

Center Overview



The CADD/GIS Technology Center for facilities, infrastructure, & environment

Harold Smith, Chief



CADD/GIS Technology Center
for facilities, infrastructure, and environment
CEERD-ID-C

Army Engineer Research and Development Center
at Waterways Experiment Station
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Center Internet URL : <http://tsc.wes.army.mil>



- Mission Statement

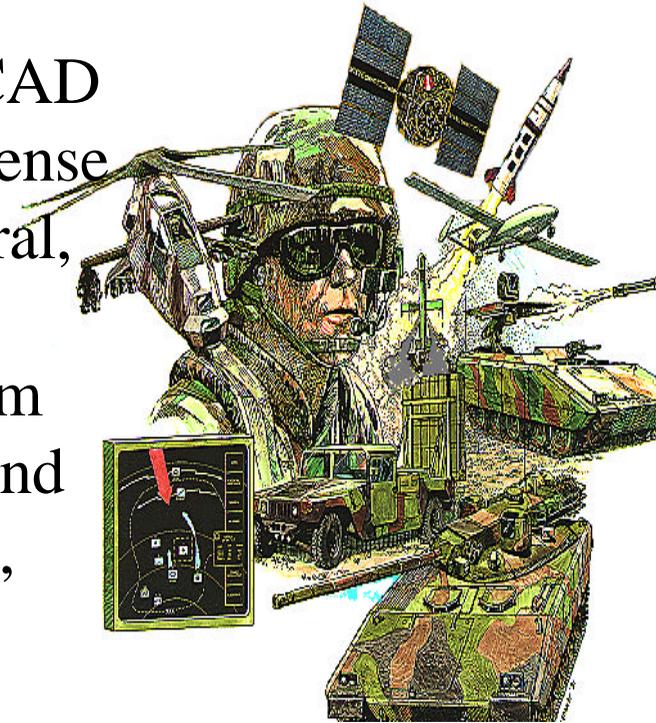
CADD

Establish 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.

GIS

Our Mission

- Establish a multi-agency vehicle to coordinate CAD 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, training, operation, and maintenance of CADD/GIS and facilities management systems.

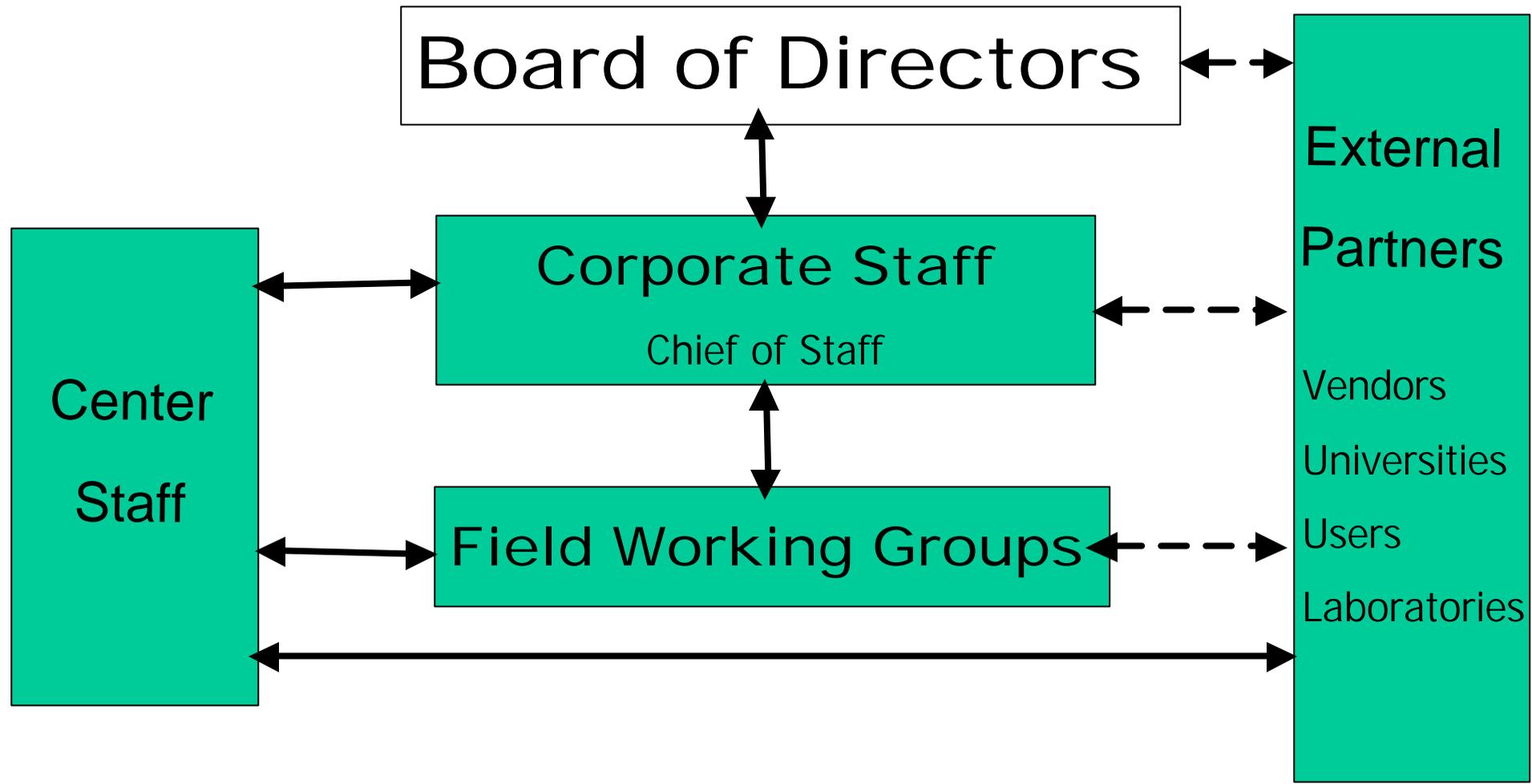


Center History

- 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 October, 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

- Originally established as the “Tri-Service CADD/GIS Technology Center” in 1992 at the Army Waterways Experiment Station, Information Technology Laboratory, Vicksburg, Mississippi .
- Established by the Army (including Army Corps of Engineers), Navy, and Air Force (i.e, Tri-Services).
- Center’s name changed to “CADD/GIS Technology Center for facilities, infrastructure, and environment” in July, 1999 to reflect a broader mission.

Organizational Chart



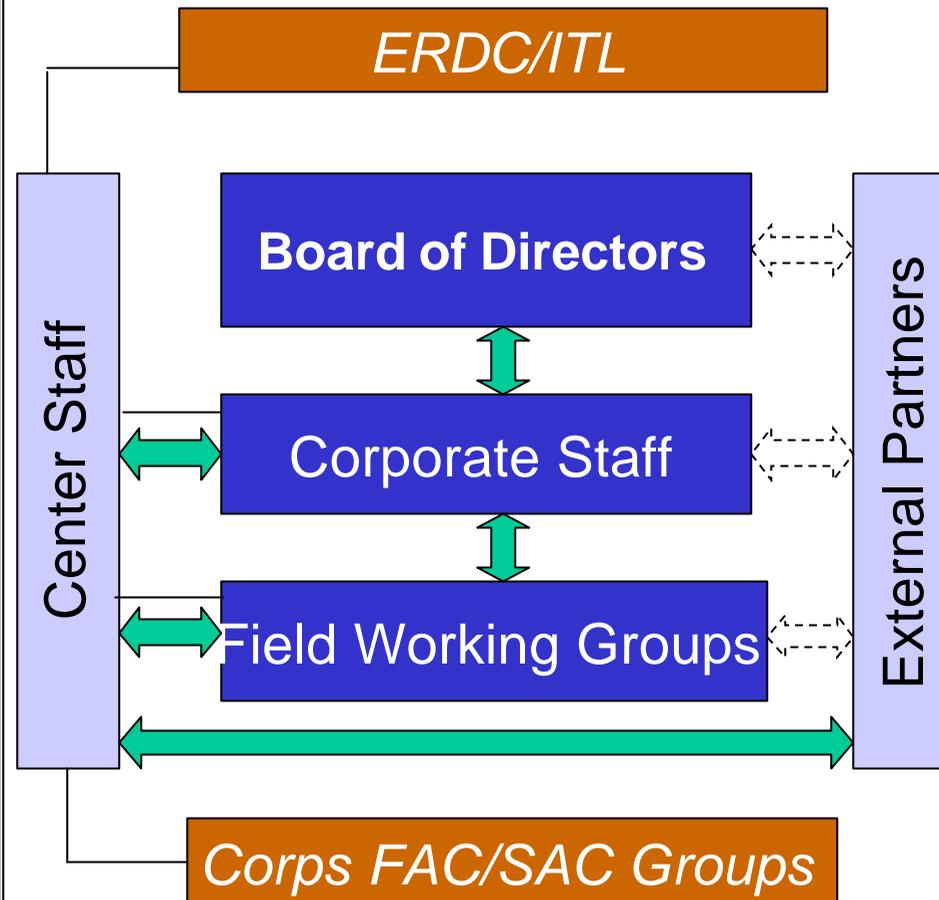
The *New* CADD/GIS Technology Center

Federal Partners:

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

Federal Associates:

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



Industry Associates:

- ESRI
- Autodesk
- Bentley
- Intergaph

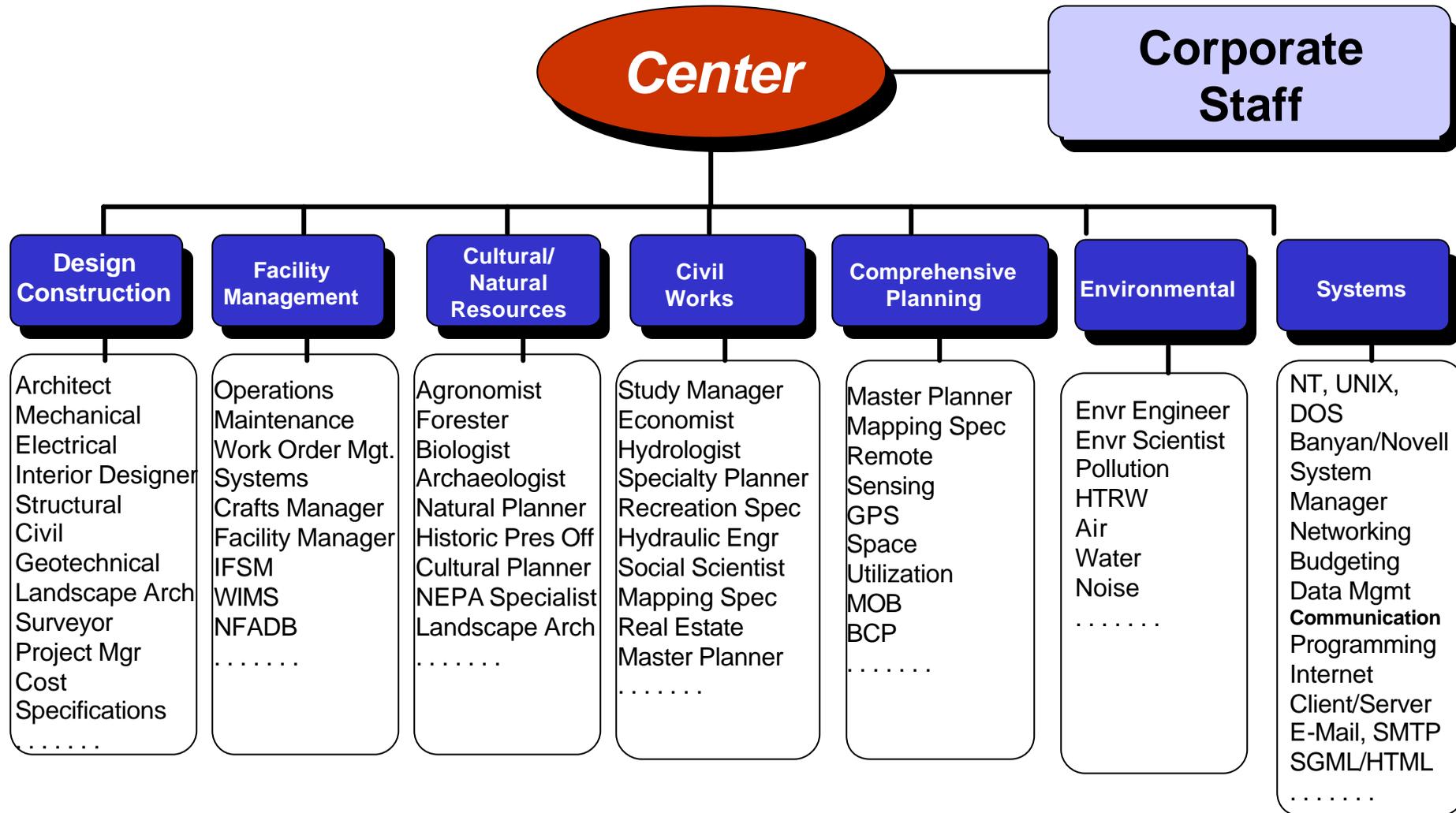
Societies/Organizations

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

Board of Directors Partners

- *United States Army Corps of Engineers (Military Programs.)*
- *United States Army Corps of Engineers (Civil Works)*
- *United States Army Assistant Chief of Staff for Installation Management*
- *Naval Facilities Engineering Command*
- *United States Air Force Civil Engineer*
- *United States Marine Corps*
- *National Institute of Building Sciences*
- *General Services Administration Public Building Services*
- *National Aeronautics and Space Administration*
- *Defense Logistics Agency*
- *United States Coast Guard*
- *Department of State*
- *Federal Aviation Administration*

Field Working Groups



- **Role in Acquisition -**
 - Define technical requirements for CADD/GIS/FM software & hardware.
 - Manage large centralized CADD/GIS/FM software and hardware acquisitions.
 - Center currently manages the Naval Facilities Engineering Command (NAVFAC) FCAD2 contract for purchase of CADD/GIS/FM software and hardware by DoD and Federal Government.

- **Applications Development** -
 - Serve as a focal point for consolidation of CADD/GIS/FM software applications.
 - Rely on other organizations and the private sector to develop CADD/GIS/FM software applications.

- **Promote Communication -**
 - Provide a vehicle to share information, programs, processes, techniques, and available training programs.
 - Record ideas and needs of DoD and participating agencies and coordinate with vendors and users in industry.

- **Promote Standards -**
 - Develop CADD/GIS/FM standards.
 - Provide information concerning benefits of using standards.
 - Promote use of standards.
 - Provide training on use of standards.

- **Furnish Technical Advice -**
 - Serve as clearinghouse for advise on CADD/GIS/FM hardware and software issues.

- **Interface with Professional Organizations and Industry -**
 - Establish contacts and maintain working relationships with professional organizations and industry to aid in the coordination of standards for CADD/GIS and FM.

- **Evaluate Technological Developments** -
 - Review and stay abreast of developments in CADD/GIS/FM software and technology.

Center Functions

- **Recommend Necessary CADD/GIS and FM Policy**
 - Develop policy, which is reviewed/approved by the Corporate Staff.
 - Ultimate goal is to create policy that is consistent across DoD and participating agencies.

Symposium 2002

CADD/GIS Symposium and Exposition 2002

- **When:** August 20 – 22, 2002
- **Where:** San Antonio, Texas
- **Partnering with Air Force Joint Service Pollution Prevention and Hazardous Waste Management Conference and Exposition.**
- **Website:**
<http://tsc.wes.army.mil/CADDSymposium2002.asp>



- Symposium 2000 had:
- 1129 Attendees
- 115 Presentations
- 19 Workshops
- 89 Exhibitors

- Center Projects:
 - Approved by Corporate Staff & Board of Directors each Fiscal Year.
 - Categories
 - Core Mission (CADD, GIS, & FM Standards)
 - Mission Related (e.g., CADD, GIS, FM, & Information Technology Tools, Guidance)
 - Mission Support (e.g., Center Internet/Intranet, Working Groups, Symposium).
- Reimbursable Projects:
 - GIS development
 - Database development & Integration.
 - Internet, Foundation Knowledge, Portal Technology.

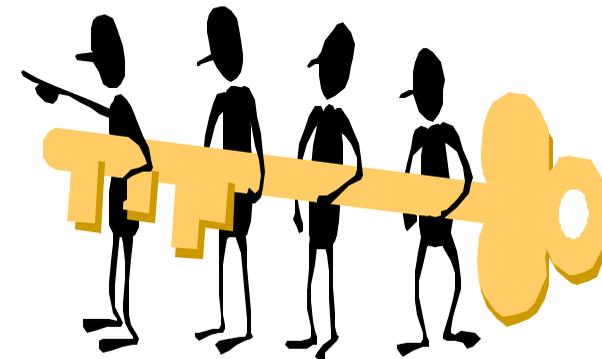
Reimbursable Projects

- **GIS & Database Development & Integration:**
 - Support to Mississippi Valley Division in REEGIS & MVD Enterprise GIS development.
 - Support to New Orleans District in REEGIS & Atchafalaya Basin GIS development.
 - Support to Army National Guard Bureau in GIS development.
 - Support to USGS in development of a FGDC Framework Prototype & Video.
 - Support to ERDC DPW in WES Master Plan development.

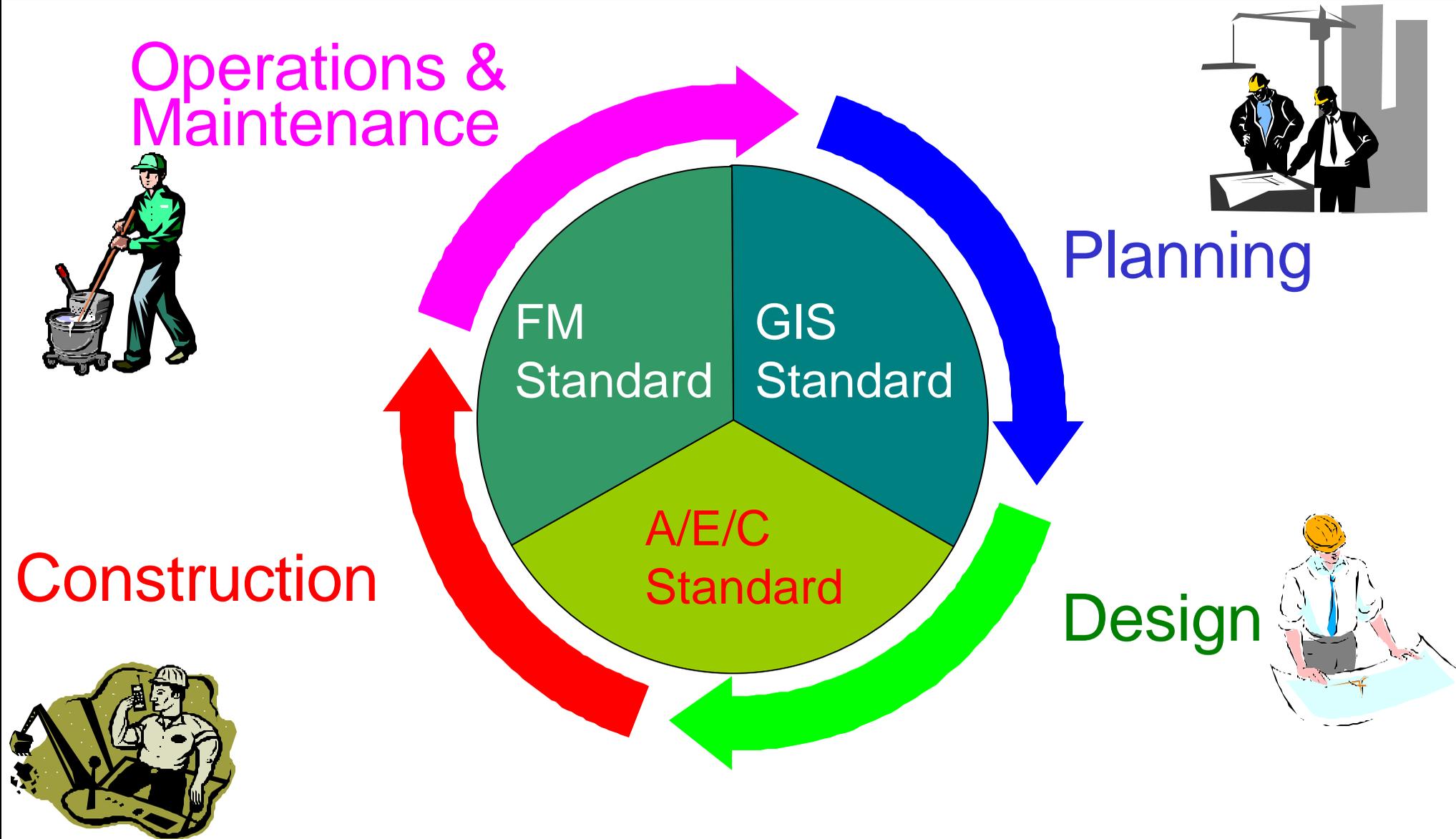
The Center's Approach to Standards

- **Current Efforts**

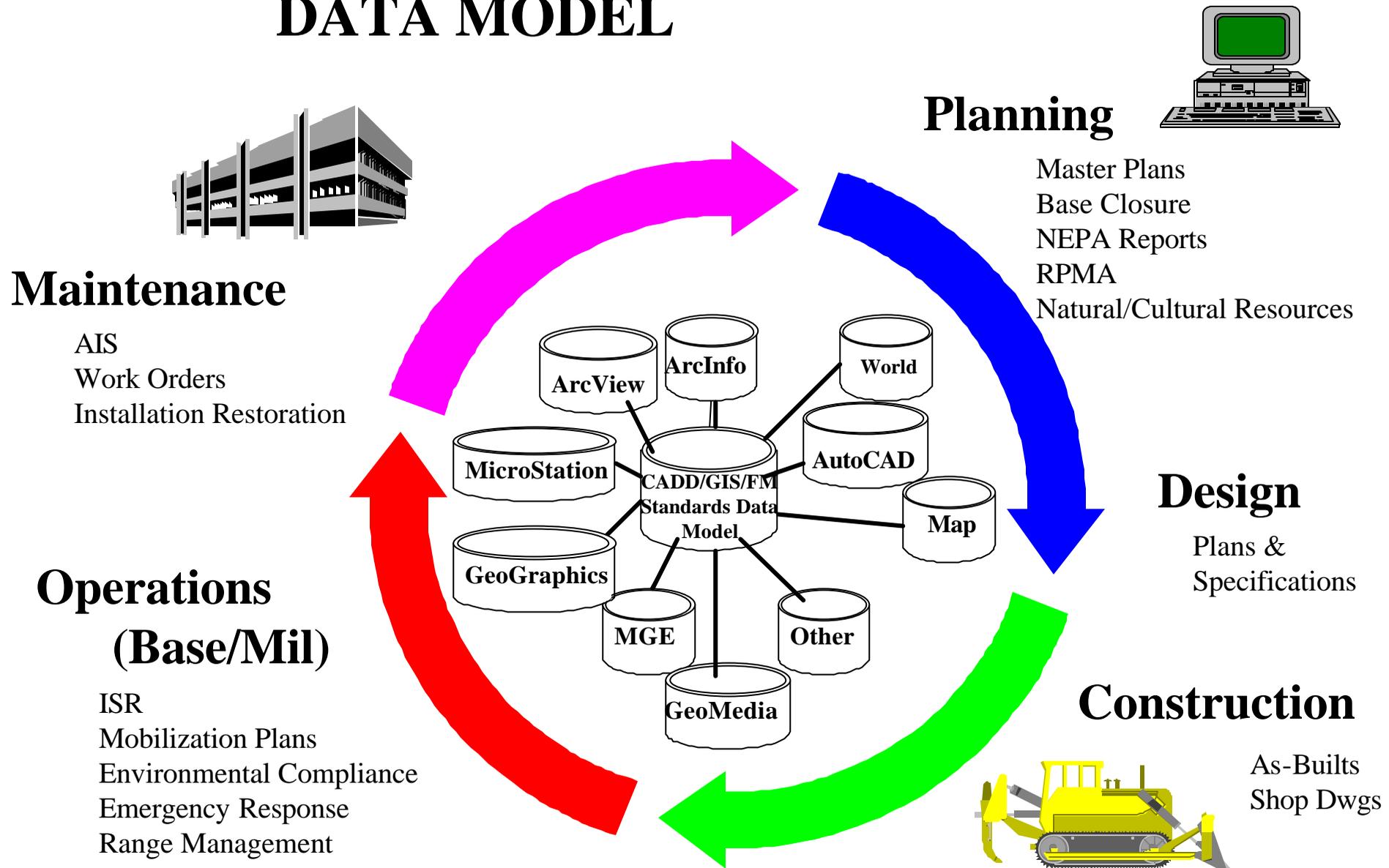
- Architect-Engineer (A-E) Deliverables Guidelines
 - A/E/C Guidelines
 - GIS/Spatial Data Guidelines
- Architectural/Engineering/Construction (A/E/C) CADD Standard
- Spatial Data Standard (SDSFIE) (GIS)
- Facility Management Standard (FMSFIE) (GIS & CADD)
- Electronic Bid Solicitations (EBS)
- CADD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



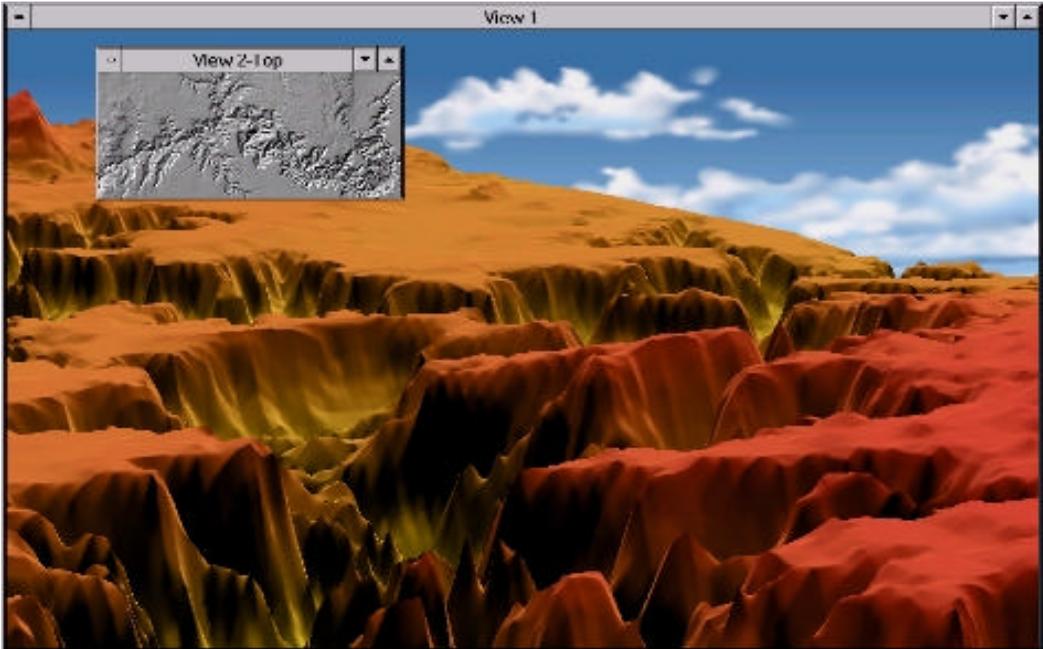
Life-Cycle Project Model



LIFE-CYCLE PROJECT DATA MODEL



What is GIS ?!?!?



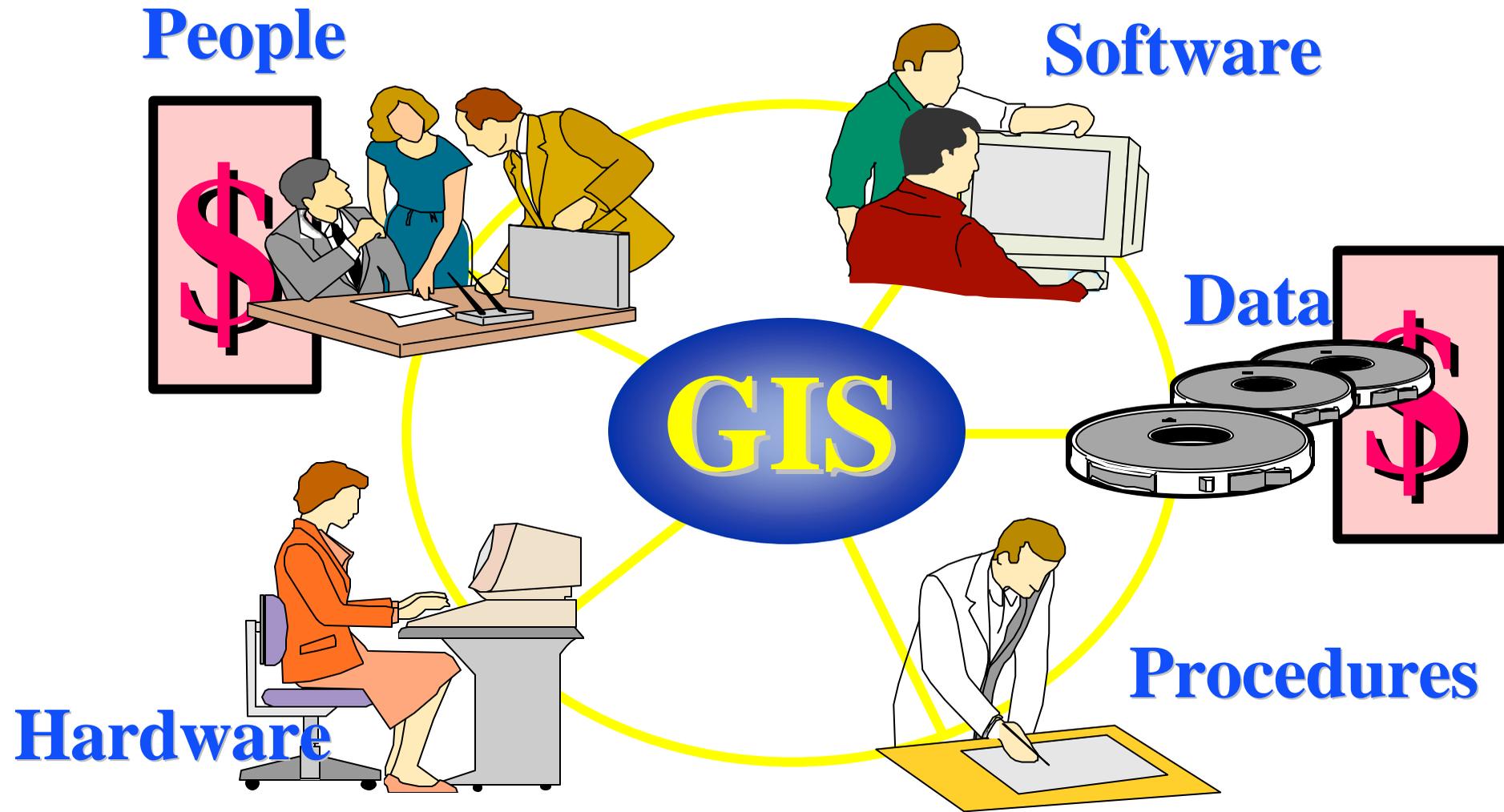
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 Horizontal_Coordinate_System_Definition:
 Planar:
 Grid_Coordinate_System:
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 Coordinate System 1927
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 Transverse_Mercator:
 Longitude_of_Central_Meridian: -082.166666
 Latitude_of_Projection_Origin: +30.000000
 False_Easting: 500000
 False_Northing: 0.0

Planar_Coordinate_Information:

.....	636-1044	Neumann Donald L 5 Bugle Ridge Dr	638-1423
.....	638-3004	Neumann Robert A 511 Newell Vick Dr	638-8426
.....	634-8689	Nevels A M 4101 Flowerce Rd	636-8097
.....	636-4167	Nevels Chris Pecos Ridge Apts	634-1384
.....	636-2052	Nevels Connie 88 Chickasaw Ln	634-8862
.....	634-0223	Nevels Donna 118 Belva Dr	636-1986
.....	638-1474	Nevels Hazel Chickasaw Subdivision	638-2793
.....	638-4057	Nevels Jim 2014 Washington	634-1095
.....	638-5460	Nevels Johnny Jr	
.....	636-0584	1496 Standard Hill Rd	638-5831
.....	638-4843	Nevels Kristy 4815 Gibson Rd	636-7704
.....		Nevels Leon Old Hwy 27	638-7034
.....		Nevels Loyd Mrs Standard Hill Rd	638-6424
.....		Nevels Patricia Hwy 81 N	636-6382
.....		Nevels Ricky & Tabatha	
.....		Boy Scout Rd	634-6304
.....		Nevels Scott Jason & Keeley	
.....		Dudley Rd	634-8222
.....		Nevels Terry 271 Magnolia Rd	638-0809
.....		Nevels Wardean Mrs Hwy 81 N	636-2978
.....		Nevels Wayne Q	

A system for capturing, storing, retrieving, analyzing, and displaying geographically referenced information, i.e. data identified according to its location on the earth.

Geographic Information System



Activities Coordinating with the Center on CADD Standards

Federal Agencies:

- Architect of the Capitol
- Department of Commerce
- U.S. Coast Guard
- Defense Logistics Agency
- Army Reserve
- Army National Guard
- Marine Corps
- Department of Energy
- Veterans' Affairs
- National Institute of Standards
- Environmental Protection Agency
- General Services Administration
- Department of Interior

Organizations and Societies:

- National Institute of Building Sciences
- Construction Specifications Institute
- American Institute of Architects
- International Facilities Management Association
- Construction Sciences Research Foundation
- International Standards Organization

Vendors:

- Microsoft
- Bentley
- Intergraph
- Autodesk

Activities Coordinating with the Center on GIS Standards

Federal Agencies:

- Department of Agriculture
- U.S. Forest Service
- Department of Commerce
- U.S. Coast Guard
- Defense Logistics Agency
- Department of Energy
- Housing and Urban Development
- Department of Interior
- U.S. Geological Survey
- National Biological Information Infrastructure
- Department of Transportation
- Environmental Protection Agency
- Federal Emergency Management Agency
- National Aeronautics and Space Administration
- Tennessee Valley Authority
- Federal Aviation Administration

Vendors:

- ESRI
- Bentley
- Intergraph
- Autodesk
- PSDI (Maximo)
- FIS

Activities Coordinating with the Center on GIS Standards

Organizations and Societies:

- Federal Geographic Data Committee (FGDC)
- National Associates of Counties
- American National Standards Institute (ANSI)
- International Organization for Standardization (ISO)
- American Society for Testing and Materials (ASTM)
- American Chemical Society (ACS)
- Nature Conservancy
- Ohio Geographically Referenced Information Program (OGRIP)
- Pennsylvania Mapping and Geographic Information Consortium (PAMAGIC)

Universities:

Colorado State University
Penn State University
BYU
Texas A&M
Mississippi State

City and State Organizations:

Bakersfield, California
Garland, Texas
California Department of Agriculture
State of PA
Mississippi DOT

Coordination Efforts With DoD & Federal Standards

Development Initiatives Include:

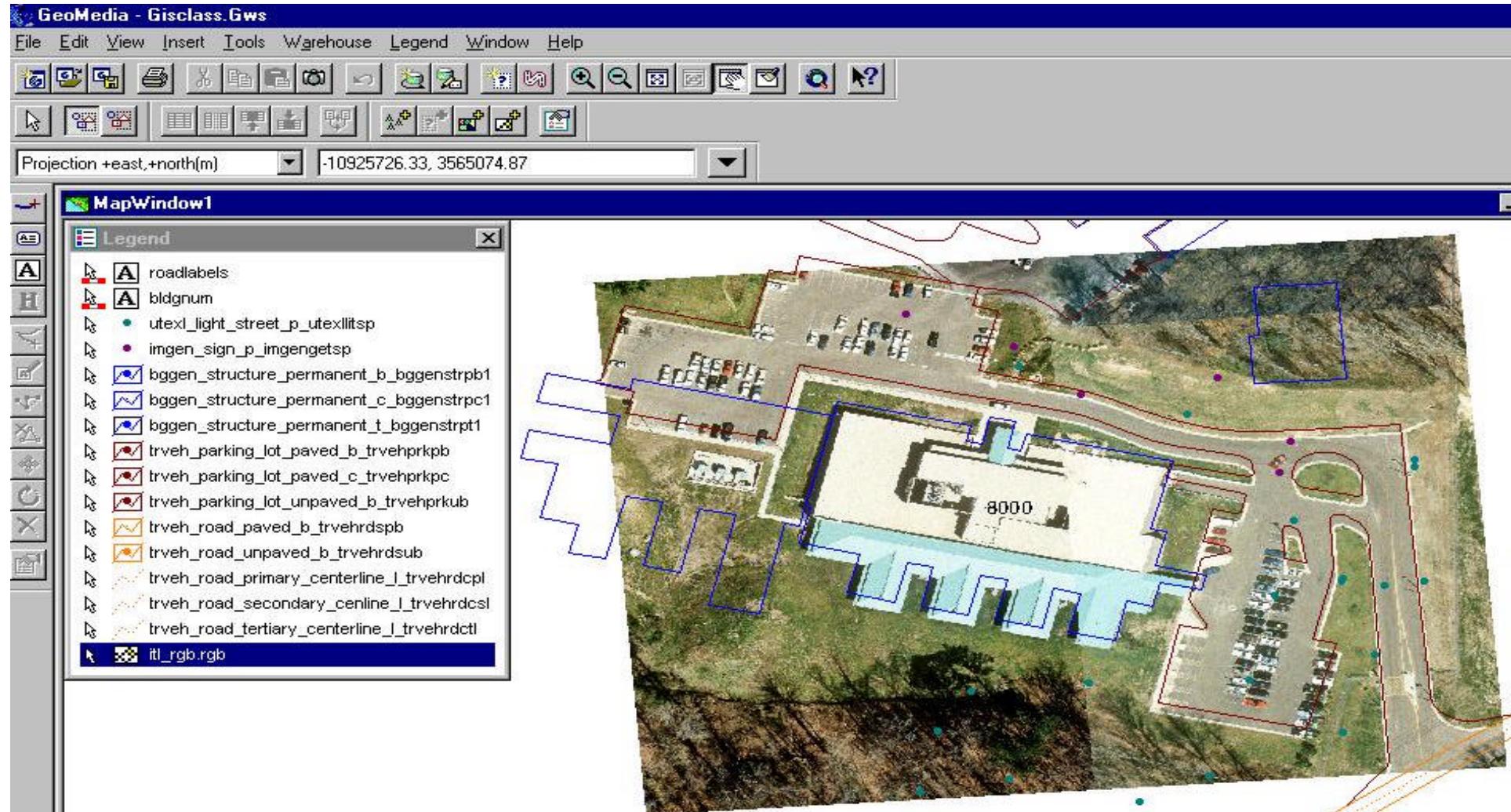
- Federal Geographic Data Committee (FGDC)
 - *Center* Participation
 - Adoption of Subcommittee Products
 - Adoption of Metadata Standards
- Defense Information Systems Agency (DISA)
- Corporate Information Management (CIM) Initiatives
- Defense Environmental Security Corporate Information Management (DESCIM) Initiatives
- National Imagery and Mapping Agency (NIMA) (formerly Defense Mapping Agency (DMA)) Initiatives

Spatial Data Standard (SDSFIE)

for facilities, infrastructure, & environment

- Provides a standard graphic and nongraphic (database) format and structure for GIS implementations.
- Provides a “nonproprietary” standard designed for use with commercially available “off-the-shelf” GIS and relational database software.
- Provides a GIS implementation schema for approved FGDC geospatial related data standards, and appropriate DISA data elements.
- Provides a grouping of geographically referenced (geospatial) features (i.e., features which can be depicted graphically on a map at their geographic location (coordinate). Each geospatial feature has an “attached” Attribute Table containing pertinent data about the geospatial feature.

WES Master Plan in GeoMedia & ArcView



Atchafalaya Basin, New Orleans District

GeoMedia Professional - [imero]
 File Edit View Insert Tools Analysis Warehouse Legend Window Help

Lon,Lat(d:m:s) -91:48:26.275, 30:59:32.925

Legend

- bggen_structure_permanent_b_bggenstrpb
- bggen_structure_permanent_c_bggenstrpc
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- immac_grain_elevator_b_immacgelab
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- revetmentLabel
- RiverMileMarker
- atch.cot

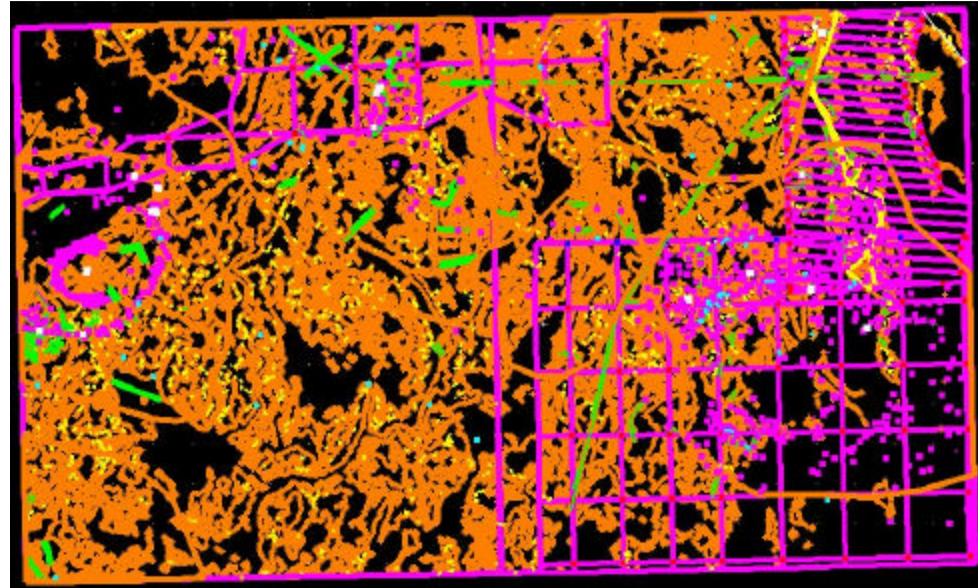
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Name	Value
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ORI_PRJ_DS	This work is authorize
ACMRV_CODE	120
ALLOTMENTS	Atchafalaya Basin, C
OP_ALL_FT	5375
OP_HW_FT	
NONOP_FT	
A_COST	
NARRATIVE	
SUR_CRS_ID	300
FEAT_NAME	ODENBURG REVET
TYP_WRK_D	
AREA_SIZE	
AREA_U_D	
DECOM	

Press F1 for Help. 1:102,349

Automation of USGS Digital Data into SDSFIE

- **Mapping of USGS Feature Codes to SDSFIE**
- **Development of Intergraph and ESRI product workflows to incorporate digital DLGs**
- **Project to satisfy both Native and SDTS DLG Formats**



Facility Management Standard (FMSFIE)

for facilities, infrastructure, & environment

- Initial Development has focused on:
 - Providing a standard database format and structure for temporal, “business”, and event data (e.g., inspections, repairs) related to SDSFIE geospatial features and/or A/E/C CADD objects.
 - Providing a “nonproprietary” standard designed for use with commercially available “off-the-shelf” CADD, GIS, FM, and relational database software.

A/E/C CADD Standard Release 2.0

The A/E/C CADD Standard is a means of ensuring consistent construction drawings, non-graphic attribute information, and contract deliverables.

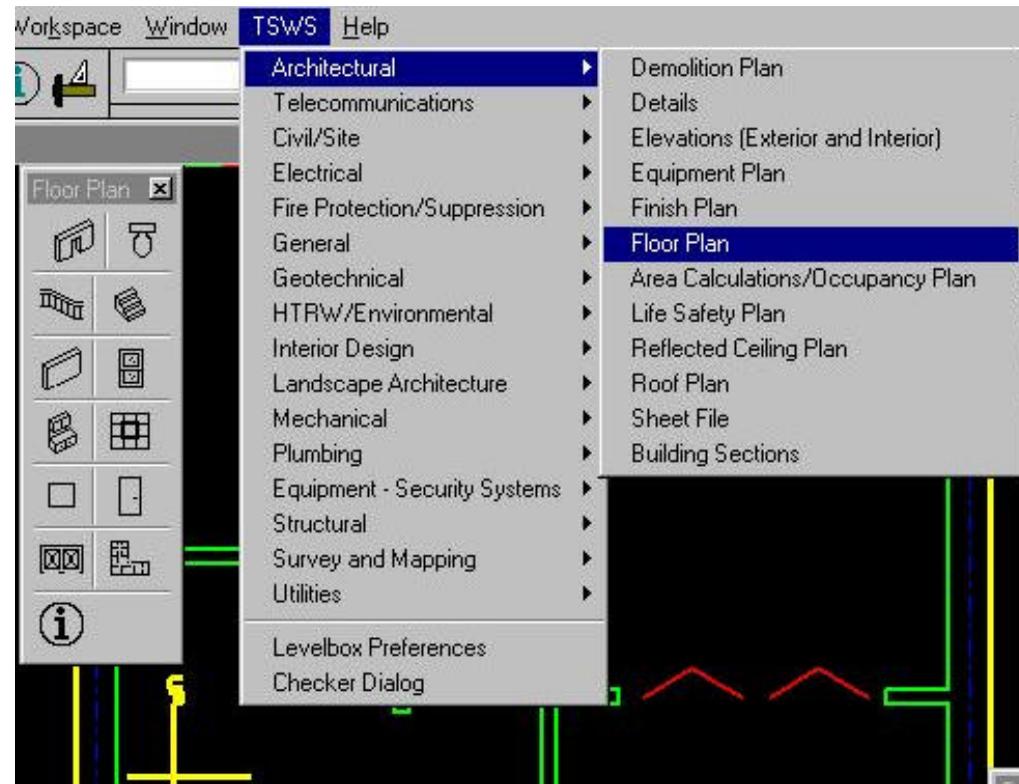
- Development of the A/E/C CADD Standard helped highlight the need for a National CAD Standard.
- The A/E/C Standard is compliant with the newly created National CAD Standard.
- Formal Training Classes



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.

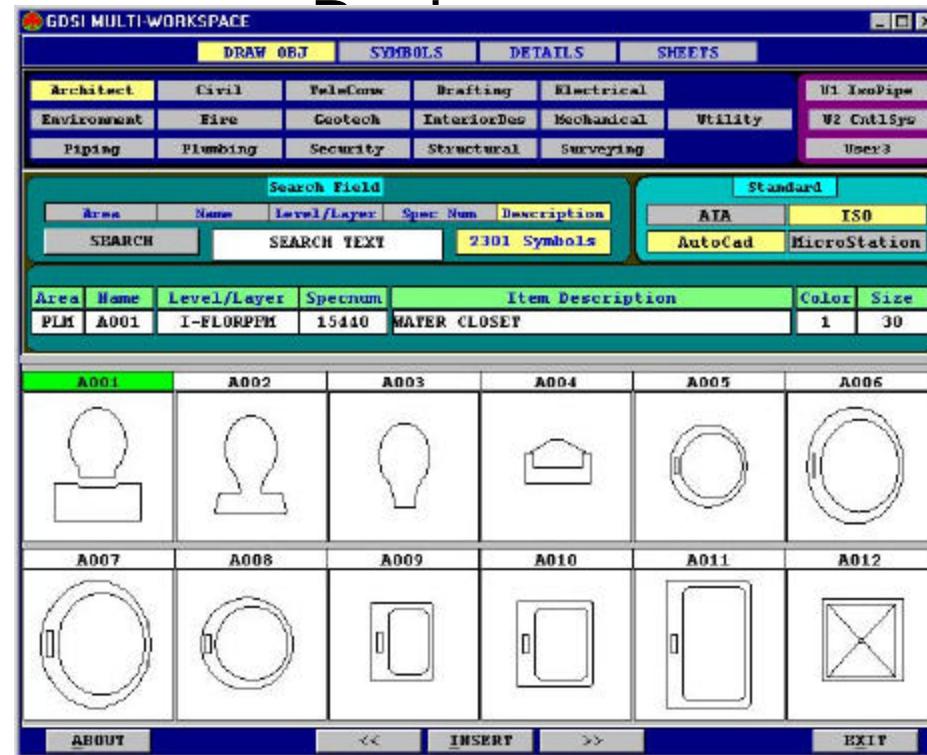
- A File Manager application was added to the Workspace at the request of the Army.



AutoCAD Workspace

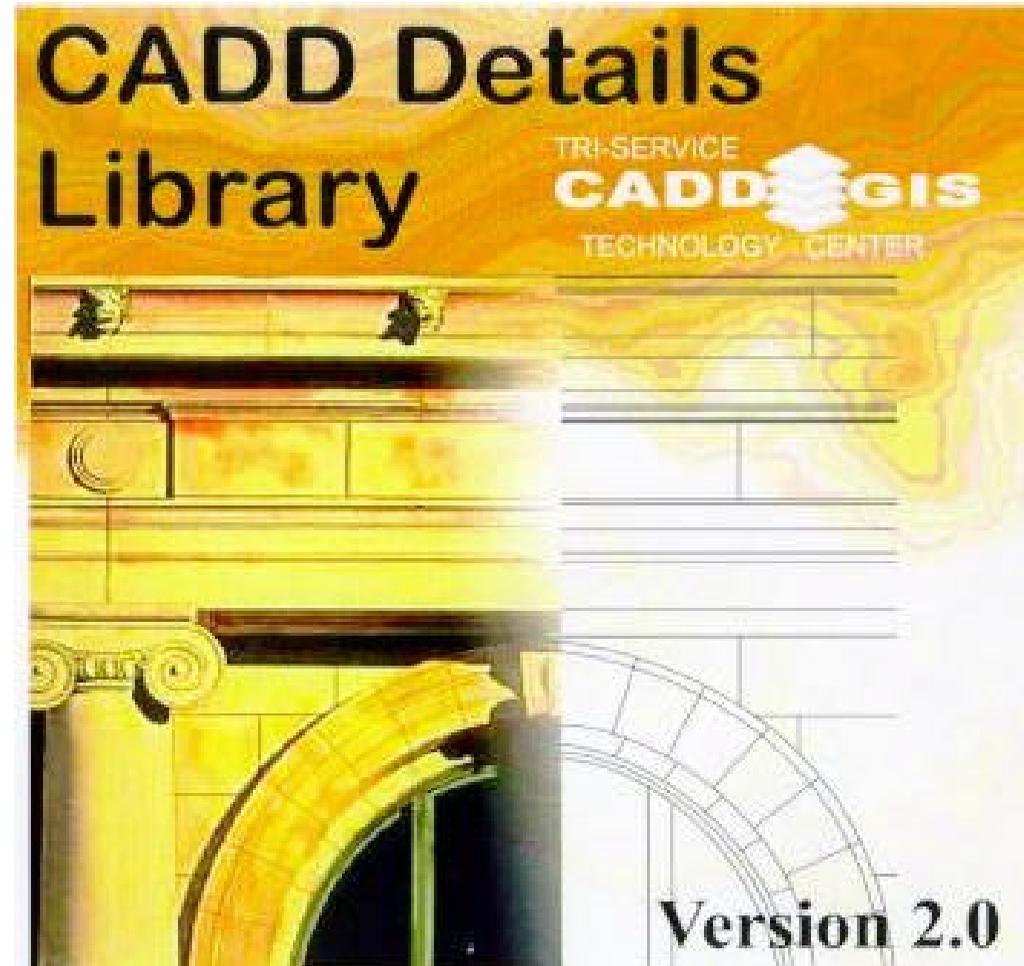
This application implements the A/E/C CADD Standard in the AutoCAD environment.

- It uses a Visual Interface to allow to address CADD platforms.
- A beta version of application is available



CADD Details Library Release 2.0

- Architectural
- Mechanical
- Electrical
- HTRW
- Structural
- Civil/Site
- Landscape
- Interior Design



Electronic Bid Solicitation

HQUSACE has issued a mandate to all Corps Districts to issue electronic solicitations for all projects. The Air Force, Navy and NASA are also using electronic solicitations.



Advertised Solicitations

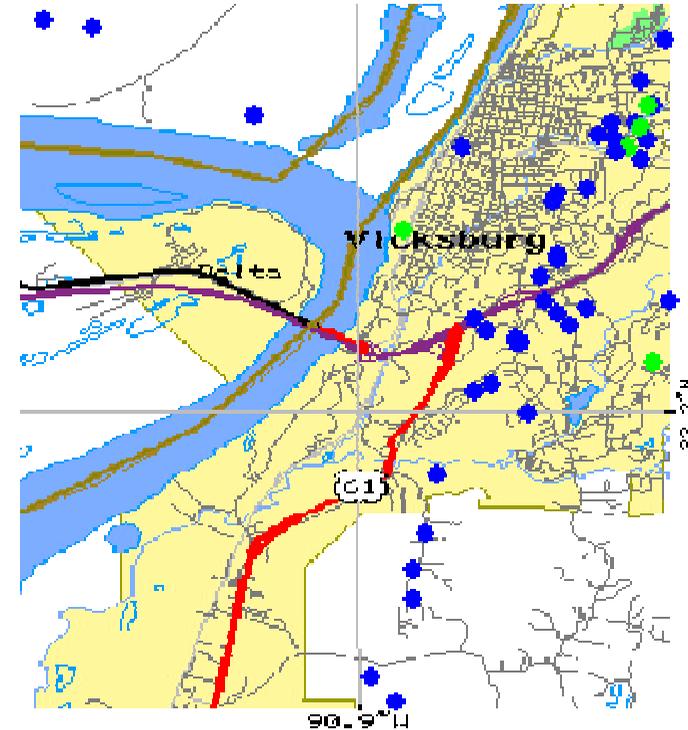
Click on a Solicitation Number to Register.
 Click on a heading to sort by that heading.

 = CD  = Paper  = Web

Solicitation Number	Title	Location	Media	Issue Date	Bid/Due Date
DACAXX-99-R-0001	Solicitation With 2 Amendments	Mississippi		12/1/98	12/1/99
DACAXX-99-R-0002	Solicitation Without Amendments	Mississippi		12/1/98	12/1/99
DACAXX-99-R-0005	Web-only Solicitation	Mississippi		2/1/99	12/31/99
DACAXX-99-R-0006	Paper-only Solicitation	Mississippi		2/2/99	12/31/99
DACAXX-99-R-0007	Posponed Solicitation	Mississippi		1/2/99	Postponed
DACAXX-99-R-0008	Canceled Solicitation	Mississippi		1/2/99	Canceled

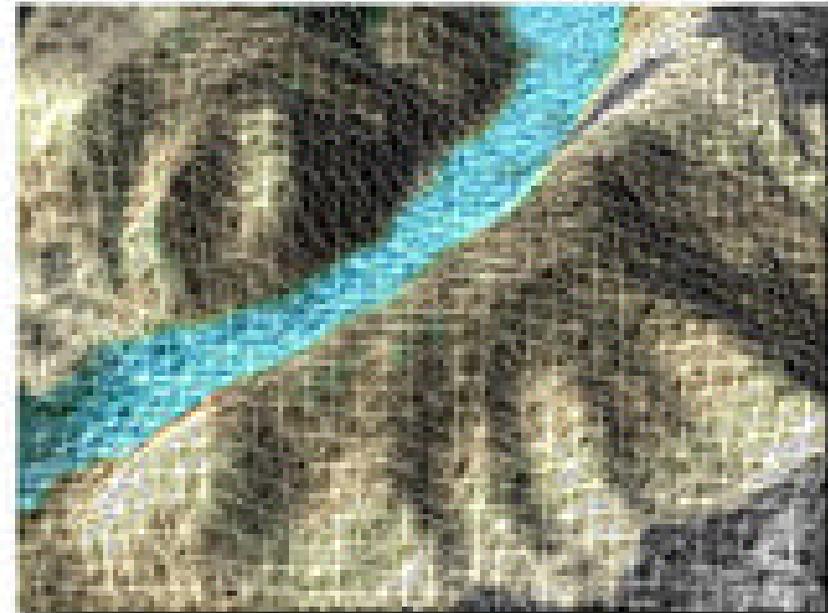
Survey Engineering Monument Management System (SEMMS)

- SEMMS provides a Survey Control Database Schema and common data fields associated with SDSFIE
- Helps user to enter and maintain data
- Delivers data to public through Internet
- User's Manual is available for implementation
- NGS data for the nation comes with product
- Available on CD-ROM or Web
- Lite version for field use

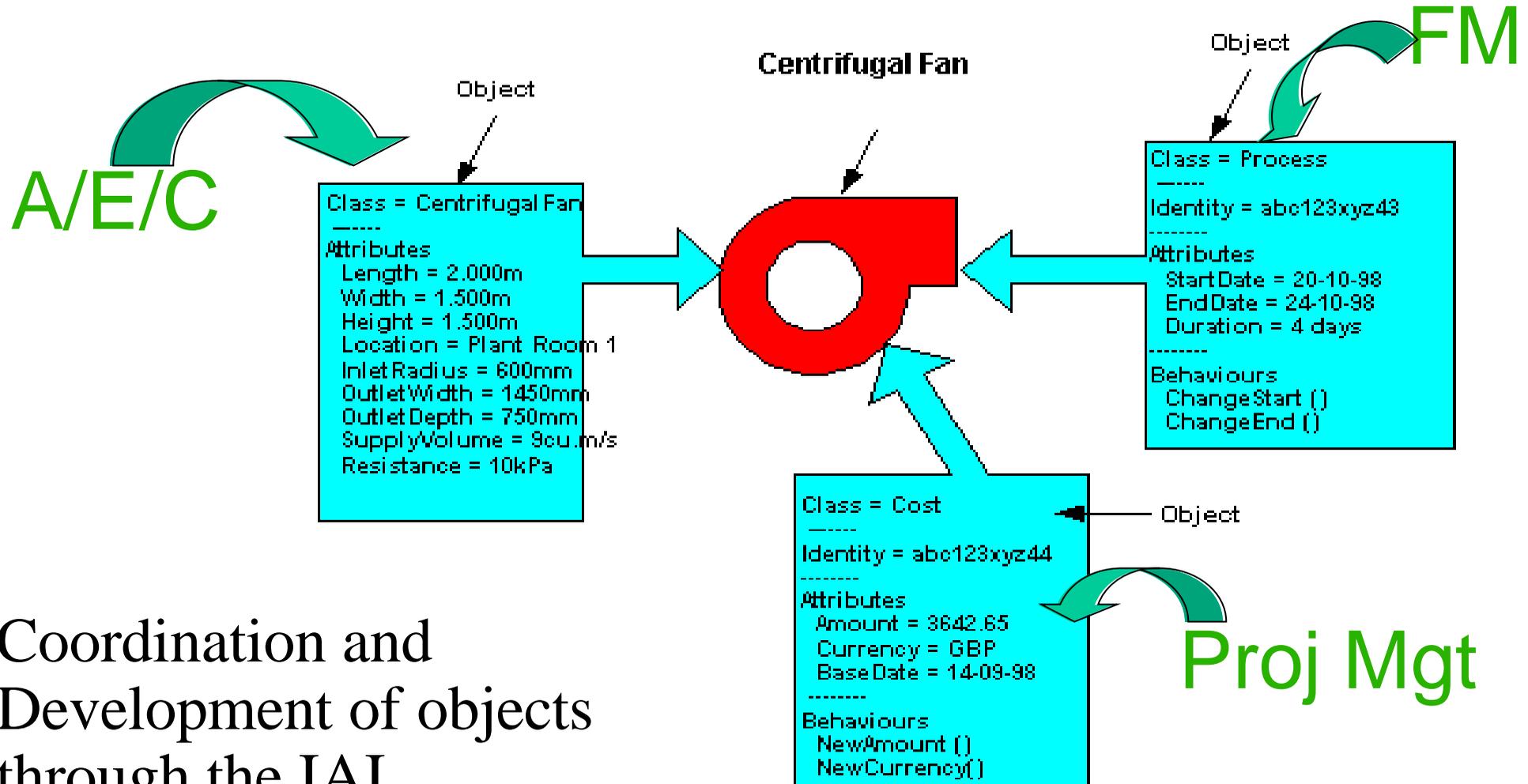


Aerial Photography Management System

- **Develop standard system to manage aerial photography in both digital and hardcopy formats.**
- **Development of methods and workflows to link photos to GIS databases and use the web as a query tool.**



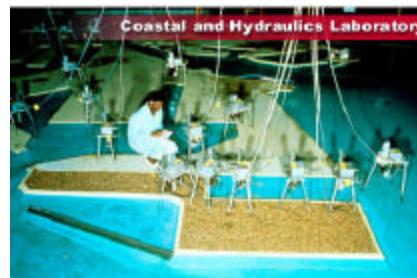
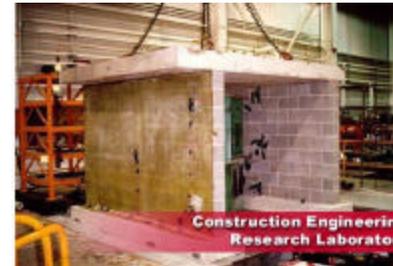
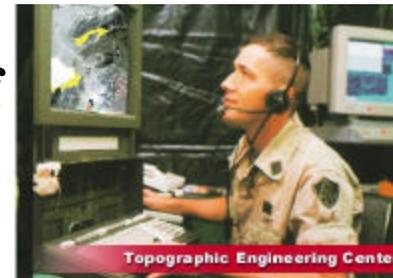
Development of Object Standards



- Coordination and Development of objects through the IAI.

Engineering and Research Development Center

The *Engineer Research and Development Center* (ERDC) is the U.S. Army Corps of Engineers' distributed research and development command. ERDC consists of eight unique laboratories.





1,320 Employees

Research areas:

- **Coastal and Hydraulics**
- **Environmental Quality**
- **Geotechnical**
- **Information Technology**
- **Structures**



**Waterways
Experiment
Station**



Vicksburg, Mississippi

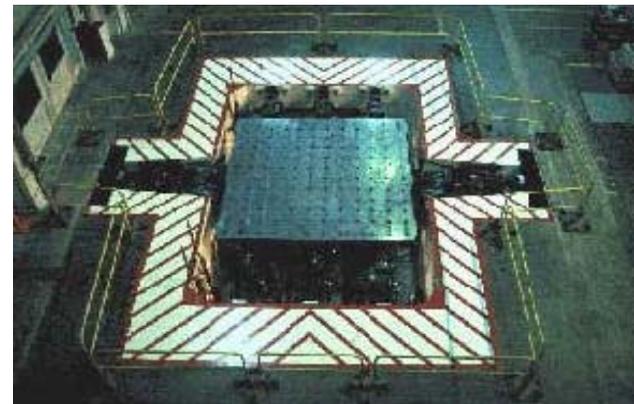


324 Employees

Research areas:

- **Facilities Operation and Maintenance**
- **High Performance Materials**
- **Engineering Management Systems**
- **Energy Conservation**
- **Facilities Design/Construction**

**Construction Engineering
and Research Laboratory**
Champaign, Illinois





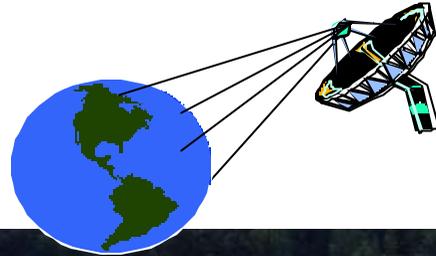
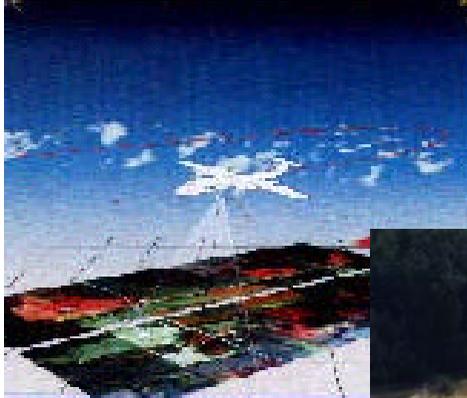
330 Employees

Research areas:

- **Pavements**
- **Geotechnical**
- **Structures**
- **Environmental Quality**
- **Emergency Response Management**



Cold Regions Research and Engineering Laboratory
Hanover, New Hampshire



354 Employees

Research areas:

- **Spatial Data Integration**
- **Rapid Mapping Technology**
- **Imagery Analysis**
- **Position/Navigation**
- **Terrain Visualization**



Topographic Engineering Center

Fort Belvoir, Virginia