

# CADD/GIS Insights

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U.S. Army Engineer Research and Development Center



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EDMS  
SDSFIE  
FMSFIE  
EBS  
A/E/C CADD  
SEMMS



# Insights

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

Harold L. Smith, Center Chief  
Laurel Gorman, Outreach Coordinator

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The CADD/GIS Technology Center for Facilities, Infrastructure, and Environment is dedicated to fostering the application of computer-aided design and drafting (CADD) and geographic information system (GIS) technologies for facility life-cycle efforts throughout the DoD, other federal agencies, and private industry. The CADD/GIS Insights is published by the CADD/GIS Technology Center for Facilities, Infrastructure, and Environment of the Information Technology Laboratory, U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199.

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## From the Chief

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*Harold Smith, Chief, CADD/GIS Technology Center for Facilities, Infrastructure, and Environment*

We have arrived – the 2004 GeoSpatial Technology Symposium and Exposition is in full swing with 45 concurrent technical sessions, workshops, and user group meetings. The Center staff is available to assist you in making this the best Symposium ever. A good place to touch base with us is at the Information Booth located near the escalator on the River Level and at our hexagonal-shaped Center booth located in the Geospatial Pavilion in the Exhibition Hall. Remember our registration pass is also valid for other concurrent conferences including the Joint Services Environmental Management Conference, GeoBase Conference, and the AFCEE Technology Transfer Workshop. I look forward to seeing you there!

The Center has also been busy on special geospatial technology projects funded by our Federal partners on a reimbursable basis. Often these pilot projects lead to corporate-wide implementation of new techniques and methods in supporting enterprise-GIS, 3-D CADD models, and Web services. Just to name a few, we have been working with the Office of the Secretary of Defense (OSD), the National Geo-Intelligence Agency (NGA), the Smithsonian, and the U.S. Army Engineer Research and Development Center (ERDC).

For the OSD, the Center is overseeing the modernization of their existing rental (recruiting) facilities management information system utilizing the latest advances in online databases and Web portal features. Many of the ERDC Lab Web sites have been enhanced by the Center's Web programmers. Several military installations, the National Guard Bureau, and USACE District offices have requested onsite training on the Spatial Data Standards and companion tools. The NGA looked to the Center to establish the Spatial Data Standard for Facilities, Infrastructures, and Environment (SDSFIE) as the baseline for development of the Homeland Security Infrastructure Program (HSIP) Minimum Essential Data Sets (MEDS). The HSIP MEDS will serve as a source of geospatially accurate information in support of Federal level readiness, response, and recovery efforts in cases of man-made or natural disasters. In addition, this information can also be used by military facilities, municipalities, and other agencies for their readiness, recovery, and response efforts. For the Smithsonian, the Center is currently developing a 3-D model of the new National Museum of the American Indian to demonstrate object technology and facility management, support a prototype test of the ADEPT document management system, and assist in CADD and GIS implementation tasks.



*Smithsonian, National Museum of the American Indian*

As always, we strive to identify new and innovative solutions in implementing CADD/GIS/FM standards and technologies, which will be showcased at the Symposium. Come by the Center's booth and we can give you further project information.

# What to See at the 2004 Geotechnology Symposium and Exposition



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

With the advent of summer the 2004 Geospatial Technology Symposium ([https://tsc.wes.army.mil/center\\_info/symposium/2004symposium.asp](https://tsc.wes.army.mil/center_info/symposium/2004symposium.asp)) is right around the corner! The Center is busy getting ready for this August event. Recently, e-mails were sent out to presenters notifying them of their acceptance and presentation times. With each Symposium, the Center receives informative and interesting topics to consider for presentation, and this year was not an exception. With almost 150 presentations being given during the week, it will be tough for attendees to choose which presentations to watch! And don't forget about the Workshops! Ten Workshops will be given during the 3-day event, allowing for more in-depth coverage of a particular topic. These will be offered on a "first come, first served" basis, so arrive early for a good seat. Workshops currently scheduled include Overview of SDSFIE Tools - Basic SDSFIE Workshop, Implementing the SDSFIE Geodatabases, Explosives Safety Siting (ESS) Application, Long-Range Real-Time Kinematic (RTK) DGPS Workshop, NGS Bluebook Processing, Advanced Mapping



Technologies, Facilitating Waterway Management with a Web-based Mapping System, GPS Height Modernization, Overview of Remote Sensing and Data Acquisition, and A/E Contracting.

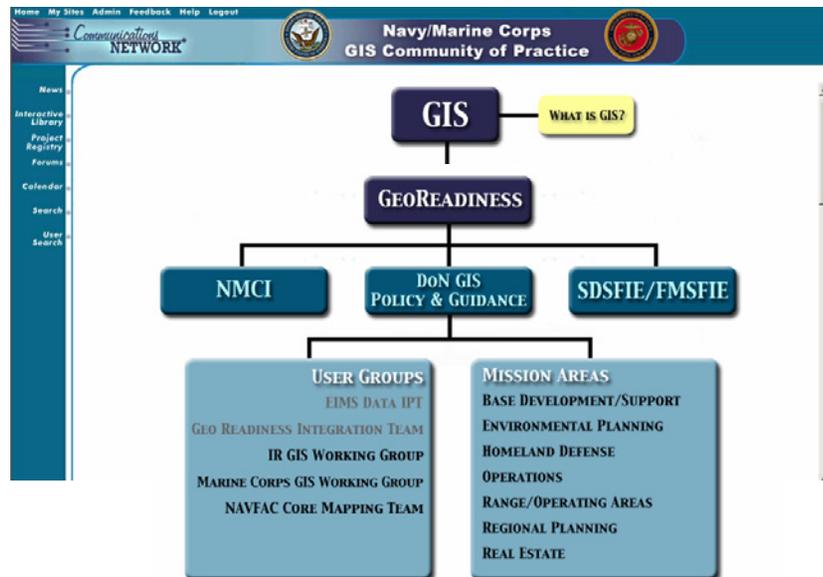
Once again, there will be an icebreaker reception in the Exhibit Hall on Tuesday, August 17, at 5 p.m. Expect good food and entertainment, as well as the chance to network with fellow colleagues, while surrounded by hundreds of exceptional and exciting exhibits. Wednesday morning, the 2004 Geospatial Technology Symposium will hold its Plenary session from 8:00 to 10:00. The Center has invited Mr. Norbert Young from McGraw-Hill Construction Company as the keynote speaker. At the request of several attendees, we have added several sessions on the Center and its Standards products. The Standard sessions will provide an overview of the products and offer a glimpse of what is yet to come.

Until August 6, registrations are offered at a reduced rate. Because there are four concurrent conferences/symposiums at the Henry B. Gonzalez Convention Center in San Antonio, Texas, be sure to register and make hotel reservations as soon as possible! Registration/hotel information can be found at <http://www.p2-hwmconference.com/attend.htm>. Also, if you are interested in exhibiting at the Symposium, there are still a few booths left! Exhibitor information can be found at <http://www.p2-hwmconference.com/exinfo.htm>.

So, make sure August 17-19, 2004, is marked on your calendar! Expect to be educated, informed, updated, and even excited about the latest in geospatial technology. We hope to see you in San Antonio!

# Navy/Marine Corps GIS Communications Network

Caitlin Willoughby, Boor•Allen•Hamilton, McLean, VA



Are you working environmental, facilities, real property, or other issues on the installation you are supporting? Are you looking to find information on how GIS is being implemented at other military installations? Then you need to be a member of the Navy/MC GIS Community of Practice! With over 500 users, there is a wide array of resources including custom extensions, VB's, AML's, data sources, and sample data management plans. The network, which serves as a communication and collaboration tool, is a community and Web site 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. Recent postings include the following announcements: FGDC Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns, MCAS Miramar GIS Strategic Plan, 2004 CADD/GIS Technology Center Symposium, Force Protection at PWC Japan, CNM IVT Guam Geodatabase, and GEA – Geospatial Environmental Applicability. This Web site 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, please contact Linna Manomaitis at [manomaitis\\_linna@bah.com](mailto:manomaitis_linna@bah.com) or 703-917-2278; Caitlin Willoughby at [willoughby\\_caitlin@bah.com](mailto:willoughby_caitlin@bah.com) or 703-377-4726; or Josh Fortenberry at [josh.fortenberry@navy.mil](mailto:josh.fortenberry@navy.mil) or 805-982-4990.

Contact the site administrator to obtain the membership policy and see if you qualify. To subscribe, log onto <http://www.navy-mc-gis.org> and select "Subscribe."

*Created for the GIS community by the Naval Facilities Engineering Command, the Navy GIS Users Group, and the Marine Corps GIS Working Group under the sponsorship of the Chief of Naval Operations for Environmental Protection, Safety, and Occupational Health Division (N45).*

# Data Standard for Facility Management

*Bobby Carpenter, the CADD/GIS Technology Center for Facilities, Infrastructure, and Environment*

The collection, storage, maintenance, and analysis of voluminous amounts of both static and dynamic information compose a major part of all facility management (FM) activities. One major component in the cost-effective and efficient management of these data involves the use of a well-designed, nonproprietary data content standard (data dictionary and data model) designed specifically for the management of both static and dynamic FM information. The Facility Management Standard for Facilities, Infrastructure, and Environment (FMSFIE) was developed by the CADD/GIS Technology Center in partnership with the Patuxent River Naval Air Station for this purpose.

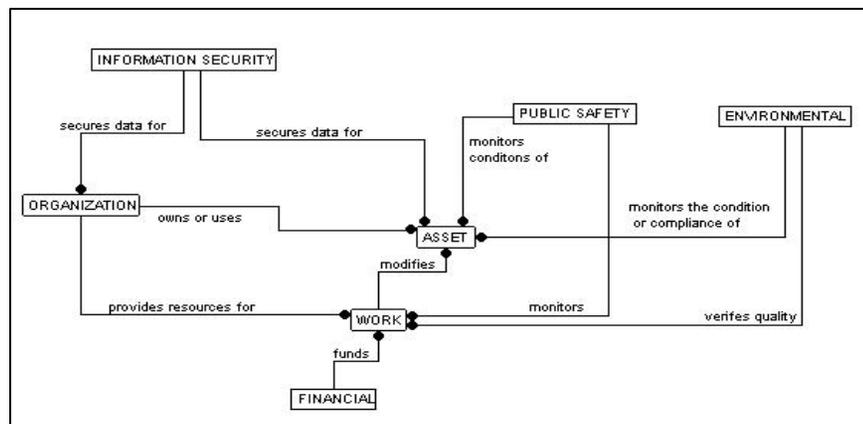
The **FMSFIE Release 2.30** (published in October 2003) marked the first release of the “transactional” FMSFIE. An update, the **FMSFIE Release 2.31**, was published in March 2004. The FMSFIE Release 2.40 is scheduled to be available in October 2004. “Transactional” is defined as communicative actions or

activities, involving multiple parties or things that reciprocally affect each other in a near real time setting that is based on life cycle events. The goal of the transactional FMSFIE is to provide a robust data content standard designed to improve efficiency and lower costs associated with the collection, management, analysis, and reporting of facility management data.

The major features of the FMSFIE include the following:

- Provide a transactional data content standard focusing on legal and Federal reporting requirements related to asset management, work management, environmental management, public safety management, organization management, information security management, and financial management at DoD installations, Army Corps of Engineers Civil Works activities, and other Federal Government organizations.
- Provide a data content standard designed for use with commercially available, off-the-shelf relational database software and enterprise CADD and GIS implementations.
- Provide a nonproprietary data content standard, which permits organizations, contractors, and vendors to use the data schema and data dictionary freely, share FMSFIE-compliant data with other organizations, and build applications based upon the FMSFIE data schema.

To see the tool in action and hear a general overview of the FMSFIE, please attend the FSMSIE Workshop during the Symposium from 1:30 to 3:30 PM on Tuesday, August 17.



# Web Based Tool to Simplify the Environmental Impact Analysis Process

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*Bobby Carpenter, the CADD/GIS Technology Center for Facilities, Infrastructure, and Environment*

The National Environmental Policy Act (NEPA) is our basic national charter for protecting the environment. It seeks to balance a broad range of environmental factors as well as other considerations of national policy. It sets out two basic and related objectives: ensuring that agency decision-makers take environmental factors into account and mitigating potential environmental damage. All Federal government organizations are required to comply with the NEPA. NEPA requires that all Davis-Bacon Act compliant construction projects be screened against a checklist of environmental considerations and evaluations (e.g., endangered species, wetlands, cultural resources, hazardous waste sites, etc.).

The Environmental Impact Analysis Process (EIAP) is a method used by various DoD and Federal organizations in ensuring that compliance with the requirements of NEPA is achieved. The [CADD/GIS Technology Center's Environmental Field Working Group](#) has developed an electronic Web-based checklist to expedite this process.

The Center's [EIAP Web-based tool](#) also provides guidance concerning integration with an SDSFIE-compliant Geographical Information System (GIS) to facilitate the decision-tree process.

Robins Air Force Base (AFB) and the Patuxent River Naval Air Station (PAX) have already taken steps to automate this process under current procedures by utilizing information technology solutions such as GIS and Web-based applications. The Center's Environmental Field Working Group (FWG) used the PAX and Robins AFB EIAP systems as the baseline for initial project development (Parts 1 and 2), with improvements made as necessary to provide a Web-enabled environmental planning decision-tree tool that could be used by all DoD and Federal Government organizations.



# Rapid Application Development Using HTML Templates

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

Welcome to the Webmaster Forum, a column dedicated to sharing webmaster issues and solutions to manage Web services effectively. This issue's column addresses how to retrieve and display data dynamically using HTML templates. If you would like to see a specific webmaster issue discussed here or would like to submit an article as a guest columnist, please contact Drew Anderson at [Drew.L.Anderson@erdc.usace.army.mil](mailto:Drew.L.Anderson@erdc.usace.army.mil).

**Problem: Develop a versatile routine that can display any data any way.**

By using HTML templates, a single function can be used to retrieve and display data dynamically. An HTML template can be thought of as a set of HTML codes containing place holders for data. A place holder must be unique and cannot be confused with HTML codes. A common practice is to use % symbols to surround a place holder name (e.g. %Name%, %Title% or %Content%).

This simple HTML template wraps data in a box with a title.

```
<table width='100%' border=1>
<tr><td>%Title%</td></tr>
<tr><td>%Content%</td></tr>
</table>
```

A program would use the 'replace()' function to swap the place holders '%Title%' and '%Content%' with actual data.

```
sTemplate = "<table width='100%'
border=1><tr><td>%Title%</td></tr>" _
& "<tr><td>%Content%</td></tr></table>"
sBuffer = replace(sTemplate, "%Title%", "My
```

```
Title")
sBuffer = replace(sBuffer, "%Content%", "My
Content")
Response.Write sBuffer
```

This is a simple concept with very dramatic results. Changing the template changes the way the data are displayed. Instead of a simple table with a border, you may want to add background color for the title or/and a background color for the content area. Store the template in a database and then logic can be used to decide which template to use. This is very useful if you want to create skins for your Web site.

Display data within an HTML table requires a more complex template. This template would be used to render information from a database. To show a list of people from a database table first requires extracting the data. The SQL statement might look like this:

```
SELECT LastName, FirstName, Phone FROM
Persons ORDER BY LastName, FirstName;
```

Next we need to look at the way we want to display it. A single entry might look like:

```
<table width='100%' border=0>
<tr>
<td>
%LastName%, %FirstName%
</td>
<td>
%Phone%
```

```

</td>
</tr>
</table>

```

Because part of the template needs to be done for each row, we have to break the template up into an array. The array has five elements, 'Table Start', 'Row Start', 'Row', 'Row End', and 'Table End'. This will provide us with a very flexible template, capable of handling almost any situation.

The next issue to deal with is how to cycle through the records and build the table. We could 'hard code' or write a generic function that handles it all for us. This generic function takes an SQL statement, an HTML template, and a connection to a database. After executing the SQL statement against the database, it proceeds to build a string, combining data and HTML codes. The end result is an HTML table containing data from the database.

```

Function RenderHTML( sSQL, sHTML, db)
    Dim rs 'A database Record Set
    Dim sRow 'A single row buffer
    Dim sBuffer 'A data buffer with all rows
concatenated
    Dim aTemplate 'An array of HTML Templates
    '0 - Is how to start a table (e.g.
"<table>")
    '1 - Is how to start a row (e.g. "<tr>")
    '2 - HTML code for an entire row (e.g.
' "<td>%Name%</td><td>%Phone%</td>")
    '3 - End the row (e.g. "</tr>")
    '4 - End the table (e.g. "</table>")

    sBuffer = "" 'Initialize the buffer
    aTemplate = Split(sHTML,"|") 'create an
array of HTML templates using
'the pipe symbole as the delimiter

    Set rs = db.Execute(sSQL) 'Execute the SQL
statement

```

```

While Not rs.EOF 'Cycle thru each record
    sRow = aTemplate(2) 'Copy the row HTML into
the row buffer

```

```

    For Each f in rs.fields 'Cycle thru each
field
        'Replace the field name with the field value
        sRow = Replace(sRow, "%" & f.name & "%",
f.value)
    Next

    'Wrap the row with the row start and row end
codes
    'end codes and add it to the buffer
    sBuffer = sBuffer & aTemplate(1) & sRow &
aTemplate(3)

    rs.MoveNext
Wend

rs.Close
Set rs = Nothing

    'Wrap the buffer with the start table and
end table codes
    MyFun = aTemplate(0) & sBuffer &
aTemplate(4)

End Function

```

The function is very versatile because it does not require any knowledge of the SQL statement or HTML template. It does require the SQL statement and HTML template to marry up or else place holders will not be replaced.

Storing the SQL statement and the HTML template in a database allows a designer to decide how data from a specific table are to be displayed. A routine can retrieve the proper SQL statement and HTML template and then combine the two. To do this properly we would need to make the SQL statement a template too. For instance:

```
SELECT * FROM Persons Where %Where% ORDER BY  
LastName, FirstName;
```

The '%Where%' place holder would be replaced with the condition required at the time. If you want everyone in a specific section, the '%Where%' would be replaced with "Section='IDC'".

With the HTML and SQL templates stored in a database, you can concentrate more on the what, when and where and less on how to display the data. Throw in the ability to do skins and you wind up with a diverse Web application.

# CAD2 News

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## *Rusty Brasfeild*

SYSOREX Federal, Inc. is a recent addition to the CAD2 Team through their recent acquisition of McBride Associates, along with its subsidiary McBride Enterprise Solutions (collectively "McBride"). McBride was one of the Federal Government's premier product and services providers and a strong partner to the CAD2 customers. The reorganization of the CAD2 contract was completed in March 2004. Currently all contract fulfillment, under the McBride name, is being directed to Sysorex Federal.

Sysorex has been a leading provider of Information Technology services and products to the Federal Government since 1986, and has been named as one of the Federal Government's top ten suppliers. In 2002, in response to our customers' requests for one-stop solutions, we identified and subsequently acquired two companies that have helped us achieve that goal.

The first acquisition, Information Systems Consortium, Inc. (ISC), brought high-end database design, development, and implementation and training into the Sysorex portfolio. ISC built its reputation in the areas of high-end relational database, application and Web development, and Oracle Applications. These functional areas provide a complete life cycle development to the Federal Government, which was a perfect complement to Sysorex's own stellar reputation for exceptionally high quality service.

The other key acquisition was that of McBride and Associates, along with its subsidiary McBride Enterprise Solutions (collectively "McBride").

These new additions to the Sysorex family round out our service and product offerings and add new contracting vehicles that help simplify and accelerate the procurement process for our customers and provide true one-stop shopping.

Sysorex is an Information Technology **solutions** provider.

Sysorex Federal pledges to work with our customers to identify the best possible business solution and then deliver the product - on time, within budget, and exactly what you ask for. No excuses, just results. And Sysorex guarantees it - in writing, *before* they start.

As a CMM Level 3-compliant company, Sysorex will provide the full spectrum of System Development Life Cycle services with a particular emphasis on

- Federal Enterprise Architecture
- Enterprise Security and Access
- Database Design and Development
- Application Development
- Enterprise Database Administration
- Java and J2EE Development
- Financial Applications (including Oracle Federal Financials)
- Legacy Data Migration
- Object Oriented Database Design and Application Development
- Complex Process Modeling and Development.



# Calendar of Events

Date (2004)	Event
<b>Meeting</b>	
August 16	<b>BOD/CS/FWGs Symposium Meeting.</b> Henry B. Gonzalez Convention Center, San Antonio, TX. POC: Martha Pettway, 601-634-4109, <a href="mailto:Martha.L.Pettway@erdc.usace.army.mil">Martha.L.Pettway@erdc.usace.army.mil</a>
<b>Conferences</b>	
August 9-13	<b>24<sup>th</sup> Annual ESRI International User Conference.</b> San Diego, CA. POC: ESRI, Inc., <a href="mailto:uc2004@esri.com">uc2004@esri.com</a> , <a href="http://www.esri.com/events/us/index.html">http://www.esri.com/events/us/index.html</a>
August 17-19	<b>2004 GeoSpatial Technologies Symposium and Exposition.</b> POC: The CADD/GIS Technology Center, Toby Wilson, <a href="mailto:James.T.Wilson@erdc.usace.army.mil">James.T.Wilson@erdc.usace.army.mil</a> , <a href="http://tsc.wes.army.mil">http://tsc.wes.army.mil</a>
August 17-19	<b>9<sup>th</sup> Joint Services Pollution Prevention and Hazardous Waste Management.</b> Henry B. Gonzalez Convention Center, San Antonio, TX. <a href="http://www.p2-hwmconference.com/index.cfm">http://www.p2-hwmconference.com/index.cfm</a>
August 17-19	<b>2004 Geobase Compass Conference.</b> Henry B. Gonzalez Convention Center, San Antonio, TX. <a href="http://www.usafa.af.mil/iita/Conference.htm">http://www.usafa.af.mil/iita/Conference.htm</a>
August 23-26	<b>13<sup>th</sup> Annual ITAM Workshop.</b> Parks Reserve Forces Area, Camp Parks, CA. <a href="http://www.army-itam.com/workshop/overview.jsp">http://www.army-itam.com/workshop/overview.jsp</a>
August 22-27	<b>2004 DoD Conservation Conference.</b> Marriott Riverfront Hotel, Savannah, GA. <a href="http://www.dodconservationconference.com">http://www.dodconservationconference.com</a>
September 12-16	<b>National States Geographic Information Council (NSGIC).</b> Hyatt Regency Austin, Austin, TX. POC: Amanda Hermann, <a href="mailto:ahermann@amrinc.net">ahermann@amrinc.net</a> , <a href="http://www.nsgic.org">http://www.nsgic.org</a>
November 12-14	<b>24<sup>th</sup> Army Science Conference.</b> JW Marriott Orlando Grande Lakes, Orlando, FL. <a href="http://www.asc2004.com">www.asc2004.com</a>