our sponsors and partners is also the foundation of USACE watershed management approach as outlined in the Civil Works Strategic Plan. For this sharing to become seamless, all engineers and scientists at all levels need to use a common architecture, data standards and file management software for geospatial technologies, Enterprise GIS.

USACE is already making significant investments in stand-alone and partially integrated GIS systems. This memorandum requires District GIS investments be coordinated by each MSC and geospatial data standards be used for Corps project data.

There is a cost associated with initiating and maintaining Enterprise GIS and implementing standards. However, if we do not corporately address this, we will continue to have 42 different implementations of the technology and no way to share data and information internally or with our partners.

*(Large blank area for comments or additional information)*

**RELEASER:** CARL A. STROCK, Director of Civil Works *Carl A. Strock*

**RECOMMENDATION:** That the DCG sign the attached memorandum

**ACTION:**  APPROVED       SEE ME       OTHER

COORDINATION			
ORGANIZATION	NAME	CONCUR/NONCONCUR	DATE
CECW-HS	<i>E. Hecker</i> E. HECKER		
CEMP-DA	<i>G. Tsukalas</i> G. TSUKALAS	<i>Dr. Paul...</i>	20 May 04
CERM-BA	E. ZAMMIT	<i>[Signature]</i>	1 June 04
CECI	W. BERRIOS	<i>[Signature]</i>	25 May 04



ROUTING SHEET FOR CIVIL WORKS CORRESPONDENCE\*

Date Circulated 23 Apr 04

SUBJECT: Watershed Mgmt and the Implementation of Enterprise Geographic Info Sys (EGIS) in the USAAC 2012 Environment

Staff Action Control (SAC) # \_\_\_\_\_

SAC Suspense Date \_\_\_\_\_

Location of Electronic Version in "S" Drive:

File Folder: CECW-EIC

File Subfolder: (circle one)

CS Taskers      CW Taskers      SA Taskers

Non-task Letters/Memos

File Name: Watershed EGIS Implementing Standards

Electronic Read Copy File: S: Drive / CECW-CE / Watershed EGIS Implementing Standards

MFR: \_\_\_\_\_  
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Routing / Coordination:

Nancy Blyler X7755  
Action Officer (ext.)

M. MORA 23 Apr 04  
CECW-0 f2 fwhbw 27 Apr 04  
D. Lyden CECW-CP 27 Apr 04  
\_\_\_\_\_  
CECW-P

CECW-415  
[Signature] 23 Apr 04  
Branch Secretary

Robert Bank  
Branch Chief

Division Secretary

Deputy Division Chief

[Signature]  
Division Chief

~~Assistant Dir. CECW-7~~ CEMP-2

~~CECW-ZC~~ CECI

CECW-ZB

CECW-ZA

\* After review, initial, or signature, please call the following person for pick up:

Name: Nancy Blyler Phone # 761-7755

## Enterprise GIS Guidance

The Technical Architecture Working Group; comprised of representatives from HQ, ERDC, MSC's and District Offices; is defining the common geospatial architecture that will be documented and delivered to Office of Management and Budget (OMB) in the Corps' Enterprise Architecture. Detailed guidance on eGIS is evolving and there are activities underway with HQ, ERDC and the MSC's to move forward over the next year. Although not all details have been defined, there are many things that Districts and MSC's can implement today.

- a. Each MSC shall develop an eGIS charter and accounting policy (Enclosure 3) that not only commits the Command to eGIS, but also addresses resourcing by establishing a facility account that will be used for regional servers, software licenses, data management activities, and training.
- b. Each District has a Geospatial Data & Systems (GD&S) POC and a CADD manager. Districts shall reevaluate these positions whose prime responsibility is data management and ensuring that geospatial data is accessible throughout the Corps.
- c. In order to share data more easily with our sponsors and customers, every field office and District office needs to implement the Spatial Data Standards for Facilities, Infrastructure and the Environment (SDSFIE). The SDSFIE were initiated in 1995 and since then have been actively maintained by the CADD/GIS Technology center incorporating comments and input from the user community as well as evolving with geospatial technology as industry moves forward. Since 1995, the Army (ACSIM and USACE), Air Force, and Navy have spent over 10 million dollars in developing and maintaining the SDSFIE. Today, the SDSFIE has been adopted by many state and local governments and is recognized by the American National Standards Institute (ANSI) as a National Standard. Data standards, implementation tools and policy have been in place for many years (see Enclosure 2) with limited success regarding their implementation within USACE. Therefore, HQ is requiring District's to report their progress as outlined in Enclosure 4. The focus is on standardizing new data collection efforts and O&M projects. There is no requirement to convert existing data unless a District determines it is in their best interest to convert data sets. Enclosure 4 also provides a comprehensive list of available tools and resources to help in implementing the SDSFIE. The CADD/GIS Technology Center is committed to working with Commands to ensure that implementation of the standards goes as smooth as possible.



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

CECW-EE (1110)

21 AUG 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Architectural, Engineering and Construction (A/E/C) Computer Aided Design and Drafting (CADD) Standards and Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)

1. Since the late 1980s the use of Computer Aided Design and Drafting (CADD) and Geographic Information System (GIS) technology has become almost universal in our industry. The CADD/GIS Technology Center (the Center) (formerly the Tri-Service CADD/GIS Technology Center) at the Waterways Experiment Station has led the effort to develop CADD and Spatial Data Standards, and released the first version of the A/E/C CADD Standards in 1995 and the Spatial Data Standards (SDS) in 1997. Since then, the American National Standards Institute (ANSI) has approved the Spatial Data Standards and A/E/C CADD Standards have been developed in close coordination with the National Institute of Building Sciences as they develop the National CAD Standards.
2. These standards were developed and are continuously evolving through end user and vendor input, and enable all offices to exchange data with one another and all clients irrespective of the CADD or GIS system they are using. Recent world events have clearly demonstrated the importance of seamless sharing of such data and virtual collaboration in the production of engineering products. For more details on implementing the standards, see Enclosure 1.
3. As the Corps moves to Regional Business Centers and needs to share resources through virtual teaming between districts, it is essential that all districts are using the same standards in the preparation of their CADD and GIS files. Despite our best efforts, though, USACE Districts have not adopted these important standards universally. There are many reasons, I believe, ranging from "not invented here" to "too hard to change what we've always done". If we're to become a learning organization we need to take this kind of thing on because it directly affects mission accomplishment. I'm requesting your support implementing these standards throughout your regions with command attention and systematic follow through. If I need to redouble the training and institutional support to your districts to make that happen please let me know. I'd appreciate feedback on your assessment of the situation in your MSC by 1 October 2002 along with your advice for moving forward.
4. POCs for A/E/C and SDSFIE Standards are Jean McGinn at 703-428-7479 and Nancy Blyler at 202-761-5540.

FOR THE COMMANDER:

Encls

DWIGHT A. BERANEK, P.E.  
Chief, Engineering and Construction Division  
Directorate of Civil Works

Encl 2

CECW-EE

SUBJECT: Architectural, Engineering and Construction (A/E/C) Computer Aided Design and Drafting (CADD) Standards and Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)

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SUBJECT: Architectural, Engineering and Construction (A/E/C) Computer Aided Design and Drafting (CADD) Standards and Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)

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U.S. ARMY ENGINEER DISTRICT, FAR EAST  
U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE  
U.S. ARMY CENTER, TRANSATLANTIC PROGRAMS

Enclosure 1

Supplemental Information on Implementing A/E/C and SDSFIE Standards

1. References:

a. CEMP-EE/CECW-EP Memorandum dated 09 Jul 1998, Subject: Architectural, Engineering and Construction (A/E/C) Computer Aided Design and Drafting (CADD) Standards, Encl 2.

b. ER 1110-1-8156, Policies, Guidance and Requirements for Geospatial Data and Systems

c. EM 1110-1-2909 Geospatial Data and Systems

d. DAIM-MD Memorandum dated 16 Oct 2001, Subject: Data Standards for Computer Aided Drafting and Design (CADD), Geographic Information Systems (GIS) and Related Technologies, Encl 3.

d. NCITS 353 News Release, Encl 4.

2. It is USACE's policy to implement geospatial data standards as outlined in Section 6 reference 1.b.. Additionally, ACSIM has provided interim guidance to the field requiring the use of the SDSFIE in the acquisition of all GIS data. Many state and local governments have also adopted these standards. The SDSFIE are a primary enabler for enterprise GIS efforts such as, MVD's Enterprise GIS, the Regional Sediment Management Program and the Consolidated Everglades Restoration Program.

3. The CADD/GIS Center holds regular workshops to aid in the implementation of the SDSFIE. Information on class schedules and space availability can be found on the Center web site at <http://tsc.wes.army.mil>. For more information on these workshops contact Bobby Carpenter at 601-634-4572.

4. Since 1998 (See Encl.1) Corps policy has been to comply with the A/E/C Standards in the production of CADD products. A recent survey showed that 18 districts, both civil works and military, are implementing the A/E/C standards and 8 others are partially implementing. Seven districts did not respond to the survey.

5. Reality is that implementation of the A/E/C standards within our Districts has been difficult and we have a long way to go to become fully standards-compliant. In recognition of the difficulty in making the transition to the A/E/C Standards, the Center developed a tool known as the A/E/C Standards Workspace. Two years ago, the USACE Senior Advisory CADD (SAC) Committee sponsored the formation of a Standards Workspace Assistance Team (SWAT) and associated assessment methodology.

6. The SAC Committee funded SWAT visits to the Jacksonville, Louisville and Honolulu Districts. These implementation visits consisted of training on the A/E/C

CADD Standard and Workspace tools and interviews with key personnel, primarily from the Engineering Divisions. The training sessions were designed to introduce working level and first line supervisors to the A/E/C CADD Standard and its implementation tools and to help provide momentum for the District's migration to the Standard. The trip reports and sample implementation plan outlines are available for download on the Corps CADD knowledge base website at <http://ckb.wes.army.mil/sfac/swat.htm>.

7. SWAT visits are now available on a reimbursable basis for all Districts, and generally consist of 3 to 4 people on site for 5 days. A good indication of the activities performed during the visits can be found by reviewing the reports on-line at the website above. Requests for SWAT visits may be made through Larry Rogers, Chief of the Engineering and Construction Division in the Ft. Worth District, who is currently serving as Chairman of the SAC. If you have any questions concerning the SWAT process or other A/E/C Standards implementation issues within the Corps, please contact John Kincaid, CEMVR-ED-DM, 309-794-5492.



DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

09 JUL 1998

CEMP-EE/CECW-EP

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Architectural, Engineering and Construction (A/E/C) Computer Aided Design and Drafting (CADD) Standards

1. Engineering Circular (EC) No. 25-1-243, Rescission, which was issued 30 June 1996 and expired 30 June 1998, rescinded Engineer Manual (EM) 1110-1-1807, Standards Manual for U.S. Army Corps of Engineers CADD Systems, Parts 1-4. The EC additionally stipulates that users of CADD systems must use the latest version of the Tri-Service CADD/Geographic Information System (GIS) Technology Center's A/E/C CADD Standards.
2. In order for the Corps of Engineers to efficiently move into the twenty-first century and use the virtual office in the design process, it is essential that all districts use the same standards when using CADD technology. Therefore, all Corps Districts must use the most current version of the Tri-Service A/E/C Standards for CADD systems usage. All CADD produced projects which are 35% or less complete shall henceforth comply with the standards. A copy of the standards can be downloaded from the internet at <http://tsc.wes.army.mil>. A hard copy can be obtained from the Tri-Service CADD/GIS Technology Center (CEWES-ID-C), 3909 Halls Ferry Road, Vicksburg, MS 39180.
3. The points of contact at HQUSACE are Mrs. Jean McGinn (202-761-1052) in the Military Programs Directorate, and Mr. M.K. Miles (202-761-8885) in the Civil Works Directorate.

FOR THE COMMANDER:

Encl

  
MILTON HUNTER  
Major General, USA  
Director of Military Programs



DEPARTMENT OF THE ARMY  
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT  
600 ARMY PENTAGON  
WASHINGTON, DC 20310-0600



REPLY TO  
ATTENTION OF

DAIM-MD (AR 210-20)

16 OCT 2001

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Data Standards for Computer Aided Drafting and Design (CADD), Geographic Information Systems (GIS) and Related Technologies

1. Interim policy and guidance for Geographic Information Systems (GIS) technologies is enclosed for immediate compliance and implementation.
2. HQDA is developing a strategy to increase data compatibility, eliminate redundant GIS efforts, and integrate installation GIS databases and applications across the Army into an enterprise system. This interim policy and guidance is the first step in that process. HQDA has established the Army Range Sustainment Integration Council (ARSIC), GIS subcommittee, to coordinate this policy.
3. This guidance identifies the goals and standards necessary to establish an enterprise GIS system within the Army. The standards for creation, collection, maintenance, storage, and distribution of installation geospatial data are provided. Implementation of these standards is essential to support Army installation management decisions and to maximize mission effectiveness. Execution of these standards at all Army levels supports compliance with Executive Order 12906 and other national and DoD guidance. This guidance will reduce duplication of installation GIS data creation, collection and applications, and enable the delivery of standardized products. Accordingly, it is the vehicle to promote the life-cycle management of geospatial data and serves as a technical guideline for GIS at all Army installations.
4. Your cooperation is essential to successfully implement and develop an Army Enterprise GIS. The Point of Contact for this effort is Linda Smith, 703-692-9222, DSN 222-9222, linda.smith@hqda.army.mil. Thank you for your support.

  
R. L. VAN ANTWERP  
Major General, U.S. Army  
Assistant Chief of Staff  
for Installation Management

  
WILLIAM G. WEBSTER, JR  
Brigadier General, GS  
Deputy Chief of Staff for Operations  
Director of Training

DAIM-MD (AR 210-20)

SUBJECT: Data Standards for Computer Aided Drafting and Design (CADD), Geographic Information Systems (GIS) and Related Technologies

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**INTERIM POLICY AND GUIDANCE  
FOR  
GEOGRAPHIC INFORMATION SYSTEMS (GIS)  
TECHNOLOGIES**

1. **Purpose.** This document provides policy guidance on standards affecting the collection and creation of spatial data within the Department of Army.
2. **Scope.** This policy statement applies to all HQDA-funded (in-house or contracted) geospatial data creation, collection, acquisition, modification and editing.
3. **Background.** Standardization of GIS data documentation, formats, accuracy, and definition increases the Army's ability to compile data across functional areas, promotes data sharing, and reduces duplication of effort. Using current Federal and DoD standards will assist in these efforts.
4. **Enterprise GIS.** Assistant Chief of Staff for Installation Management (ACSIM), Plans and Operations Division is the lead for establishing Army guidance for enterprise GIS, and will coordinate actions at HQDA to foster enterprise GIS development. Army GIS programs and offices must take steps to establish integrated GIS data and systems on installations to allow for sharing across functional areas (engineers, resource management, range management, environment, housing, etc.) and at all Army levels. The enterprise approach will eliminate stand-alone GIS databases and applications.
5. **Data Documentation.** All GIS data will be documented in accordance with the Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata. Both '*Mandatory*' and '*Mandatory as Applicable*' fields, as defined by the FGDC Standards, shall be completed for each GIS data layer. Existing GIS data shall be documented, to the extent possible, no later than 1 March 2002. Numerous compliant metadata software programs are readily available on the Internet, <http://www.fgdc.usgs.gov>, to assist in this effort.
6. **Data Sharing.** The National Spatial Data Infrastructure (NSDI) and Executive Order 12906 (April 13, 1994) state that all GIS data will be shared to avoid wasteful duplication and promote effective and economical management of resources. All federal agencies are required to participate in the NSDI as per EO12906. Army GIS personnel shall share data across functional and organizational lines, with other federal, state and local governments, and non-governmental organizations (NGO's) in accordance with applicable state and federal laws. Army Installations shall work with Reserve Component Training Sites to pursue mutually beneficial partnerships
7. **Data Standards.** The Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) shall be followed for geospatial database table structure, nomenclature, attributes, and symbology to allow for data integration. Installations are encouraged to utilize a Structured Query Language (SQL) compliant relational database for SDSFIE implementation. The SDSFIE and related documentation can be downloaded from the CADD and GIS Technology Center homepage at <http://tsc.wes.army.mil>.

Enc

8. **Projections and Datums.** All GIS data shall use North American Datum (NAD) of 1983, or World Geodetic System (WGS) of 1984 coordinate system datums, and the North American Vertical Datum of 1988 (NAVD88) to ensure data alignment and accuracy. Data should be displayed using an appropriate projection for installation use. The projection and datum must be documented in the metadata and provided whenever the data is distributed. A resource for explanation of projections and datums can be found in the following Corps of Engineers manual on geospatial mapping (EM 1110-1-2909), <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em1110-1-2909/c-11.pdf>. This manual addresses issues related to geospatial mapping including datums, scales, and the resulting accuracy.

9. **Data quality.** All GIS data shall be created and maintained at a quality and resolution that ensures accuracy and usefulness for installation management and mission support. All GIS data created shall meet the Federal Geographic Data Committee Standard Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy, FGDC-STD-007.3-1999. Army geospatial data requirements are further defined in Engineering and Design, Geospatial Data and Systems, EM Manual No. 1110-1-2909, 1 Aug 1996. General info on GIS quality standards are at: [http://front.gis.state.nm.us/committe/stand/New\\_dataqual.htm](http://front.gis.state.nm.us/committe/stand/New_dataqual.htm). The National Standard for Spatial Data Accuracy can be downloaded from: <http://www.fgdc.gov/standards/documents/standards/accuracy/chapter3.pdf>.

10. Further implementation guidance is pending.

**NCITS Approves New CD-Based Geographic Information Standard**  
*Considered Integral to Homeland Security,*  
*Standard Will Be Used By Military Facilities And Commercial Airports*

**Washington, DC, November 15, 2001** – Today at a meeting of the National Committee for Information Technology Standards (NCITS), the Executive Committee approved the Spatial Data Standard for Facilities, Infrastructure & Environment (NCITS 353). The standard represents an important milestone, not only because of what it addresses, but also because of its database format, which makes it instantly usable.

NCITS 353 is a nonproprietary geographic information (GI) standard for use with off-the-shelf Geographic Information System (GIS), Computer Aided Design and Drafting (CADD), and relational database software. The standard coupled with this software supports comprehensive master planning, environmental planning, and site planning, engineering, and lifecycle maintenance for facilities/installations, infrastructure, and environmental applications. (Note: geographic information may also be referred to as spatial data.)

“Now there will be a national standard for enabling the common collection and interoperability of spatial data by DoD facilities, state and local governments,” said Henry Tom, Chairman of NCITS L1, GIS Technical Committee. “Because these operations include our military facilities, civilian airports and other public facilities, infrastructure, and environment, this standard is fundamental for our homeland defense.”

Kate McMillan, Director of the NCITS Secretariat, explained the significance of putting the standard on CD as a digital database: Given the sheer size of NCITS 353, providing this standard in digital form via a CD greatly enhances the viewing and browsing of it and reduces the burden on an organization’s efforts to implement this standard into a commercial GI database schema.”

The CADD/GIS Center originally developed the GI standard for Facilities, Infrastructure, and Environment (Center) for the installation communities within the Federal Government, including all branches of the military, NASA, the Federal Aviation Administration, the State Department, and the Environmental Protection Agency. Various city governments and other public agencies within state and local governments have also participated in the development of the standard and are implementing it. Designed to be easy to implement, this GI standard will aid any Federal, State, and Local Government organizations; public utilities; and private industry that plan, manage, or maintain significant infrastructure/facilities.

The Center annually updates and expands the GI standard and will update the NCITS version accordingly.

**Content of the Standard**

NCITS 353 defines a catalog of geographic features as well as the graphical representation of those features in a well-defined data model. (A geographic feature is a

representation of a real world phenomenon associated with a location relative to the earth.) These features are graphically represented, based on map components, as a point, a line, or a polygon. Additionally, the standard contains non-graphic attributes associated with each feature type that further describe/define each feature, business/facility management, and/or "event" type information (e.g., construction, operation, maintenance, repair, and inspection type records).

#### **Format of the Standard**

Users quickly install a browser application via the CD to view/browse and print the NCITS 353 feature type catalog. Additionally, the NCITS 353 "generator" may be installed that provides the capability to generate ANSI-compliant SQL code of an "implementable" schema in support of database schema construction.

#### **About NCITS**

The National Committee for Information Technology Standards (NCITS) is the forum of choice for information technology developers, producers and users for the creation and maintenance of formal de jure IT standards. NCITS is accredited by, and operates under rules approved by, the American National Standards Institute (ANSI). These rules are designed to ensure that voluntary standards are developed by the consensus of directly and materially affected interests. The NCITS web site is [www.ncits.org](http://www.ncits.org) and the address is NCITS Secretariat, Information Technology Industry Council, 1250 Eye St. NW, Suite 200, Washington, DC 20005.

**TEAM CHARTER**  
**South Atlantic Division**  
**Enterprise Geospatial Information System (eGIS)**  
**Program Management Team**

**eGIS Program Vision**

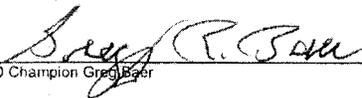
Re-engineer existing location-based district work-flows through the implementation of an enterprise GIS program and recognize the following quotas:

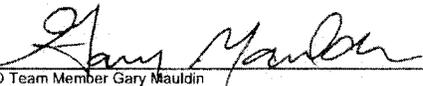
1. Increase productivity.
2. More efficient use of resources.
3. Provision for expanded and/or additional services.
4. Propagate effective, more accurate and informed decision-making.
5. Increase access and dissemination of digital information.

We, the members of the South Atlantic Division enterprise Geospatial Information System Program Management Team, commit to work together in a spirit of mutual respect and cooperation. We are committed to complete and implement a quality program to fulfill the intra-divisional eGIS vision. We will strive to develop a program that achieves an equitable balance between function and cost that will result in division-wide adoption and while adding value to the Army and the general public. We will create an enjoyable program in the spirit of teamwork and financial success to ensure the expeditious development of this program. We agree to the following common goals and objectives:

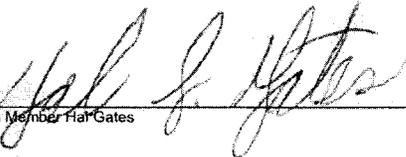
1. Communicate openly and seek wide input for our plan.
2. Establish policy, standards, and procedures.
3. Resolve problems and make decisions at the lowest possible level in a timely manner.
4. Maintain the professional atmosphere of mutual respect.
5. Conduct periodic evaluations of the Team's effectiveness.
6. Produce a quality product.
7. Develop successful inter-intra agency cooperation.
8. Demonstrate the technical capabilities of the partners.

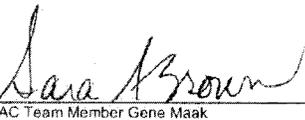
**Supported By**

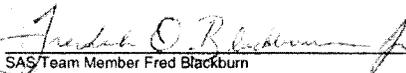
  
SAD Champion Greg Baer

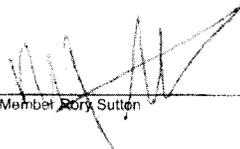
  
SAD Team Member Gary Mauldin

  
ERDC Team Member Rose Kress

  
SAM Team Member Hal Gates

  
SAC Team Member Gene Maak

  
SAS Team Member Fred Blackburn

  
SAJ Team Member Rory Suttan

  
SAW Team Member James Jacaruso

  
COMMANDER SAD Brigadier General Peter T. Madsen BG, USA

## Accounting Policy for eGIS Costs and Distribution of RF5022 Facility

1. The following procedures apply to enterprise geographic information systems (eGIS) costs and distributions from the RF5022 Facility Account for GIS Operations (ER 37-2-10).

### A. Costs

(1) Operational expenses such as hardware/software ownership expenses, hardware/software maintenance, hardware repair, software site licenses, expendable equipment, software and supplies, labor, training, and travel should be recorded in RF5022. These are the additional incremental costs of having a general purpose GIS capability at the district level, independent of a specific project. It allows the district's investment in spatial data to be preserved for use by other teams and future projects.

(2) Costs associated with developing tools and collecting and processing historical data that benefit a single project should be charged directly to that project or study.

(3) Costs associated with developing tools, collecting and processing historical data where the benefit cannot be attributed to a single organization, project or study should be recorded in RF5022.

### B. Distribution

Distributions should be made directly to projects "if the costs contribute exclusively to the accomplishment of a single project," EC 37-1-261. Distributions should be made monthly.

(1) When the costs in A(1) and (3) above can be attributed to a single department, the costs should be distributed to the departmental technical overhead accounts. If a license holder works exclusively on one project, or a piece of hardware is dedicated to a project, the project should be charged directly.

(2) The remaining costs in RF5022 from A(1) and (3) above cannot be attributed to a specific project, study or department. They comprise the programmatic cost of preserving the much larger district investment in spatial data and tools for reuse by future projects, partners and sponsors and other USACE components. The benefits accrue to the district as a whole and should be fairly and consistently distributed to the departmental accounts of the users.

2. These procedures will be reevaluated each year and revised and resubmitted for approval when appropriate, in response to changes in eGIS technology or organization.

Approved:



LESTER S. DIXON

Co-Chair, Regional Management Board



PAUL D. ROBINSON

Co-Chair, Regional Management Board



US Army Corps  
of Engineers®

# Geospatial Standards in the Virtual Engineering Environment

## □ Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE)

### **General**

The attached draft document provides a schedule for achieving compliance with SDSFIE within the U.S. Army Corps of Engineers. In general:

- All Operation and Maintenance GIS projects shall be 100% database structure compliant within 18 months.
- All new projects, data collected/developed/contracted for, and/or otherwise funded by the Corps' shall be 100% compliant immediately (from initiation).
- All existing project data that are being revised, referenced, added to, or integrated with new projects shall require migration to the relevant standard when used.
- Data sets that are no longer in use do not need to be converted to SDSFIE.
- These standards do not apply to raster data.
- National datasets produced by other agencies and commercial datasets need not be translated to the SDSFIE.

### **Definitions**

For clarification, the following terms are defined as:

- Operations and Maintenance GIS project: a project whose costs are covered by funding from Operation and Maintenance (O&M).
- 50% database structure compliancy: refers to the SDSFIE data model usage. Implementation of the SDSFIE naming conventions of the Entity Sets, Entity Classes, and Entity Types constitutes 50% database structure compliancy.
- 100% database structure compliancy: refers to the SDSFIE data model usage. Implementation of the SDSFIE naming conventions of the Entity Sets, Entity Classes, Entity Types, attributes, and domain values and migration of all datasets to this model constitutes 100% database structure compliancy.
- Levels of SDSFIE compliancy: There are two levels of SDSFIE compliancy: Basic and Experienced. These are fully explained in a technical paper available at <http://tsc.wes.army.mil/products/tssds-tsfsms/tssds/html/sdsdocin.asp>.

### *June 2004*

- Upon receipt of the HQUSACE implementation directive, notify all District/Division personnel (including A/Es) that projects initiated after 1 June 2004 must comply with the SDSFIE.
- Direct A/E's to the Center's web site containing the information on the standards (<http://tsc.wes.army.mil/products>).
- Realign new project funding to accomplish compliance. (Note: Prioritize implementations by: 1) projects that cross District boundaries, 2) projects that are being accomplished by multiple districts, and 3) intra-district projects which share a common geographic feature.)

### *July 2004*

- Identify all GIS projects that are less than 50% database structure compliant and provide the information through submittals to HQ via the <http://geospatialcompliance.usace.army.mil> web site.
- Use the identified results being tracked at the above web site that will serve as the baseline to compile compliance metrics. (Clarification: It is the goal of HQ to have the projects identified in the submittals to be 100% compliant with the SDSFIE within 18 months.)
- Complete Implementation Plan for GIS standards. This plan should be an addendum to any existing Geospatial Implementation plan.
- Schedule initial training

### *August 2004*

- All new projects initiated after 1 June 2004 will be 100% compliant with the SDSFIE.
- Compliance may be ensured/verified through the use of GIS Compliance tools (SDSFIE Toolbox tools of Access Builder, SQL Generator, Data Checker).
- As identified, report missing/required additions to the Standard via the Center's Comments database at [http://tsc.wes.army.mil/comments/AECSDS\\_comments/AECSDS-CommentForm.asp](http://tsc.wes.army.mil/comments/AECSDS_comments/AECSDS-CommentForm.asp) . The Comments Database provides the fastest avenue for corrections, additions, and resolution of issues.
- Schedule follow-up training (if required).
- Develop A/E contract language requiring all deliverables be provided in compliance with the latest release of the SDSFIE. Additional information on contract language is available in the "Contract Language Guidelines for Acquiring Geospatial Data System Deliverables From Architect-Engineer Consulting Firms" available from the CADD/GIS Technology Center.

### ***December 2004***

- Complete 6 month report. (See Required Reporting below.)
- Report missing/required additions to the standards via the Center's Comments database at [http://tsc.wes.army.mil/comments/AECSDS\\_comments/AECSDS-CommentForm.asp](http://tsc.wes.army.mil/comments/AECSDS_comments/AECSDS-CommentForm.asp) .
- Schedule any additional training (if required).

### ***June 2005***

- Complete 12 month report. (See Required Reporting below.)
- Report missing/required additions to the standards via the Center's Comments database at [http://tsc.wes.army.mil/comments/AECSDS\\_comments/AECSDS-CommentForm.asp](http://tsc.wes.army.mil/comments/AECSDS_comments/AECSDS-CommentForm.asp) .

### ***October 2005***

- Complete 18 month report. (See Required Reporting below.)
- Complete quality checks of all geospatial data.

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### ***Required Reporting***

Report implementation accomplishments (at 6 month intervals) to HQ for each project via the <http://geospatialcompliance.usace.army.mil> web site. Within the web site, you will be required to identify for each project (from 0% to 100%) your compliance with the following:

- Implementation of SDSFIE naming conventions of the SDSFIE Release library data model (entity sets, entity classes, entity types, attributes, and domain values).
- Correlation of existing datasets to SDSFIE.
- Implementation of SDSFIE data model, by migration of all datasets to SDSFIE-compliant RDBMS (SDSFIE Tools for Geodatabase (SDE/Personal), Oracle, SQL Server, Informix).
- Verification of compliancy percentage by use of SDSFIE Tools.
- Implementation of FGDC metadata (SDSFIE Geodatabase Builder, Corpsmet 95, etc.).
- Verification of data quality (queries, maps, etc.)
- Implementation of SDSFIE in a functional regional dataset that is 100% database structure compliant.

## **Additional Support**

In recognition of the difficulty in making the transition to the SDSFIE for Regional GIS and 2012, the CADD/GIS Technology Center developed a toolbox consisting of a browser, filter maker/eraser, and several generator tools for ESRI Geodatabases, Intergraph Warehouses, Microsoft Access databases, and RDBMS (Oracle, SQLServer, Informix) databases. The entire SDSFIE library and toolbox can be downloaded from [http://tsc.wes.army.mil/products/tssds-tsfmts/tssds/projects/sds/sds\\_toolbox.html](http://tsc.wes.army.mil/products/tssds-tsfmts/tssds/projects/sds/sds_toolbox.html).

There is an eight step procedure for implementing SDSFIE which is available at <http://tsc.wes.army.mil/News/Geodatabase/Geodatabase.asp>.

The CADD/GIS Technology Center has migrated several USACE Districts datasets into the SDSFIE (MVK, MVM, MVN, etc.) and has developed internal tools to assist in the conversions. They have also built an ESRI Geodatabase toolkit for generating SDSFIE-compliant geodatabases, loading data into these geodatabase, and running diagnostics on the geodatabases. This toolkit is incorporated within the SDSFIE toolbox. Specific geodatabase tools can be downloaded at <http://tsc.wes.army.mil/News/Geodatabase/Geodatabase.asp>.

Training classes are held periodically at the CADD/GIS Technology Center and SDSFIE implementation workshops will be held at the Geospatial Technology Conference in San Antonio, TX in August 2004 (see <http://tsc.wes.army.mil>) for details). Onsite implementation visits are available. Requests should be made by the District Commander to CADD/GIS Technology Center, Director.

The Center will conduct monthly web meeting to address Standards implementation issues as determined by user requests.