

# **CADD/GIS TECHNOLOGY CENTER**

**For Facilities, Infrastructure and Environment**

**Harold L. Smith, Chief**

<http://tsc.we>

# Use of CADD & GIS Standards for Environmental Management

## 29<sup>th</sup> Annual Environmental & Energy Symposium & Exhibition

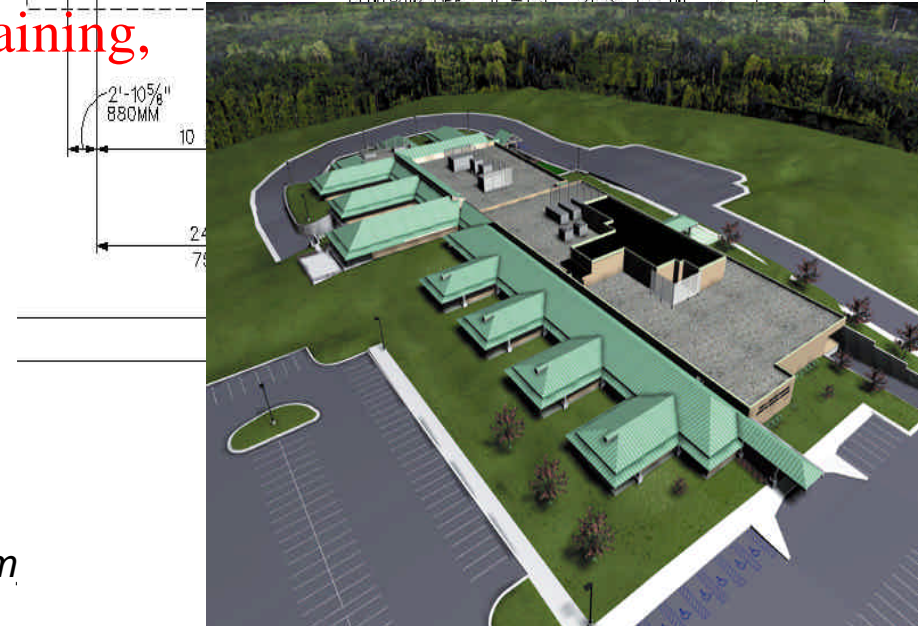
### April 7-10, 2003

CADD/GIS Technology Center Internet URL :  
<http://tsc.wes.army.mil>

# The CADD/GIS Technology Center

## *Our Mission*

Establish a multi-agency vehicle to coordinate CADD and GIS activities within the Department of Defense and with other participating governmental (federal, state and local) agencies, and the private sector. This includes **setting standards, promoting system integration, supporting centralized acquisition, and providing assistance for the installation/district, training, operation, and maintenance of and facilities management systems.**



## *Function*

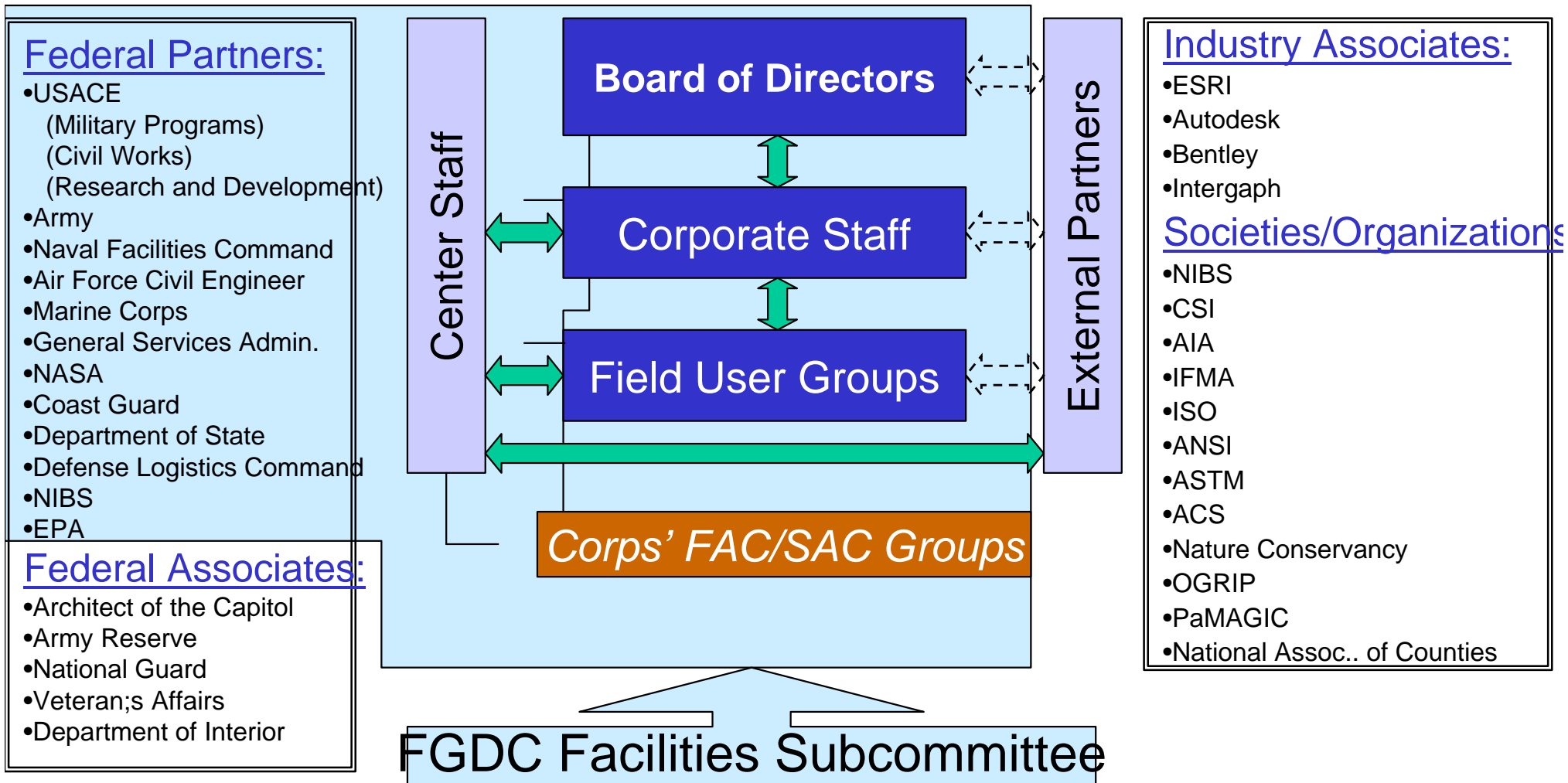
- Develop and Promote Standards
- Maintain Contract Vehicles
- Promote Communications
- Furnish Technical Advice
- Serve as an “Honest Broker”
- Perform Limited Applications Development
- Evaluate Technological Developments
- Interface with Professional Organizations and Industry
- Recommend CADD/GIS and FM Policy





# Center History

- 1987 Corps established CADD Center at WES
- 1989 CADD Center Expanded to Included DEHs
- 1990 CADD Center Expanded Activities to include GIS
- 1991 June, DMRD 982 Recommended Tri-Service CADD/GIS Technology Center at WES
- 1992 August, MOU signed by all 3 services and Corps Civil Works Directorate
- 1992 Tri-Service CADD/GIS Technology Center established at WES
- 1995 Coast Guard Joined the Group
- 1997 DLA Joined the Group
- 1999 Expanded CADD/GIS Role to other Federal Agencies
- 1999 Marine Corps, NASA, GSA, EPA, Dept of State Joined
- 1999 Entire Group Established as the FGDC Facilities Subcommittee
- 2000-03 Expanding Membership to other Agencies; USGS, IAI, NIMA,
- Smithsonian



Federal Partners:

- USACE  
(Military Programs)  
(Civil Works)  
(Research and Development)
- Army
- Naval Facilities Command
- Air Force Civil Engineer
- Marine Corps
- General Services Admin.
- NASA
- Coast Guard
- Department of State
- Defense Logistics Command
- NIBS
- EPA

Federal Associates:

- Architect of the Capitol
- Army Reserve
- National Guard
- Veteran;s Affairs
- Department of Interior

Industry Associates:

- ESRI
- Autodesk
- Bentley
- Intergaph

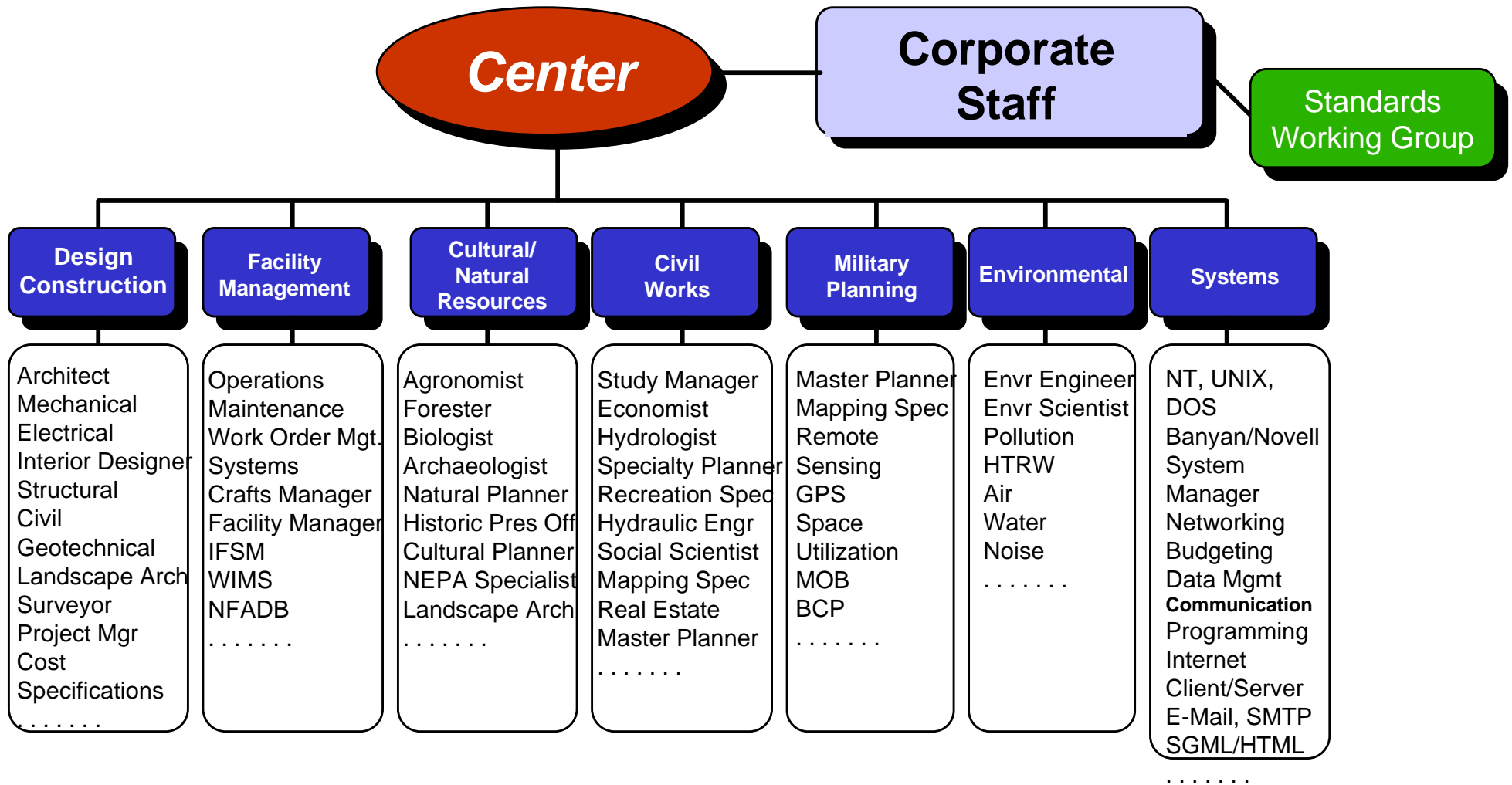
Societies/Organizations

- NIBS
- CSI
- AIA
- IFMA
- ISO
- ANSI
- ASTM
- ACS
- Nature Conservancy
- OGRIP
- PaMAGIC
- National Assoc.. of Counties

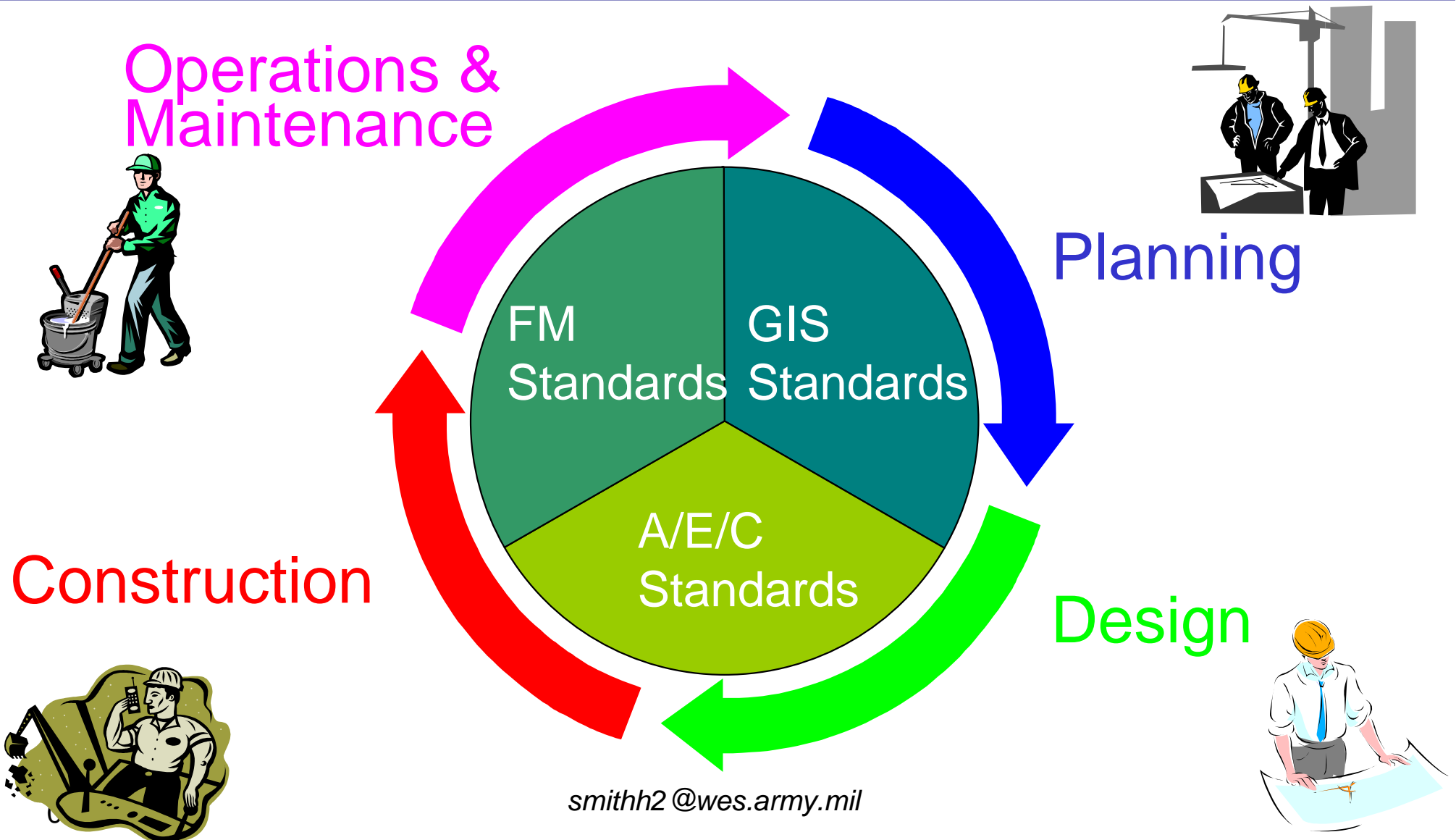
**FGDC Facilities Subcommittee**

smithh2@wes.army.mil

# Field Working Groups



# Life-Cycle Data Model





# CADD/GIS Standards Developments

A/E/C CADD  
Standard



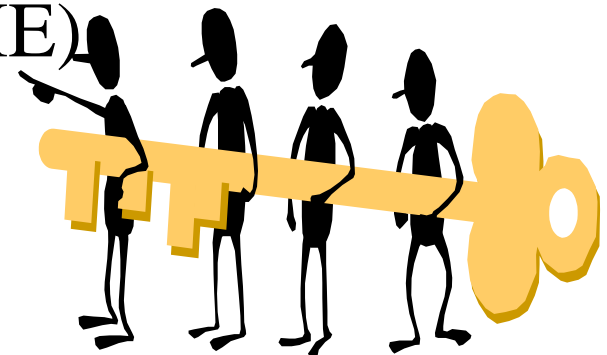
SDSFIE  
Standard



CADD/GIS  
Object  
Standards

# Current Profile of Standards

- Architect-Engineer (A-E) Deliverables Guidelines
  - A/E/C Guidelines
  - GIS/Spatial Data Guidelines
- Architectural/Engineering/Construction (A/E/C) CADD Standard
- Spatial Data Standard (SDSFIE) (GIS)
- Facility Management Standard (FMSFIE)
- Electronic Bid Solicitations (EBS)
- CADD & GIS Object Standards



# Federal Partners in Development of National CADD Standards

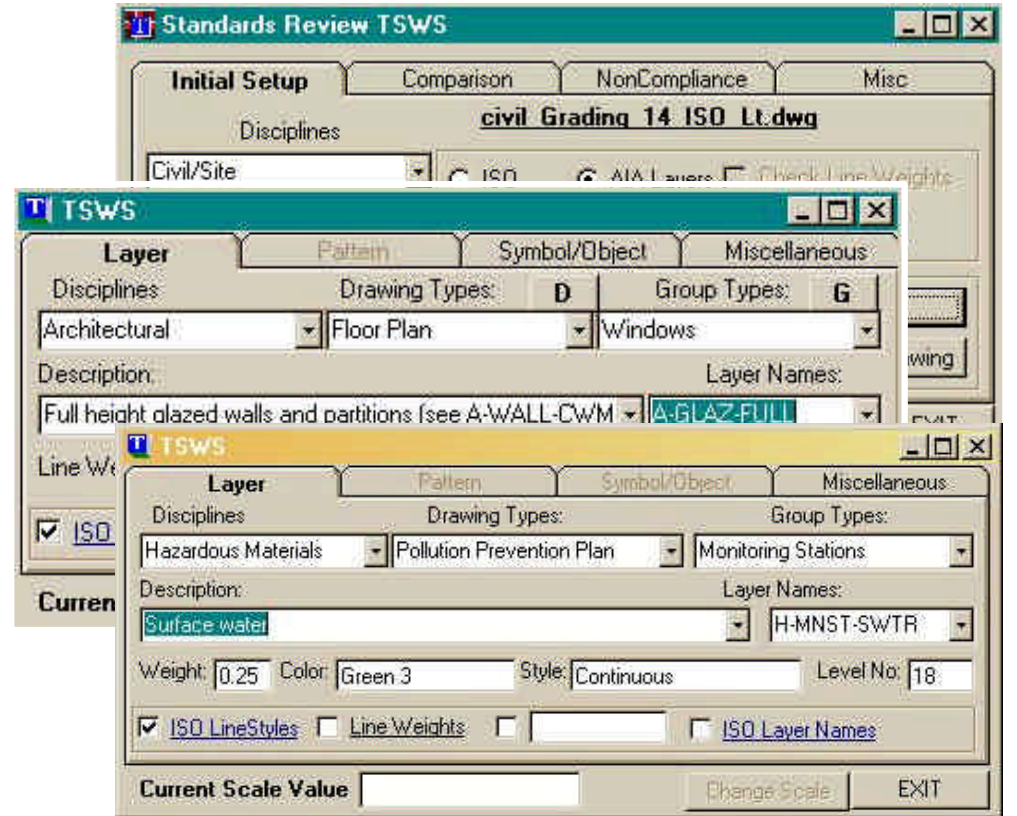
- *The A/E/C National CADD Standard*

- Army
- Navy
- Air Force
- Corps of Engineers
- Marine Corps
- NASA
- Coast Guard
- Department of State
- General Services Administration



# A/E/C CADD Standard

The A/E/C CADD Standard is a means of developing consistent CADD files within and between organizations. The A/E/C CADD Standard currently covers 14 disciplines and is compliant with the U.S. National CAD Standard.

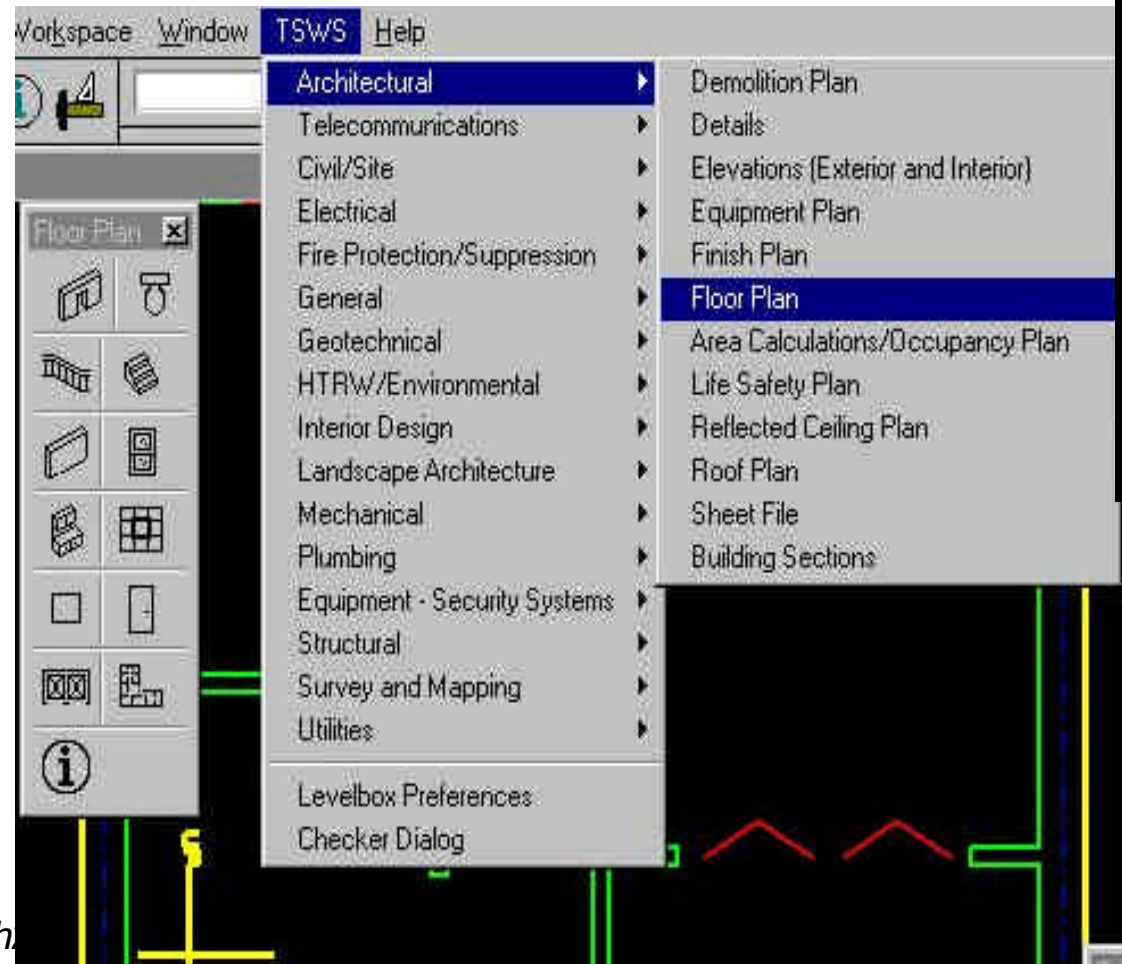




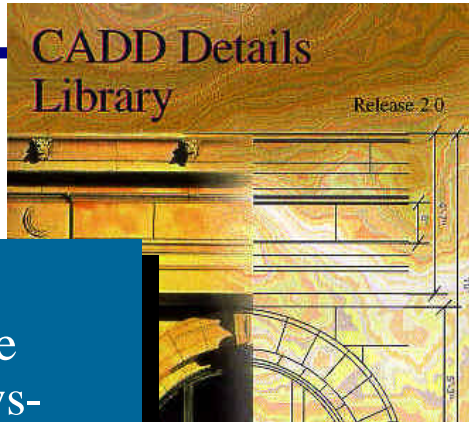
# A/E/C CADD Standard Workspace

The workspace provides a transparent means of conforming to the standard.

The user can select from pull down menus and drawing palettes to select a drawing item and the correct symbology is automatically set.

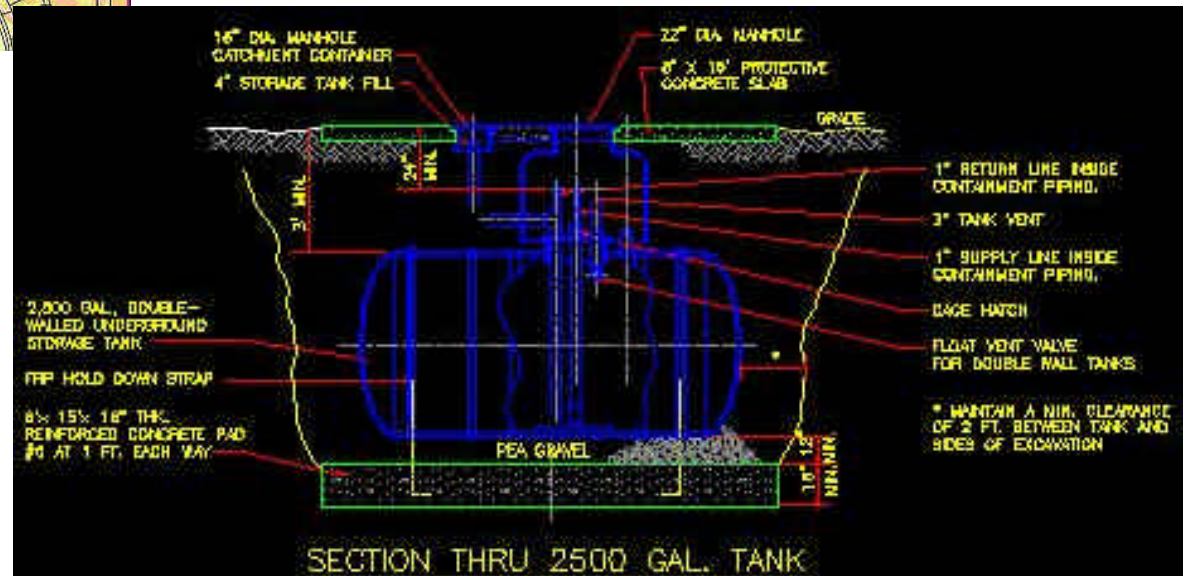


# CADD Details Library



- CADD Details Library  
 All details in the library  
 are in inch-pound  
 and metric

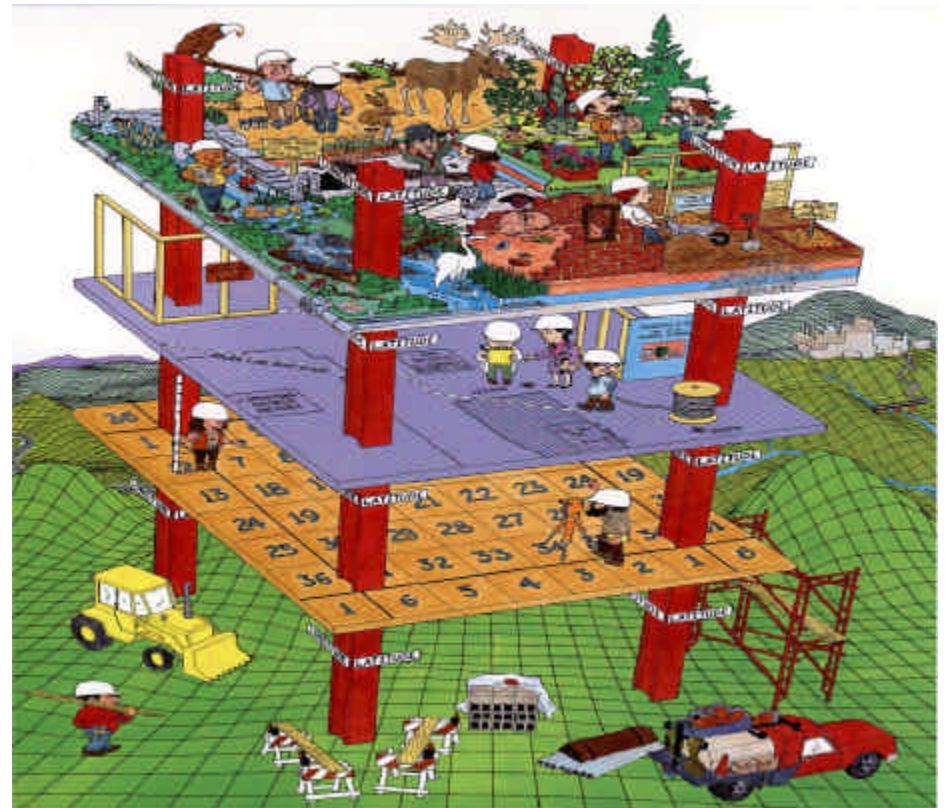
According to the Engineering News-Record, Federal appropriation for construction (including grants and aid to states) totaled about \$35 billion, to date. Over \$600 million in federal work is being readied for design award or is now in the design stage using metric units.



**3000 details now available online or in hardcopy**

# What is the Spatial Data Standard (SDSFIE)

- Large scale/high resolution geospatial data content and classification standards for *GIS*
- An integrated model of multi-thematic data content standards.
- An example of a Federal Geographic Data Committee data content standards *implementation.*





# Spatial Data Standard (SDSFIE)

## NCITS 353 (Spatial Data Standard for Facilities, Infrastructure, & Environment) –

- November 15, 2001 – NCITS 353 received final approval from NCITS Executive Committee.
- January 2002 – NCITS 353 CD reviewed and tested by Center



BSR NCITS 353

*for Information Technology –  
Geographical Information Systems –  
Spatial Data Standard for Facilities,  
Infrastructure, and Environment (SDSFIE)*



# Entity Sets

- Broad grouping for data management purposes
- Entity Sets (26 Themes in SDSFIE Release 2.2)

**Landform**

**Geology**

**Soil**

**Hydrography**

**Flora**

**Fauna**

**Climate**

**Visual**

**Future\_Projects**

**Olfactory**

**Auditory**

**Cultural**

**Land Status**

**Buildings**

**Improvements**

**Utilities**

**Communications**

**Environmental Hazards**

**Boundary**

**Cadastral**

**Geodesy**

**Transportation**

**Demographics**

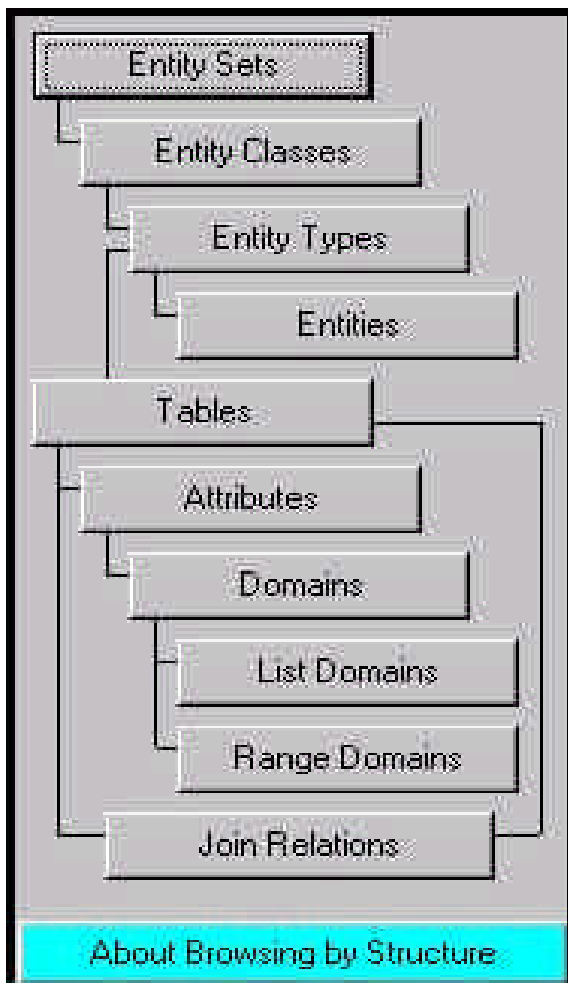
**Military Operations**

**Ecology**

**Common**

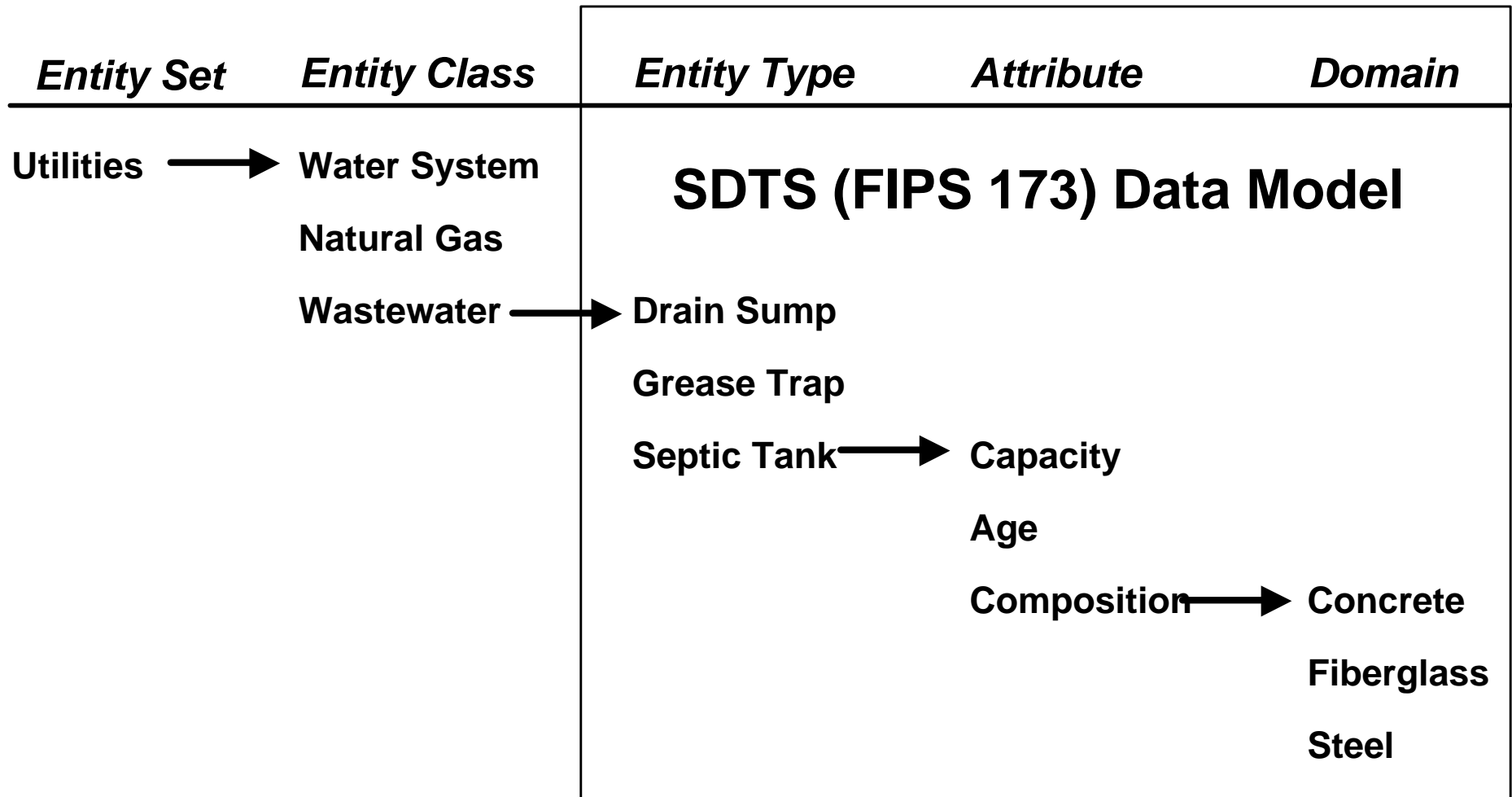
# Data Model Sch

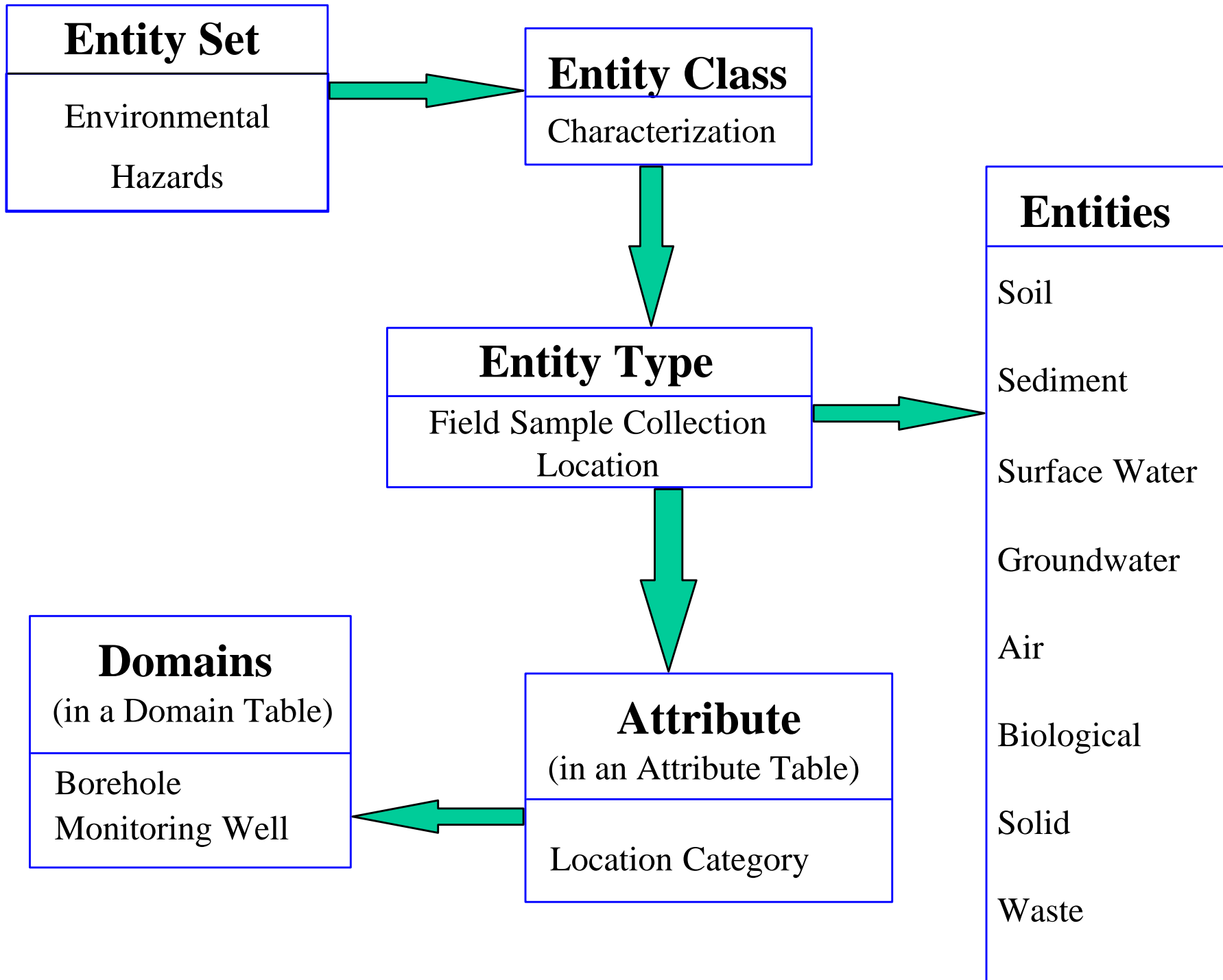
## SDSFIE Release 2.200



|        |  |
|--------|--|
| 26     | Entity Sets                            |
| 169    | Entity Classes                         |
| 967    | Entity Types                           |
| 6,811  | Entities (CADD & CADD Based GIS)       |
| 1,055  | Attribute Tables (Database Tables)     |
| 27,239 | Attributes (Fields in Tables)          |
| 1,022  | Domain Tables (List & Range)           |
| 22,749 | List Domain Values                     |
| 17     | Range Domains                          |
| 8,503  | Relational Database Join Relationships |

# SDSFIE Relational Data Model







# Number of Attributes in Each

|                               |                   |
|-------------------------------|-------------------|
| Utilities (6,272)             | Cultural (595)    |
| Environmental Hazards (5,160) | Fauna (589)       |
| Transportation (2,985)        | Landform (576)    |
| Improvements (2,983)          | Land Status (576) |
| Communications (1,153)        | Geology (477)     |
| Hydrography (1,088)           | Geodetic (427)    |
| Cadastral (861)               | Soil (326)        |
| Common (826)                  | Boundary (216)    |
| Military Operations (683)     | Climate (192)     |
| Flora (654)                   | Buildings (166)   |

# Number of Attributes in Each

Auditory (128)

Ecology (99)

Visual (87)

Demographics (73)

Olfactory (29)

Future Projects (28)



# Environmental Compliance GIS Data Content Standards Incorporated into SDSFIE

- Polychlorinated Biphenyls (PCBs)
- Lead Paint
- Indoor Air Quality
- Hazardous Waste
- Hazardous Materials
- Air Quality & Emissions
- Asbestos Containing Materials
- Regulated Storage Tanks
- Surface Water Discharges (NPDES Permits)
- Toxic Substances
- Environmental Sites



# Environmental Restoration GIS Data Content Standards Incorporated into SDSFIE

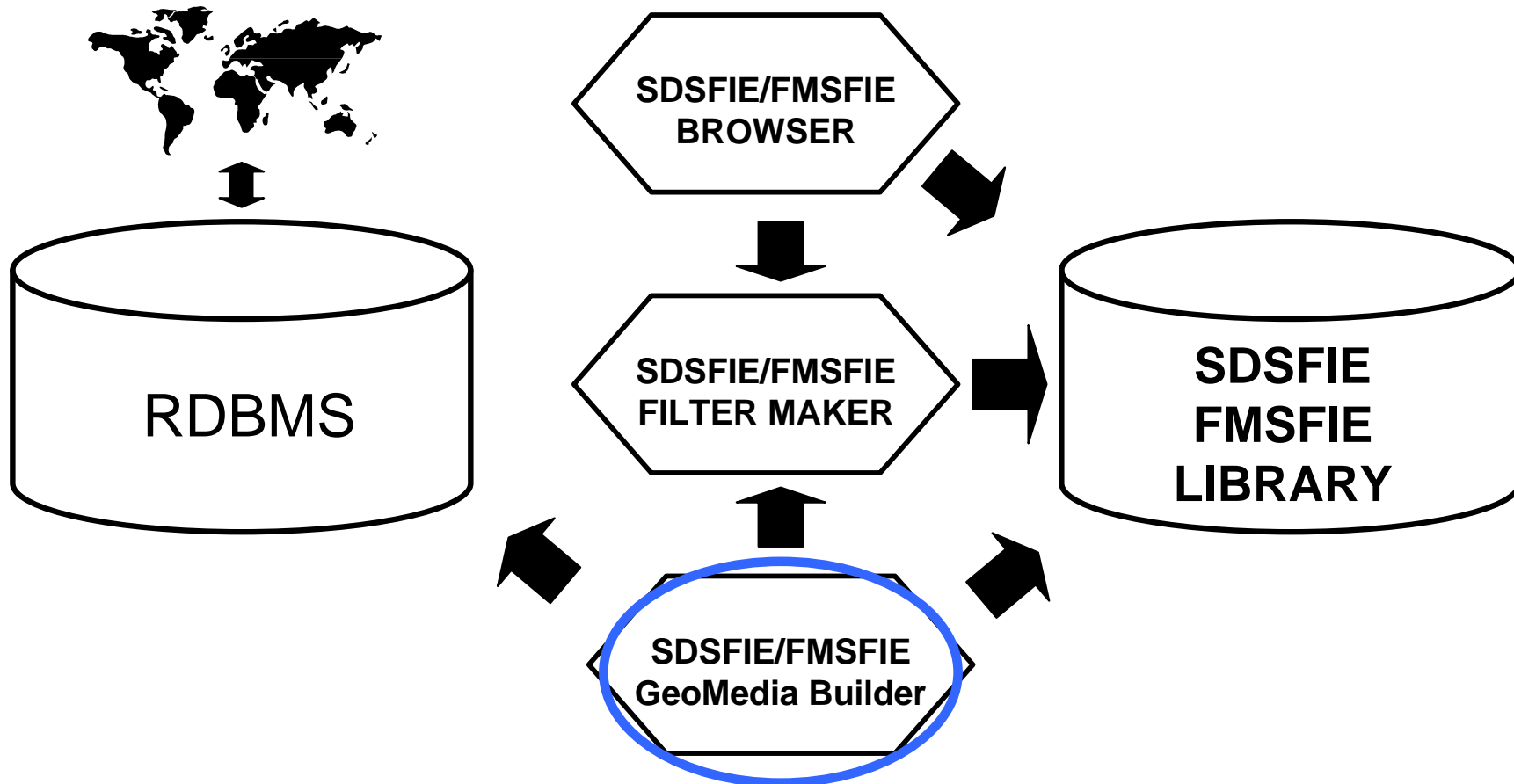
- Boreholes
- Wells
- Environmental Field Sample Collection,  
Analysis, & Results
- Environmental Sites (FUDS, IRP, Superfund,  
Brownfields)
- Environmental Remediation

# Release 2.20 SDSFIE Software Toolbox

1. **Browser** – Permits viewing & printing of SDSFIE.
2. **Filter Maker** – Permits customer selection of SDSFIE Subset for specific project or organization.
3. **Filter Eraser** – Enables deletion of customer developed Filters no longer needed.
4. **Access Builder** – Creates SDSFIE compliant Access 97 or 2000 blank databases.
5. **SQL Generator** – Generates scripts for Oracle, Informix, SQL Server, ANSI SQL to create databases
6. **GeoMedia Builder** – Builds SDSFIE compliant Intergraph GeoMedia database Warehouse.
7. **Geodatabase Builder** – Permits construction of SDSFIE compliant ESRI Arc 8.x Personal Geodatabase (Access 2000)
8. **Access Data Creator** – Data Entry Tool
9. **Diagnostics and Upgrades** – Analyzing and upgrading to new releases
10. **Geodatabase Loader** – Data Entry for a Geodatabase



# SDSFIE Tools



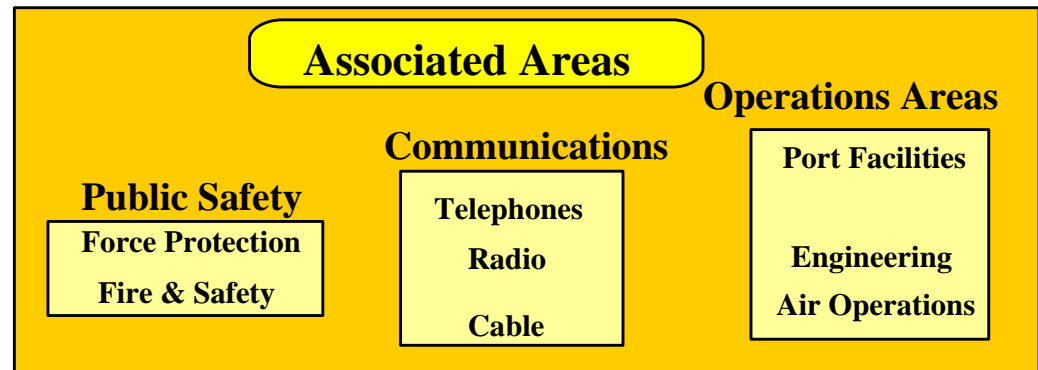
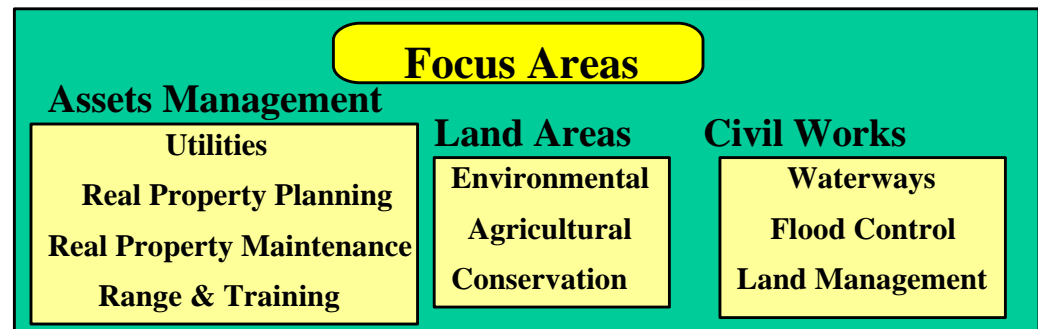
# Facility Management Standard (FMSFIE)

## FM Strategic Plan –

- Provides goals and objectives for development of FMSFIE.
- Provides plan for migrating FMSFIE to a transactional data model.



### Transactional FMSFIE Focus Areas

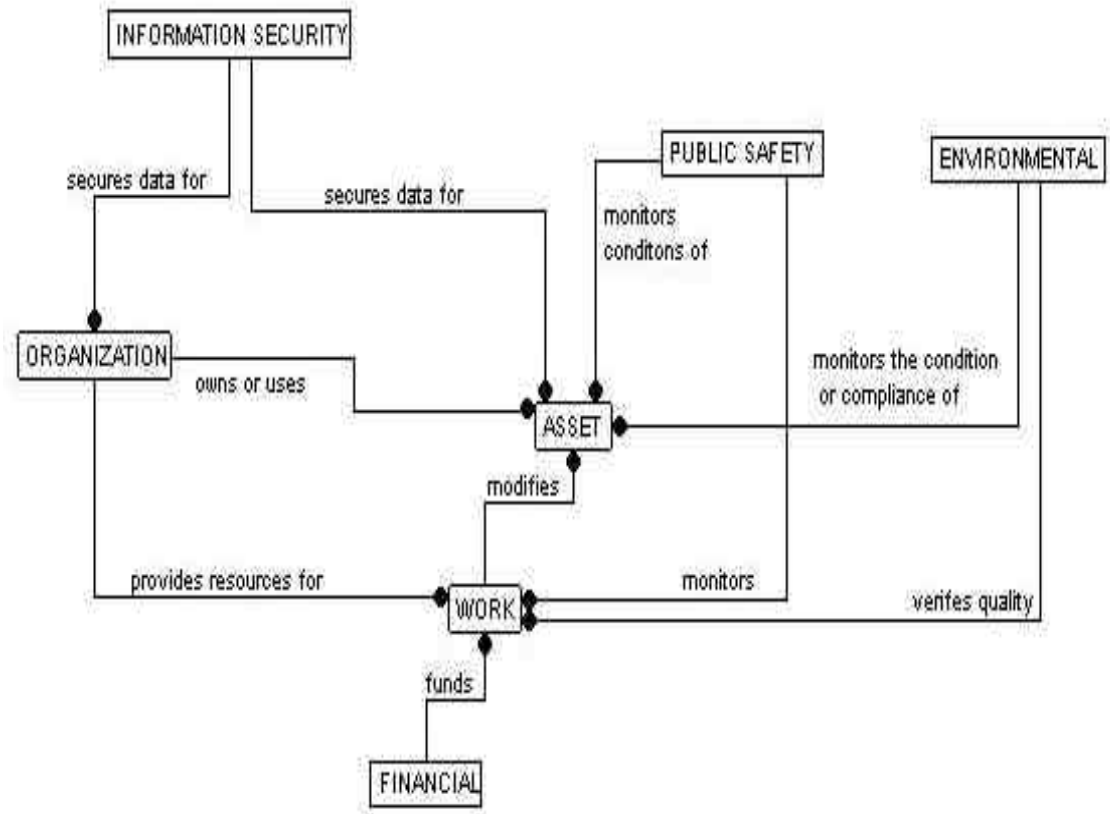


# Facility Management Standard (FMSFIE)

## Component 1 – Prepare Technical Content/Guidance for FMSFIE Release

### Transactional FMSFIE –

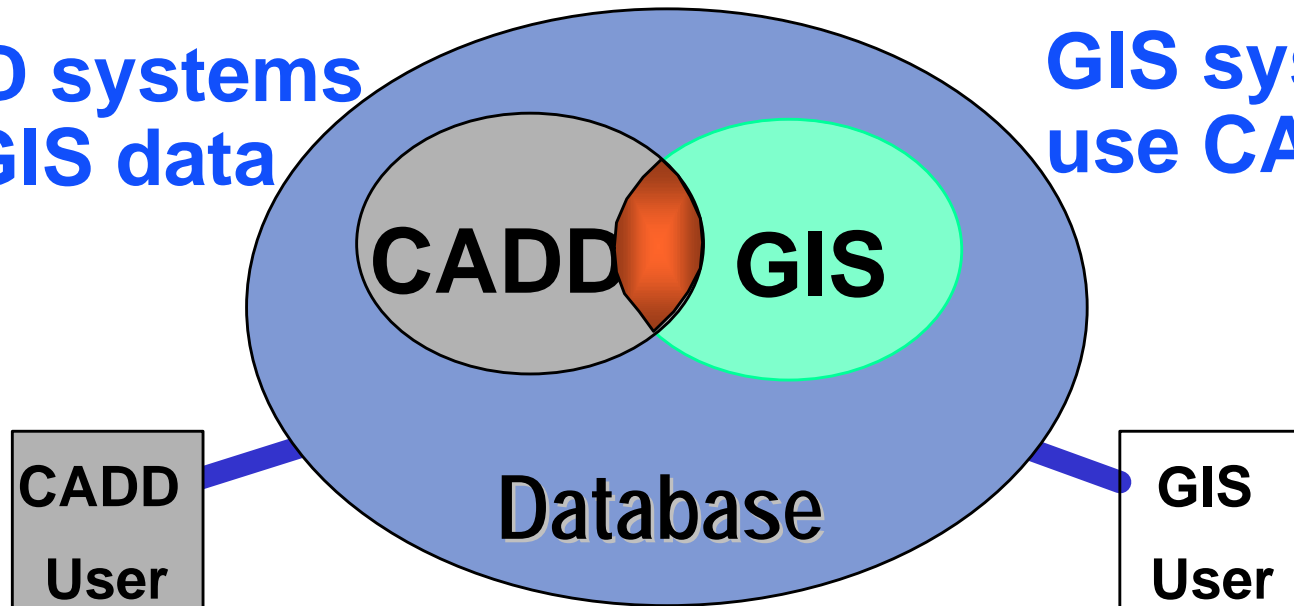
- Includes seven Entity Sets:
  - Assets
  - Work
  - Environmental
  - Organization
  - Public Safety
  - Information Security
  - Financial
- Guidelines for development determined by FM Focus Group.



# Data Integration in a Database

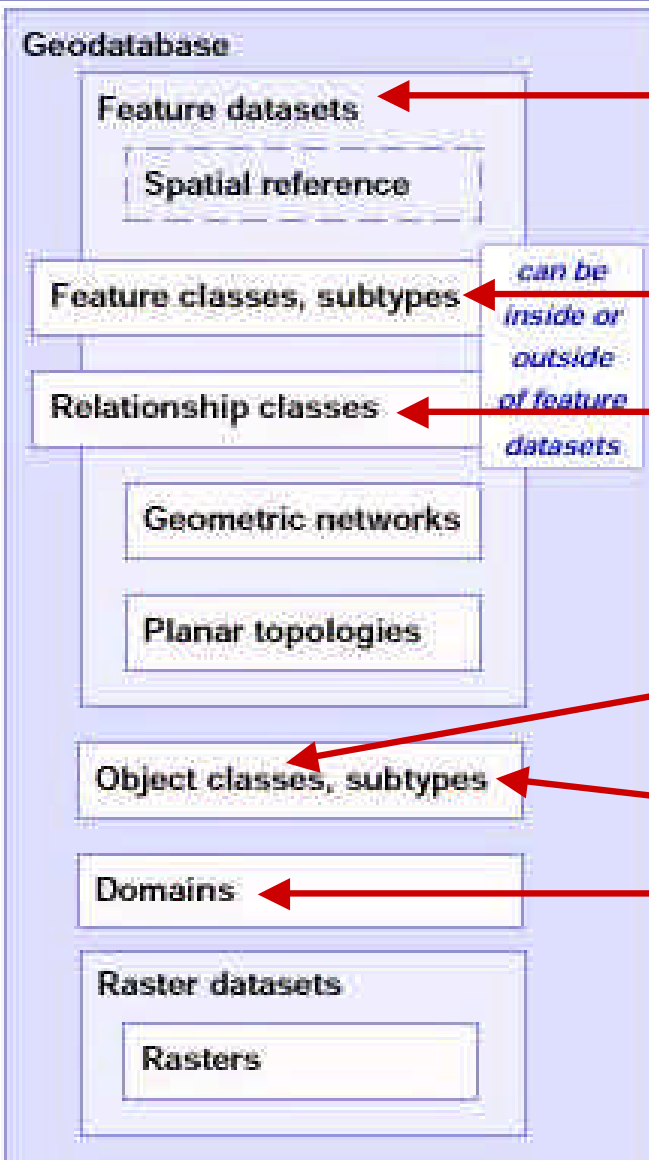
**CADD systems  
use GIS data**

**GIS systems  
use CADD data**



**Data maintained in a single environment**

# SDSFIE Geodatabase Object-Relational Model



SDSFIE Entity Set/Entity Classes

SDSFIE Entity Types

SDSFIE Joins/Relationships

SDSFIE non-graphic tables (FM)

SDSFIE discriminators +

SDSFIE domain tables

# Real Property Enterprise System (RPES)

**The development of RPES  
presents an opportunity to  
utilize the FMSFIE as a  
data content standard for  
the DoD**

**Status:**

- White paper under development for distribution to OSD Proposed work:
  - Developed correlation matrix between RPES requirements and FMSFIE
  - May require refinement of the FMSFIE data model
  - Provide Filter within FMSFIE (may require additional tools and update to Browser)

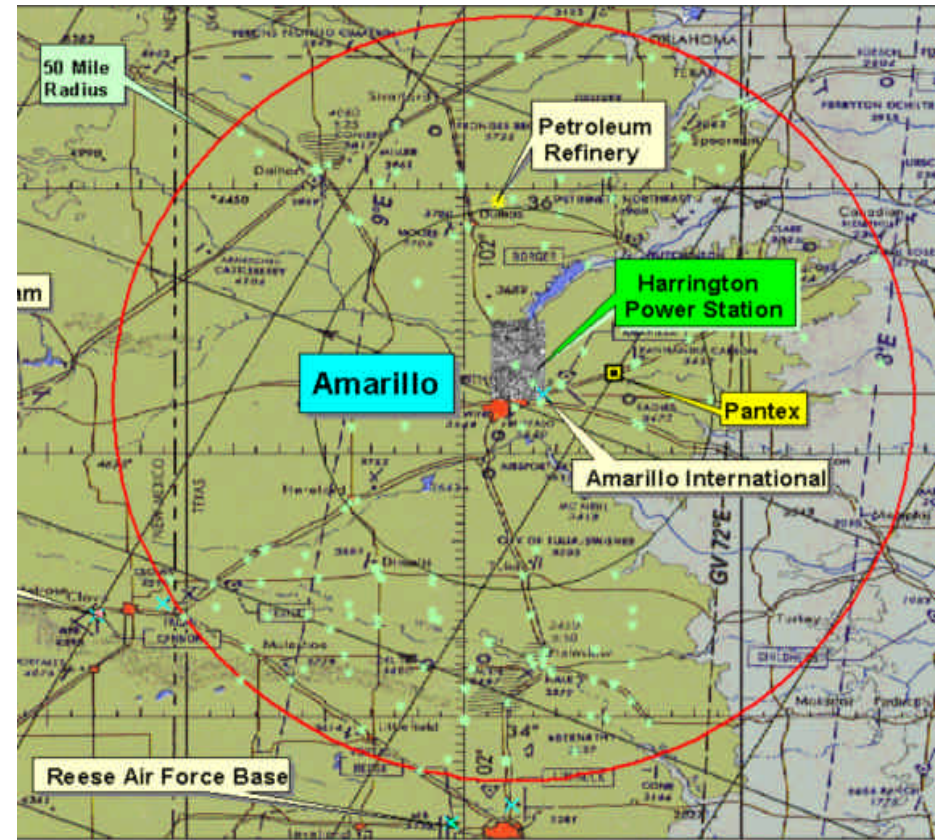




# Homeland Security Infrastructure Program

The development of a Homeland Security Infrastructure Program (HSIP) presents an opportunity to utilize the SDSFIE/FMSFIE as a data format standard for the HSIP's Minimum Essential Data Sets (MEDS)

- Work Underway:
  - Developing a correlation matrix of MEDS requirements with SDSFIE
  - Review results with HSIP team
  - Incorporate MEDS into SDSFIE
  - Provide Filter within SDSFIE (may require additional tools and update to Browser)
  - Incorporating the EM requirements from a Boston, Mass EM Pilot project



# FY03 Spatial Data Standard (SDSFIE) Development

- Incorporating Federal policies and standards for Historic Buildings in SDSFIE
- Evaluating FEMA geospatial requirements and integrating with SDSFIE
- Adding military training range requirements to the SDSFIE
- Evaluating OE Standard developed for Huntsville District Corps of Engineers



# Policies/Guidance on CADD/GIS Standards

- Corps of Engineers – ER-1110-1-8156 and EM-1110-1-2909
- Army – ASCIM Interim Policy Memo (AR 210-20)
- Air Force – Required by GeoBase Initiative
- Navy – Interim Policy Memo from NAVFAC on GeoReach Initiative

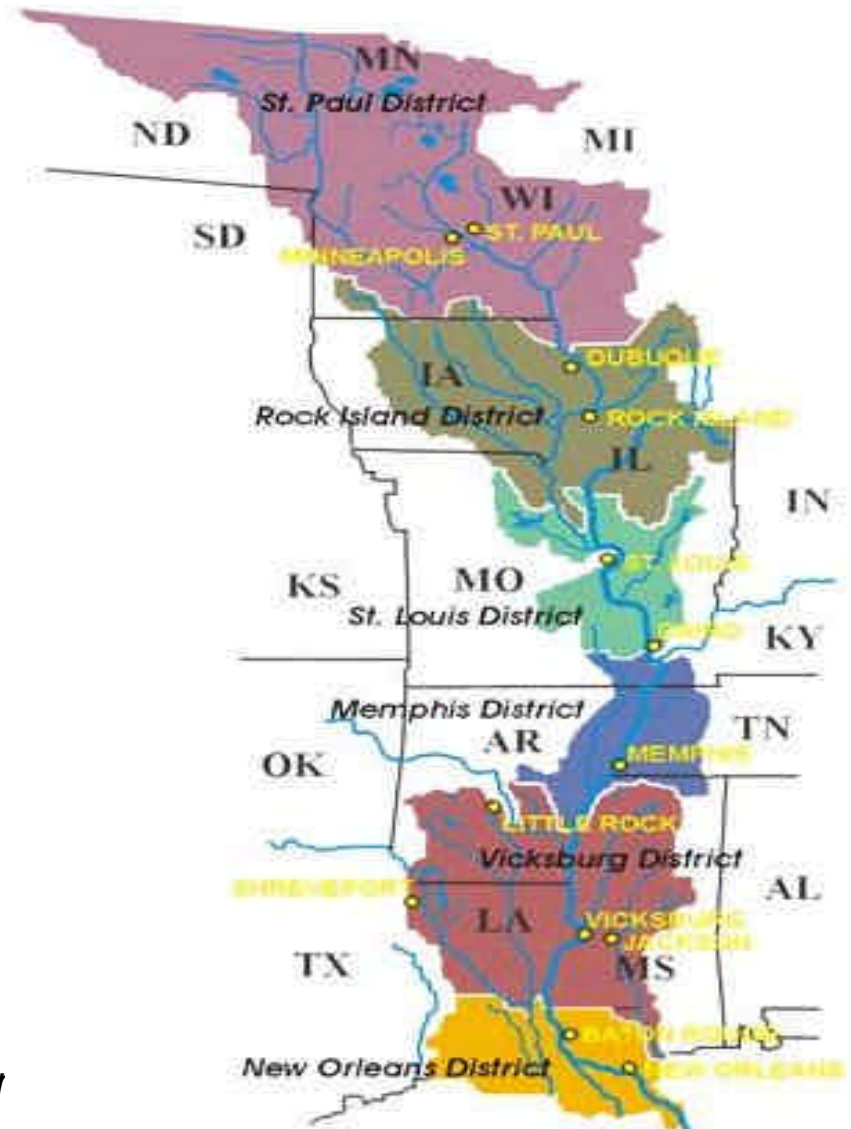
# Benefits of Using CADD, GIS, & FM Data Content Standards

- Standard Data Collection Requirements
- One Training Program
- Common Software Applications
- Standard Implementation Procedures and Requirements
- Common Data Model which Permits the Sharing of Data
- Nonproprietary Data Model (SDSFIE & ANSI NCITS 353)



# Benefits of Using a Data Content Standard

- U.S. Army Corps of Engineers Mississippi Valley Division (CEMVD) adopted SDSFIE as GIS Standard for their GIS (called Regional Engineering & Environmental GIS (REEGIS)).
- REEGIS is used by all Six Districts within their Division. Each District maintains their part of REEGIS.
- Some Districts use Intergraph MGE & GeoMedia, whereas other Districts use ESRI ArcView, ARCINFO, & ArcGIS.
- Geospatial data can be shared between Districts & MVD, even though they use different GIS software programs.



# Benefits of Using a Data Content Standard

## ◆ Common Data Model which Permits the Sharing of Data

### – Fort Bragg

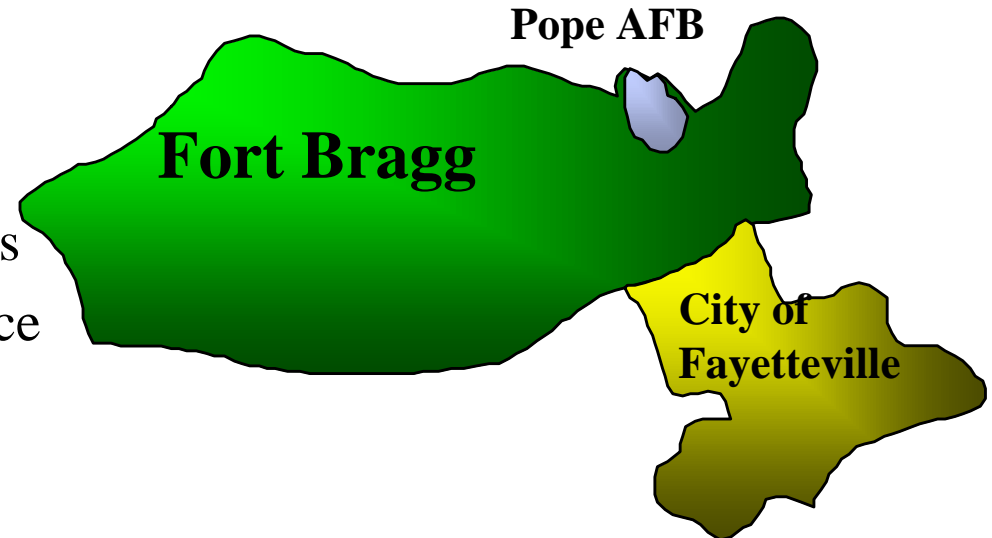
- ◆ Pope AFB Assets
- ◆ BRAC and Mobilization Plans
- ◆ Utilities and Drainage Interface

### – Pope Air Force Base

- ◆ Site Drawings and As-Builts

### – City of Fayetteville

- ◆ Hurricane Evacuation Plan
- ◆ Cadastral Data and Demography
- ◆ Utilities and Drainage Interface





# Training

- **Courses**

- Electronic Bid Solicitation

*PROSPECT Course*

- SDSFIE Implementation Workshop  
(Mar '03) Vicksburg, MS

- A/E/C Implementation Workshop  
(Dec '02) New York District

- GIS/GPS  
(Mar '03) Vicksburg, MS  
*PROSPECT Course*



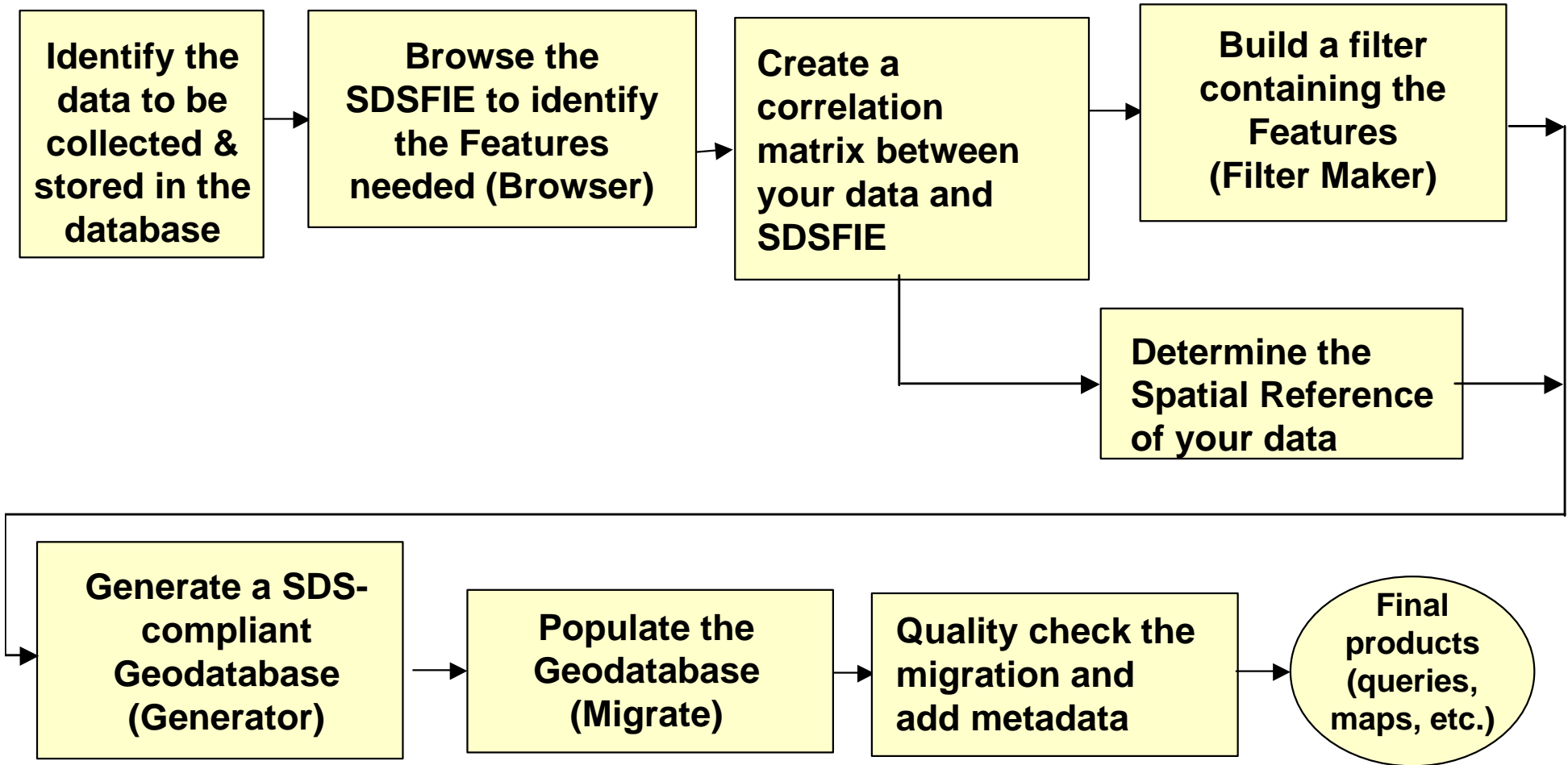
The SDS workshop was excellent. Denise, Nancy and Barry did an great job of teaching the course. I like what you all are doing for GIS, and I am looking forward to putting it to use.

*David Hawley,  
Civil Engineer*

Thanks again for a great SDS Implementation workshop. A rather dry sounding topic was actually quite useful, and the training course was one of the best I have had during my time with the Corps.

*Heather Henneman,  
Hydraulic Engineer*

# Steps for Implementing the SDSFIE

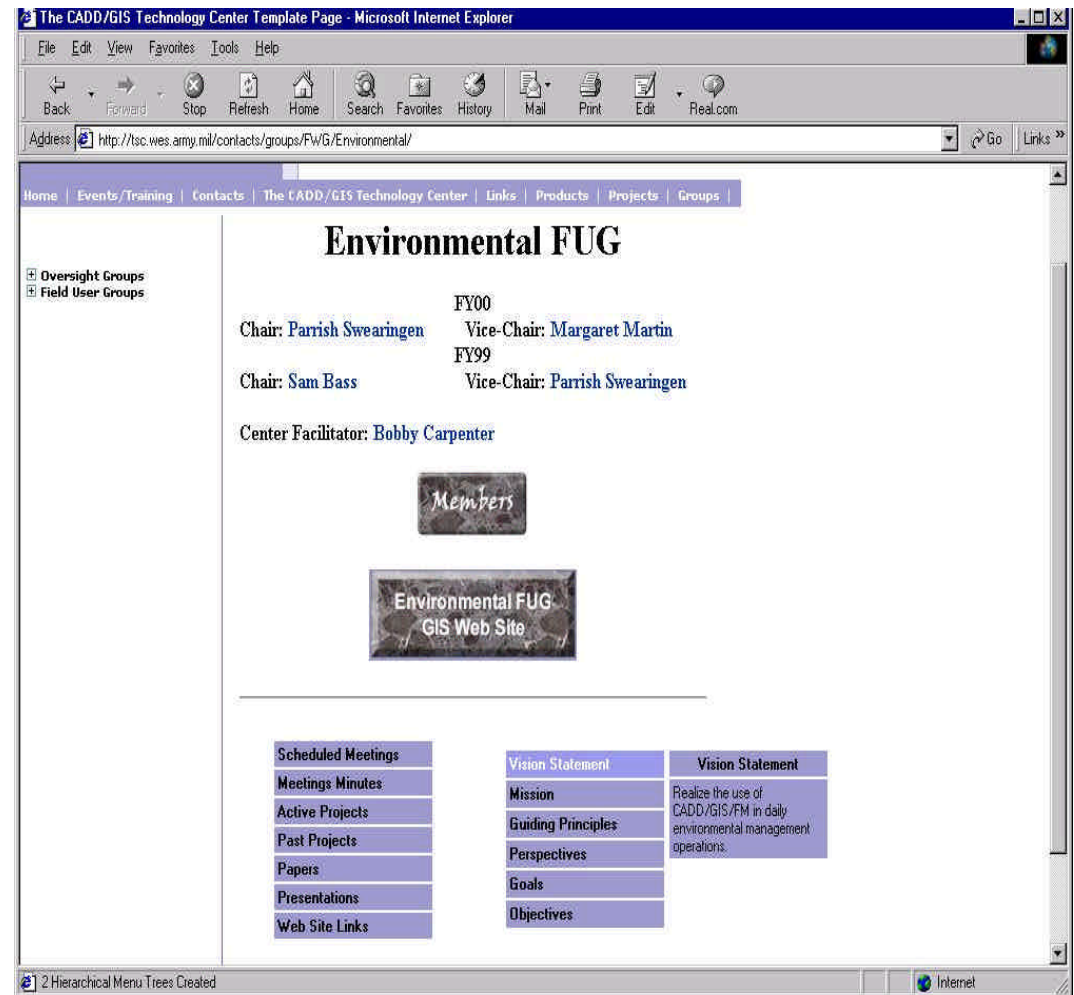


# Environmental Field Working Group

## Internet Website

- Go to CADD/GIS Technology Center Website (<http://tsc.wes.army.mil>). Then select “Groups” & “Environmental”.
- Contains information on projects, Environmental Restoration & Compliance GIS related topics, & meeting minutes.

Center POC – Bobby Carpenter



# Development of SDSFIE to GMS Interface

Address: <http://chl.wes.army.mil/software/gms/>

@ home  
**GHL**

- Overview
- New Features
- GMS Modules
- GMS Supported Models
- Visualization
- Conceptual Modeling Approach
- System Requirements
- Download GMS
- GMS Documentation
- GMS Registration
- FAQ
- Support
- Policy

Take a look at SMS and WMS



**Department of Defense  
Groundwater Modeling System**

The Department of Defense Groundwater Modeling System (GMS) is the most sophisticated groundwater modeling environment available today.

**Watch A Movie About GMS**

**Current GMS version - 3.0**

The Department of Defense, in partnership with the Department of Energy, the U.S. Environmental Protection Agency, Cray Research, and 20 academic partners, has developed the DoD Groundwater Modeling System. The GMS provides an integrated and comprehensive computational environment for simulating subsurface flow, contaminant fate/transport, and the efficacy and design of remediation systems.

GMS integrates and simplifies the process of groundwater flow and transport modeling by bringing together all of the tools needed to complete a successful study. GMS provides a comprehensive graphical environment for numerical modeling, tools for site characterization, model conceptualization, mesh and grid generation, geostatistics, and sophisticated tools for graphical visualization. What's more, all this is available for both PC and UNIX based operating systems.

**Objective:** Develop electronic interface to extract data from a Spatial Data Standard (SDSFIE) compliant GIS database and load it into the Department of Defense (DoD) Ground Water Modeling System (GMS) for environmental groundwater modeling and analysis.

# Use of GIS to Meet Clean Air Act (CAA) & SARA Title III Data Reporting Requirements

- **Objective:** Develop data model and GIS data content standard for:
  - Clean Air Act (CAA)
  - Superfund Amendments and Reauthorization Act (SARA) Title III (Right-to-Know)



– **Project Web Site (Environmental FWG Website) -**

[http://tsc.wes.army.mil/contacts/groups/FWG/Environmental/envprojects/01.016/01\\_016.htm](http://tsc.wes.army.mil/contacts/groups/FWG/Environmental/envprojects/01.016/01_016.htm)



# Use of GIS to Simplify EIAP

## Objective:

- Develop web and GIS based electronic checklist for Environmental Impact Analysis Process (EIAP).
- EIAP is method commonly used for ensuring that new construction projects are in compliance with National Environmental Policy Act (NEPA) legal requirements.



By Jim Weaver / courtesy USFWS

– **Project Website (Environmental FWG Website):**

[http://tsc.wes.army.mil/contacts/groups/FWG/Environmental/envprojects/01.040/01\\_040.htm](http://tsc.wes.army.mil/contacts/groups/FWG/Environmental/envprojects/01.040/01_040.htm)



# 01.040 – Use of GIS to Simplify EIAP



CADD/GIS  
**TECHNOLOGY**  **CENTER**  
*for facilities, infrastructure, and environment* **CADD and Geospatial Technologies**

HOME INSTRUCTIONS EPC APPLICATION FYI

**Environmental Planning Checklist**




- Section**
- 1 Soil Disturbance
  - 2 Storm Water and Wastewater
  - 3 Critical Area and Coastal Zone
  - 4 Historic Preservation
  - 5 Capital Improvements
  - 6 Endangered Species
  - 7 Land Use
  - 8 Tree Clearing
  - 9 Bird/Aircraft Strikes
  - 10 Deer Auto Collision
  - 11 Pesticides
  - 12 Solid Waste and Recycling
  - 13 Hazardous Waste and Materials
  - 14 Polychlorinated Biphenyls (PCB)
  - 15 Air Quality (Emissions)
  - 16 Drinking Water
  - 17 Installation Restoration
  - 18 Petroleum Systems
  - 19 Oil Control
  - 20 Groundwater Monitoring Wells
  - 21 Asbestos
  - 22 Lead
  - 23 Socioeconomics
  - 24 Traffic
  - 25 Noise
  - 26 Aesthetics
  - 27 Environmental Justice

## Environmental Planning Checklist

< Select a section from the list at left.

You may begin in any of the available 27 sections.

As you proceed through the checklist, you will see the following symbols indicating your progress in each section:

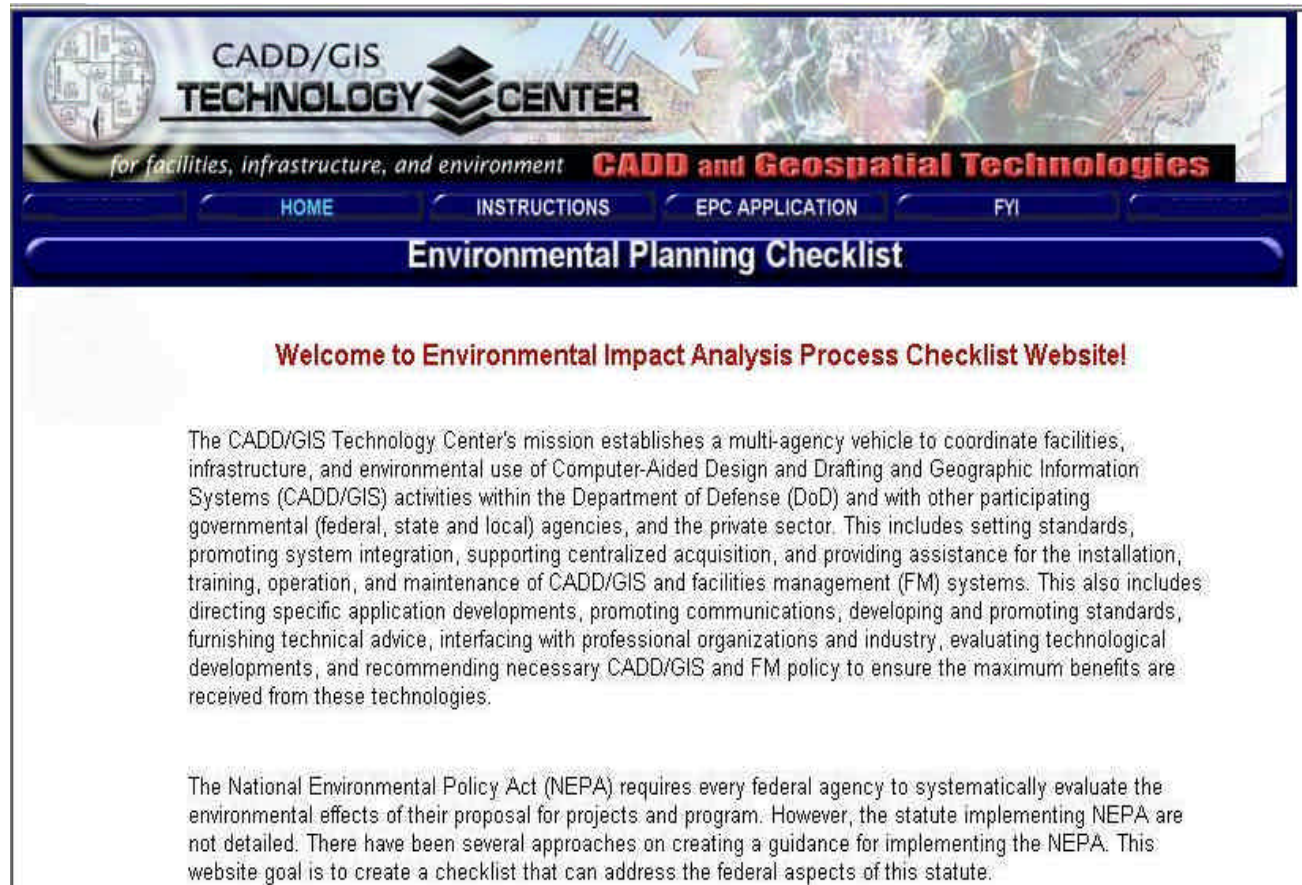
- Section not yet visited - 
- Section partially completed - 
- Section completed - 



< When you see this icon, place you mouse over the icon to see special instructions.

# 01.040 – Use of GIS to Simplify EIAP

- Web-Based Application requires installation on server with Microsoft Active Server Page (ASP) software.
- Can be accessed via Internet using Internet Explorer or Netscape browser. Requires download and installation of free Macromedia Shockwave Player plug-in.



The screenshot shows the website header with the CADD/GIS Technology Center logo and navigation links: HOME, INSTRUCTIONS, EPC APPLICATION, and FYI. The main heading is "Environmental Planning Checklist". Below this, there is a red banner that reads "Welcome to Environmental Impact Analysis Process Checklist Website!". The main content area contains two paragraphs of text. The first paragraph describes the CADD/GIS Technology Center's mission, which is to coordinate facilities, infrastructure, and environmental use of Computer-Aided Design and Drafting and Geographic Information Systems (CADD/GIS) activities within the Department of Defense (DoD) and with other participating governmental (federal, state and local) agencies, and the private sector. The second paragraph discusses the National Environmental Policy Act (NEPA) and the need for a checklist to address the federal aspects of this statute.

**Welcome to Environmental Impact Analysis Process Checklist Website!**

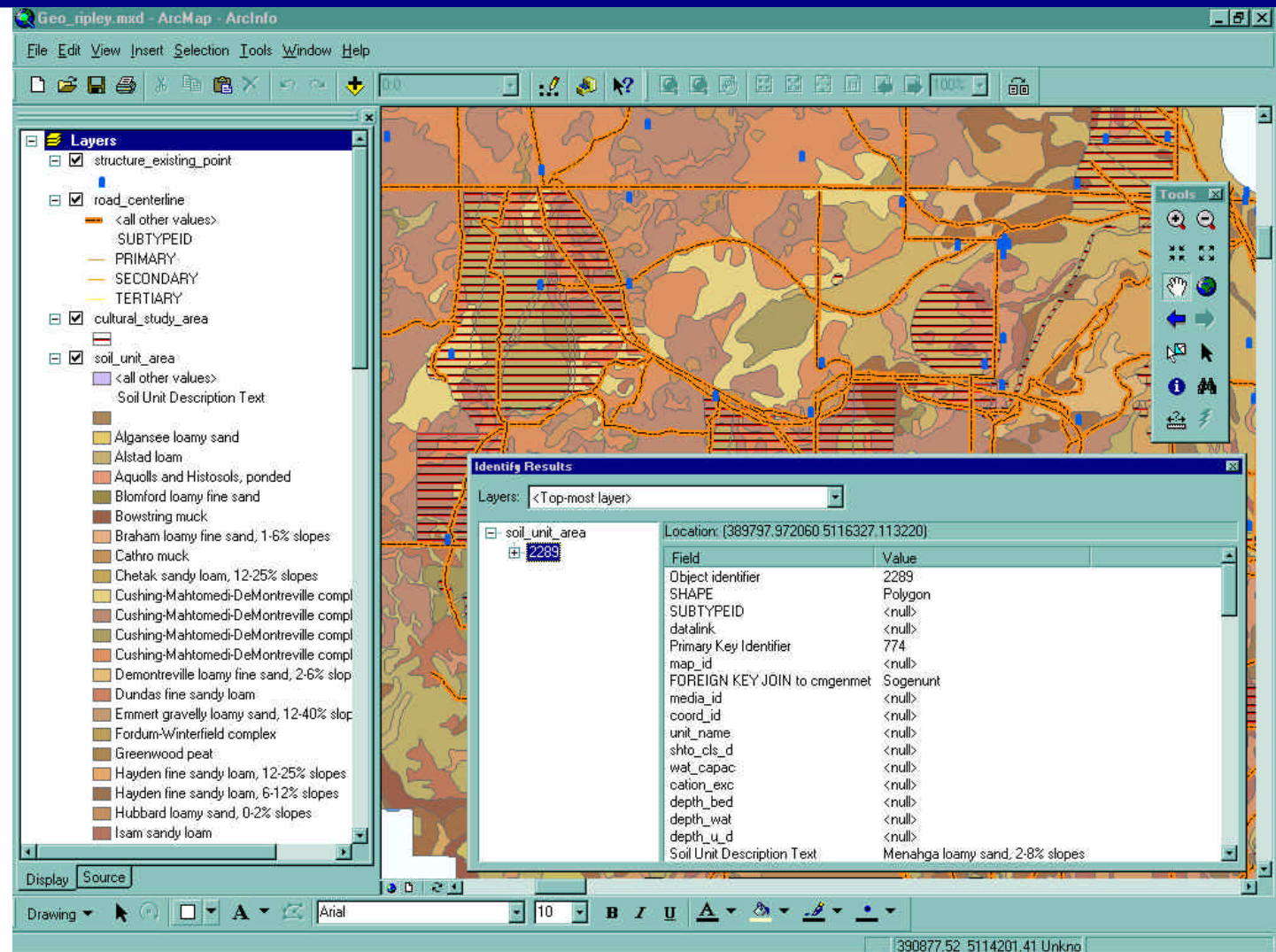
The CADD/GIS Technology Center's mission establishes a multi-agency vehicle to coordinate facilities, infrastructure, and environmental use of Computer-Aided Design and Drafting and Geographic Information Systems (CADD/GIS) activities within the Department of Defense (DoD) and with other participating governmental (federal, state and local) agencies, and the private sector. This includes setting standards, promoting system integration, supporting centralized acquisition, and providing assistance for the installation, training, operation, and maintenance of CADD/GIS and facilities management (FM) systems. This also includes directing specific application developments, promoting communications, developing and promoting standards, furnishing technical advice, interfacing with professional organizations and industry, evaluating technological developments, and recommending necessary CADD/GIS and FM policy to ensure the maximum benefits are received from these technologies.

The National Environmental Policy Act (NEPA) requires every federal agency to systematically evaluate the environmental effects of their proposal for projects and program. However, the statute implementing NEPA are not detailed. There have been several approaches on creating a guidance for implementing the NEPA. This website goal is to create a checklist that can address the federal aspects of this statute.



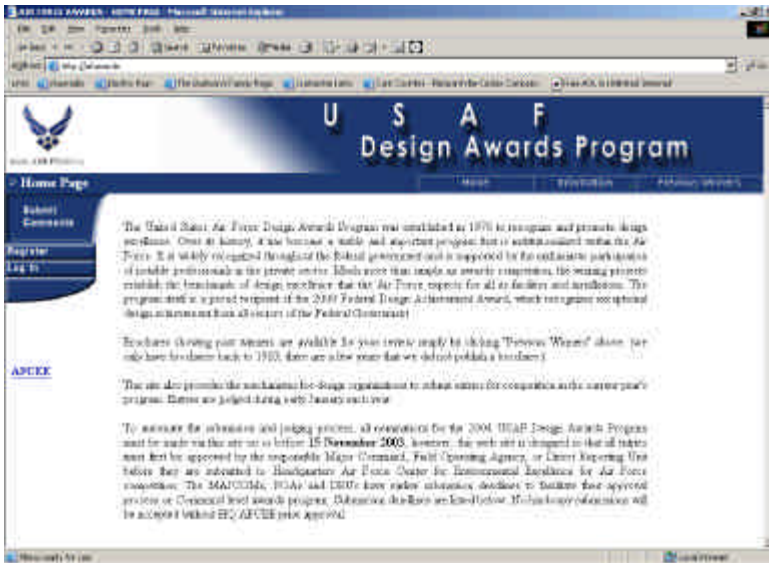
# Army National Guard Bureau ITAM Geodatabase Project

- Converted NGB stove-piped flat files into an object-relational database
- Enabled analysis of different data in an enterprise system
- Put the power of “map making” into the hands of the users

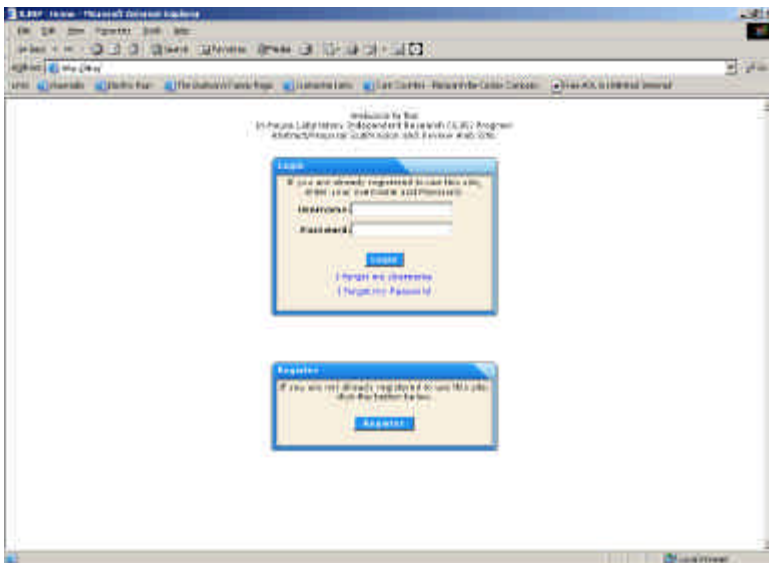


## USAF Design Awards Program

This site recognizes excellence in design and environmental achievement by the USAF and its professional partners. All information, evaluations, and supporting images are submitted via the site.



## In-house Laboratory Independent Research (ILIR) Program Abstract/Proposal Submission and Review Web Site



# SEMP Data Repository Web Site

Developing a portal-based Web site for Distribution and Collection of SERDP Ecological Data from 5 R&D Programs and a permanent long term monitoring program for Ft. Benning



# Electronic Bid Solicitations

| Solicitation Number  | Title                           | Location | Media | Issue Date | Closing Date        |
|--|---------------------------------|----------|-------|------------|---------------------|
| <b>Construction</b>  |                                 |          |       |            |                     |
| <a href="#">OACAS00-00-0001</a><br><del>Amend 09/02/2000</del> | Solicitation with 2 Amendments  | Missouri |       | 9/2/00     | 12/21/00<br>2:00 PM |
| <a href="#">OACAS00-00-0002</a><br><del>Amend 09/02/2000</del> | Web-only Solicitation           | Missouri |       | 9/2/00     | 12/21/00<br>2:00 PM |
| <a href="#">OACAS00-00-0003</a><br><del>Amend 09/02/2000</del> | Paper-only Solicitation         | Missouri |       | 12/1/00    | 3/2/01<br>2:00 PM   |
| <a href="#">OACAS00-00-0004</a>                                | Solicitation under Evaluation   | Missouri |       |            | Under Evaluation    |
| <a href="#">OACAS00-00-0005</a>                                | Returned Solicitation           | Missouri |       |            | Returned            |
| <a href="#">OACAS00-00-0006</a>                                | Cancelled Solicitation          | Missouri |       |            | Cancelled           |
| <b>Services and Supplies</b>                                   |                                 |          |       |            |                     |
| <a href="#">OACAS00-00-0007</a>                                | Solicitation without Amendments | Missouri |       | 9/2/00     | 12/21/00<br>2:00 PM |
| <b>Supplies &amp; Acquisition</b>                              |                                 |          |       |            |                     |

- New Web Pages
  - Central Reporting System
  - ASFI Posting
  - Mailing Labels Utility
  - Automated Project Download
  - Utilizing XML Technology
- 40 sites using standard pages
- Enterprise Version

# Electronic Bid Solicitations

- Developed by the Center – In use by:
  - 40 Corps of Engineers Sites
  - 16 Army National Guard Sites
  - 1 Air Force Site
- Hosting at the Center
  - Pittsburgh, Omaha, Savannah



# Electronic Bid Solicitations

- Security Issues
  - Due to recent (post 9-11) security concerns, we are planning to consolidate all EBS Web Sites at the center.
  - This is being coordinated with the Federal Technical Data Solution (FedTedS) initiative. FedTeDS is an online dissemination solution designed to safeguard sensitive acquisition related information for use by all Federal Agencies.

# CADD/GIS/FM Hardware/Software and IT Services Contracts

- IM/FCAD2 Contracts:
  - Comprehensive CADD, GIS, Facility and Installation Management Contracts
    - Hardware, Software, Maintenance and Technical Support Services
    - Available to All Federal Agencies
- ESRI BPA Contract
- CADD/GIS BPA IT Services Contracts



# CADD/GIS Symposium 2004 Co-located With DOD P2/HW Conference

Dates: August 19-22 2004



# QUESTIONS?

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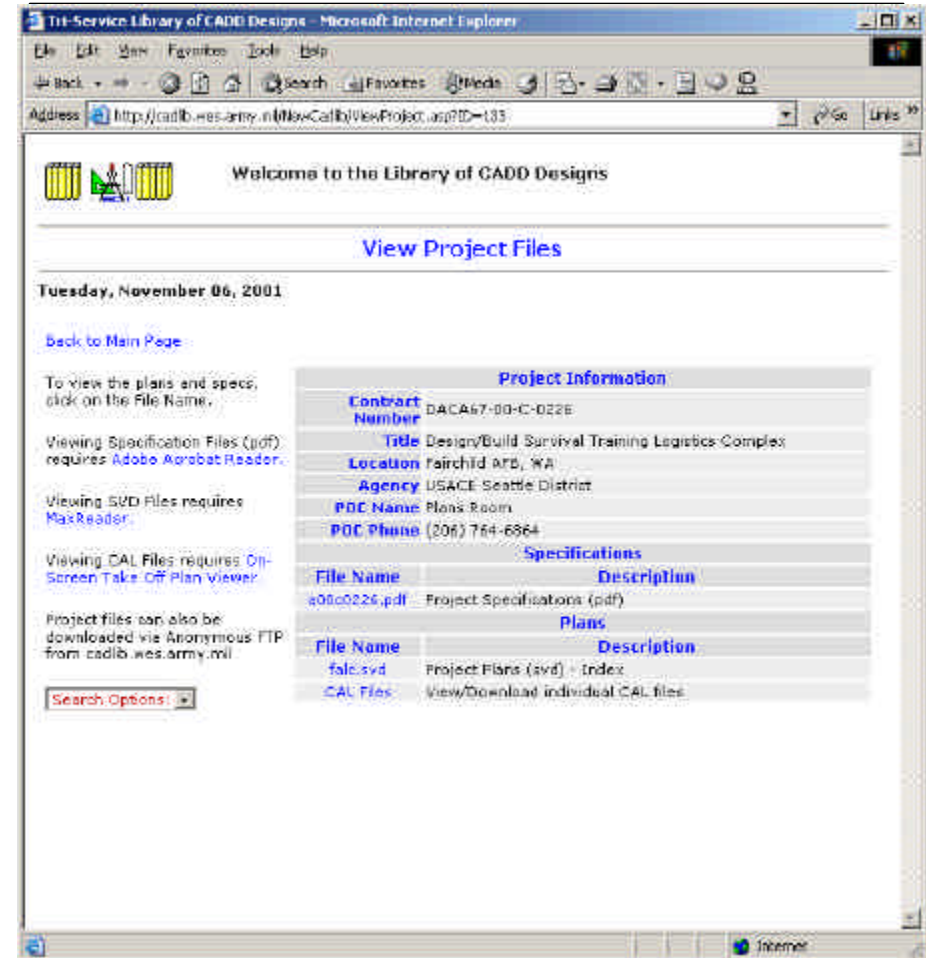
E-mail: [Harold.L.Smith@erdc.usace.army.mil](mailto:Harold.L.Smith@erdc.usace.army.mil)

CADD/GIS Technology Center Internet URL :  
<http://tsc.wes.army.mil>

# Library of CADD Designs

The purpose of the library is to make CADD drawings of completed project designs available to DoD designers.

- Since Oct. 1, 2001, there have been over 5,300 different visitors to the site.  
 Current Number of Projects - 166
- Contributing Districts
  - Seattle (46), Louisville (29), Sacramento (28), St. Louis (21), Tulsa (16), Vicksburg (10), Omaha (10), Mobile (2), Baltimore (2), Jacksonville (1), Kansas City (1)



# Implementation Support

- The SWAT visited the following:
  - Jacksonville District (FY01)
  - Louisville District (FY01)
  - Honolulu District (FY02)
- The Center visited the following on a cost-reimbursable basis:
  - New York District (FY03)