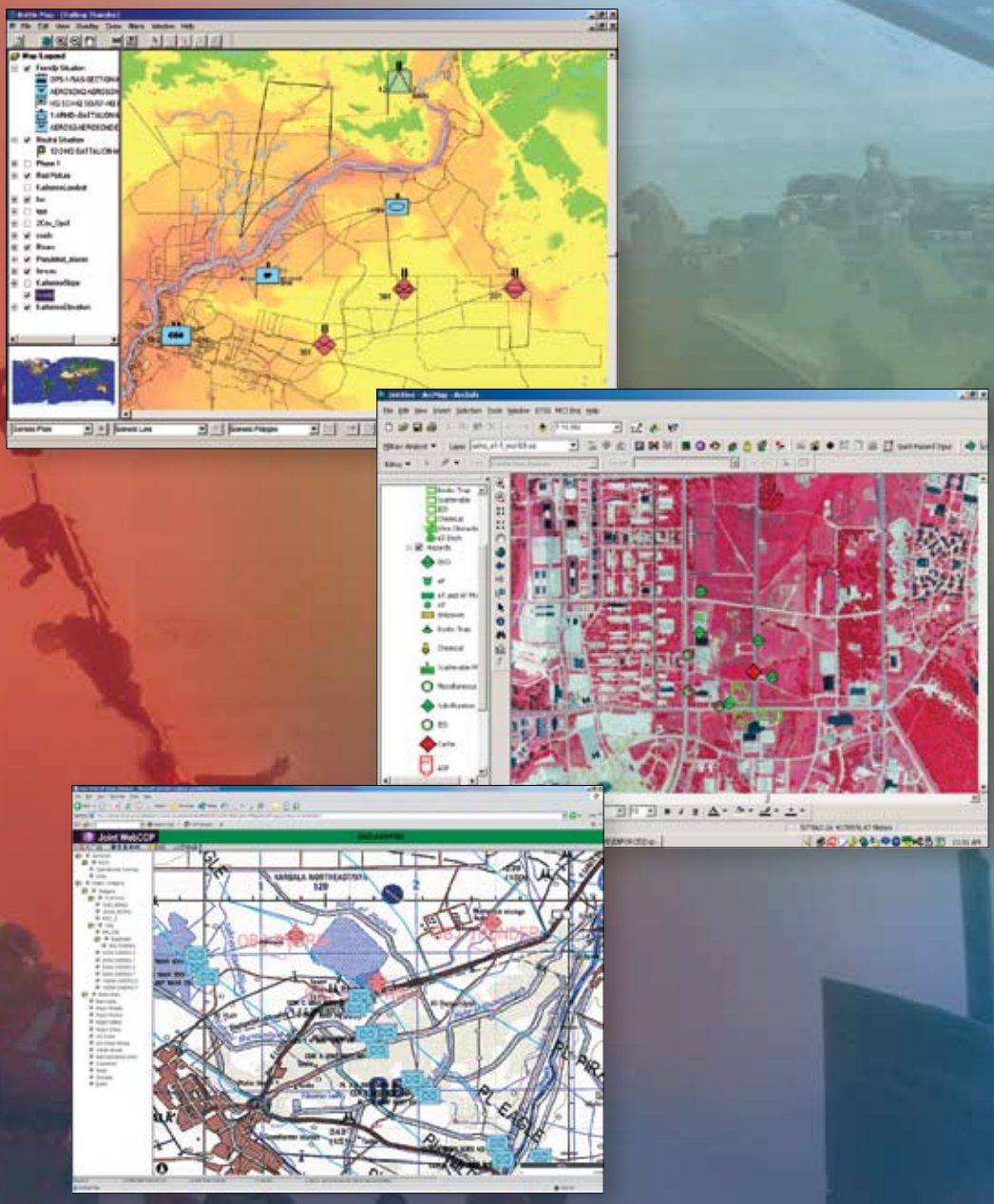
Volume 1

GIS in the Defense and Intelligence Communities



ESRI

Table of Contents

Dear Colleague

Geographic information system (GIS) technology is a critical infrastructure for the defense and intelligence communities. I am constantly amazed at the breadth of GIS usage and humbled by the importance of tasks to which GIS is applied. This book portrays your work and the important contributions you are making to your nation's security.

These snapshots of your efforts have been drawn from many sources and necessarily represent a limited view of GIS usage. For good reason, many stories cannot be told in the public domain, but be reassured that GIS is serving a broad spectrum of defense and intelligence users. Even within that important constraint, this book illustrates the ubiquity of GIS usage; GIS has truly emerged from its historic niche usage to become a key foundation for Network Centric Warfare, a cornerstone for effective base and facility management and a powerful tool for multi-intelligence assessment.

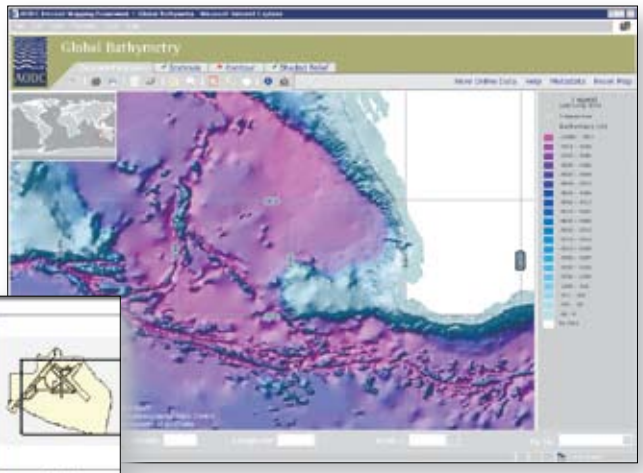
What strikes me as I look through this book is how quickly all this has happened and is happening. Ten years ago commercial off-the-shelf (COTS) software played a very small role in defense, and any geospatial capabilities had to be especially created for each program, often at tremendous cost to the taxpayer. Today, COTS software leads the way, and the reuse of licensed software is saving literally millions of dollars and at the same time delivering important new capabilities to the warfighter, analyst, and base commander.

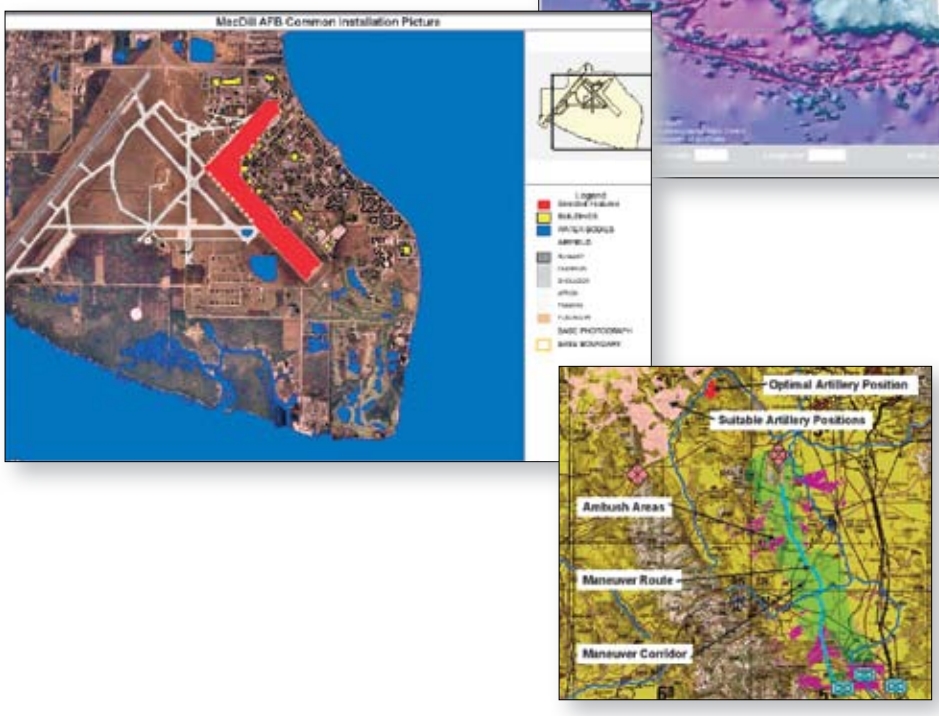
I am delighted to acknowledge some programs that are breathtaking in their vision and footprint. The Commercial Joint Mapping Tool Kit (C/JMTK) (described on page 4) will provide a common geospatial foundation for all DoD and many international mission systems. As many as 250 individual programs will benefit from this insertion of COTS GIS capabilities. GeoBase (described on page 6) is a mature USAF program that creates a common installation picture for base commanders and reflects the adage that for the Air Force, the base is the mission—lose the base, lose the mission. The Distributed Geospatial Intelligence Network (DGInet) provides for the discovery and horizontal fusion of spatial information across the intelligence community. Enterprise infrastructure programs such as this are the wave of the future and critical to national security.

I hope you enjoy seeing the work of your colleagues in the defense and intelligence GIS communities. Please take advantage of the collective knowledge that is represented in this book to reduce program risk and deliver timely capabilities to those that protect us.

Regards,

President, ESRI





Commercial Joint Mapping Toolkit

Overview

TASC, a business unit of Northrop Grumman Information Technology (IT), is the prime contractor for the National Geospatial-Intelligence Agency's (NGA) Commercial Joint Mapping Toolkit (C/JMTK) program. The Northrop Grumman IT TASC team includes ESRI, Leica Geosystems, and Analytical Graphics, Inc. (AGI).

C/JMTK is a standardized, commercial, comprehensive toolkit of software components for the management, analysis, and visualization of map and map-related information. It replaces the government-owned software package Joint Mapping Toolkit (JMTK).

The C/JMTK program capitalizes on technical benefits and economies of scale of the commercial software industry while providing the standardization, distribution mechanisms, and life cycle oversight of NGA and DISA with community, domain, and operational knowledge of the mission applications.

C/JMTK Components

- Application layer
  - Graphical user interface
  - Map windows
  - Table of contents
  - Toolbars
  - And more
- Tools layer
  - Input/Output
  - Data management
  - Analysis
  - And more
- Data layer
  - Internet map server
  - Enterprise data storage

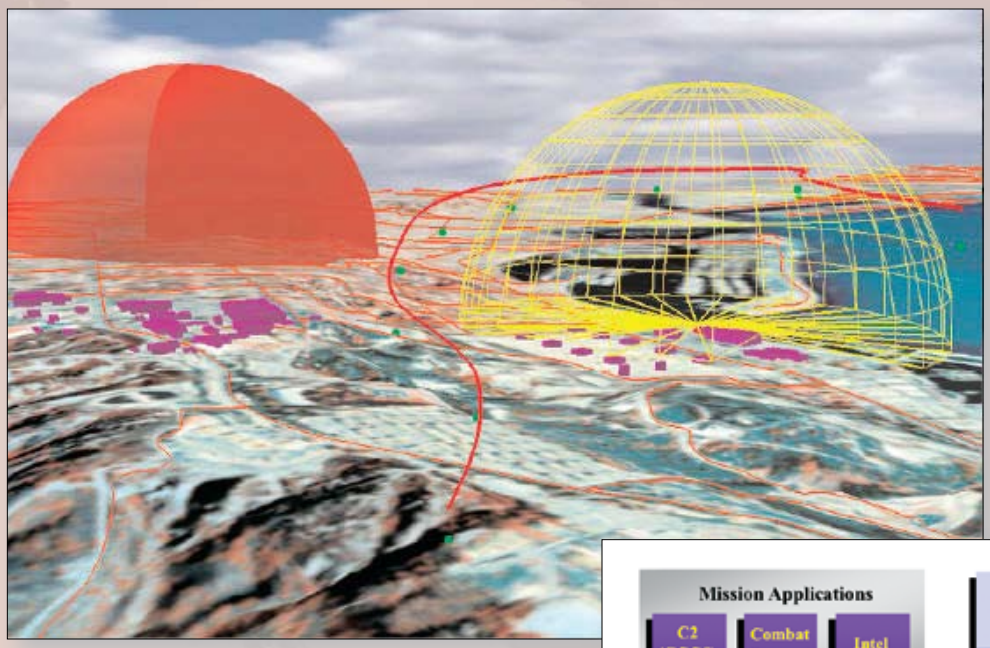
NORTHROP GRUMMAN
Information Technology

Contractor Program Manager

Brett Cameron, brett.cameron@ngc.com

C/JMTK Web Site: www.cjmtk.com

Embedded in C2I Mission Applications



COE Compliant

Thin Clients

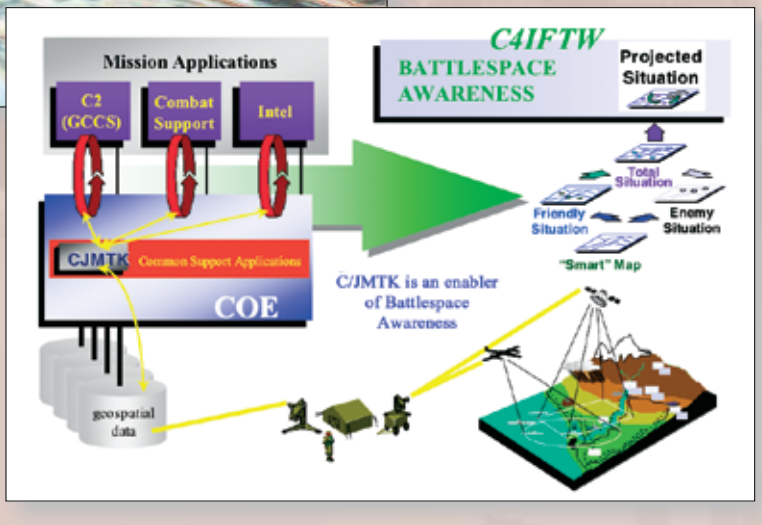
Thick Clients

Application Server

NGA Licensed

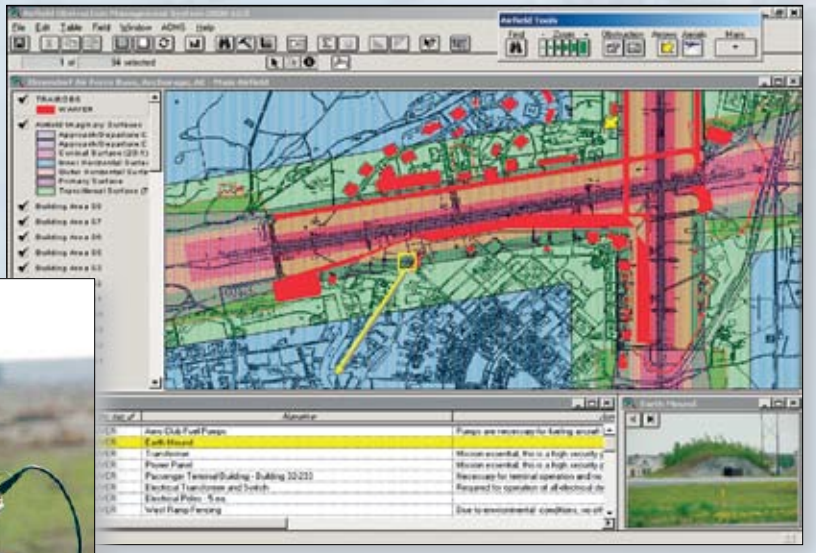
Scalable

Data Server



U.S. Air Force GeoBase

One Installation...One Map



GIS links graphic features (entities) to tabular data (attributes).

Air Force basing operations, whether at home or abroad, have relied on civil engineers to respond especially when the mission called for a map. Since the creation of the "Installation Engineer" role in the early 1950s to the present, surveying and mapping have always been key civil engineering tools for managing the complex installation infrastructure. The USAF GeoBase program, launched in the summer of 2001 by the Air Force Civil Engineer, has transformed the traditional surveying and mapping process into an invaluable information resource for the larger installation mission, both at home air bases and in the deployed environment.

What is GeoBase? It is probably easiest to begin with what it is not. It is not just an information technology (IT) system that can be purchased over the counter at a software store. It is not a capability that can be achieved by buying computer hardware and geographic information system (GIS) software and leaving it on organizational doorsteps to be implemented. Rather, shaped from lessons learned over the past 20 years, it is a radically different and surprisingly practical strategy for guiding Air Force organizations to make long-term, shared use of geospatial information or digital maps to accomplish the shared basing mission. Most important, it is a strategy that is working.

Aided by the convergence of innovations across the technology, policy, and academic research sectors and championed by the Air Force Civil Engineer, the GeoBase strategy has literally transformed traditional mapping. However GeoBase may be defined, in the wake of 9/11 events, the rapidly expanding demands for situational awareness within and around Air Force base operations show that the GeoBase program came just in time.

For more information on GeoBase

Contact Laura Silsbee at
Laura.Silsbee@pentagon.af.mil.

You may also visit www.geobase.hq.af.mil.

Building a Strong GeoBase Foundation

The comprehensive GeoBase program is based on guiding principles that echo Federal, Department of Defense, Air Force directives or widely recognized best practices for information management. These guidelines direct Air Force organizations to

- Recognize the value of assigning a dedicated GeoBase cadre to ensure that local geospatial information resources are identified, organized, and applied to help satisfy Air Force and DoD needs.
- Appreciate that paying attention to the necessary cultural and behavioral changes accompanying GeoBase, rather than information technology, will be the most critical factor in securing long-term success.
- Employ a strategic planning process to guide the development and assessment of the impacts of GeoBase investments to include phasing the implementation to both reduce risk and allow the Air Force culture to adapt to new ways of doing business.
- Adhere to a single set of Air Force-approved information technology and data standards as outlined in the GeoBase technical architecture to maximize interoperability, minimize new application development costs, and protect the GeoBase investment.
- Ensure current GeoBase information resources are accurately inventoried and then shared to the maximum extent allowable to avoid wasteful redundancies.
- Validate existing sources of geospatial information prior to investing in new data collection efforts.
- Provide all mission elements with controlled, ready access to a georeferenced common installation picture of the installation.
- Assign geospatial information stewards with the responsibility for maintaining and protecting their respective functional information.

In turn, Air Force organizations should put these principles into operation through their "pillars" of system and information architectures, financial management, policy and guidance, education and training, people, and work flow. Adhering to these guidelines will help ensure Air Force organizations successfully meet the rapidly growing expectations of the Air Force for the GeoBase program.

Common Installation Picture

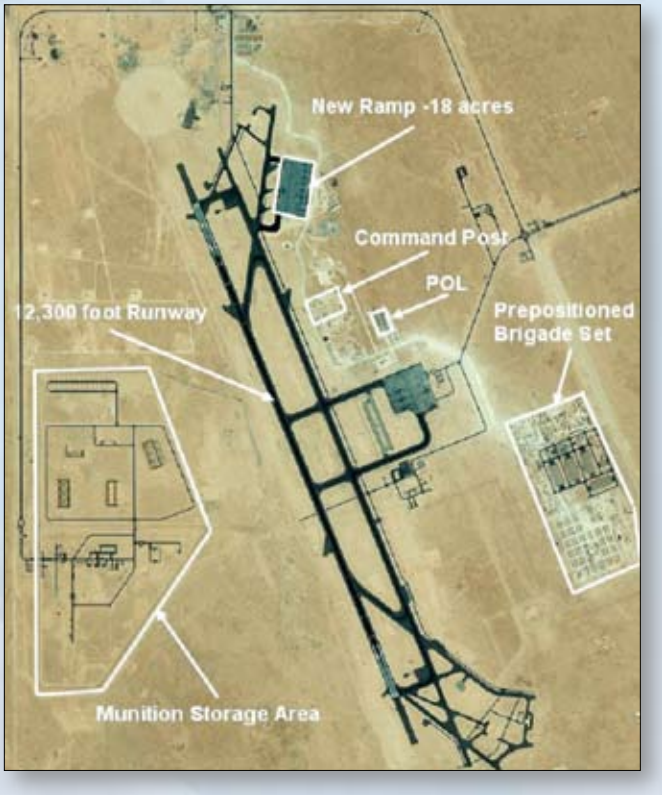
GeoBase Missions

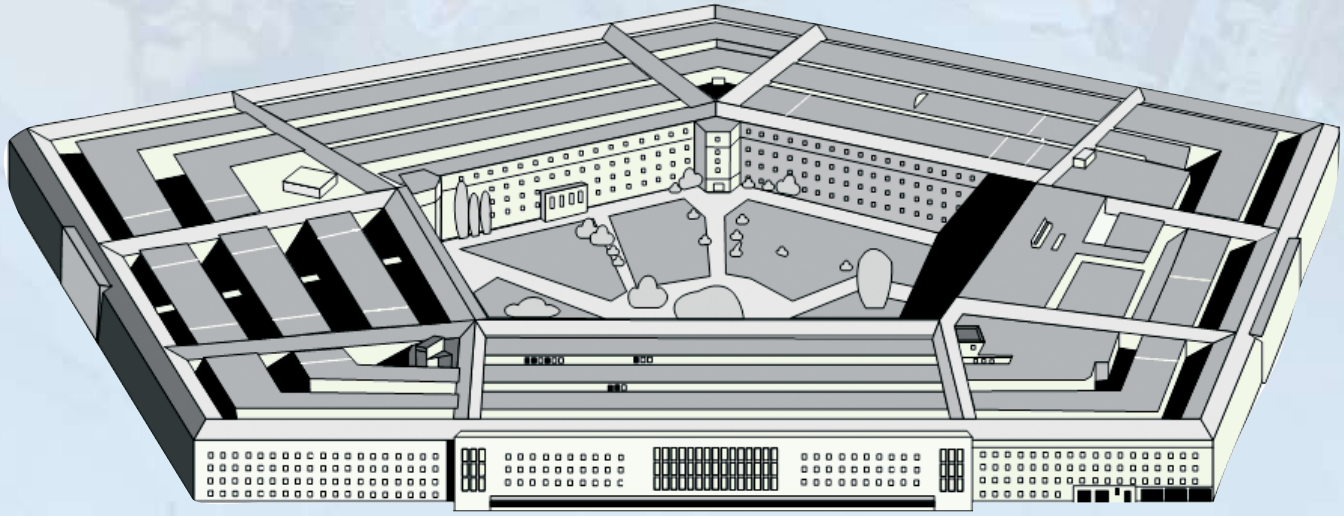
Garrison GeoBase

Typically associated with fixed U.S. Army installations, Air Force doctrine uses the same term to describe one of two modes of Air Force basing. Garrison GeoBase enhances command and control by providing one installation map that delivers current situational awareness in a secure fashion via the base network. The Common Installation Picture (CIP) is a high-quality picture that allows viewers from their desktop computers to quickly visualize the complex built-up infrastructure using easy "point-and-click" steps. The Garrison GeoBase information technology architecture was approved by the Air Force Chief Information Officer in October 2002 and will allow current and emerging IT solutions across the Civil Engineer, Real Property, Command and Control, Security Forces, Weapons Safety, Environmental Management, and Communication sectors to make "one installation...one map" a reality.

Expeditionary GeoBase (GeoReach)

Expeditionary GeoBase supports the second Air Force basing mode. GeoReach is the name given to the expeditionary site mapping capability that involves sharing both classified and unclassified information of potential and actual forward operating locations (FOL). While the intelligence sector has focused on targeting "red force" targets within the battle space, GeoReach fills a key basing niche by allowing airmen with Secret access rights to view "blue force" FOL imagery and key infrastructure. Staff within the PACAF, ACC, and USAFE Geo-Integration Offices team with their respective operational planners from their regional areas of responsibility to optimize combat support and force deployment. The CIP again serves as the visual rallying point for compiling all expeditionary site survey data into a single view. The imagery is acquired through partnerships with the National Geospatial-Intelligence Agency and other branches of the military. Additional software tools enable operators, logisticians, and civil engineers with aircraft parking, fuel and munitions storage, and other force bed down requirements. Because of the GeoReach process, fewer airmen go forward prior to deployment where they may be exposed to hostile conditions, yet expeditionary site planning knowledge vastly increases.





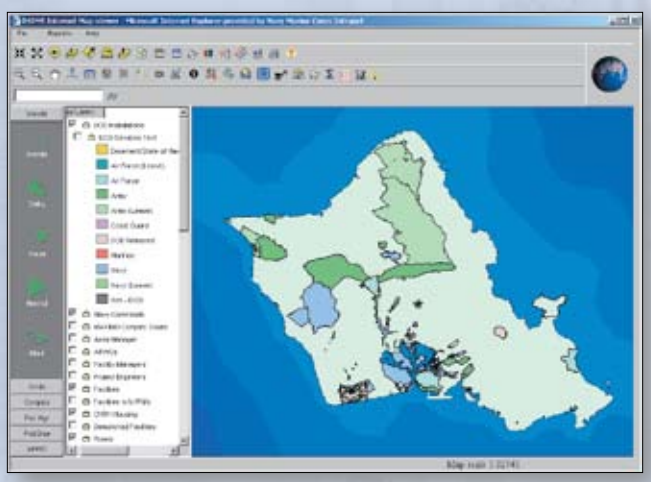
Strategic GeoBase

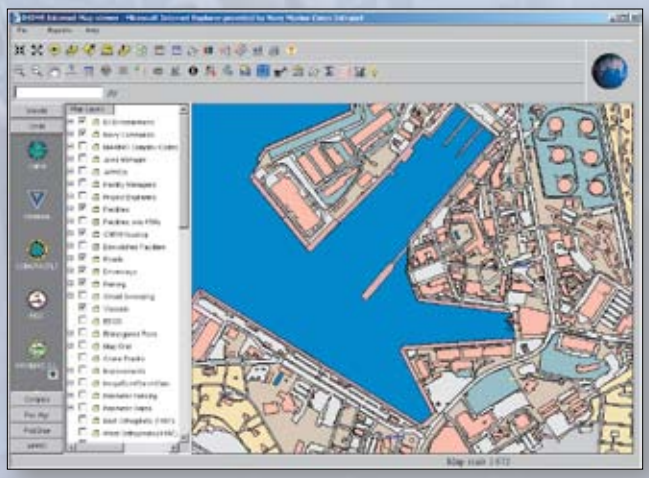
It did not take long for senior leaders on the Air Staff and the Air Force Secretariat to inquire as to how the GeoBase program could be extended to meet their needs. Therefore, the Strategic GeoBase program was launched in 2002 as a practical means to convey imagery and key data from Garrison GeoBase sources to satisfy strategic questions. Proximity of installations and ranges to other regions, such as urban areas, national parks, and other areas of political interest, is a frequent topic of discussion within the Pentagon. Strategic GeoBase is designed to serve as the single installation visualization tool by incorporating legacy Air Force geospatial information investments such as the range database maintained in Airspace and Ranges (AF/XOOR). In addition, Strategic GeoBase will also blend with emerging mapping solutions tied to homeland defense, force protection, and base realignments. Thanks to the Assistant of the Air Force for Installations, Environment and Logistics, the first Air Force-wide library of imagery acquired from commercial space-based satellites provided situational awareness to senior leaders in early 2004. As more Air Force members become aware of GeoBase capabilities, this new appreciation for the value of geospatial information will undoubtedly lead to more innovative uses.

The Future Defense Installation Spatial Data Infrastructure

In just a few years, the USAF GeoBase program has demonstrated how a mission-centric approach to GIS investment can rapidly be adopted across a worldwide enterprise. Senior Department of Defense (DoD) leaders have also gained a new appreciation for the value of GIS-enabled situational awareness. In July 2004, the Office of the Secretary of Defense established the Defense Installation Spatial Data Infrastructure (DISDI) office that will serve as a new DoD focal point for securing adoption and shared use of geospatial information resources across the DoD. The DISDI office will develop policies and facilitate coordination of spatial data standards, imagery, and associated geospatial technologies across the broad worldwide CADD/GIS user base in the defense sector. The DISDI effort will also ensure that critical mission sectors outside of installations and environment, such as homeland defense, are also making full access of the "one installation...one map" vision. For more information on the new DISDI program, contact the executive manager for the DISDI program, Colonel Brian Cullis (USAF), at Brian.Cullis@osd.mil.

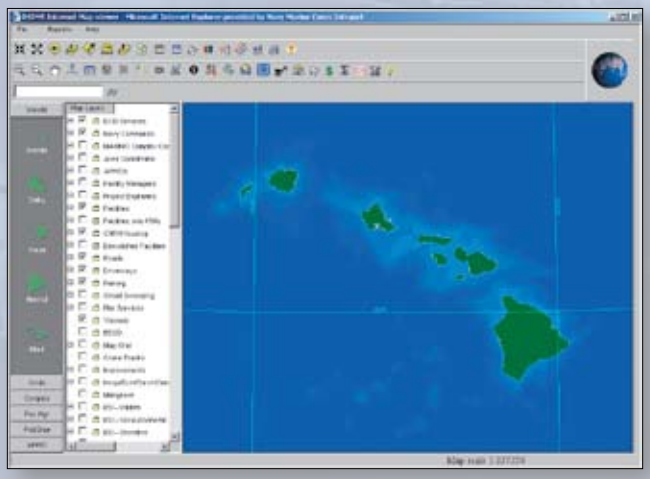
Navy Region Hawaii Uses GIS Technology for Facilities Management and Public Works Operations





Commander Navy Region Hawaii (COMNAVREG Hawaii) required a standardized process to keep track of its shore installation facilities and infrastructure and desired the capability for information retrieval and analysis to support facilities planning, management, and public works efforts. To accomplish this goal, it created a component-based GIS application called Regional Shore Installation Management System (RSIMS).

RSIMS combines spatial data with tabular information to provide its users with a visual tool that allows them to intuitively perform reporting and analysis functions for regional planning and facilities management. RSIMS links the region's spatial data to databases such as Naval Facilities Assets (NFA) that contain real property inventory for land, buildings, structures, and utilities owned or leased by the Department of the Navy. RSIMS is also linked to IBM Maximo®, an Oracle®-based maintenance management system that tracks and manages repair, maintenance, and service work orders for many military activities in Hawaii. Energy consumption data is also available through a link to CUBIC, an Oracle-based system that stores electrical as well as water and sewer metered data. The integration of GIS technology with operations databases results in an easy-to-use, interactive graphical interface allowing users to navigate and retrieve information via a map. It also provides reporting and analysis functionality for work orders, equipment inventory, preventive maintenance inspections, and job plans for recurring work.



Point of Contact

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Pearl Harbor, Hawaii 96860

Peter C. Len, P.E.
Director, Engineering System Division
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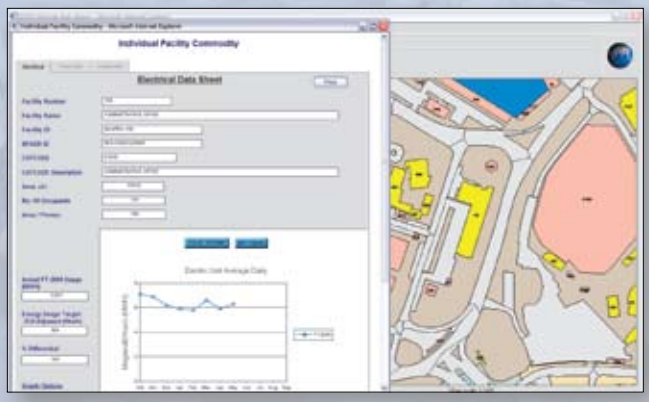
E-mail: peter.len@navy.mil

Through RSIMS, multiple users can instantly access spatial data in real time from their desks and are able to overlay various data types onto each other. It has increased worker efficiency and improved response time. Users are now able to do data analyses and see relationships between different data sets, all of which were difficult or impossible when the data existed as paper maps and stand-alone databases. Other benefits RSIMS has provided are the ability to share data among various departments, thus eliminating data redundancy and fragmentation, as well as streamlining data maintenance by making it easier, faster, and more cost-effective to update the maps.



RSIMS utilizes a spectrum of spatial data required for facilities and installation management.

- General installation maps: military facilities and dwelling units, transportation routes, naval vessels, piers, cadastre, bathymetry, and hypsography
- Utilities: electrical, wastewater, potable water, steam, compressed air, and saltwater
- Environmental constraints: wetlands, shoreline sensitivities, refuges, endangered species, electromagnetic radiation arcs, explosive safe distance arcs, hazardous materials storage, and remediation zones
- Public safety: tsunami and flood inundation zones, emergency services locations, oil spill contingencies, street geocoding for emergency dispatch, and secured perimeter boundaries

RSIMS also includes raster imagery such as orthorectified aerial photography and USGS topographic line maps. The vector spatial data served by RSIMS is stored either as ESRI's ArcInfo® shapefiles or in ESRI's ArcSDE® geodatabase, and the data is maintained using ESRI's ArcGIS® Desktop (ArcMap™, ArcCatalog™, ArcToolbox™) and ArcInfo Workstation. The raster images in RSIMS are compressed using LizardTech's MrSID® and displayed as SID files.

RSIMS is accessed via the Internet based on ESRI's ArcIMS® software. RSIMS is fully component based and data driven allowing for rapid development of customized applications for specific user needs. All configuration data is stored in an extensive Oracle schema that is maintained through an administrative module.

The standardization of the ESRI® file formats allows the same set of spatial data to be used by the Navy for complementary purposes. The RSIMS spatial data is therefore accessible in a mobile environment for on-site investigations using ESRI's ArcPad® and a Pocket PC handheld device. Accessing the data through ESRI's ArcScene™ and IMAGINE® by ERDAS allows the Navy 3D visualization capabilities to verify view channels between buildings, study height regulations, and model harbor depths for ship passage.

U.S. Army Office of the Assistant Chief of Staff for Installation Management

Overview

The U.S. Army Office of the Assistant Chief of Staff for Installation Management (OACSIM) establishes the Army's policy for installation of an enterprise GIS. GIS efforts include standardizing and supplementing existing programs, establishing resources for new programs, and integrating requirements for cross services application. In support of these efforts, the OACSIM is establishing a centralized program that includes a GIS repository (GISR).

Benefits

- Implementing an Army-wide enterprise GIS to support Installation Management
- Cross service coordination in support of the Installation Visualization Tool (IVT)
- Integration of stovepipe GIS implementation into a sustained service-wide resource
- Increased situational awareness at all levels at one or many locations

For more information, visit http://gis.hqda.pentagon.mil.

Distributed Geospatial Intelligence Network

Overview

The DGInet technology can be employed by defense and intelligence organizations to provide an enterprise solution for geospatial Intelligence data. DGInet was designed as a Web-based enterprise GIS for non-GIS savvy intelligence analysts, military planners, and warfighters. It enables the utilization of thin clients to search massive amounts of geospatial and intelligence data, using very low bandwidth Web services, for data discovery, dissemination, and horizontal fusion of data and products.

The DGInet core technology has been deployed at several defense and intelligence community sites.

Features

- Web map services across multiple organizations/nodes
- XML-based metadata search
- Selective data display/data fusion
- Thin client/Serverside applications
- Download capability
- Product generation (soft copy and hard copy)
- Data management via workstation-based administrative tools

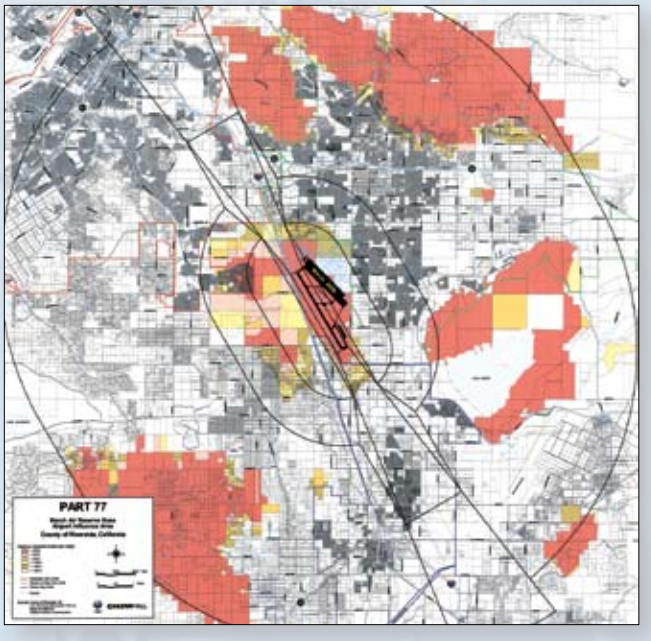
Benefits

The DGInet technology provides a robust geospatial solution for the military/intelligence customer by making very large (multiterabyte) databases available through a common Web-based interface. It provides clients with the capability to quickly and easily find, overlay, and fuse georeferenced data from multiple sources for use as map background displays or to support analytical functions.

For more information contact Jack Miller:
jmiller@esri.com

AIR FORCE

March Air Reserve Base



March ARB Airport Influence Area

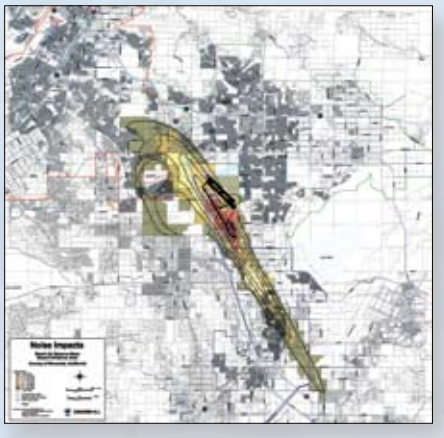
This series of maps displays land use compatibility issues at March Air Reserve Base (ARB) in Riverside County, California.

March Air Force Base (AFB) was first established as a military installation in 1918 and converted to an Air Reserve Base in 1996. With the announcement of base realignment, the adjacent jurisdictions—the cities of Perris, Moreno Valley, and Riverside and the county of Riverside—formed March Joint Powers Authority (JPA), a public entity focusing on addressing the use, reuse, and joint use of the realigned base. JPA is planning and implementing new uses for currently vacant lands, reuse of existing facilities, and joint use of the airfield facilities. The general plan is required by the state to address specific components of the community including safety (areas most vulnerable to an airplane accident during the landing or takeoff), noise sensitivity (sites such as churches, schools, housing, and office buildings), and height restrictions, specifically Federal Aviation Regulations Part 77: Objects Affecting Navigable Airspace.

CH2M HILL developed a parcel-based GIS to enable March JPA to monitor land use adjacent to March ARB. Safety, noise, and Part 77 data sets were developed using both Air Force and Federal Aviation Administration (FAA) regulations and combined with parcels to identify areas sensitive to noncompatible land use. This GIS data set can be used for reviewing property, developing a mailing list for a demographic, and tracking available property for future acquisition and air rights.

CH2M HILL, Inc.
Englewood, Colorado

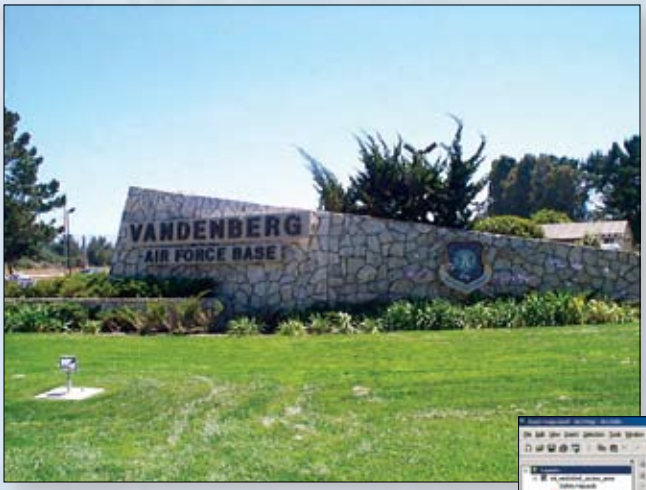
Point of Contact
Stephen Sheridan
E-mail: ssherida@ch2m.com



Noise Impacts

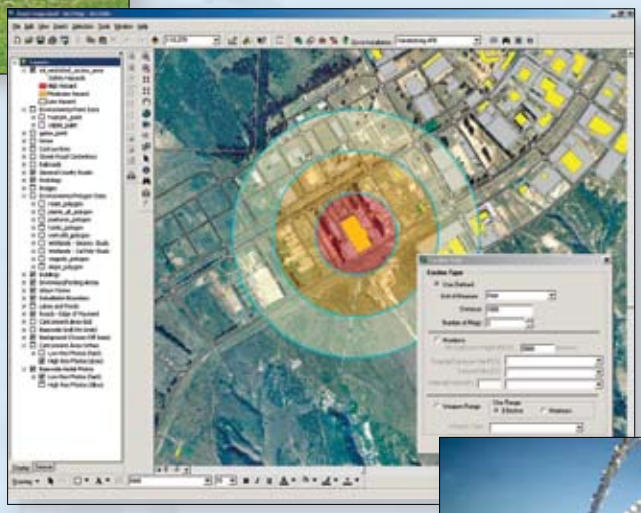
Safety Areas

Vandenberg Air Force Base Geo-Integration Office



Overview

The Vandenberg Air Force Base Geo-Integration Office provides AF GeoBase support to the USAF Space Command and the 30th Space Wing. For the past 10 years, Vandenberg AFB has been a pioneer and leader in GIS implementation and deployment for the USAF. During this time, Vandenberg AFB has compiled one of the largest GIS databases in the Air Force. Its commitment is to provide the 30th Space Wing and all supporting agencies with up-to-date mapping support using the latest technology and equipment in GIS technology.



U.S. AIR FORCE

For more information contact

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GIS/Geo-Integration Administrator
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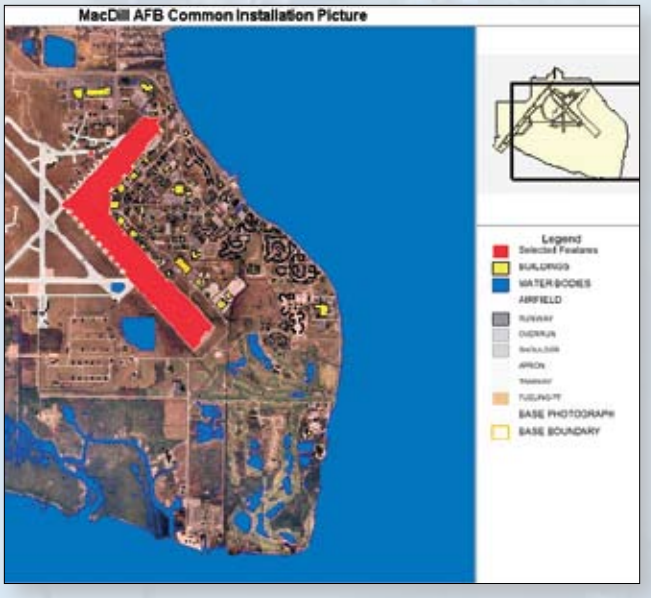
Capabilities

The GIS data sets developed at Vandenberg AFB provide multidisciplined GIS support for the 99,000-acre Vandenberg AFB. From mission critical support of space and missile launches to environmental concerns and fire management, ESRI ArcGIS products have supported the following:

- Comprehensive planning
- Command Post/Disaster Control Group
- Launch Control Center
- Disaster Response Van
- Security Forces Dispatch Center
- Explosive Ordnance Disposal Management
- Airfield obstructions analysis
- Natural and cultural resources
- NRO mission planning
- Hotshots
- Fire department fire modeling (FARSite)
- Flood modeling
- Safety
- Environmental planning
- Environmental restoration (IRP) and compliance
- Engineering project management
- Toxic hazard modeling
- Utilities operations and maintenance
- Communications operations and maintenance
- Disaster preparedness
- Emergency response
- Base safety
- Bioenvironmental
- Real estate management
- Wildlife management
- Weather

Advances in GIS technology, including GPS receivers/base stations, high-resolution orthorectified color photography, and light detection and ranging (LIDAR)-derived hyperaccurate topography have provided the Vandenberg Geo-Integration Office with the necessary tools to ensure that data sets are of the highest accuracy. These advances, along with an excellent GIS support staff, are in line with the highest standards of the U.S. Air Force.

MacDill Air Force Base GeoBase Program



Overview

GeoBase uses an enterprise GIS as its backbone, providing accurate base infrastructure and operational information for real-time situational awareness. MacDill's GeoBase implementation focuses on two mission sectors: Garrison GeoBase and Strategic GeoBase. Implementation efforts began at MacDill AFB in September 2003. Although it is relatively early in the process, the deliberate and systematic approach taken at MacDill has already paid off in huge dividends.

Garrison GeoBase

This is an innovative program enabling cross functional information sharing through a variety of IT solutions. It ultimately enhances the efficiency and accuracy in which current situational assessments are presented to the MacDill AFB decision makers. The foundation of Garrison GeoBase is the Common Installation Picture (CIP). Essentially, CIP is the base layout map provided in a spatial environment. All other basemapping programs use The CIP as its basic map data set. Data displayed on top of The CIP is called Mission Data Sets (MDS). Currently MacDill AFB users access, print, and manipulate the CIP and MDS information through browsers on the base Intranet. In a matter of months, GeoBase has already become a vital working part of many MacDill AFB functions.

Strategic GeoBase

This program provides senior leadership an Installation Visualization Tool (IVT) and the means necessary to answer strategic questions. The MacDill AFB IVT was used to answer the Base Realignment and Closure (BRAC) committee's questions concerning base infrastructure, land usage, base construction constraints, and other critical information. The MacDill community planner and real property manager both stated, "Without the GeoBase service, answering the BRAC inquiries would have been much more difficult and highly time-consuming."

For more information contact

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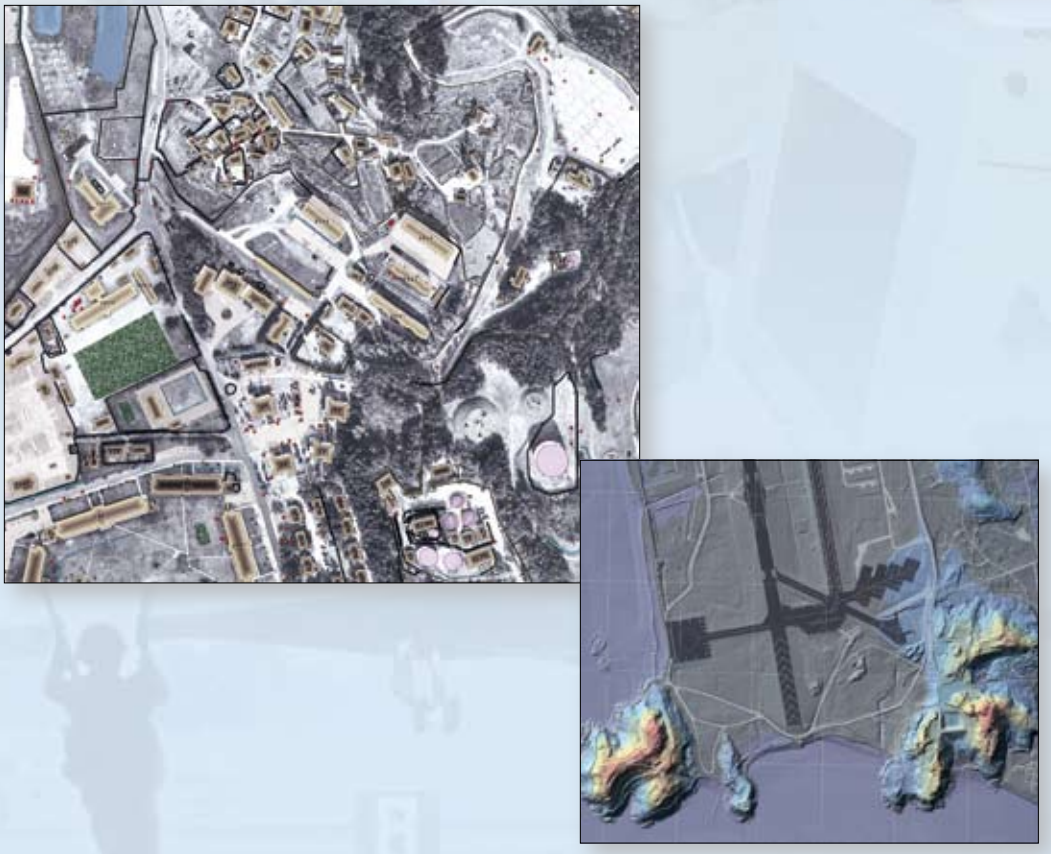
Kunsan Air Base



Geo-Integration Office, Kunsan Air Base, Republic of Korea

Kunsan Air Base is located on the southwestern coast of the South Korean peninsula. This map displays the various forms of data that have been used to develop and maintain an accurate and effective mapping system for the Pacific Air Force GeoBase program.

The digital terrain model (DTM) depicts elevations in five-meter intervals around the airfield. It was manipulated to identify areas on the base that are at or below sea level—areas most susceptible to flooding. The elevation information derived from the DTM has been used to help emergency teams on the base prepare for typhoon season.

The detail view is a general map of the northeast portion of the base. It shows existing fence lines, walls, parking areas, some aboveground utilities, and structures. These features were overlaid onto the base orthophoto and used to identify and create locations for some of the more visible aboveground features. The GeoBase staff used this data to verify and correct features for the base Common Installation Picture and Mission Data Sets.

U.S. Air Force

Geo-Integration Office

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Elmendorf Air Force Base Approach Zone Encroachment Analysis

Oblique view from the southeast – Red areas highlight obstructions within the approach zone.

Compliance with Air Force Safety Standards brought the altitudes associated with the North Approach Zone of Runway 33-15 into question. An intersection between the defined Approach Zone (a 1.145 degree incline from an imaginary line 200 feet before the runway on the overrun at ground level) and a ground surface defines a collision. According to analysis, the approach zone does appear to collide with the surface. A total of 5,253,258.72 cubic meters over a surface area of 657,563.29 square meters would need to be removed to meet standard requirements.

The planar elevation model of the approach zones was derived from a 0.5-meter digital elevation model by way of the inverse distance weighted method in ArcGIS Spatial Analyst and trigonometric relationships. Oblique visualizations produced in ArcScene (ArcGIS 3D Analyst™) were used to display the area of incidence from alternate angles with the assistance of vertical exaggeration. The raster calculator in ArcGIS Spatial Analyst was used for conditional mathematics in making volume and surface area calculations.

Elmendorf Air Force Base
Alaska

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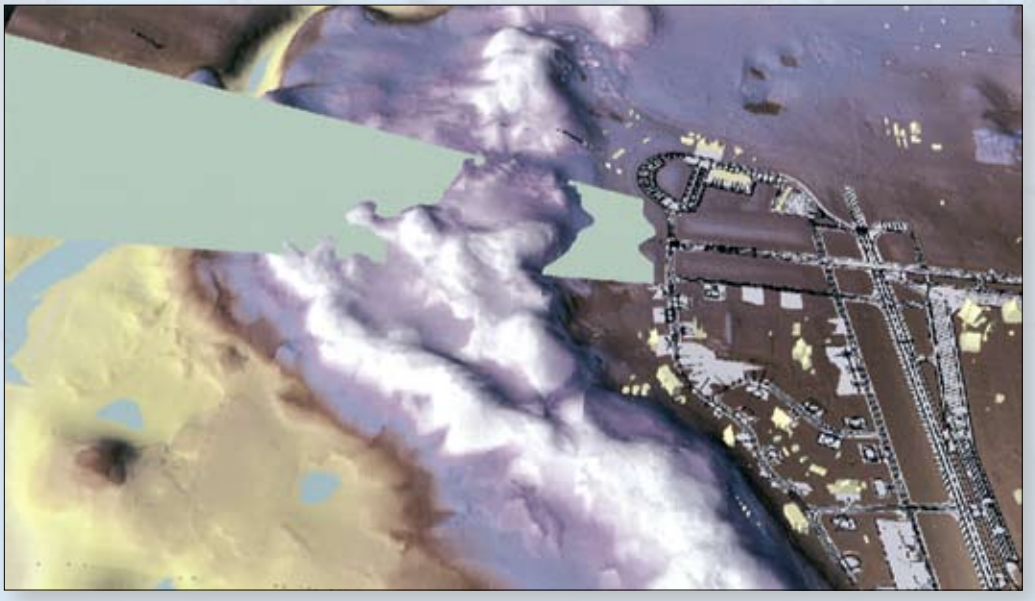
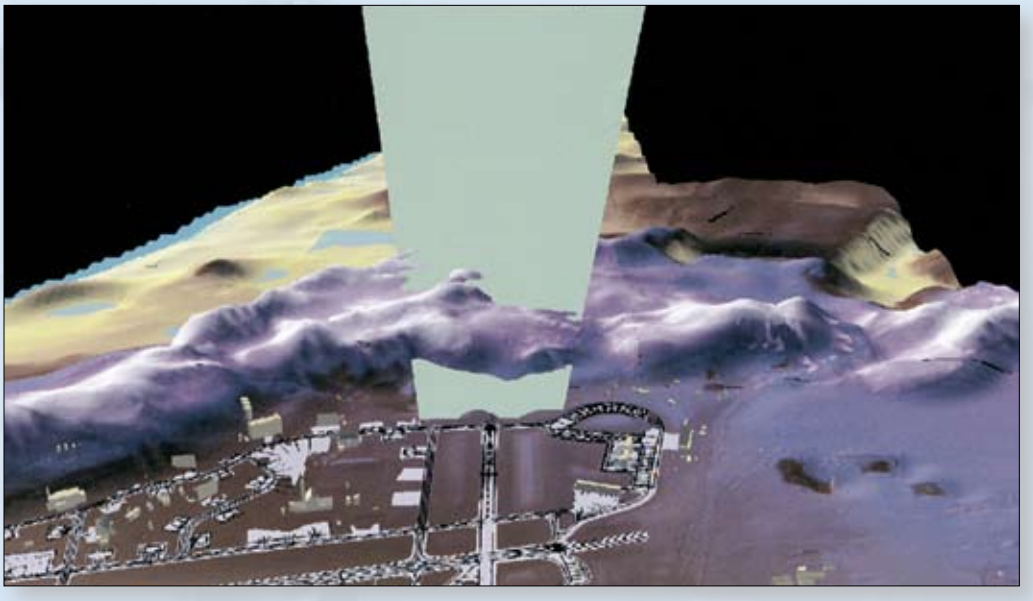


Oblique view from the west—Digital elevation model and hillshade at two-meter resolution north of the runway and cantonment area, 0.5-meter resolution otherwise.



Oblique view from the south showing areas of hill that break the safety approach plane.

Global Mirror Exercise

Overview

Global Mirror, a Department of Homeland Security (DHS) and Federal Emergency Management Agency (FEMA) supported emergency preparedness exercise, was conducted on May 10–12, 2004, in Colorado Springs, Colorado. The exercise presented a weapons of mass destruction (WMD) terrorist incident scenario. The exercise also crossed government jurisdiction geographic boundaries of Peterson Air Force Base, the city of Colorado Springs, and El Paso County, all in Colorado. Fifty-two agencies and organizations participated in the exercise.

CH2M HILL Point of Contact Information

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Goals

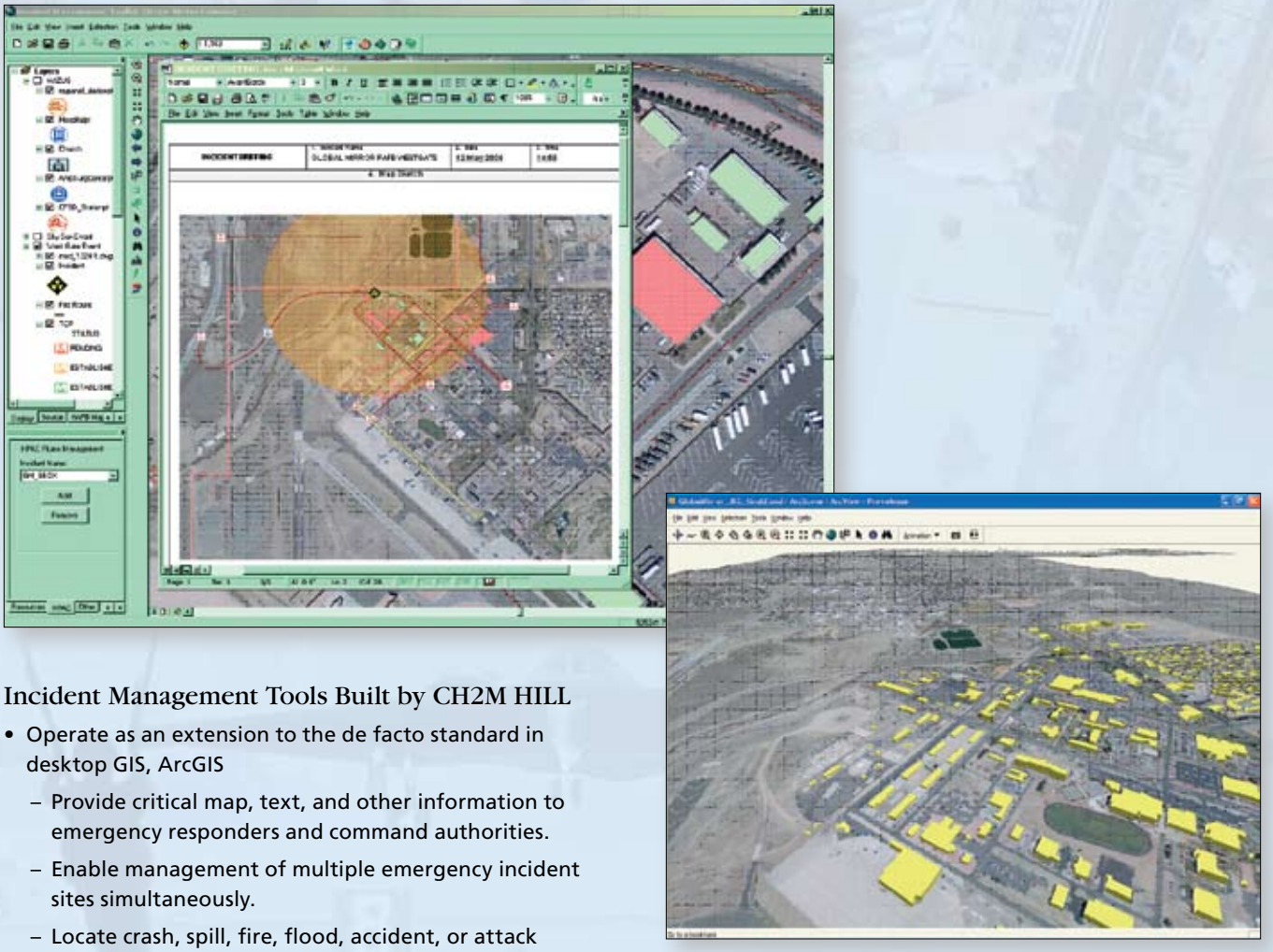
One of the goals of Global Mirror was to test an integrated suite of software applications to

- Enhance situational awareness by providing a common operational picture for incident management to emergency managers and responders.
- Support compliance with applicable Air Force's Full Spectrum Threat Response (FSTR) policies and instructions for collaborative emergency incident response.
- Support the Department of Homeland Security's National Incident Management System (NIMS) for managing local to federal interagency collaboration and communication during emergencies.
- Provide secure interagency real-time collaboration for planned and ad hoc emergency management work flows.

Solutions

CH2M HILL provided technology support to the U.S. Air Force Space Command's participation in the multi-agency homeland security exercise. CH2M HILL's solutions included an integrated suite of applications to

- Leverage existing map and imagery data investments of Peterson AFB, City of Colorado Springs, El Paso County, Colorado Springs Utilities, USGS, NGA, and FEMA to provide a collaborative common operating picture for situational awareness.
- Support redundant wireless communications to critical operations nodes—leveraging commercial service providers while maintaining high levels of security.
- Integrate City of Colorado Springs and Peterson AFB emergency response vehicle location information provided by an automated vehicle location (AVL) system.
- Integrate visualization of hazardous release of materials events using the Defense Threat Reduction Agency's (DTRA) Hazard Prediction Assessment Capability (HPAC).



Incident Management Tools Built by CH2M HILL

- Operate as an extension to the de facto standard in desktop GIS, ArcGIS
  - Provide critical map, text, and other information to emergency responders and command authorities.
  - Enable management of multiple emergency incident sites simultaneously.
  - Locate crash, spill, fire, flood, accident, or attack incident sites.
  - Generate incident cordon areas.
  - Track emergency responder vehicle locations near real time using AVL technology.
  - Model and plot potential toxic plumes.
  - Generate optimal routes for emergency response to an incident.
  - Determine evacuation routes from an incident and potential toxic plumes.
  - Generate text reports of incident resources and status.
  - Display the status of buildings inside an incident area cordon based on notification and evacuation status.
  - Automatically generate traffic control (guard/barricade) points and stage entry control point locations.
  - Assign resources to incidents based on incident management needs (police, fire, logistics, and operations).
  - Utilize map bookmarks for quick navigation and management of multiple incidents.
  - Integrate map output with NIMS incident briefing reports for collaboration.
- Provide customized peer-to-peer (PTP) based secure collaboration using Groove Networks' Groove Workspace.
  - Maps are shared in a secure Groove Workspace from the CIMT.
  - Department of Homeland Security NIMS and Air Force FSTR document libraries and forms are available in a shared and trusted workspace for collaborative operations.
  - Maps and documents provided to the Groove Workspace are securely shared within an organization or with external collaborative partners.
  - Secure communications are provided.
    - Provide instant messaging (chat).
    - Provide messaging (e-mail).
    - Provide voice (VOIP).
  - Groove collaboration tools
    - Provide files, forms, calendar, discussions, pictures, meetings, and sketchpad.

Lessons Learned or After Action Review

"Our goal is to build a common command and control tool that each base can use for consequence management and emergency response," said LtCol. Tom Laffey, Air Force Space Command Emergency Services Division chief.

The heart of this new capability is the GeoBase service, which integrates geographic information systems with global positioning system technology to provide incident commanders with a Common Operating Picture of a disaster scene.

"GeoBase effectively reduces our response time by providing quick and accurate response capability," said LtCol. Laffey. "The system combines detailed maps of an accident scene with automatic vehicle location technology to provide both on-base commanders and community leadership with the ability to see the same picture of the incident scene and more effectively coordinate response efforts."

Air Force Space Command (AFSPC) is working closely with emergency response personnel from local, state, and federal entities to take advantage of emerging technologies to enhance emergency response capabilities.

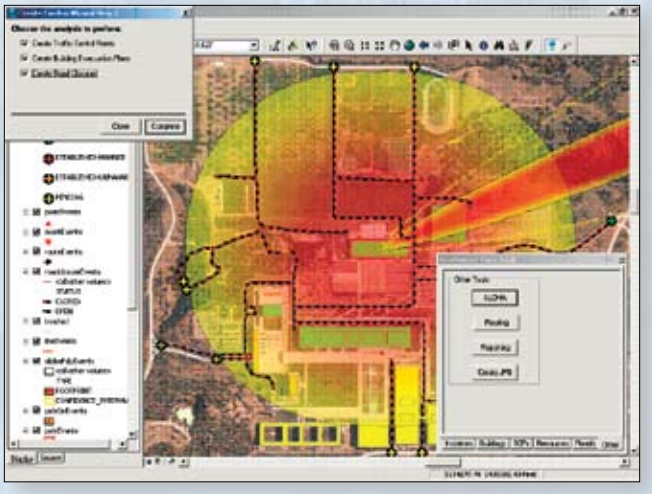
"As members of this community, we want to ensure every possible resource is available to assist the city in the event of an emergency," said General Lance W. Lord, AFSPC commander. "This new system will streamline those efforts and enhance the effectiveness of that relationship when it comes to first response."

A major challenge for integrating military and civilian response capabilities was finding the common geography to tie each entity together. This thread is *The National Map* created and maintained by the U.S. Geological Survey.

"*The National Map* is a seamless digital map of the entire United States that is available on the Web," said Max Ethridge, geographer for USGS's central region. "We work with states, cities, counties, and other federal agencies across the country. We find that by working with these kinds of relationships between cities and military bases, we can provide data of the surrounding areas and provide some assistance with technology and standardization."

The commander of the 21st Space Wing at Peterson AFB knows how vital crisis communication is between the base and the local community.

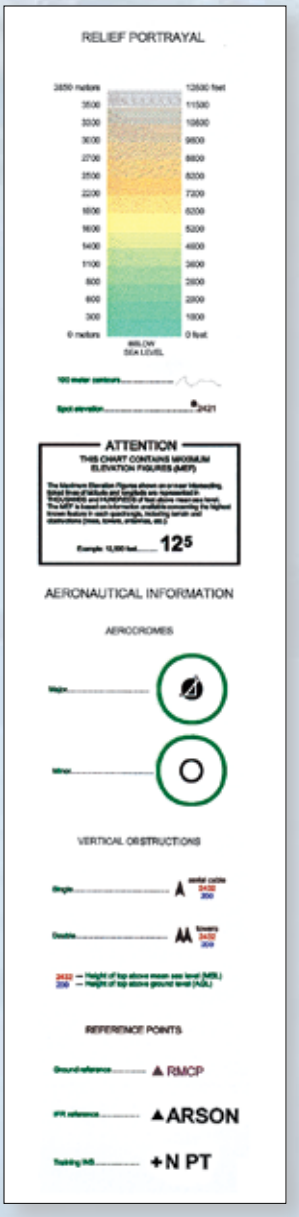
"In 1997, I was the missile wing commander at Grand Forks (Air Force Base, North Dakota) during its 500-year flood, so I know up close and personal how important it is to have established and rehearsed relationships with your downtown community," said Brig. Gen. Richard E. Webber. "The first thing you need to be able to do is communicate, and with this new system, the county can talk to the city and to any of the military installations, and that is a huge improvement. Every two years we have an exercise with

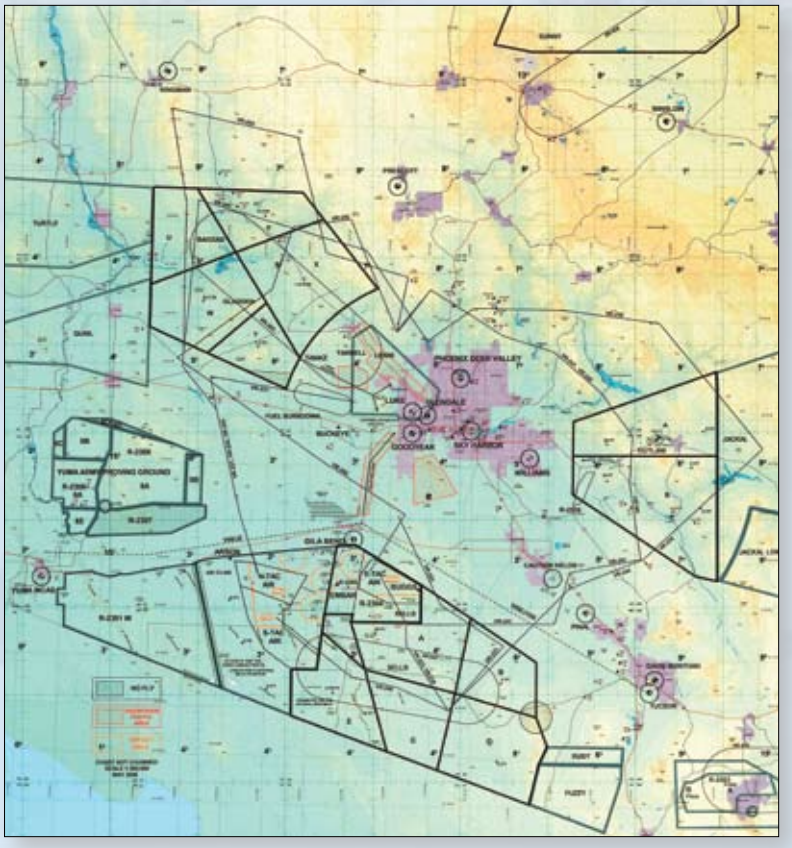


the county and the city, and this year, for the first time, we brought civilian firefighters onto the base to fight a simulated fire. This will pay huge dividends, because we now know how to work with each other not only at an operational level but at a tactical level."

"The country is now more aware of the need for cooperation and coordination between military bases and the civilian community," said Colorado Springs Mayor Lionel Rivera. "In Colorado Springs we have several military installations and several levels of government, and if we can learn to do this as a team, I think we can be a model for the rest of the nation. We have one of the best prepared communities in the country, and it is our responsibility as government and military leaders to provide that kind of safety net for our community."

Tactical Pilotage Chart





Instructional pilots use the Tactical Pilotage Chart as a supplemental tool during training of F-16 student pilots at Luke Air Force Base near Phoenix, Arizona. The chart contains surface and airspace data, such as elevation, major roads and cities, airfields, obstructing towers and cables, training routes, restricted airspace, no-fly areas, communication points, tactical areas, and other military operating areas, covering Arizona.

The Standards and Evaluations Group, an education component of the 56th Operations Group at Luke Air Force Base, commissioned the chart. More than 100 of these charts are circulating among the fighter squadrons attached to Luke Air Force Base and several divisions of the 56th Range Management Office.

56th Range Management Office
Luke Air Force Base, Arizona

By BTG, Inc., Applied Engineering Services and Luke Air Force Base, 56th Range Management

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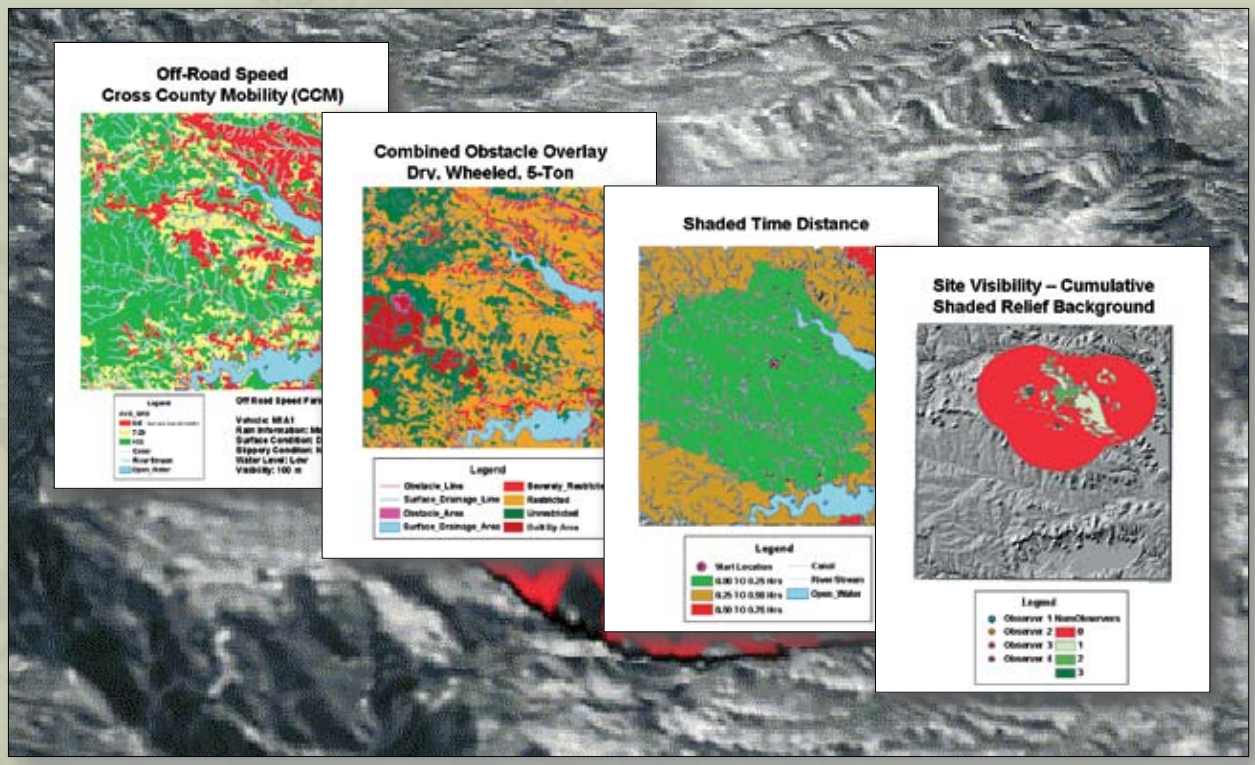
ARMY

Digital Topographic Support System



Overview

Battlefield commanders rely heavily on Intelligence Preparation of the Battlefield (IPB) to reduce uncertainties about the enemy, weather, and terrain. Terrain analysis, which provides this information, must be tailored to the specific mission and unit involved. Various tactical decision aids (TDAs), such as cover and concealment and off-road mobility, are needed, which integrate geospatial data, weather, imagery, and other information to support the commander's battle planning and execution. The Digital Topographic Support System (DTSS) provides critical, timely, and accurate digital and hard-copy geospatial information to support IPB.

Capabilities

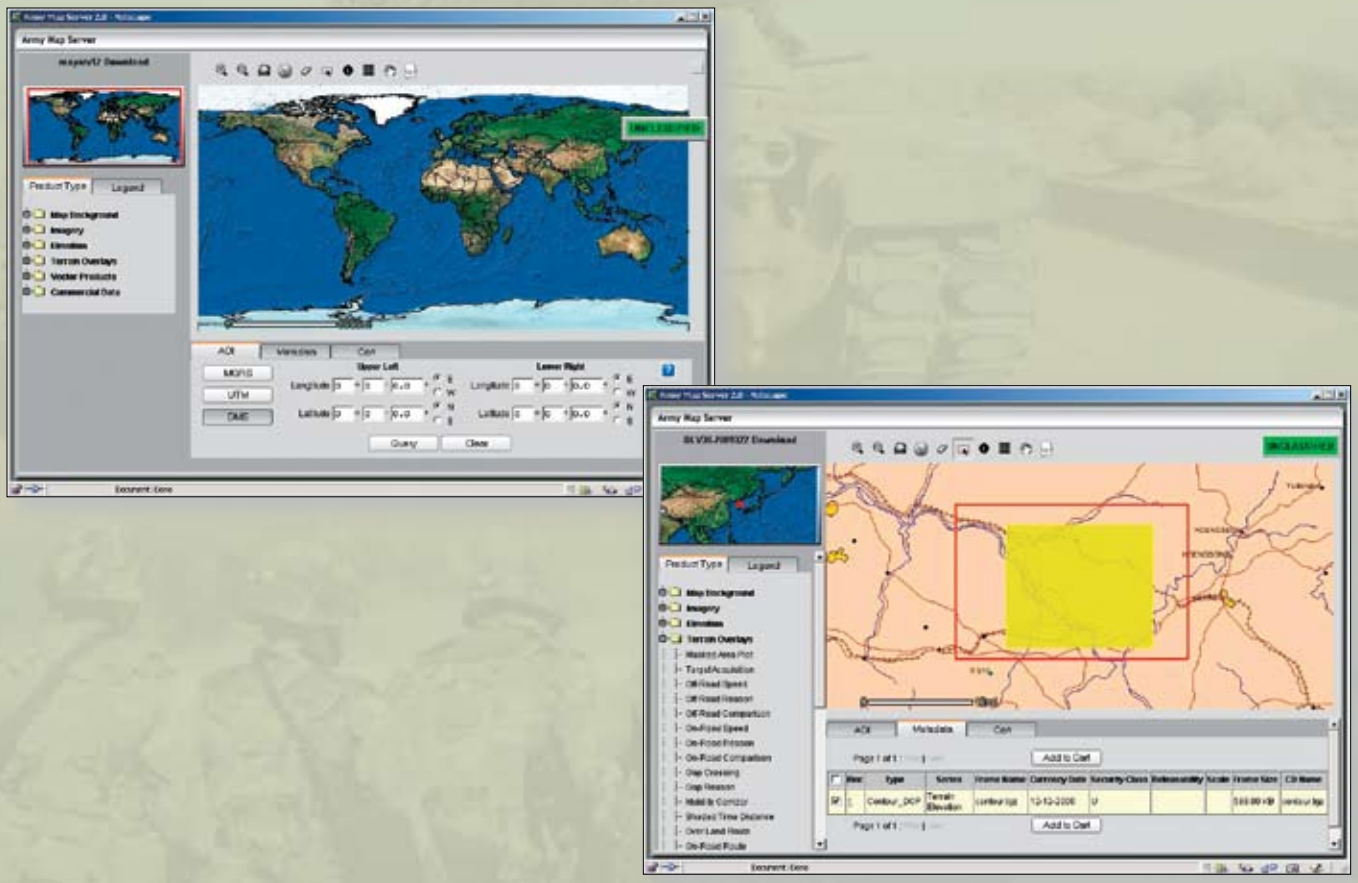
By taking advantage of capabilities provided by ESRI's ArcGIS software, along with custom code, the DTSS provides the Army with the capability to generate custom TDAs from any digital terrain data source. The DTSS provides the user with an easy-to-use interface to create user-defined TDAs based on the area of operation, mission requirements, and available data.

Benefits

The DTSS missions include generating and collecting geospatial information, developing and managing a geospatial database, and providing a suite of geospatial information and capabilities that support the warfighter with terrain analysis products, special map reproduction, and geodetic survey support.

For more information, visit www.tec.army.mil/ctis/index.html.

Army Map Server



Overview

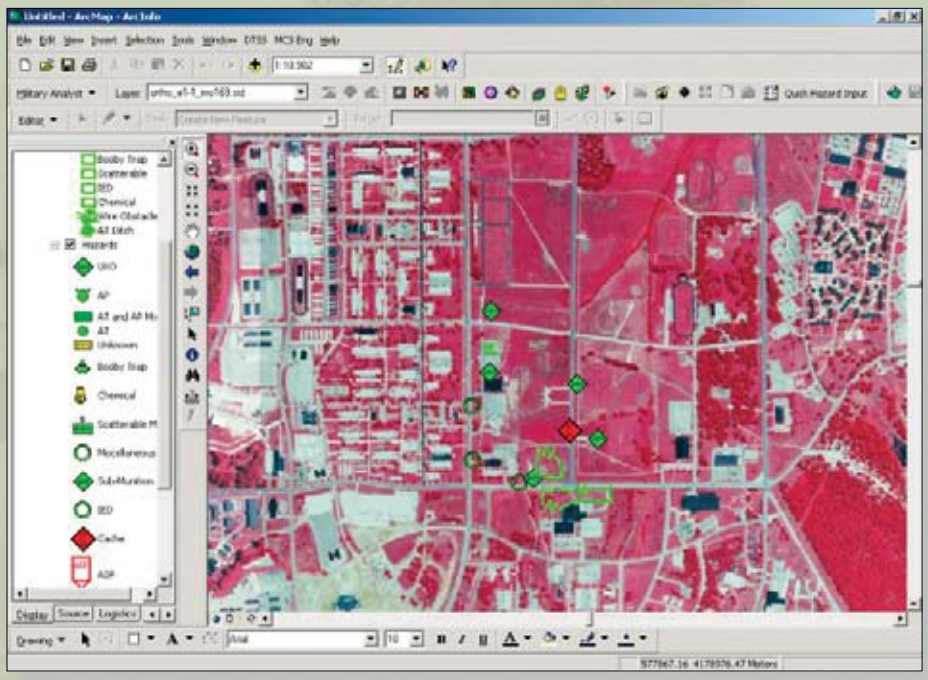
The Army Map Server was created in an effort to support the dissemination of a common geospatial data set to all Army Battle Command Systems (ABCS). The Army Map Server utilizes three primary sources of data: National Geospatial–Intelligence Agency (NGA), commercial data, and data derived by Army Terrain Teams. NGA provides digital elevation, feature, and image data. Commercial data consists mainly of vectors, high-resolution imagery, and video formats. The Army Terrain Teams provide both digital data and Tactical Decision Aids (TDAs) generated on the Digital Topographic Support System (DTSS).

Capabilities

The Army Map Server provides a Web-based, easy-to-use interface that allows clients to pull several geospatial data and product types stored on the DTSS down to their systems. The Army Map Server uses state-of-the-art commercial software packages including ESRI's ArcIMS and ArcSDE as well as IBM's Informix® relational database management system (RDBMS) to store, manage, and exchange this data. ArcIMS and ArcSDE are also components of the Commercial Joint Mapping Toolkit (C/JMTK), an NGA program to enhance geospatial data interoperability across DoD systems, built around ESRI components. This commonality will allow greater sharing of data and services between the Army Map Server and systems using C/JMTK.

For more information, visit www.tec.army.mil/ctis/index.html.

Maneuver Control System—Engineer



Overview

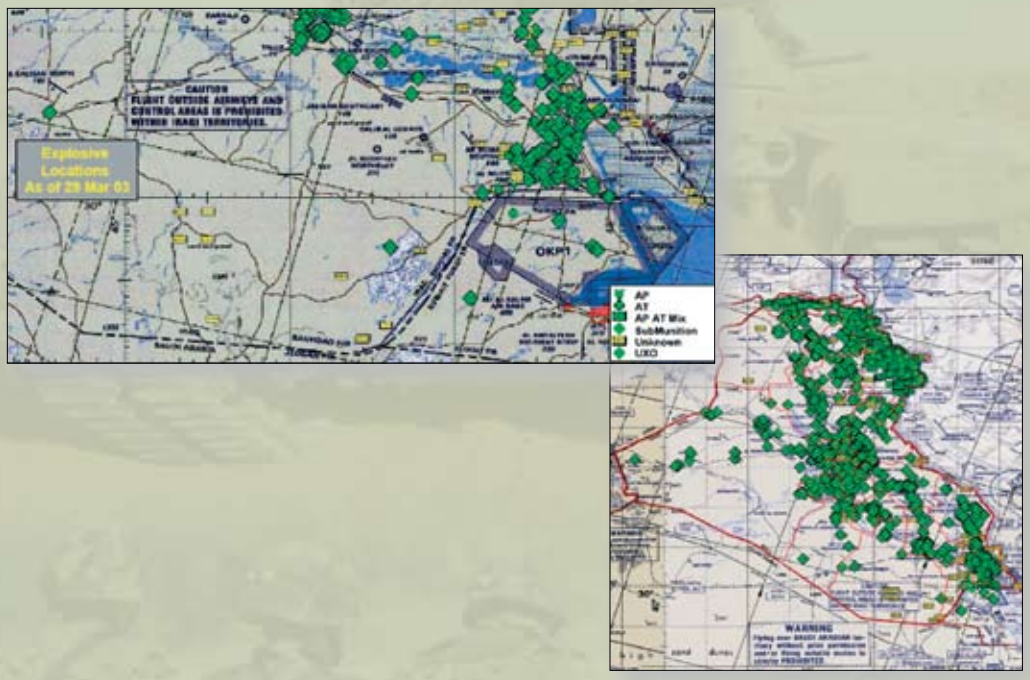
Maneuver Control System—Engineer (MCS-Eng) brings the appropriate level of mobility and survivability information to engineers to support maneuver forces during battlefield planning and execution. MCS-Eng was developed for all combat engineering units. MCS-Eng will assist engineers by giving engineering units an easy-to-use, comprehensive Command and Control (C2) capability that allows for planning, executing, reporting, and visualing that will update the Common Tactical Picture (CTP). MCS-Eng capabilities focus on four major functional areas: countermobility, survivability, mobility, and general engineering.

Capabilities

For support of operations during Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF), MCS-Eng stand-alone prototypes called the Tactical Minefield Database (TMFDB) were provided to soldiers in Kuwait, Afghanistan, and Iraq. The TMFDB is an application built using ESRI ArcObjects™ and integrated into the ArcMap framework making it compatible with the Commercial Joint Mapping Toolkit (C/JMTK). MCS-Eng 1.0 expands on capabilities of the TMFDB and is the first released, fully integrated version of MCS built with C/JMTK components.

For more information, visit
www.esri.com/library/newsletters/defense/muster_winter2003.pdf.

Tactical Minefield Database



TMFDB is an application built on ESRI's commercial off-the-shelf ArcInfo software. The use of ArcGIS software was beneficial because it has been used extensively in the military topographic community for several years. Using existing COTS software and modifying it to meet current needs significantly decreased the fielding time required to receive TMFDB prototypes and place them into operation

Features

- Data input
- Data merge
- Data analysis
- Output—C2PC overlays, maps, HTML reports

Benefits

TMFDB provided a new capability to engineers to track explosive hazards on the battlefield. This new capability was especially helpful to CFLCC-C7. TMFDB has proven to be a useful tool to track minefields and explosive hazards through all phases of this campaign. Using TMFDB, CFLCC-C7 was able to track the location of all air and ground cluster munitions as well as new and existing minefields.

For more information contact

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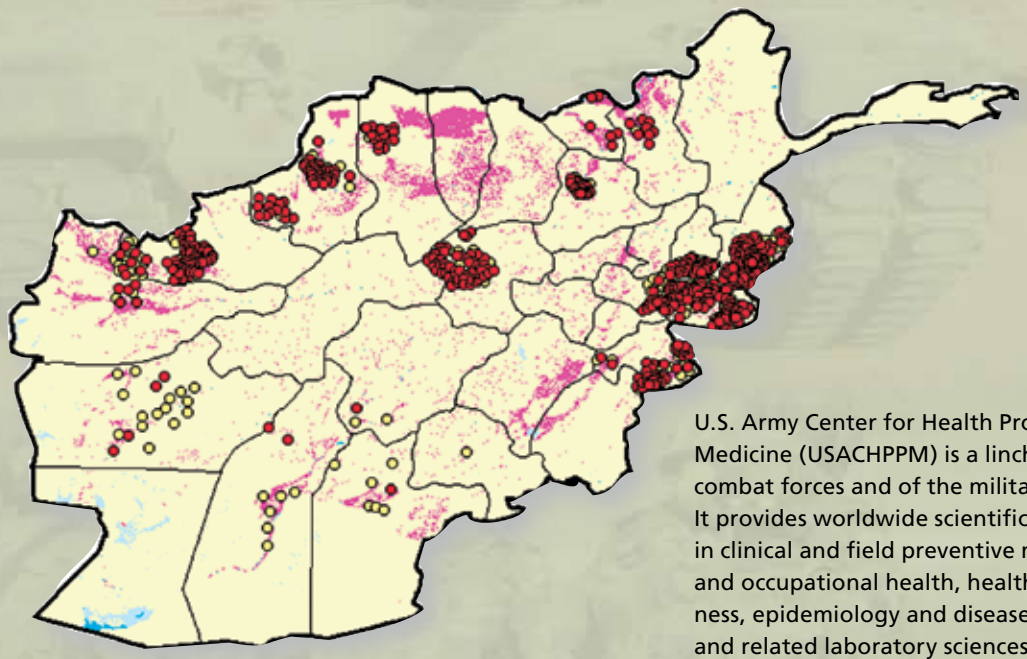
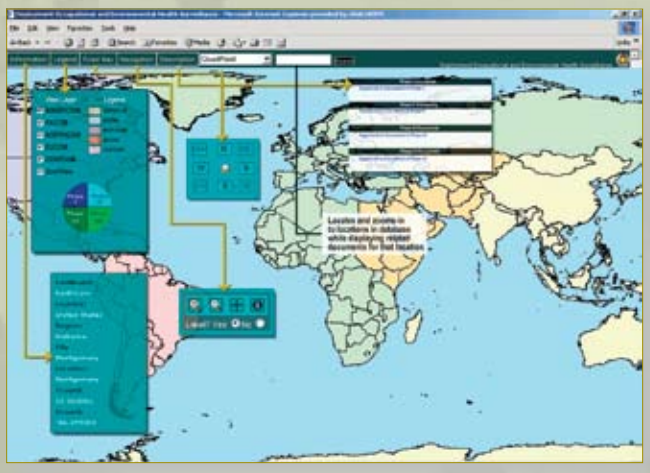
U.S. Army Center for Health Promotion and Preventive Medicine



U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) is a linchpin of medical support to combat forces and of the military managed care system. It provides worldwide scientific expertise and services in clinical and field preventive medicine, environmental and occupational health, health promotion and wellness, epidemiology and disease surveillance, toxicology, and related laboratory sciences. It supports readiness by keeping soldiers fit to fight, while also promoting wellness among their families and the federal civilian workforce.

Many health issues that CHPPM engages around the world are spatial in nature. Noise levels near aircraft runways, concentrations of disease carrying arthropods, and groundwater contamination near artillery ranges are but some issues that share a spatial component that affect the health of the DoD and surrounding civilian populations. GIS is a tool that decision makers at USACHPPM have been utilizing over a decade for these and other spatial issues.

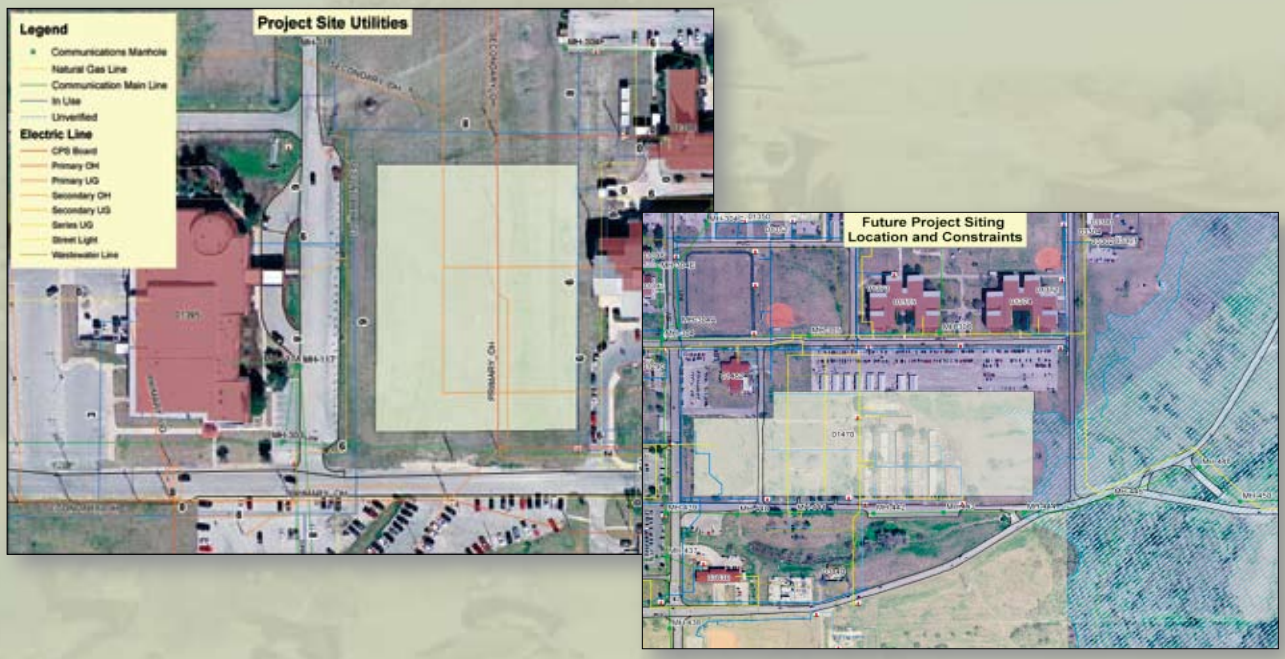


Contact

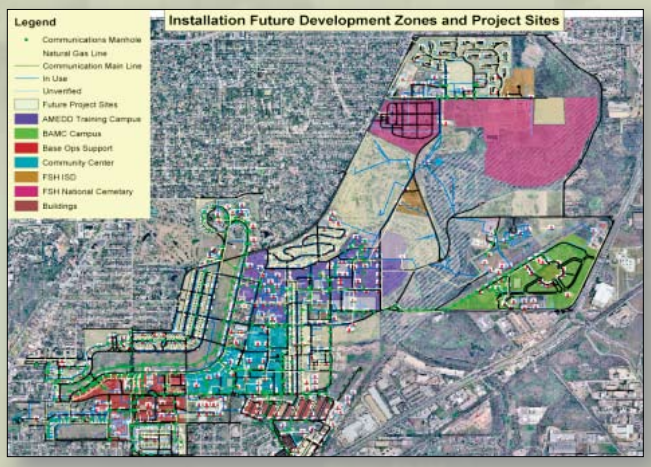
USACHPPM Public Affairs

Phone: 1-800-222-9698
Web: http://chppm-www.apgea.army.mil

Enterprise GIS for Fort Sam Houston Installation Management



The Fort Sam Houston Enterprise GIS (EGIS) is an integrated installation-level GIS that gives users broad access to geospatial information. The primary distribution of the centrally managed, secured GIS is Web-based. EGIS is integrated with numerous legacy systems, encompasses data from disparate sources, and supports critical business functions being shared across the organization. As a decision support and planning tool, EGIS ties the data to mission requirements and displays the data in a common and standards-compliant mapping format that can be shared, compared, analyzed, and viewed throughout the installation.



Installation Applications

- Master planning
- Integrated facilities management
- Environmental and natural resources management
- Cultural resource management (architecture, archaeology)
- Installation status report (infrastructure and training lands)
- Real property management
- CADD/Mapping integration
- Force protection planning
- Physical security integration
- Fire and emergency services support and planning
- Emergency operations management
- Disaster response and preparedness

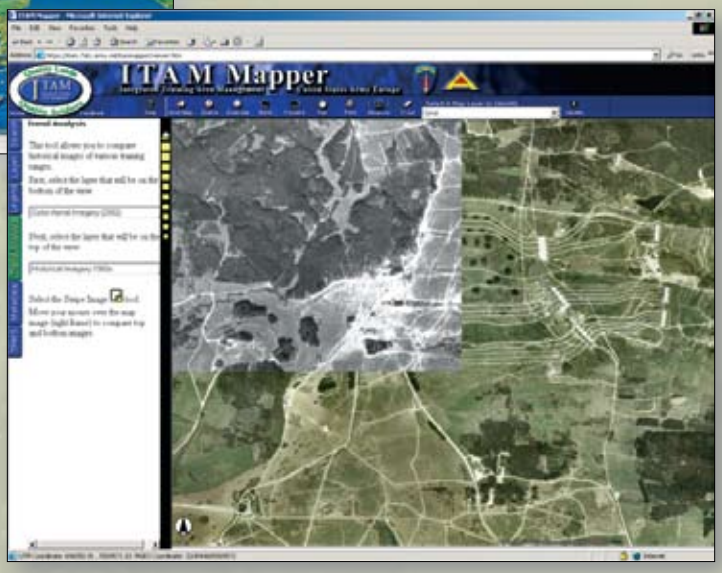
Master Planning and Future Development

- Understanding and visualizing your surroundings
- Seeing the big picture for development opportunities
- Siting future projects in relation to mission
- Identifying natural and environmental constraints
- Getting site details before design begins
- Picturing the new facility

U.S. Army Europe—Integrated Training Area Management Program

USAREUR ITAM Mapper allows users to search by coordinate, training area, range, country, or dynamically zooming in on an area.

ITAM GIS Users Planning Training Events



Trend analysis function allows users to dynamically "swipe" temporal data. In this example, Grafenwoehr's Range 301 black-and-white image from 1963 is swiped over the 2002 color image.

Heavy Maneuvers in the "Box" at CMTC Hohenfels

The United States Army Europe (USAREUR)/7A Integrated Training Area Management (ITAM) program provides a management and decision making process that integrates training and other mission requirements for land use with sound natural resource management practices. The overall goal of the Army's ITAM program is to achieve optimum, sustainable use of the training lands by implementing a uniform land management program.

Standard information products, such as the ITAM Viewer and ITAM Mapper, provide readily accessible dissemination tools for the ITAM GIS program. The Web-based ITAM Mapper delivers orthoimagery, satellite imagery, topographic maps, elevation models, and vector data to military trainers and resource managers.

For more information, contact
itam@graf.eur.army.mil
or visit
https://itam.7atc.army.mil

Terrain Commander

Overview

Terrain Commander is a highly effective surveillance system that enables large sensitive areas to be monitored from a distant Central Monitoring Facility (CMF). A single operator in a secure location can easily monitor a large number of remote surveillance sites simultaneously for an efficient use of time and manpower.

- Robust detection versus environment
- Positive visual identification
- Long-term remote situational awareness
- Beam forming acoustic array
- Distributed mine sensors
- Day/Night electro-optics
- Satellite-based long-haul communications
- Advanced integrated control station
- ID and differentiated targets

TEXTRON Systems

Textron Systems
201 Lowell Street
Wilmington, Massachusetts 01887

Phone: 978-657-5111
Web: www.systems.textron.com

Capabilities

The Terrain Commander system combines state-of-the-art communications and mapping technologies with a supporting array of acoustic, seismic, magnetic, electro-optical, and passive infrared sensors, tailored to meet mission specific requirements. This complete multisensor system works effectively in daylight and darkness for remote surveillance around the clock.

Communication from the field-deployed Optical Acoustic Satcom Integrated Sensor (OASIS) allows Terrain Commander to detect, capture, and process images of intruder activity. Subject data and images are then transmitted to a distant Command and Control Station (CCS) in near real time.

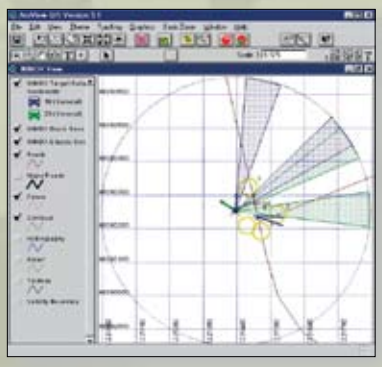
Visual displays and data transmitted from the field-deployed OASIS to CCS—including maps, consecutive still photographs, and multiframe motion detection—identify distant or obscure images that would be undetectable in a static image.

NINOX

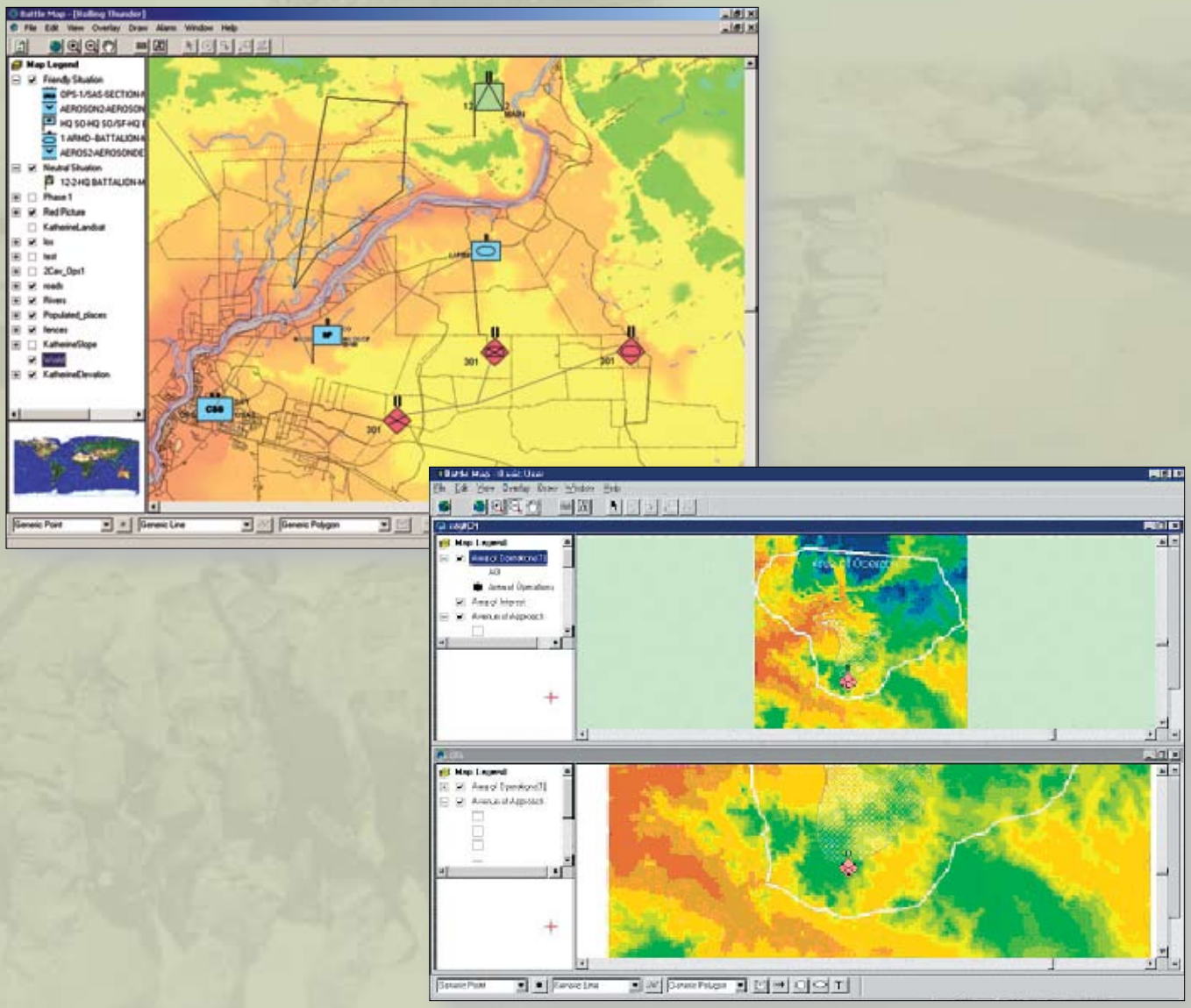
The Australian Defence Force plans to use the system to monitor sensitive areas such as isolated airfields, roadways, and waterways. Terrain Commander provides state-of-the-art ground-based surveillance solutions for this requirement, as well as for other operations such as border surveillance, now a critical need for so many countries.

Future Combat Systems

Textron Systems' role in the U.S. Army's Future Combat Systems program is for systems development and demonstration of hand-emplaced and remotely delivered UGS systems capable of detection, classification, location, and tracking of vehicles, personnel, and aircraft in both rural and urban environments, and transmitting that information in a timely fashion to all interested parties via the FCS C4ISR (Command, Control, Communication and Computers, Intelligence Surveillance and Reconnaissance) network.



Battlefield Command Support System



Introduction

The ability to obtain, analyze, and distribute information around the battlespace is critical to the success of military operations in the 21st century. Efficient management of information is a force multiplier that enables military commanders to more effectively employ the assets under their command. The ability of advanced technology-based systems to penetrate the opponent's decision loop provides a tactical advantage over conventional command mechanisms.

SAAB

Battlespace Solutions

One such system is the Battlefield Command Support System (BCSS), which is in service with the Australian Army. BCSS is a fully field deployable, scalable system that provides near real-time situational awareness, military messaging, and operational planning tools across a wide range of communication bearers.

BCSS is built on an information framework that provides a stable base for the integration of selected modules or other capabilities.

The BCSS Battlemap uses ESRI's ArcView® software as its base. Applications are developed within this integrated environment to make use of the many features of ArcView, resulting in a powerful tool with an easy-to-use user interface.

The Battlemap supports the concept of overlays. These can be one of three types of foundation map data, system overlays, or user-defined overlays.

Foundation data is background map data, such as topographic and cartographic data, which is displayed in read-only mode. Tools such as line of sight and fields of fire rely on topographic data for the interrogation of terrain features.

The system overlays are created and managed by the system itself. These include the current situation overlays containing Friendly, Enemy, Neutral and Unknown symbology; the Alarm overlay; and the CP Log overlay, in which georeferenced log and planning entries are linked.

User-defined overlays are those created by operators. These can contain a range of Mil standard APP6A point, line, area, and unit symbols.

The Battlemap supports all ESRI-supported types of map data, including shapefiles, coverages, TIN, grids, and DTED, and provides the ability to load any coverage with an ESRI layer file.

Operational Use

BCSS has been engineered from its foundation for operation in the land environment where widely dispersed forces and very restricted bandwidths are commonplace. This flexibility ensures that BCSS can be effectively utilized in both static and highly mobile military units, providing a common operational picture from a Strategic HQ down to individual platform, utilizing LAN, WAN or Combat Net Radio.

The Australian Army first fielded BCSS in 1998 as a brigade HQ and below battlefield command support system. The latest software release is deployed throughout the Australian Army from divisional to company level and is currently being used in support of peacekeeping operations in East Timor.

The primary BCSS modules are

- Battlemap situational awareness with GPS-based position reporting
- Military communications with structured message formats
- Engineering support functions
- Operational planning tools
- Electronic command post log
- Logistic support and capability status tools
- Intelligence databases and tools

Deployable Geomatics Support System

Deployable Geomatics Support

The Canadian Mapping and Charting Establishment (MCE) has been very active in providing dedicated geomatics support to deployed operations and exercises. Since 1992, Geomatics Technicians have been deployed to Bosnia and Herzegovina, Croatia, Eritrea, Haiti, Kosovo, Mozambique, the Sinai, and Afghanistan. MCE continues to support NATO-led operations in Bosnia and Herzegovina. Every major Canadian Forces (CF) deployment now includes at least one dedicated Geomatics Support Team (GST) that is tailored to provide close geomatics support either to the Task Force Commander and/or any maritime, air, land, or special forces components.

The Geomatics Support Team

A Geomatics Support Team typically consists of four members from Master Corporal (MCpl) to Warrant Officer (WO). Its primary tool is the Deployable Geomatics Support System (DGSS), consisting of high-end commercial off-the-shelf hardware mounted in rugged transportable boxes and able to operate in a wide range of environments. Commercial Geographic Information System (GIS) software is exploited, with tactical-level geospatial data as source, to provide terrain analysis and visualization in support of the Task Force planning process. Low volume plotting of products is also possible. In addition, GST is equipped with handheld Global Positioning System (GPS) devices and digital cameras to capture and attribute geospatial data. If accurate survey work is required, then dedicated Geodetic Survey Teams can be deployed.

Using a combination of COTS Electronic Total Station (ETS) and GPS hardware and software, centimeter positional accuracy is achievable, as was done for the Inter-Entity Boundary Line (IEBL) in Bosnia and Herzegovina. The GST can also assist in the sourcing and distribution of both hardcopy maps and digital geospatial data. The GST can operate and move around the battlefield using its own vehicles and integrated power generation.

Contact

Lieutenant Colonel Yvan Désy
Commanding Officer
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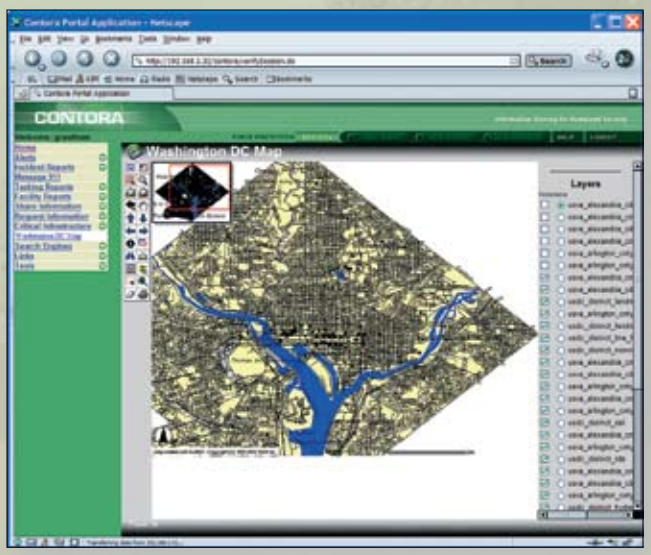
U.S. Army: Prepare, Respond, Inform, Secure, Monitor Program (PRISM)



Overview of PRISM Program and GIS Use

Prepare, Respond, Inform, Secure, Monitor (PRISM) is an information sharing and command and control backbone that can tie together the emergency response actions of federal (DHS and DoD), state, and local governments. PRISM provides command and control capabilities needed to visualize the situation via an ArcIMS software-enabled mapping interface, direct the response, and collaborate among affected/responding parties. The PRISM application provides access to alerting, incident report tracking, tasking and facilities reporting, and request for information tools. It also enables collaboration through information sharing and provides the ability to search for and locate relevant information while responding to an event. Integration with sensor systems, reverse 911 messaging, and vehicle tracking systems has been completed and is optionally available.

The PRISM software serves as a front-end user interface for the emergency response/crisis management community. Integration with GIS products from ESRI has enabled PRISM to provide a single display in which the user is able to quickly visualize the situation at hand and drill down into the map to learn more about the events that have taken place. The power behind the system that distinguishes PRISM from other command and control capabilities in this market space is its integration with Solers' Transsend™ Enterprise Messaging Service product. Using Transsend, PRISM is able to share information gathered and displayed at one PRISM server with other servers on the network that share responsibility for the same geographic area of interest. Thus, information that is gathered at one PRISM server is automatically and immediately sent to other PRISM servers and displayed on their mapping interface.

Contact

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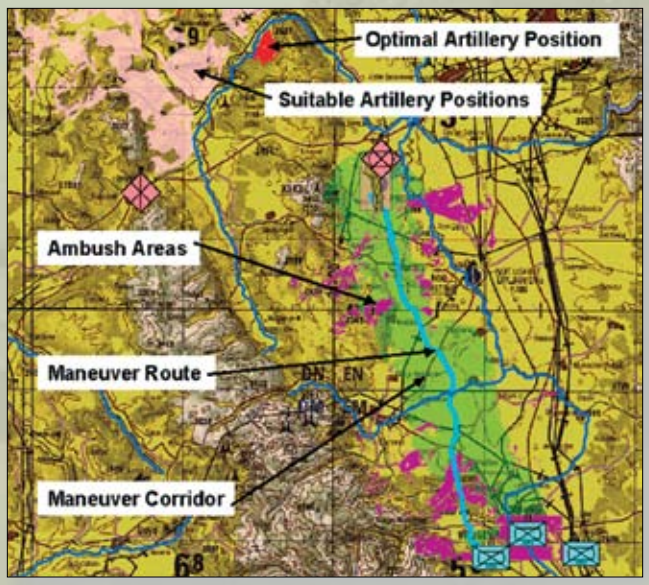
Agency: U.S. Army Ft. Gordon Battle Command Battle Lab (BCBL(G))

Battle Space Terrain Reasoning and Awareness



Description and Background

Terrain and weather effects represent a fundamental, enabling piece of battlefield information supporting situation awareness and the decision making processes within C4ISR. These effects can both enhance and constrain force tactics and behaviors, platform performance (ground and air), system performance (e.g., sensors) and the soldier. Battle Space Terrain Reasoning and Awareness (BTRA) focus is on the development of software analytics designed to create information and knowledge products that capture integrated terrain and weather effects and develop predictive decision tools to exploit those products. The ultimate objective is to empower commanders, soldiers, and systems with information that allows them to understand and incorporate the impacts of terrain and weather on their functional responsibilities and processes.

Engineer Research and Development Center –topographic Engineering Center

www.tec.army.mil

Contact
Mike Powers at Michael.W.Powers@erdc.usace.army.mil
or 703-428-7804

BTRA developments stress computational efficiency and seek to maximize the ratio between the actionable information content of its products and the size of the products to ensure their ability to be transmitted over tactical communication networks. BTRA decision tools are designed and engineered to be embeddable in other host C4ISR systems and applications or as services within a system of systems concept.

Key Capabilities

BTRA focused on the development of six information generation components and five decision tools addressing terrain and weather effects. Each component utilizes terrain feature data; digital elevation models; current and forecasted weather; and information regarding tactics, techniques, and system performance. BTRA generates information addressing (1) Observation, Cover and Concealment, Obstacles and Mobility, Key Terrain and Avenues of Approach (OCOKA); (2) integrated products defining operational positions of advantage; (3) high fidelity weather/terrain effects of mobility and signature physics; (4) advanced mobility analysis; (5) digital ground and air maneuver potential, and (6) tactical structures relating information produced by other components.

Decision tools operate on BTRA information products, not the original data. These tools support (1) predictive multicriteria, multiobjective maneuver and logistical route analysis for ground and air platforms and forces, (2) predictive sensor performance (e.g., IR, MMW, seismic, and acoustic), (3) situation assessment, and (4) predictive threat assessment.

Current Status

BTRA will continue research and development through 2006. Mature BTRA components (version 2.0) have been fielded in the Army's Digital Topographic Support System (DTSS) Version 8.0. Similar capability has also been fielded in the Air Force's Time Critical Targeting Facility, part of Theater Battle Management Core Systems (Baseline 10). BTRA, under funding from the Office of the Secretary of Defense, will continue the transition of current and maturing capabilities to the National Geospatial-Intelligence Agency's (NGA) [formerly known as NIMA] Commercial Joint Mapping Toolkit (C/JMTK), DTSS, and the Air Force. Under Memorandum of Agreement, the Engineer Research and Development Center will embark on joint technology development with Communications–Electronics Command (CECOM) and NGA's C/JMTK.

Geospatial Information Science at the United States Military Academy

Overview

The United States Military Academy's Geospatial Information Science Program prepares future Army leaders with the skills required to effectively apply geospatial information technology to achieve information superiority on tomorrow's battlefields. As a member of West Point's Geography and Environmental Engineering Department, the program supports the Academy's mission of preparing cadets for a career as an officer in the United States Army by offering cadets a wide range of education and research opportunities in the increasingly relevant and critical field of GIScience. At the same time, the program leverages its faculty expertise and resources to provide education and research support to numerous Department of Defense organizations.

Education

A wide range of GIScience courses build on a solid geographic foundation and are available to cadets to fulfill degree requirements or as electives. For those cadets interested in majoring in the geospatial field, a bachelor's in geospatial information science is offered. The program's faculty also provides geospatial training sessions to outside agencies when requested.

- Surveying
- Remote sensing
- Advanced remote sensing
- Photogrammetry
- Cartography
- GIS
- Advanced GIS
- Independent study

Research

The program's faculty and cadets conduct research for and with a number of Department of Defense organizations. Cadets also participate in a summer internship program in which they work with DoD geospatial organizations such as NGA, Topographic Engineering Center, and U.S. Army Space Missile Defense Command.

For more information, visit
www.dean.usma.edu/departments/geo/GIS.

GeoRover

GeoRover's Digital Data Tracker tool automatically georeferences and plots data collected in the field as layers in ArcGIS. The GIS display can be converted to a Web page with one click.

GeoRover®, a commercial software extension for ArcGIS, enables you to quickly and easily create, import, and edit GIS data within ESRI's ArcGIS 8.x/9.x. In addition to importing text files, spreadsheets, and databases, GeoRover provides streamlined tools for importing field data collected with an untethered GPS receiver and a variety of collection devices. GeoRover "makes GIS simple" in the field, office, and command center.

SAIC
An Employee-Owned Company

Web site: www.saic.com/products/software/georover
E-mail: georover@saic.com

Capabilities

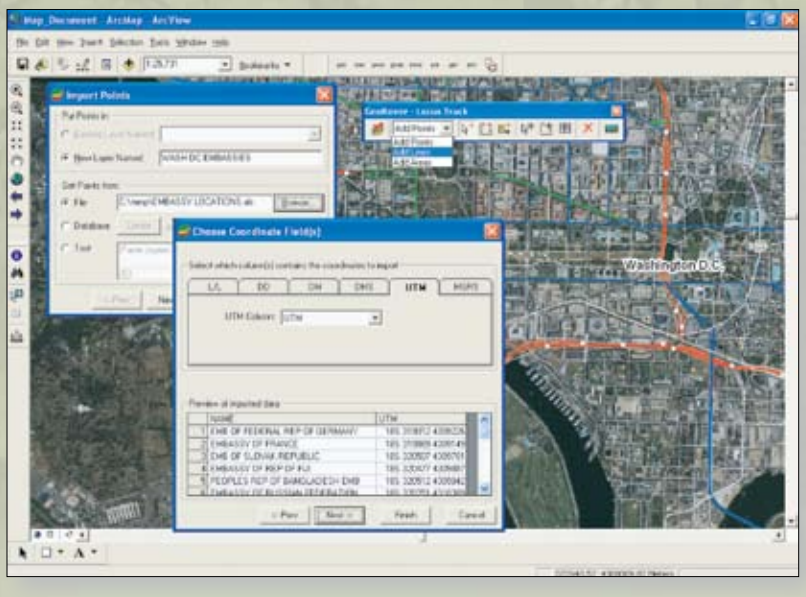
- Interactive (point and click) and coordinate-based tools for creating and updating data within ArcMap.
- Import any delimited text (.csv, .txt, .tab, etc.), Microsoft® Excel spreadsheet, database (Microsoft Access, Microsoft SQL Server, Oracle®, etc.), or typed/pasted text with coordinates.
- Understands latitude/longitude, decimal degrees, degrees decimal minutes, degrees minutes seconds, Universal Transverse Mercator (UTM), and MGRS coordinates.
- Use the same tools for working with shapefiles and geodatabases (including ArcSDE enterprise geodatabases).
- Download and plot GPS track logs and waypoints, automatically linking to any data simultaneously collected by digital cameras (still/video), digital voice recorders, handheld computers, etc.
- Link any digital document, including Web sites, to any point, line, or area.
- Export the GIS display and associated files to an HTML Web page for immediate dissemination or inclusion in a Web site.

Applications

- Easy desktop analysis and intelligence plans and collections
- Vulnerability assessments and route reconnaissance
- Environmental studies and real estate sales/management
- Crime scene investigations and disaster investigation/recovery

Benefits

- Simple installation via CD–ROM directly into ArcGIS; no additional software is necessary.
- Significantly reduces training time for fundamental ArcGIS editing operations.
- GeoRover is mobile and can make use of practically any data collection device.
- Discrete collection capability with *NO CONNECTION REQUIRED* in the field between the GPS receiver and data collection devices.



GeoRover's Locus Track tool has powerful import wizards for ingesting data from spreadsheets, databases, and text files. Locus Track supports five coordinate systems and works with shapefiles and geodatabases.

U.S. Army Corps of Engineers Electric Charting for Inland Navigation

US Army Corps of Engineers®

IENCs are available for download from the Corps' E-Charting Web site at www.tec.army.mil/echarts.

Background

The U.S. inland navigation system consists of 8,200 miles of rivers maintained by the Corps of Engineers in 22 states and includes 276 lock chambers with a total lift of 6,100 feet. The highly adaptable and effective system of barge navigation moves more than 625 million tons of commodities annually, which include coal, petroleum products, various other raw materials, food and farm products, chemicals, and manufactured goods. Following recommendations by the National Transportation Safety Board, the National Academy of Science, and the American Waterways Operators, Congress directed the Corps of Engineers to develop and publish electronic charts for the inland waterways.

Key Capabilities

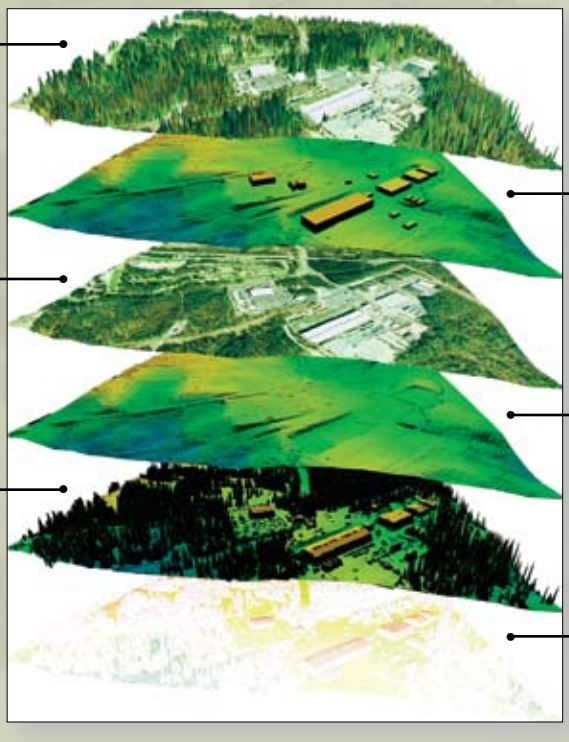
Large-scale, accurate, and up-to-date Inland Electronic Navigation Charts (IENCs), such as those being developed, enable electronic chart systems that provide accurate and real-time display of vessel position relative to waterway features; voyage planning and monitoring; training tools for new personnel; and integrated display of river charts, radar, and automatic identification systems.

Fort Bragg, North Carolina, LIDAR Terrain Mapping
EarthData International of North Carolina

EarthData International of North Carolina relies heavily on ESRI's GIS products for processing, management, and visualization of LIDAR data. GIS tools are also used extensively in research and development of numerous and varied data products and applications EarthData has developed for its clients. EarthData produces many graphic products with GIS to depict or demonstrate the processes and applications for these secondary LIDAR products.

At Fort Bragg, LIDAR terrain data was collected for the entire base to produce two-meter and five-foot contours. The LIDAR data was also used as the base digital elevation model in the generation of new digital orthophotos for developed areas on base. Beyond these contracted deliverables, several secondary value-added products were developed including the building height extraction depicted here. This new data can be used for three-dimensional urban modeling, combat training, and tactical planning for urban warfare.

This map helps clients understand some of the processing steps used in developing a true three-dimensional urban environment model. From the bottom up, the first layer shows raw LIDAR points color coded by elevation, underscoring that the original data is not a usable surface. The second layer shows a triangulated irregular network surface of the raw data and demonstrates the weakness of LIDAR to render clean building edges. The third layer is a grid of the LIDAR points classified as bare earth. The fourth layer shows the unnatural appearance of draping orthophotos over the bare earth, a common practice. The fifth layer shows the bare earth surface with simplified, clean building features. The top layer shows the digital orthophotos draped on a composite surface using the bare earth LIDAR points, vegetation LIDAR points, and the building polygons/breaklines.



Color Orthophoto Draped Over the Raw LIDAR Surface, With the 3D Buildings Incorporated

Color Orthophoto Draped Over the Bare Earth LIDAR Surface

TIN Surface of Raw LIDAR. Note the Irregular Building Edges.

TIN Surface of Bare Earth LIDAR Surface, With the 3D Buildings Incorporated

TIN Surface of Bare Earth LIDAR, Color Coded by Elevation

Raw Last Return LIDAR Points, Color Coded by Elevation

High Point, North Carolina

Contact
Karl Heidemann
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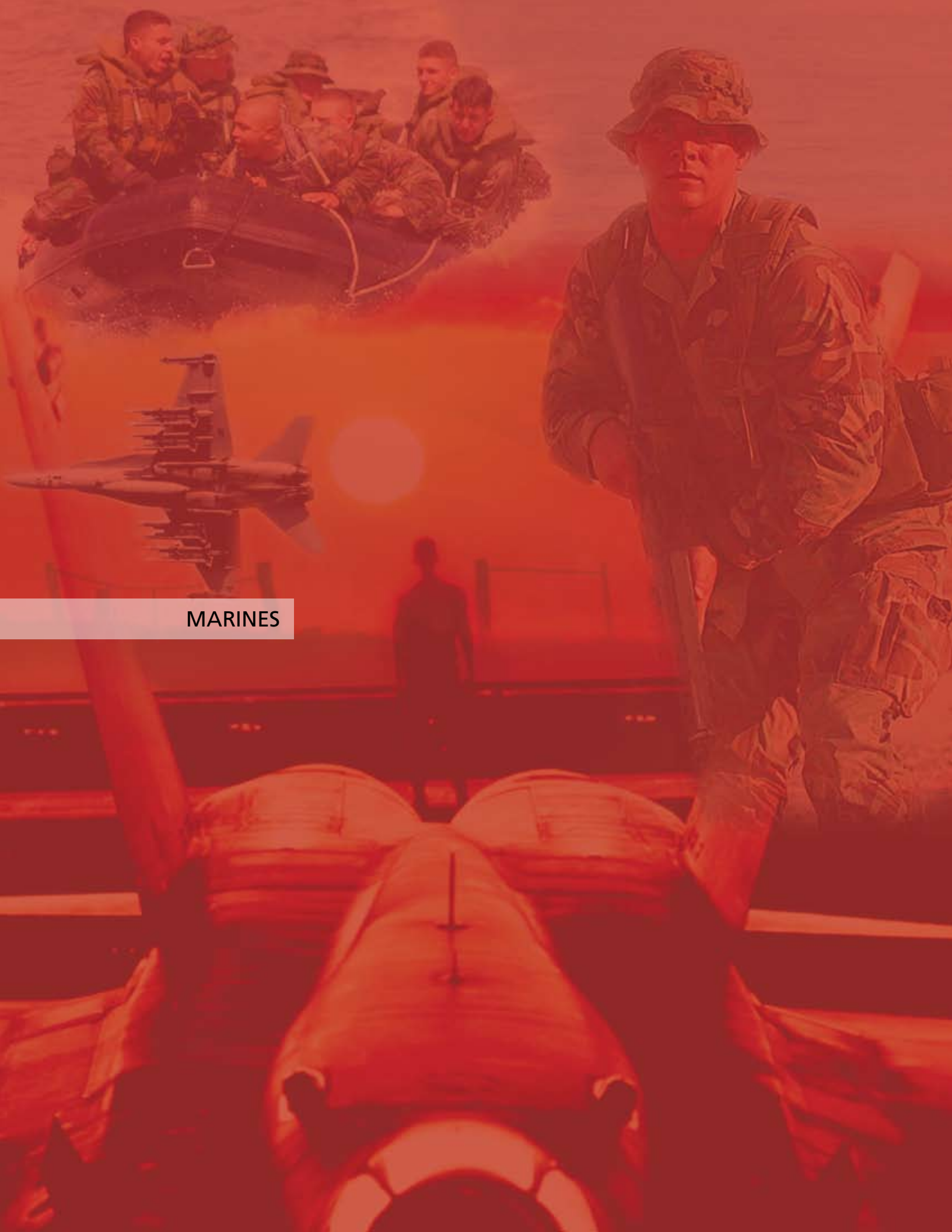
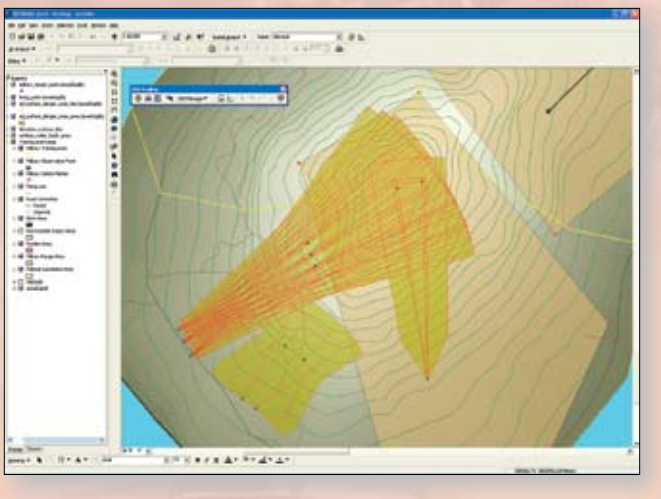
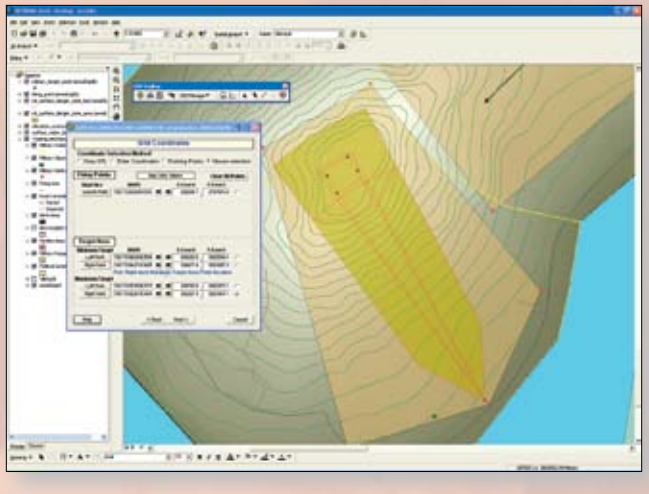
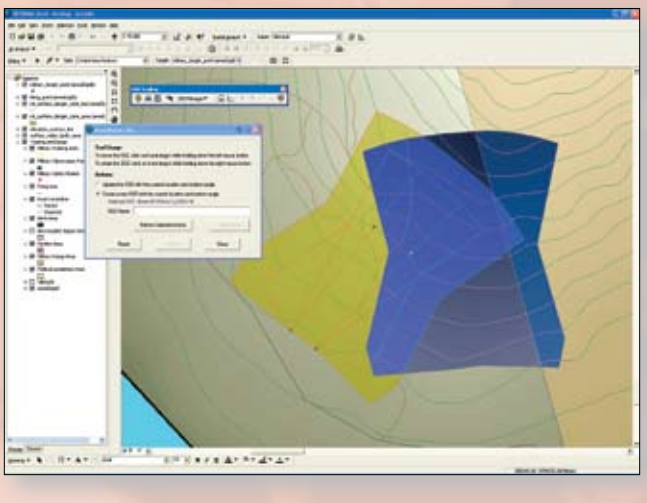

MARINES

Surface Danger Zone Tool



Geographic Information Services, Inc. (G/I/S), has developed an ArcGIS (8.3 or 9) toolbar that creates surface danger zones (SDZ) for weapons systems defined in DA PAM 385-63. This tool allows range safety officers and range control officers to interactively create SDZs by selecting weapons systems, target points, target media, and firing points. Users are able to identify firing and target locations in the map interface by entering MGRS grid coordinates or selecting existing points. The tool also allows users to create SDZs for Combined Armed Live Fire Exercises (CALFEX) by combining individual SDZs. The underlying data structure allows users to keep track of which SDZs were developed for specific training exercises. The parameters used to draw the SDZs are stored in related data files. Recent additions to the SDZTool include interactive editing of SDZs. This work was performed under contract with the U.S. Army Environmental Center in support of the ITAM program and the U.S. Marine Corps.





G/I/S

For more information

Visit www.gis-services.com or phone 205-941-0442.

Iwo Jima Defenses, February and March 1945

This map shows the battle of Iwo Jima just before U.S. forces consolidated for the night on D-Day, February 19, 1945. Japanese fortifications represented on the map were extracted from maps compiled from a ground study conducted as the battle progressed, maps prepared to document the defenses encountered by individual units, several published target lists, and a series of maps issued on February 11, 1945.

The U.S. units shown on the map are the Marine Corps infantry units that made the initial D-Day landings and those that subsequently landed and joined the battle before lines were consolidated for the night. The basemap is a composite of several maps published before, during, and after the island was captured. This map contains four grid reference systems: the original two described in the legend, Universal Transverse Mercator, and latitude and longitude. The latter two provide modern grid reference systems to the historic map details.

For more information, contact
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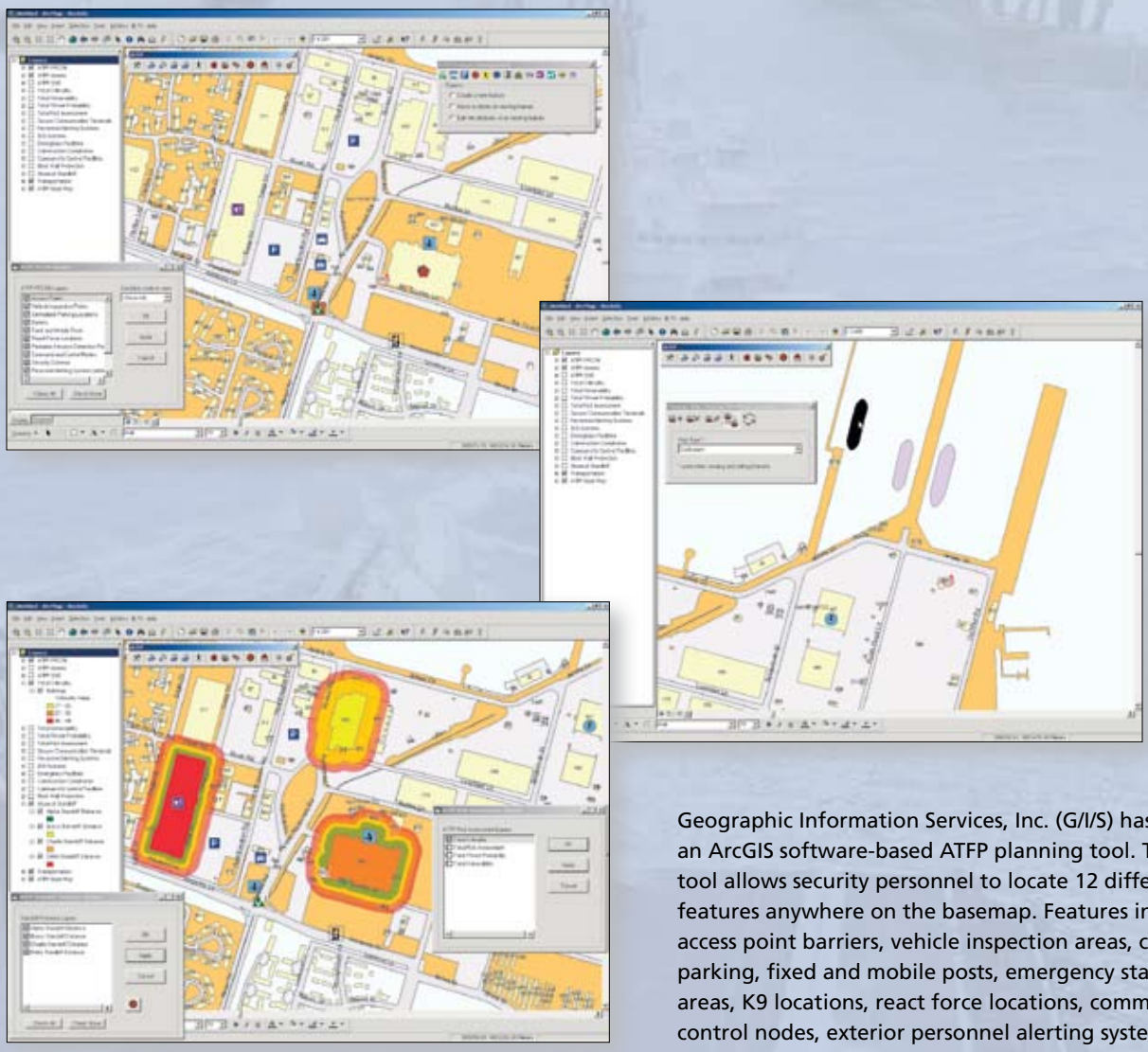
NAVY AND COAST GUARD

U.S. Navy Antiterrorism/Force Protection



Geographic Information Services, Inc. (G/I/S) has developed an ArcGIS software-based ATFP planning tool. The ATFP tool allows security personnel to locate 12 different ATFP features anywhere on the basemap. Features include access point barriers, vehicle inspection areas, centralized parking, fixed and mobile posts, emergency staging areas, K9 locations, react force locations, command and control nodes, exterior personnel alerting systems, security cameras, and perimeter intrusion detectors. Positions for all features are set for each of four force protection conditions (Alpha, Bravo, Charlie, Delta). Security personnel can also assign ATFP attributes to existing features such as buildings and ships, identifying to blast compliance values, setting standoff distances, etc. A risk component allows users to assign threat, vulnerability, and likelihood of attack values to any feature for assessing risks of attack. The data viewer component allows users to see ATFP configurations for each condition. This work was performed under contract for the U.S. Navy Region Japan Public Work Center.

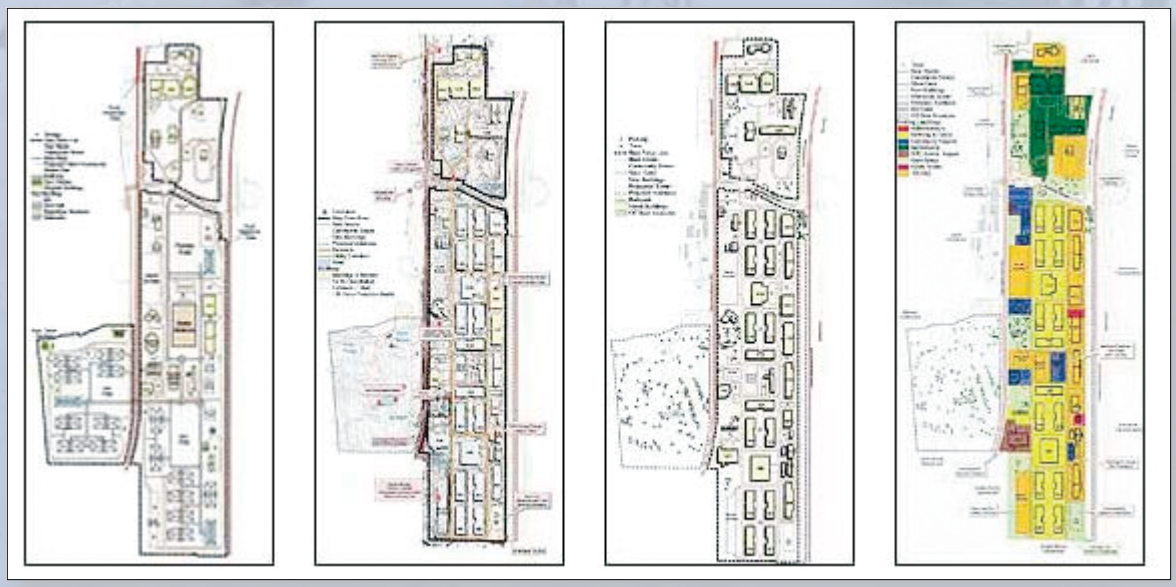
G/I/S

For more information,

visit www.gis-services.com
phone: 205-941-0442.

Navy Site Planning

Recruit Training Command Great Lakes



This map is part of a series used in the analysis of the possible site redevelopment at the U.S. Naval Recruit Training Command (RTC) Great Lakes located in northeastern Illinois. The installation houses approximately 54,000 recruits each year. The barracks are overcrowded and need to be replaced because the facilities are out-of-date, the structures are deteriorating, and there is insufficient utility capacity.

RTC Great Lakes requested a site analysis of the installation to prepare proposed site redevelopment plans illustrating environmentally sound solutions for improving and managing the land and facilities while supporting the RTC mission. Several planning guidelines were set such as the creation of a campus environment, segregation of vehicles from recruit pedestrian traffic, incorporation of antiterrorism/force protection setbacks, minimizing negative impacts to the adjacent community, and consolidation of common land use functions into activity corridors.

In addition to the design criteria, planners were required to maintain a constant berthing capacity for 16,000 recruits, minimize the adverse impacts to recruit training activity, and maximize the use of existing infrastructure. To help in this process, the maps identified proposed functional districts and land use zones within RTC; utility corridors; facility/building locations; natural resource features; and transportation, vehicular, and pedestrian circulation modes.

Contact
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Todd Horton
Brian VanBockern
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Portuguese Hydrographic Office Supporting Military Activities With GIS

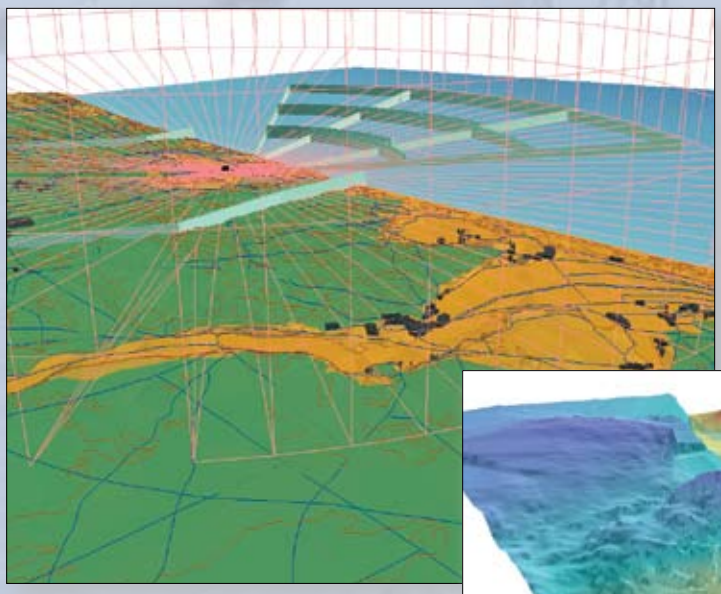


Image A

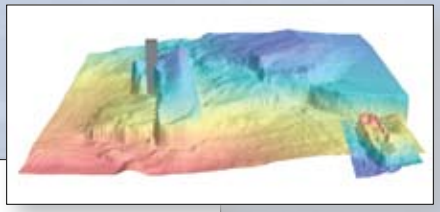


Image 1

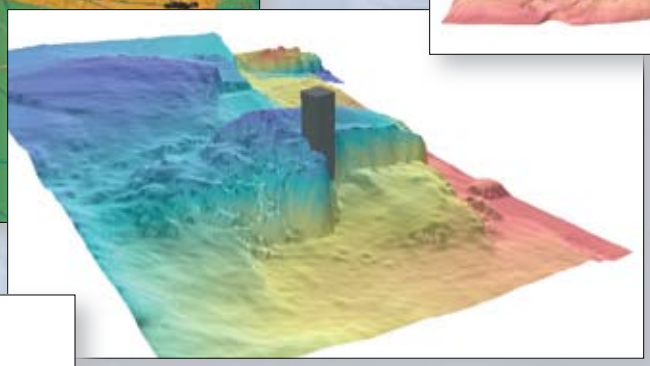


Image 5

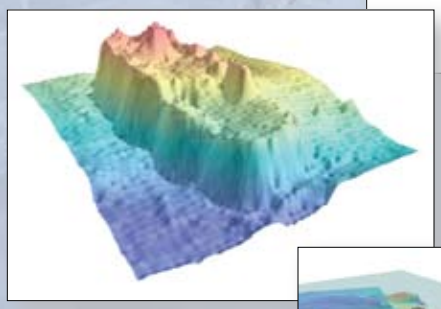


Image 4

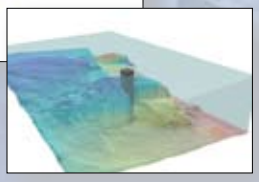


Image 6

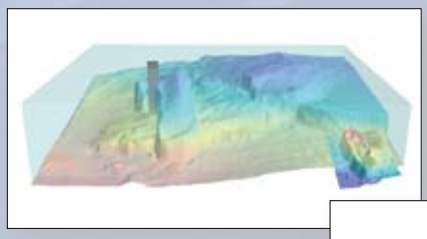


Image 2

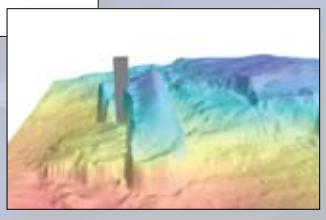


Image 3

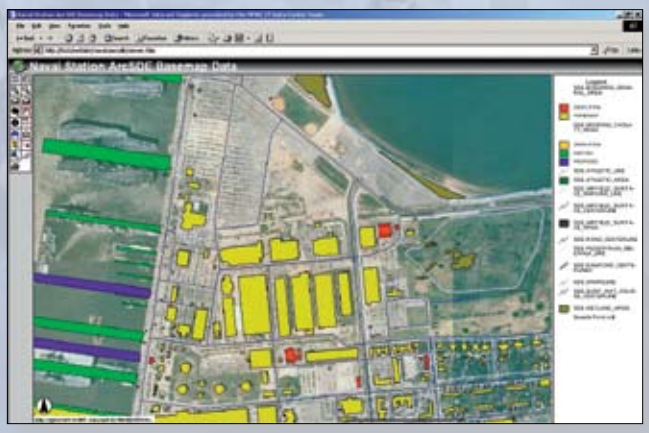
Rapid environmental assessment is an increasing demand of the military operational community when in harm's way. The Portuguese Hydrographic Office has been using ArcGIS to integrate, analyze, and distribute to military forces all relevant available environmental information as well as oceanographic model results during exercises and live operations. This information is used on the weapons and sensors decision making process and provides knowledge on what to expect from ground, oceanographic, and meteorological conditions prior to contact. Image A shows part of data integration for a briefing document that includes military exercise areas, local buildings, roads, elevation, forest, bathymetry, and ground defense weapon radius of action. Most of this data was gathered from different sources with different reference systems and was intended to support a series of sea to land marine disembarking exercises.

ArcGIS has also been used to generate seafloor surfaces from a high-resolution multibeam echo sounder. Together, these systems provide a very good picture of underwater protuberances such as sunken ships, aircraft, and medium-dimension objects. This type of information is useful in mine warfare scenarios and underwater search and rescue operations. Images 1 to 6 show several perspectives of two sunken ships inside a harbor. These wrecks are about 50 and 30 meters long.

Norfolk Naval Station: From Zero to ArcIMS in 30 Days

Geographic Information Services, Inc. (G/I/S) recently completed a rapid-paced project for the Public Works Center (PWC) at Norfolk Naval Station in Virginia that involved migrating CAD data to an SDSFIE-compliant geodatabase being served through an ArcIMS site. From start to finish, the project was completed in less than 30 days and now serves as the foundation for the PWC GeoReadiness Center for the mid-Atlantic region of the Navy.

Yvonne Mingee, director of the newly created Regional GIS Division, recognized that she needed to quickly demonstrate the power of GIS and the ease of implementation to overcome many historical barriers to funding. She contracted G/I/S to create a prototype database that would demonstrate both the utility of GIS in the PWC regional environment and the ability to deploy useful GIS systems quickly. To provide the biggest bang for the buck, she selected the central facility for the region, Norfolk Naval Station, for the initial effort.



G/I/S immediately set to work evaluating the available CAD data and digital aerial photography. It was apparent early on that the CAD data and the imagery data had been processed differently at some point, causing a regular shift of the CAD data when compared to the aerial imagery. In fact, PWC felt this data was not usable because of this problem. The errors were corrected through a reprojection process: taking the data back to its original state and properly projecting it to State Plane NAD83. The data was then migrated to an SDSFIE-compliant personal geodatabase. Because of G/I/S's experience in spatial data standard (SDS) geodatabase migrations (more than 35 military installations in the past two years), it was able to complete this task within two and one-half weeks. This migration included establishing the data linkages to the iNFADS database tables used for property management by PWC. This immediately integrated the new GIS data with existing mission critical databases providing a spatial interface for query and analysis.

Working simultaneously with the planimetric data migration was an effort to convert the basemap image data from file-based data (TIFs) into an ArcSDE image geodatabase. Both the imagery and the planimetric data were delivered and deployed as an enterprise ArcSDE geodatabase during the fourth week of the project.

Several ArcIMS sites were developed and served as soon as the databases were up and running including an ArcIMS image service serving all ArcSDE basemap data, an ArcMap map service serving an MXD, and a cultural and natural resources Internet map server (IMS) application built by the Corps of Engineers in ArcIMS 3.1 that was later migrated to version 4. These now provide widespread access to the data through the Intranet within Norfolk Naval Station and LANTDIV. The Atlantic Division LANTDIV is one of four Engineering Field Divisions of the Naval Facilities Engineering Command.

PWC is now able to demonstrate the viability of GIS as an affordable and achievable solution to the regional needs of PWC Norfolk. With this, PWC was able to secure additional funding needed to build the GeoReadiness Center, which will include data for all the bases in the mid-Atlantic region, additional ArcIMS applications, linkages to existing tabular data, and GIS data maintenance operations.

For more information contact

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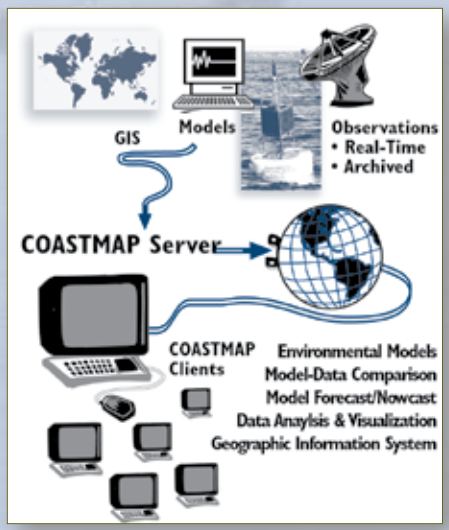
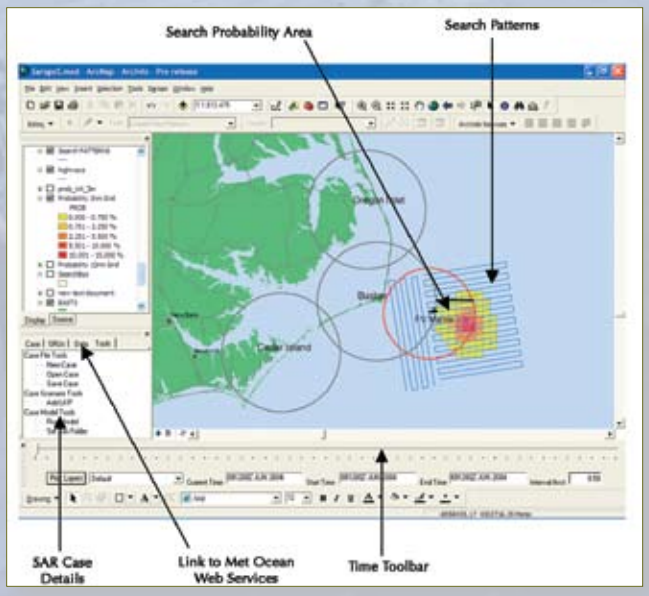
Met Ocean Data Web Services and Marine Models



System Structure



Example of a SAR Output

For more information,
visit www.appsci.com or contact

Applied Science Associates
70 Dean Knauss Drive
Narragansett, Rhode Island 02882

Phone: 401-789-6224
Fax: 401-789-1932
E-mail: asa@appsci.com
Web: www.appsci.com

Overview

Navy and Coast Guard operations require a variety of numerical models to simulate the movement of hazardous materials and objects in the marine environment. These simulations involve the assimilation of a large amount of meteorological and oceanographic data. This has typically been difficult to integrate with traditional GIS because of disparate file formats and the need for GIS to manage large amounts of time varying data. Applied Science Associates (ASA) met ocean data Web services and marine models have integrated meteorological and oceanographic data with marine numerical models for such operations.

Capabilities

ASA has developed C/JMTK and commercial ArcGIS extensions to add marine models to sophisticated GIS data applications. This allows ESRI GIS users to seamlessly activate complex numerical models and evaluate solutions based on existing GIS databases. The available tools are

AIRMAP—Atmospheric Dispersion Model

CHEMMAP—Chemical Dispersion Model

CMSMAP—Crisis Management System and Incident Command System (ICS)

COASTMAP—Real-Time Coastal Ocean Monitoring and Modeling System

OILMAP—Oil Spill Model for Marine and Fresh Water

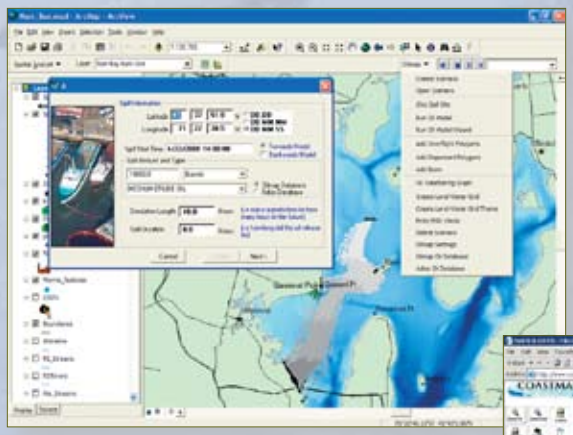
OILMAPDEEP—Deep Water Oil Spill Model

OILMAPLAND—Oil and Chemical Spill Model for Land-Based Spills

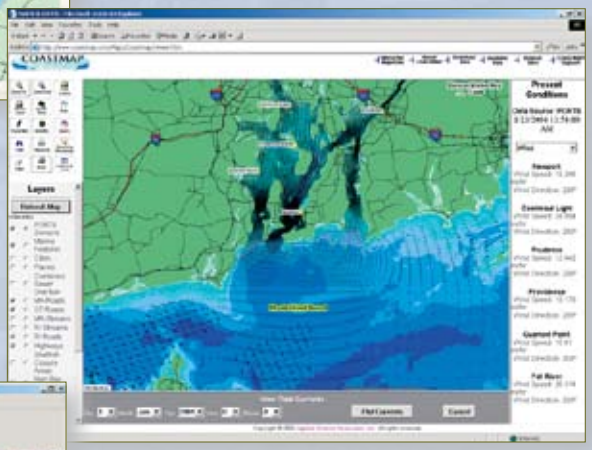
SAROPS—U.S. Coast Guard Search and Rescue Model

U.S. Coast Guard SAROPS

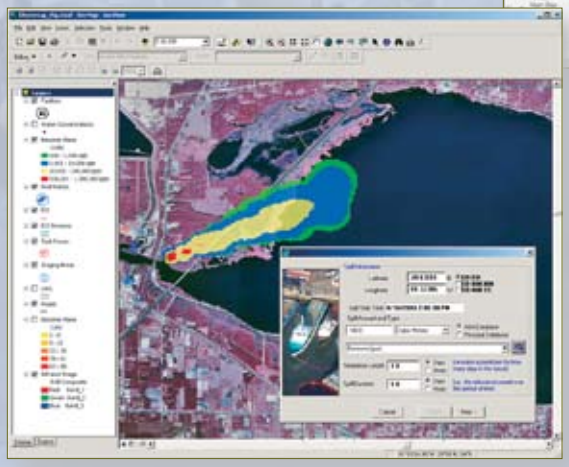
An integrated team consisting of ASA, Northrop Grumman Information Technology, and Metron Inc. is developing SAROPS, the next generation of software for national search and rescue operations. SAROPS includes three main subsystems: C/JMTK GIS-based user interface, an environmental data retrieval system, and a search planning simulator. The system allows the search planner to define the scenario, access environmental data (winds and currents) via Web services, and develop near optimal search plans given the amount of searching effort available.



Example of Oil Spill Simulation



Online Narragansett Bay Data Server (www.coastmap.com)



Example of an Atmospheric Plume

U.S. Navy COASTMAP

One of the primary requirements for emergency response and predictive modeling is access to environmental data. ASA provides Web services to allow users to connect to environmental data servers for the latest in oceanographic and meteorological conditions.

The U.S. Navy Oceanographic Office (NAVOCEANO) uses a variety of ASA's modeling tools to integrate atmospheric and oceanographic observations and model output to determine environmental conditions globally. This data is then further integrated with GIS-based models that simulate water movement (hydrodynamics), waterborne pollutants including chemicals and oil, and drifting objects.

Australian Oceanographic Data Centre

Profile

In addition to operating as the Defence Oceanographic Data Centre, the AODC operates as the National Oceanographic Data Centre for Australia within the guidelines established by UNESCO's Intergovernmental Oceanographic Commission (IOC). In performing this role, the AODC participates in various national and international oceanographic data collection, exchange, and management programs. The AODC is responsible for providing nonreal-time data, specialized databases, information products, and consultancy services in support of maritime activities of the Australian Defence Force (ADF).

Data Holdings

The AODC has an extensive holding of oceanographic data gathered over many years. These data sets have been sourced through a wide range of national and international contacts as part of AODC's role as a national oceanographic data center and membership in the International Oceanographic Data and Information Exchange (IODE) program. Data sets include both individual observations and averaged or climatological data in the form of oceanographic and meteorological atlases.

Oceanographic data parameters covered in the data holdings include

- Temperature
- Salinity
- Sound velocity
- Currents
- Chemical parameters
- Water clarity
- Bioluminescence
- Marine geology and sediments
- Magnetic field strengths
- Wave heights
- Bathymetry
- Marine meteorological observations

Geospatial Data Repository

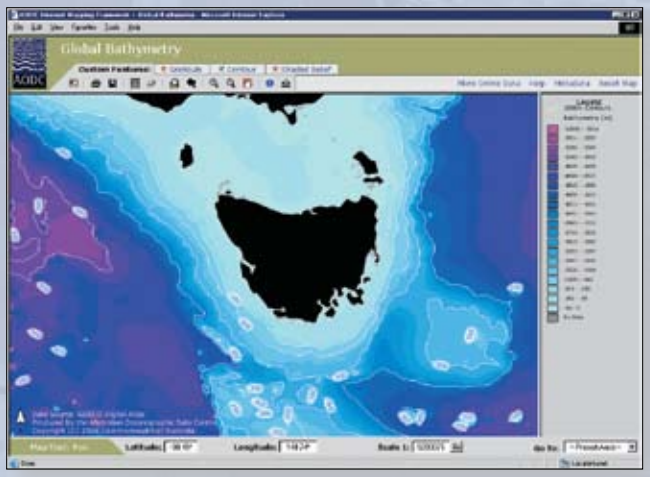
To store, serve, and maintain all this data, an enterprise GIS was implemented within the organization. Supported by an Oracle/ArcSDE 8.3 DBMS running on a UNIX® SunFire™ V250 server, a geodatabase provides access to over 10 GB of spatial data on a global scale to its internal staff via ArcGIS 8.3 desktops primarily for product generation. Furthermore, the same geodatabase provided data to external users via Internet mapping services.

Internet Mapping Framework

The Information Services Group of the AODC developed an Internet mapping framework using ESRI's ArcIMS technology to provide remote access to gridded and observed oceanographic data sets. This heavily customized framework was developed specifically to suit the often complex nature of spatiotemporal oceanographic data. Presently four Internet mapping services are available via the AODC public Web site at www.aodc.gov.au/products/data.html, with an atmospheric-based IMS currently in development. The framework has served over 70,000 maps since its inception in July 2003.

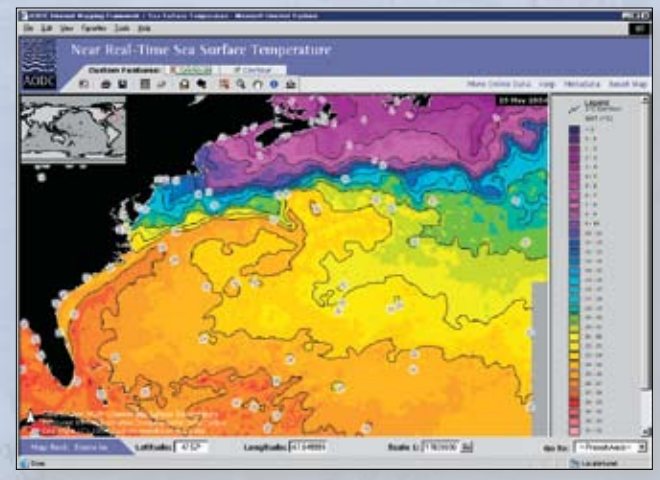
Global Bathymetry

One-minute, gridded global bathymetry derived from the GEBCO Digital Atlas published by the British Oceanographic Data Centre includes depth contours, spot depths, and a shaded relief view.



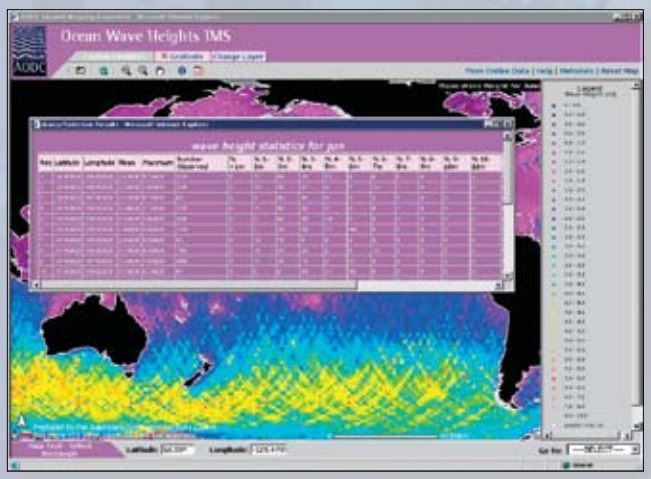
Near Real-Time Sea Surface Temperature

The one-tenth of a degree resolution data is received from two NOAA polar orbiting satellites on a weekly basis and represents a four-day average SST. This service is updated every Monday.



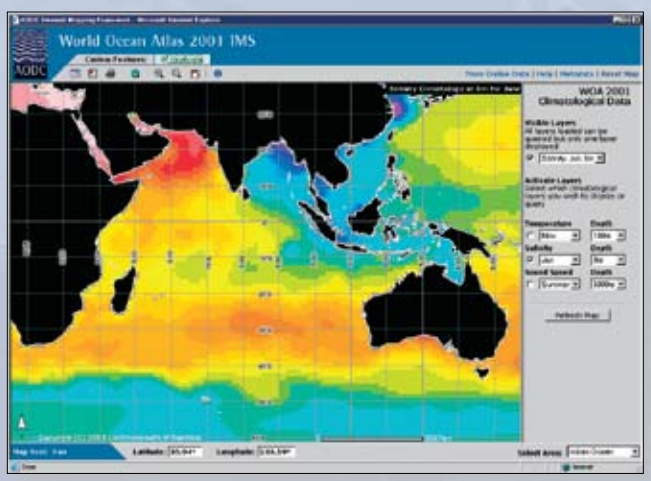
Significant Wave Heights

Global mean and maximum monthly wave heights were processed from one-degree resolution data collected by the Topex/Poseidon satellite. Tabular data including a number of observations is also available.



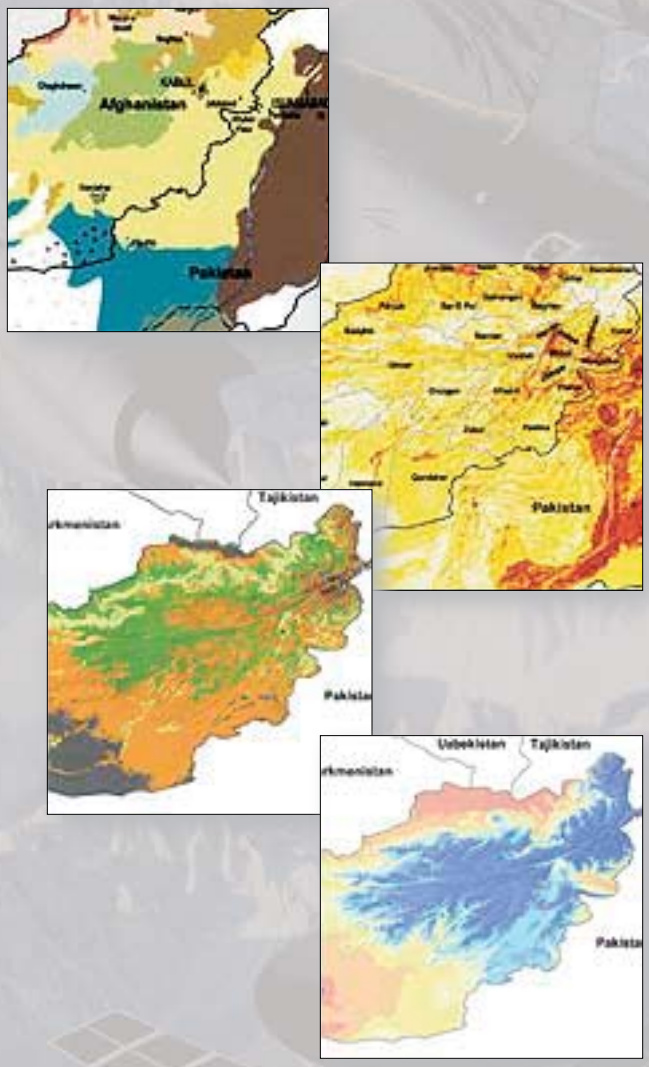
World Ocean Atlas 2001

Online access to monthly climatological layers of temperature, salinity, and sound speed at standard depths, including seasonal comparisons, are available from the World Ocean Atlas 2001.



INTELLIGENCE

Central Intelligence Agency Afghanistan—Terrain and Population

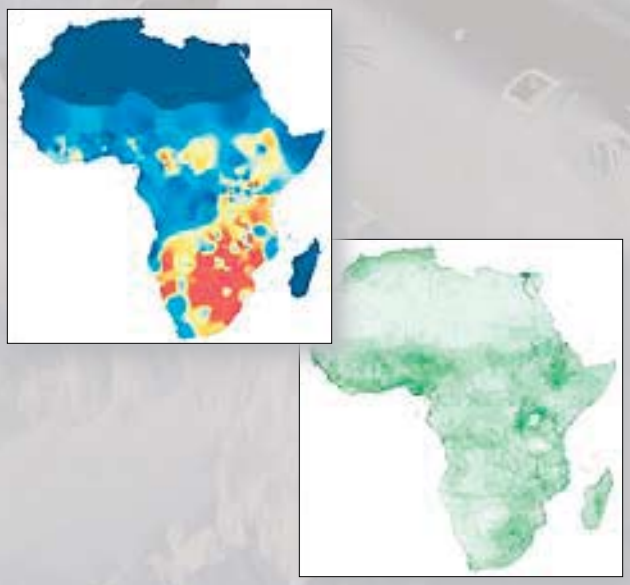


These graphics introduced senior policy makers to the physical and social geography of Afghanistan including key place names, border crossings, and airfields. Inset maps highlighted the diverse ethnic distribution, the few areas suitable for agriculture, and population density, highlighting the country's largely empty interior. A weather forecast was also included for the dates of first freeze, indicating the difficulty internally displaced people would face as winter set in.

This map served as a tool to bridge the gap in the general knowledge about Afghanistan, its rugged terrain, and some of its cultural issues in the days immediately following September 11, 2001. Approximately 2,600 copies of this map were produced.

Contact
Christopher Price
E-mail: chrisbp@ucia.gov

Africa: Applying GIS to the AIDS Pandemic
Central Intelligence Agency, Office of Transnational Issues



The U.S. Central Intelligence Agency wanted a product that would enable analysts at the Office of Transnational Issues to better understand the distribution of HIV cases across Africa. Most representations of HIV prevalence in Africa were done based on national infection rates. Such analysis highlights countries that are suffering greatest in proportion to their own populations but does not clearly indicate actual numbers of infected people because population density is not considered.

This map product calculates HIV prevalence for all of Africa using U.S. Census Bureau and Joint United Nations Programme on HIV/AIDS data. It multiplies the interpolated figure by the number of people listed in the LandScan 2000 distributed population database, modified for each country's target population cohort. The result is a grid of one-square-kilometer cells that represents the HIV-positive population while accounting for the dynamics of population density and complex HIV prevalence distribution.

Contact
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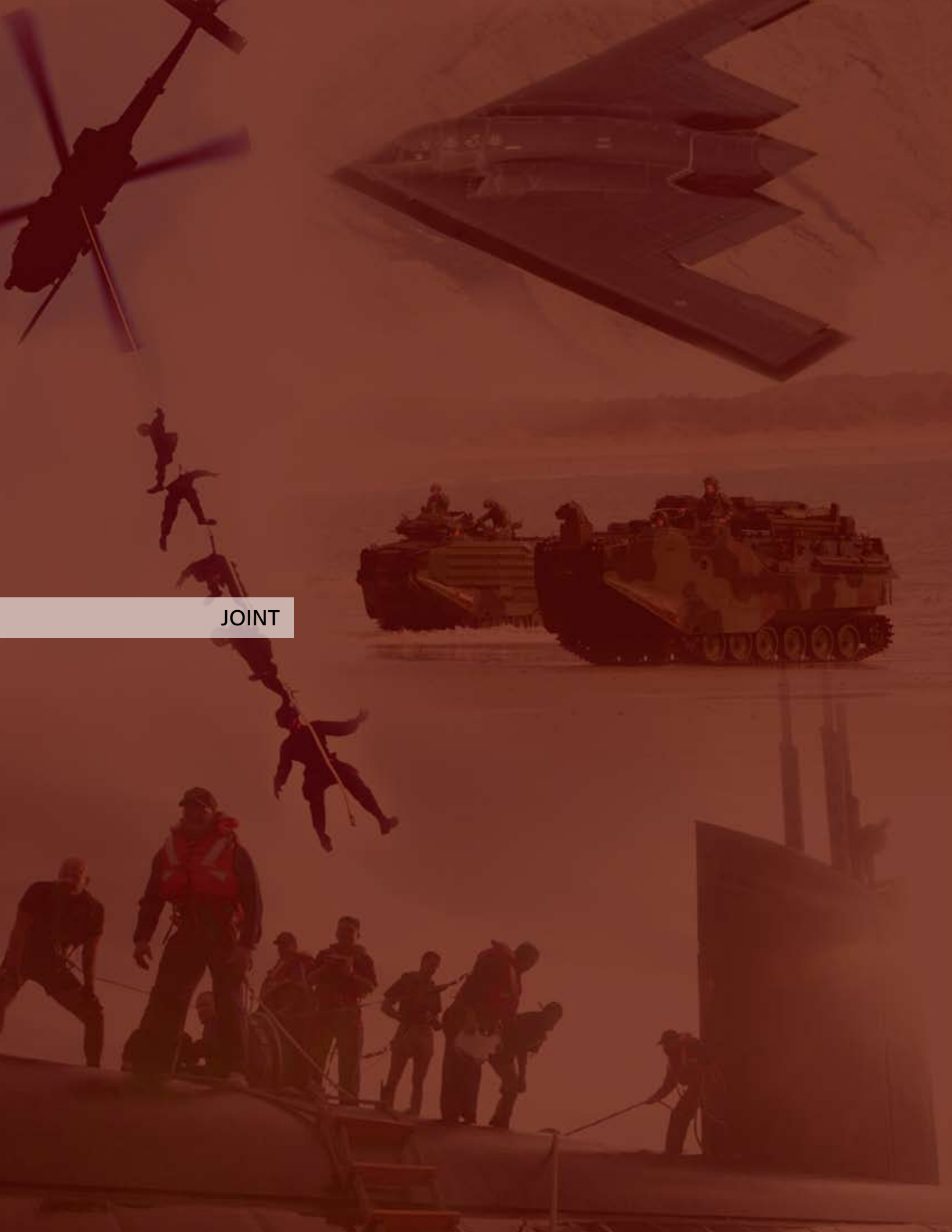
To create the final product showing the number of HIV cases per square kilometer, the cell values of the interpolated HIV prevalence map were divided by 100 and multiplied by the values in the modified population database. The extent was set the same as the buffer, the cell size was set for 0.0833 decimal degrees, and the coverages were multiplied using ArcGrid™. The result is a map that shows approximately how many HIV cases exist in each square kilometer on the African continent.

Results indicate that several sub-Saharan countries have significantly infected populations that have gone largely unnoticed in traditional analytical studies. This new method of mapping the disease enables various government offices and nongovernment organizations to reexamine issues, such as resource allocation, regional stability, fiscal aid, and prevention efforts, across the continent.



JOINT

Explosive Ordnance Disposal Information System

The importance of demining continues to grow. Despite the adoption of the Ottawa Landmine Treaty in March 1999, the basic problem is unsolved. Between 85 and 120 million active mines, scattered over 70 countries, are waiting to explode.

The Explosive Ordnance Disposal Information System (EOD IS) is an integrated geographic management and information system that supports explosive ordnance disposal, demining, improvised explosive device (IED) disposal, and countermining.

EOD IS Is Designed For

- Peacetime EOD—clearing ranges used for shooting and military exercises
- Police antiterrorist activities when explosives (IED) are involved
- Military operational countermining
- Civil and military humanitarian demining as part of international peacekeeping missions
- Naval peacetime demining of sea lanes and harbors

For more information, contact

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Enhancing Homeland Security Situational Awareness Utilizing Geographic Information Systems

Nationwide cases of the West Nile virus are tracked using data from the Centers for Disease Control in Atlanta.

Homeland security is more than protecting our communities and families against another terrorist attack. It is about having the ability to deter, defend against, and defeat the terrorist before an event occurs. GIS technology provides a common framework for displaying homeland infrastructure data for numerous organizations to add their specific layers of interest. The ability to map infrastructure in conjunction with weather systems can lend itself to better preparation prior to the onslaught of a thunderstorm, tornado, or hurricane.

Simply put, a GIS combines layers of information about a place or event to provide a greater understanding of that place. What layers of information are combined depends on the purpose—finding the best location for a new store, analyzing environmental damage, or possibly viewing similar crimes in a city to detect a pattern. Exploring data using GIS turns it into information and information into knowledge. To effectively use GIS, one must have hardware, software, data, people, and training.

U.S. Northern Command's Standing Joint Forces Headquarters for Homeland Security (SJFHQ-HLS) in Norfolk, Virginia, has been utilizing the power of GIS … in its mission to "See first, understand first, and act first." The SJFHQ-HLS staff uses the GIS Common Operational Picture (COP) on a daily basis to increase situational understanding and awareness. If an event happens somewhere in the United States, whether terrorist related or not, the first question is always, "Where is it?" Then the DoD equities are brought into the COP and other critical infrastructure.

For more information contact

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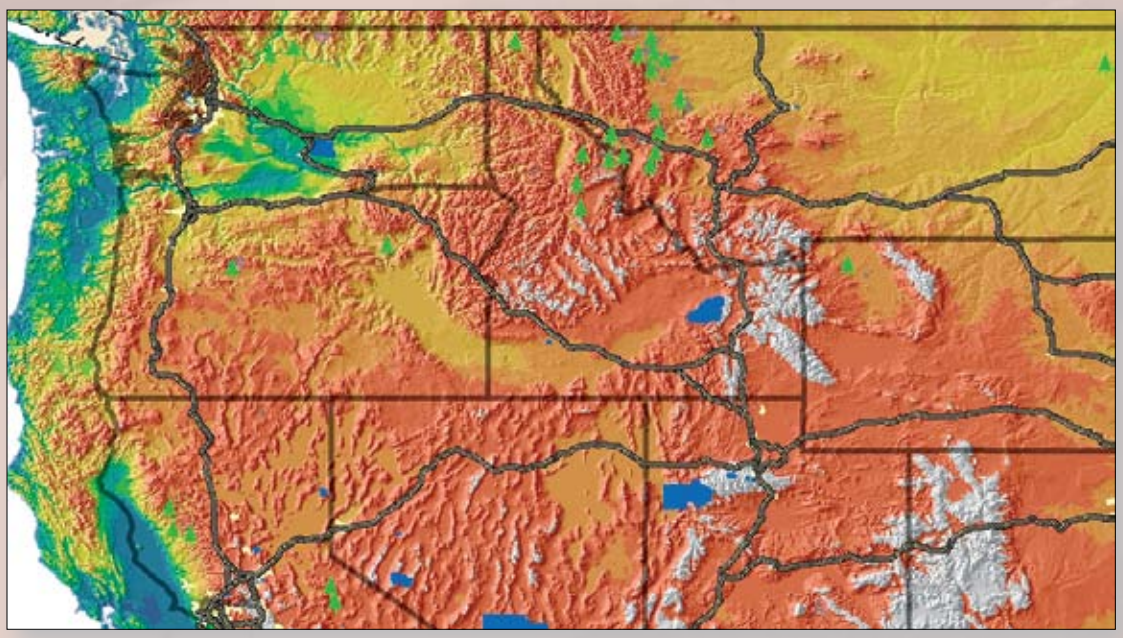
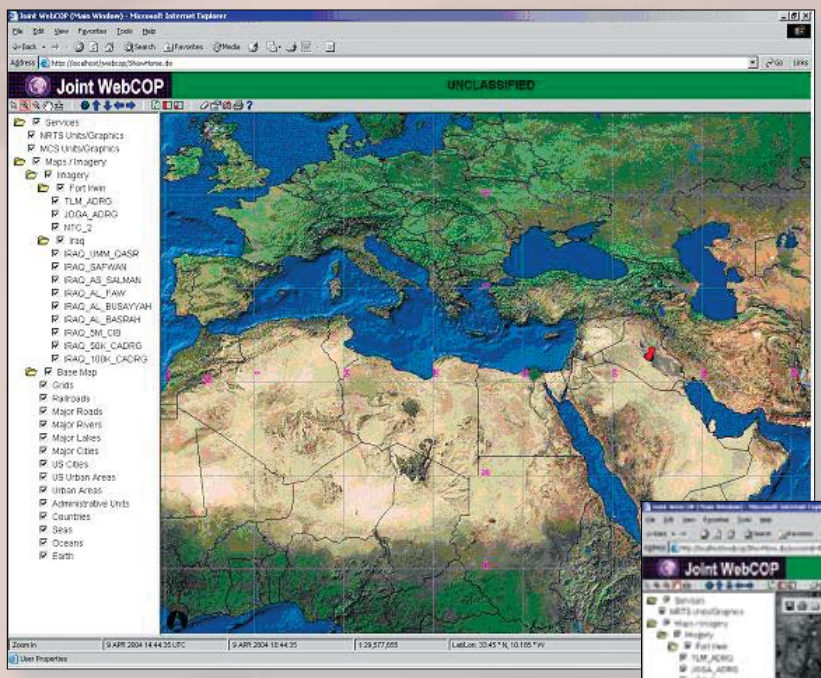


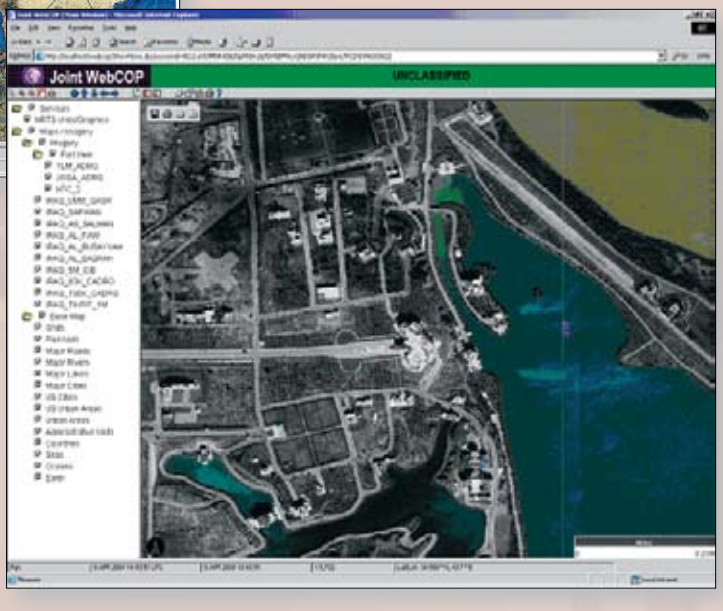
The USGS provides wildfire data on an ArcIMS site called GeoMAC. The data is then imported into ArcMap and layers are added for further analysis.

ArcInfo was utilized to track Hurricane Isabel with shapefiles obtained from the Naval Atlantic Meteorology and Oceanography Center located on Naval Station Norfolk, Virginia, along with data from the NGA.

WebCOP



Joint WebCOP provides a core set of basemap data that covers the entire world. This includes an earth GeoTIFF image, countries, oceans, cities, rivers, grids, etc.



Joint WebCOP provides the ability to show a vast array of vector and raster data including Raster Product Format, Vector Product Format, CIB, CADRG, GeoTIFF, VMap, DNC, and many others.

PEOINTERCHANGE

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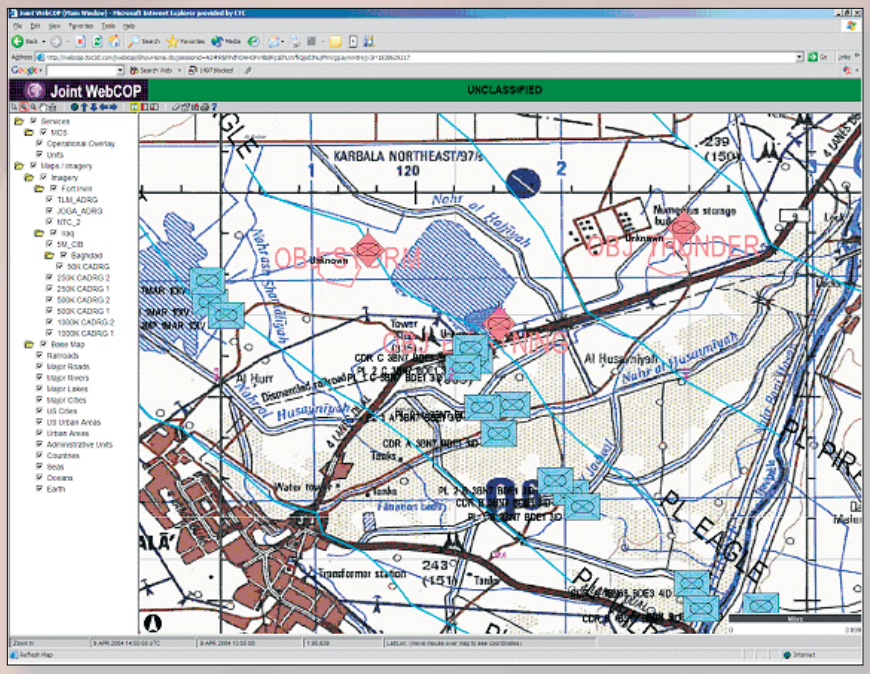
CTC Concurrent Technologies Corporation

Introduction

Improving the ability of U.S. warfighters to visualize a battlefield in near real time from miles away has never been more important. The Global Command and Control System Family of Systems (GCCS FoS) Joint Web-Enabled Common Operating Picture (Joint WebCOP) is an initiative that will allow combat commanders to accurately view troop movements using a standard Internet browser.



Joint WebCOP displays command and control data in either MIL-STD-2525B or NTDS format.

Capabilities/Benefits

The GCCS FoS Joint WebCOP is designed to be a near-term capability that builds on mature technology yet anticipates future developments. It will augment current capabilities by providing a browser front end to the COP and an open, pluggable infrastructure that can quickly accommodate new data sources and user functionality. Joint WebCOP utilizes the best of prior service unique efforts as the foundation on which to build an open, extensible, and loosely coupled architecture to be shared by all.

Joint WebCOP is implemented using the Commercial Joint Mapping Toolkit (C/JMTK) that is based on ESRI's proven commercial GIS toolkit. It includes an Internet Map Server, Spatial Database, MIL-STD-2525B symbology renderer, and software development toolkits. Joint WebCOP also utilizes Internet technologies to provide a simple, intuitive, familiar user interface, enabling soldiers to view critical information without extensive training.

Joint WebCOP provides a critical, highly responsive node for a widely distributed and mobile force. It provides users from any platform with network connectivity and a Web browser with the ability to view The COP. It minimizes the need for user training because of the use of an Internet browser. It provides access to data from Joint data feeds that most users would not otherwise be able to view.

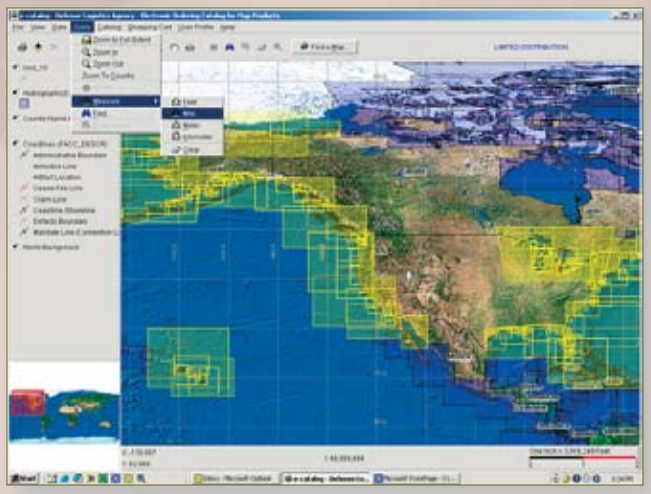
URL

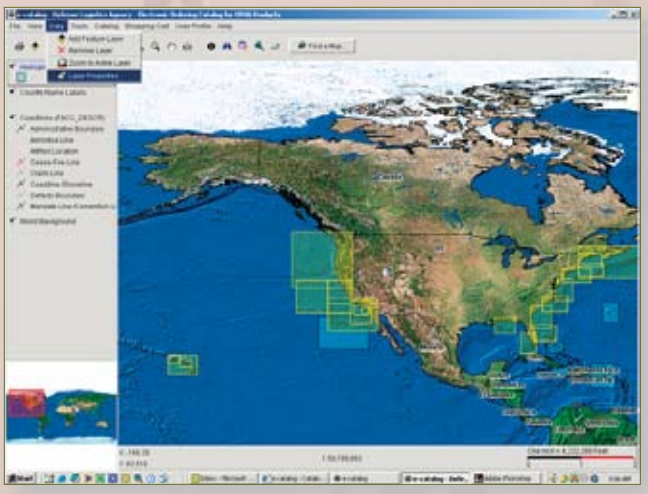
A WebCOP demo Web site is available at http://webcop.toc3d.com.

Joint WebCOP is a collaborative development effort among the GCCS-A, GCCS-M, GCCS-J, Theater Battle Management Core System (TBMCS), and the Global Information Grid Enterprise Services (GES) programs.

Defense Logistics Information Services

A Division of the Defense Logistics Agency

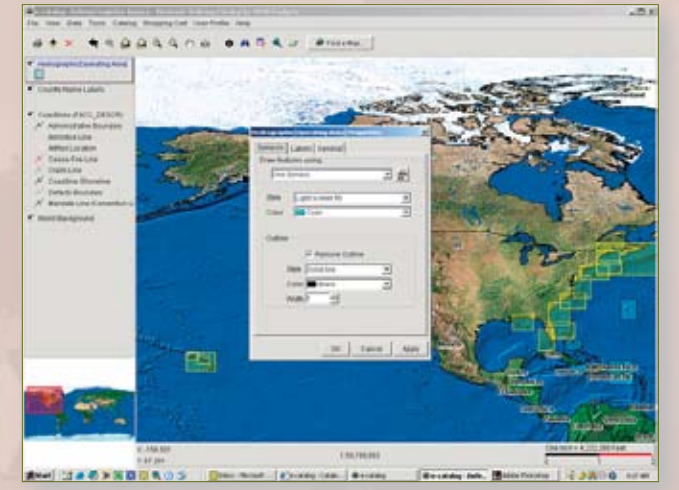




Defense Logistics Agency Map Catalog

Overview

Defense Logistics Information Services (DLIS) began producing hard-copy catalogs of hydrographic, topographic, aeronautical, and digital products in 1998. By 2000, the Defense Logistics Agency (DLA) Map Catalog team had produced its first prototype for the electronic catalog. The Map Catalog team was also invited to brief the DLA commander on the new prototype at headquarters. Regular production of the electronic catalog began with the team's partnership with ESRI in 2001 in an effort to replace the existing hard-copy catalogs. Keeping good communication lines between the partnering organizations was essential and in 2002 DLIS hosted the first Technical Exchange Meeting (TEM) that included DLIS, Defense Supply Center–Richmond (DSCR), and National Geospatial–Intelligence Agency (NGA). In 2003 the team began using customer input to provide enhancements that would make the catalog more efficient. One major enhancement made was the ability to order online. Before online ordering was made available, customers would have to create an 80-column format MILSTRIP to place an order for maps and charts. Now all the customer needs to do is upload a text file (that is created by the Map Catalog) to WebReq, an online ordering site, where it is submitted and the order is filled. This past year the team began traveling to various military bases in support of the Map Catalog. In May of this year, DLIS sent two of the team's cartographers to Bahrain to hold training for military personnel who would be supporting warfighters in Iraq. DLIS also teams with NGA on various fleet visits throughout the Navy where the capabilities of the Map Catalog are briefed to groups of sailors and navigators.



For more information, visit www.dlis.dla.mil.

Other resources
DSCR: www.dscr.dla.mil/pc9/
NGA: www.nga.mil
ESRI: www.esri.com

Benefits

The DLA Map Catalog offers its customers many benefits over the "old" hard-copy catalogs. The major benefit to the customer has been the decrease in the amount of time it takes to actually locate and order various maps and charts. A 500-item order that may have taken half a week with the hard-copy catalogs can now be completed and ordered in a matter of minutes. For the Navy, Notice to Mariners (NTM) updates have also been simplified. When using the hard-copy catalogs, Navy customers had to make corrections in their catalog that would lead to messy, torn pages that made the hard-copy catalogs hard to use. The current Navy customers who use the Map Catalog only need to click a link in the catalog's menu bar to be taken to the DLIS Web site where they unzip a file of NTM updates to their catalog, and all necessary updates are made. The Map Catalog is also very easy for the customer to navigate through and operate. The point and click environment of the Map Catalog makes it easy to locate and order maps and charts without thumbing through numerous pages.

Future

The future of the DLA Map Catalog is very bright. Currently in development are two more Map Catalogs, an online version and also an unlimited release version of the current Map Catalog. The team will continue to travel where it is needed to supply warfighters with all the necessary training they will need to use the catalog effectively and efficiently. The team will accomplish this through continued military base visits, fleet visits, and upcoming user conferences. The first of these conferences will take place in August of this year in San Diego, California, with a subsequent conference to take place on the East Coast in the spring of next year. These conferences will become a yearly occurrence both on the East and West Coasts. With many of today's processes turning to the digital realm, the DLA Map Catalog team will continue to be at the forefront of producing innovative and effective ways to support the warfighter.

Submit Your Story for Print

Each article in this publication represents a real program that is making a difference to our defense and intelligence communities. Sharing experiences lessens program risk, reduces cost, and fosters understanding of the road map toward seamless spatial information infrastructures in defense.

It is our intent to reproduce this publication at least once a year. If you are interested in featuring your program in the next edition, please read the instructions below.

Requirements

We feature defense and intelligence programs from around the world that make use of GIS. The aim is to communicate capabilities and benefits of the program, not to advertise a system integrator or solution provider.

Text

- All text submissions should be in either MS Word format or plain text.
- There must be one to three paragraphs of text. The standard format is Title, Overview paragraph, Capabilities paragraph, and Benefits paragraph.
- There must be captions for each screen shot, image, graphic, and picture submitted.
- Point of Contact information. Include appropriate names, titles, affiliations, addresses, phone numbers, fax numbers, e-mail addresses, and Web URLs for the contacts. Example: For more information, contact …
- Include imagery, pictures, graphics, and screen shots.
- Please do not embed digital graphics in the text, document, or word-processed file. Digital graphics must always be sent as separate files.
- Original screen shots should be a minimum of 96 dpi. TIFF, BMP, or EPS is preferred.
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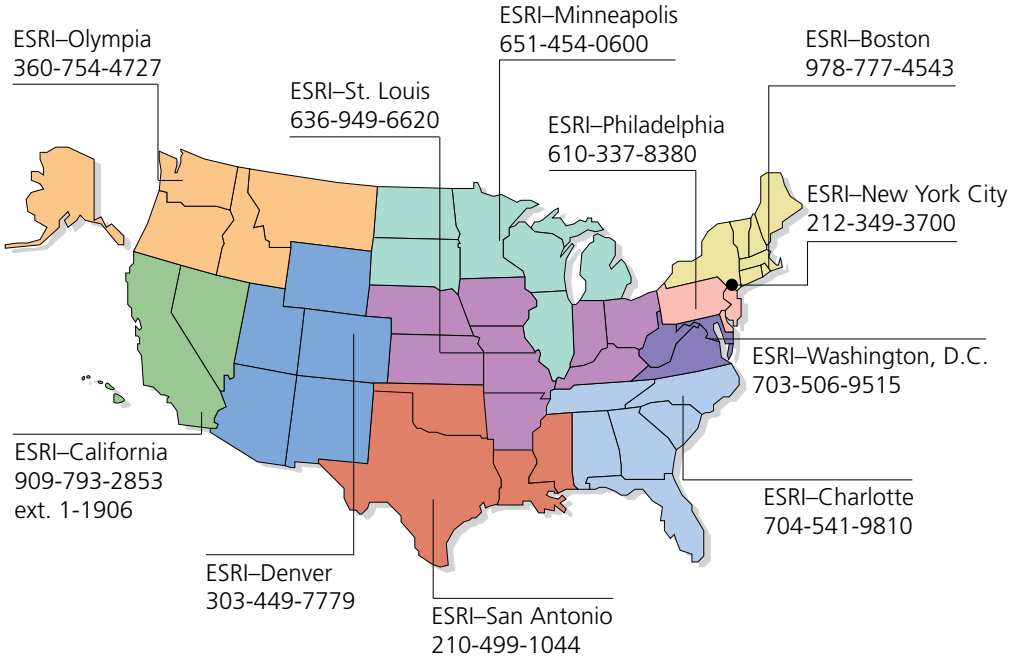

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