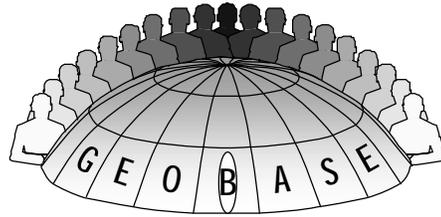


GeoBase Forum

Jan/Mar 00

IITA
INSTITUTE FOR INFORMATION TECHNOLOGY APPLICATIONS
US AIR FORCE ACADEMY



The GeoBase Forum is a quarterly newsletter intended to keep military, civil service and commercial partners informed on issues of mutual interest regarding the IITA GeoBase Initiative and the emerging USAF GeoBase program. Previous issues of the GeoBase Forum can be found at the GeoBase website: www.geobase.org.

The USAF GeoBase Advances

The USAF GeoBase Initiative originated in the fall of 1998 when representatives from the Communications and Information community met with Civil Engineer agencies to explore how the two functional missions could better share geospatial information resources. For the past 14 months, the Institute for Information Technology Applications (IITA) has served as the lead office to bring the GeoBase from a concept to operational integration.

The desired outcome of the GeoBase effort is to ensure each USAF installation has the organic capacity to access, exploit, and maintain one geospatial information infrastructure supporting multiple mission needs. This cross-functional information resource task has led the GeoBase effort to seek the endorsement of the USAF Chief Information Officer Management Board (CIOMB). Chaired by the AF CIO (SAF/AQ) and the Deputy CIO (AF/SC), the CIOMB is the senior USAF team responsible for overseeing strategic enterprise information issues such as the USAF GeoBase. Over the past six months, several Air Staff offices have scrutinized the GeoBase proposal. Two key offices heavily involved with the effort include the CIO Support Division at the Air Force Communications and Information Center (AFCIC) and the Office of the Civil Engineer (AF/ILE). The CIO Support Division, led by the previous PACAF CIO BGen (Sel) Bernie Skoch, has been instrumental in heralding the potential value of the GeoBase for the USAF and helping to shape the concept into a viable enterprise proposal. The Deputy AFCIC Commander and Chief of the Global Combat Support System Requirements Integration Division (GRID), BGen "Bud" Bell, also offered key support by sponsoring the GeoBase proposal on the CIOMB March agenda. Mr Michael Aimone, Deputy Civil Engineer, has actively represented the Office of the Civil Engineer over the past year in seeking to team with their Air Staff peers in AFCIC.

Several briefings have been presented in just the past few weeks that will serve to shape the long-term path for the GeoBase. A key briefing was given on 2 Mar 00 to the Deputy Chief of Staff for Installations and Logistics (AF/IL), Lt Gen Handy, and his deputy Mr. Orr. The USAF Civil Engineer, MGen Robbins (AF/ILE), and the Chief of Plans and Integration (AF/ILX), Ms Susan O'Neal, also attended the briefing to share their comments and offer their endorsement for raising the issue for CIOMB review. A key outcome from the brief was to have AF/IL stand up as the functional champion for the GeoBase concept while acknowledging a technical champion was still needed. Further discussions between AFCIC and AF/ILE as well as the CIOMB pre-brief to the AF CIO on 23 Mar 00 led to the Defense Information Office at Electronic Systems Center (ESC/DI) being recognized as the logical interim technical advocate to help define the USAF GeoBase operational architecture.

The capstone briefing for the IITA-led GeoBase Initiative was a 29 Mar 00 presentation to the CIOMB delivered in the Secretary of the Air Force Conference Room. Those attending included the AF CIO (Dr Delaney), Deputy CIO (Lt Gen Donahue), AF/IL (Lt Gen Handy), and several other senior leaders to include AF/DP, AF/XO, and AF/XP representatives.

The recommendations of the 29 Mar 00 CIO Management Board meeting included the following:

The Deputy Chief of Staff for Installations and Logistics (AF/IL) will sponsor a GeoBase Integrated Process Team with ILE chairing the effort with ESC/DI serving as co-chair. The IPT members will include members from the Civil Engineer, GCSS Requirements Integration Division, Intelligence, Communications and Information communities, as well as IITA continuing to serve in an advisory role.

The primary task of this IPT will be to compile a thorough and comprehensive study of the potential impacts of a formal GeoBase program for the USAF mission. It is vital that the broad USAF GeoBase program be evaluated for its tangible contributions to the broad USAF mission prior to large-scale investment just as GeoBase investment planning is carried out for units and installations. The IPT will be studying impacts internal to the USAF installation domain. This will be accomplished by evaluating and documenting organizational investments and

subsequent outcomes at three representative sites that have a relatively mature geospatial IT investment. The three sites specifically targeted for the assessment include Edwards AFB, Hill AFB, and Vandenberg AFB.

Furthermore, the technical architectures at each of the installations will also be evaluated by the 38EIG to better understand the requisite base-wide communications configuration necessary to support a viable enterprise-wide GeoBase solution. The three installations noted above each present a different operational and technical environment that will be valuable for also assembling a composite communications target architecture.

The GeoBase concept, however, offers significant potential benefit to Air Force missions beyond the installation. Several initiatives to include the Automated Civil Engineer System (AF/ILE), C4ISR Infrastructure Planning System (38EIG), Force Protection Command and Control (AF/XOF), Theater Battle Management Core System (AC2ISRC), USAF Modeling and Simulation (AF/XO), Air Force Critical Infrastructure Protection (AFCIC), the Air Force Explosive Safety Program (Air Force Safety Center), International Treaty Management Compliance (AF/XONP), as well as others yet to be discovered are all looking to exploit the potential benefits of a single, standardized geospatial information infrastructure for our USAF installations to achieve their aims.

The GeoBase mission impact study is anticipated to take about four months to complete. The report is expected to be briefed back to the Air Staff and CIOMB in Aug 00 with final recommendations for the 'way ahead' for the USAF GeoBase to be determined in Sep 00.

This effort will offer the first opportunity for the USAF CIOMB to validate the technical architecture of commercial off-the-shelf (COTS) geospatial information systems (GIS) for integration into the Joint Technical Architecture-Air Force. The JTA-AF is the technical framework supporting the broad Global Combat Support Systems, Global Command and Control System, and Global Information Grid operational visions. Inclusion of COTS GIS within the JTA-AF is a vital step towards recognizing the immense value of geospatial information for the USAF mission.

The final recommendations will likely be underscored in a message from either AF/CC or CV to the Air Staff functionals and HQ MAJCOMs when the 'way ahead' is clarified. The active involvement of the USAF CIOMB and the AFCIC CIO Support Division will offer significant long-term viability to the USAF GeoBase program within the Air Staff. Check out the GeoBase Forum in June to find out the current status of the GeoBase mission impact study.

GeoBase Planning Seminar Impacts

The 7-9 Mar 00 GeoBase Planning Seminar concluded the three initial offerings of the GeoBase Seminar Series sponsored by IITA. Entitled "Planning the GeoBase: From Strategy to Implementation", the three two-and-a-half day seminars offered in Jan, Feb and Mar 00 at the USAF Academy were designed to offer a focused, low-cost educational opportunity for both government and commercial representatives to gain insight into the planning processes and tools which serve as a sound basis for long-term GeoBase investment.

Attendance was purposefully limited to ensure ample opportunity for dialogue and interaction among those attending. Publicity was also minimal since these three seminars were used to validate both their value and the capacity of IITA to support small, educational seminars of short duration. Air Force members attending included representatives from the Air Force Space Command, Air Combat Command, US Air Forces Europe, Air Force Reserve Command, Air Force Material Command, Air National Guard, the USAF Academy, the Air Force Center for Environmental Excellence, and the Air Staff Office of the Civil Engineer.

As seen in Figure 1 below, the seminars were enriched by a strong participation from the commercial sector as well. Participating companies included CH2MHill, BTG/Delta Research Division, InSite Consulting, Computer Sciences Corporation, SM&A Corporation, Higgenbotham, Briggs and Associates, Geo InSight International, Tesseract Technologies, URS/Radian International, EarthTech, and Environmental Systems Research Institute (ESRI).

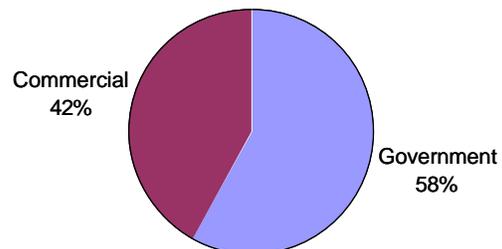


Fig 1. GeoBase Seminar Series Registrants (Jan-Mar 00)

For those that might be interested in learning more about GeoBase Planning Tools, there will be a shortened version of the IITA GeoBase Planning Seminar offered at the CADD/GIS Symposium 23-25 May 00 in St Louis. The workshop is currently scheduled for the morning of 25 May (Thursday). Seating will certainly be limited, so be sure to make your reservations now. You can find more about the CADD/GIS Symposium in the "Coming Events" section of this newsletter.

GeoBase Partnering in Japan

The Joint Service GIS Partnership was originally established in 1998 to advance the cooperative effort between the US Forces on Okinawa who were seeking to develop and sustain the use of GIS as an installation management tool. This multi-service effort was sponsored by the respective facilities and civil engineers from the USAF, USMC, USA, and USN located on the island. Their cooperation in all facets of GIS development from combined training and education courses to consolidated aerial mapping contracts have literally saved the US government millions of dollars.

Furthermore, their voluntary adoption of the Tri-Service Spatial Data Standards as well as their joint decision to use the Tokyo Datum have already reaped several unanticipated benefits such as the ability to exchange E911 emergency response plans with the local Okinawan fire and police and the ability to share applications with relative ease. The effort continues to demonstrate how the development of a geospatial information management strategic plan can allow multiple commercial firms to individually contribute to the comprehensive program.

The success of this unprecedented multi-service, regional effort was underscored during the recent meeting of the larger Japan GIS Center Working Group (CWG) at Kadena Air Base held 24-28 Jan 00. The workshop began with Mr. Hudson Kekaula from the USA Corps of Engineer's Japan Engineer District (JED) sharing welcoming remarks and a brief history and purpose of the CWG. Several defense installation representatives presented updates on their respective GIS activities to include Camp Zama in Tokyo (Mr. Hudson Kekaula), Marine Corps Air Station Iwakuni in southern Honshu (Mr. Carl Nakamura), Kadena Air Base on Okinawa (Mr. Vance Hoyt), Marine Corps Base Camp Butler on Okinawa (Mr. Jim Sleutel), and the US Navy's Public Works Center Yokosuka situated outside of Tokyo (Ayman El Swaify). TSgt Ken Jordan from HQ PACAF explained PACAF's adoption of GeoBase initiatives and also demonstrated Misawa AB's web-based prototype of their Housing Application. Lt Col Cullis from IITA presented the latest GeoBase Initiative developments, followed by Mr. Ed Riegelmann who provided the group with the essentials of strategic planning for a successful GeoBase initiative.

During this meeting, the CWG established a formal charter modeled after the Okinawa Joint Service CADD/GIS Center "Partnership Charter." Regarding CADD/GIS standards, the group agreed the use of a common standard would benefit all by reducing redundancy and allowing application specific features to be easily integrated and scaled into other CADD/GIS projects. It was also decided

that representation from the US Forces Japan sub-unified command echelon would be sought in the future. The final day of the workshop allowed several commercial firms to demonstrate their new products and services. Presenters included Dale Dunham (G/I/S), Richard Koochagian (API), Mike Quin (ESRI), Mark Weegar & Sheila Gehani (BTG), Jena Williams, Ed Riegelmann & Toshio Tauchi (Geo Insight & ACE), Yoshikuni Hirayama (Design Power), and Chris Klahorst (PSI). The meeting closed with broad agreement that since it's inception three years ago, the CWG has made great strides in facilitating strong cross-service geospatial IT partnerships and establishing many successful GIS programs. The next meeting is tentatively scheduled for Jun 00 and will be held at Camp Zama.

For more information on the Joint Service GIS Partnership, contact either Mr. Vance Hoyt (Kadena AB) at vance.hoyt@kadena.af.mil or Mr. Jim Sleutel (MCB Camp Butler) at sleuteljd@mcbbutler.af.mil. For information regarding the Japan GIS Center Working Group, you should contact Mr Hudson Kekaula, USACE/JED GIS Coordinator, at Hudson.W.Kekaula@poj.usace.army.mil.

Spotlighting GeoBase Synergy

The C4ISR Infrastructure Planning System

The greatest potential value from the GeoBase lies in programs beyond the traditional Civil Engineer domain leveraging the core GeoBase information infrastructure for their particular mission. Beginning with this quarterly edition of the GeoBase Forum, a different program will be spotlighted in each newsletter to help raise awareness across the GeoBase community for the wider mission benefits to sharing geospatial information.

It's common knowledge that achieving the vision of the USAF GeoBase will rely upon unprecedented teaming between the Civil Engineer (CE) and the Communications & Information (SC) communities. While CE has always served as the traditional office of primary responsibility for general mapping of AF installations, the SC function has also shared the need for accurate maps of their growing infrastructure on the same installations.

In 1997, the SAF/AQ Program Executive Officer, Mr. Gilligan, tasked the 38th Engineering and Installation Group to develop network configuration management and planning strategy for the Air Force of the future. In Sep 98, Lt Gen Donahue, AF/SC, also tasked the 38th EIG to develop a plan that covered all Air Force communications infrastructure. Subsequently, the 38th EIG has been the primary advocate for demonstrating the new capabilities of the C4ISR Infrastructure Planning System or CIPS.

The objectives of CIPS includes serving as a configuration management tool for AF bases, a planning tool for the base's systems-telecommunications engineering manager (STEM), a C4ISR readiness reporting tool, an information warfare tool, and finally a baseline network configuration tool offering support for modeling and simulation.

The Challenge. Currently, there is no automated system online within the Air Force to perform integrated base-level network configuration management of C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) systems and infrastructure. This lack of capability hinders the performance of the information operations mission and may result in critical mission failures. By fielding an automated system supporting C4ISR network configuration management, planning and system fielding, AF decision-makers, planners, and sustainers will have an interactive tool providing them with instant access to the current C4ISR picture.

In order to shrink the total cost of ownership of the AF's C4ISR infrastructure the AF must modernize its assets and systems. The most efficient means of accomplishing this challenge is to bring online an integrated network configuration management and planning system that is capable of mapping out the current base information infrastructure picture. Furthermore, the antiquated process for managing the STEM Blueprint planning process would see massive productivity improvements since the desired system would be able to automatically detect information infrastructure assets, map asset data to physical georeferenced points, and provide user access to information through a web environment.

Mission and Threat Analyses. In warfare, success is achieved through protection of friendly forces and denial of the enemy's ability to wage war. Warfare of the future will be won and lost through information dominance. The AF must modernize its information infrastructure and treat it as a weapon system to achieve the required objectives. Network centric warfare, under the Information Warfare (IW) umbrella, will be one of the dominant components of future warfare because it gives us the ability to exploit information about the enemy. In addition, it concentrates on protection of *friendly* C4ISR systems from enemy intrusion. Success in this type of warfare cannot be achieved without a dominant, survivable C4ISR infrastructure that is capable of being geographically visualized within the built-up environment whether in garrison or deployed. Deliberate C4ISR Infrastructure Planning (CIP) is the foundation for this C4ISR infrastructure and is necessary to achieve "dominant battlefield awareness".

CIP requires an automated toolset in order to do configuration management, C4ISR planning, and program fielding. Currently, these required AF missions are performed disjointedly resulting in minimally sufficient infrastructure planning and integration. AF planners have to deal with fragmented and incomplete configuration baselines as the foundation for their C4ISR modernization plans. This type of planning results in additional costs and poor performance of the AF's global communications grid. The AF cannot achieve the overall objectives of modernizing its C4ISR infrastructure while reducing the cost of doing business without an automated configuration management and planning tool.

Initial prototyping of the CIPS technical architecture took place at Vandenberg AFB in Feb 00. The implemented solution included: 1) a geospatial module which was dependent on the Vandenberg AFB Civil Engineer GIS infrastructure data, 2) a network discovery module to help maintain a current network configuration inventory; 3) a logical mapping application to allow a pseudo-logical map to be overlaid on the georeferenced real property data, and 4) a web-delivery mechanism. The prototype successfully demonstrated that CIPS was capable of integrating physical mapping of the Vandenberg existing C4ISR infrastructure as well as layered base maps, building floor plans, and associated data objects with the native CE GIS data.

The core of the CIPS effort lies in its ability to offer an integrated, operational picture of how our vital C4ISR network at base-level resides coincidentally with the balance of the "military city" infrastructure. By teaming with the GeoBase effort, the 38EIG has high hopes for showing how the SC and CE missions can both reach a "win-win" outcome.

Moving Towards AF GeoBase Policy

Air Force Mission Directive 19 states that the Air Force Center for Environmental Excellence (AFCEE) will serve as the "functional experts for the Air Force Civil Engineer in the areas of CADD and GIS". In support of this directive, AFCEE sponsored last year's Aug 99 GeoBase Policy Workshop to help in gaining Air Force customer input for de facto policy tenets in the near term. The Aug 00 workshop yielded the twelve GeoBase Foundations which can be found at www.geobase.org. These foundations have served to influence not only several MAJCOM GeoBase efforts over the ensuing six months, but also US Marine Corps and Naval Facilities Engineering Command directives as well.

HQ AFCEE took the "next step" towards drafting more formal policy instruments in late Feb 00 when

they again hosted a GeoBase Policy Development Workshop in San Antonio. Facilitated by Ms Deborah Locklair and Major Ken Rogers from HQ AFCEE, more than 20 representatives from across the Air Force MAJCOMs have since been offering extensive input and revisions to the draft instruments which are tentatively being viewed as prospective Air Force instruction (AFI).

The AFI development process can be a lengthy, challenging process since coordination with other Air Staff offices is required. Additionally, the cross-functional nature and potential benefit of geospatial information to several Air Staff offices will certainly attract a good deal more of input from functionals beyond the Civil Engineer. Nonetheless, HQ AFCEE is taking aggressive steps to begin this effort so vital to making geospatial information management an integral part of USAF operations. Stay tuned to the GeoBase website for more information on the policy effort. Specific questions should be addressed to either Ms. Locklair at (210) 536-5208 or Major Rogers at 536-5675. (DSN 240)

GeoBase Happenings

May 22-25 00. CADD/GIS/FM Symposium and Exposition, Adam's Mark Hotel, St. Louis, Missouri. Check out the CADD/GIS Center's website at <http://www.tsc.wes.army.mil> and be sure to keep your eyes open for scheduled GeoBase events.

Recommended Reading

Getting It Done: How to Lead When You're Not in Charge, Roger Fisher and Alan Sharp, (1998) Harper Collins Publishers ISBN:0887309585

If you have found any articles or books to be of particular benefit to your geospatial IT development effort, please contribute the item for inclusion in the "Recommended Reading" section of the Forum.

GeoBase Community Network

This list should provide you with points of contact that may be able to address specific questions regarding their respective GeoBase activities.

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USAF GeoBase Forum Inputs

The GeoBase relies on people like you sharing your ideas and insights. Let's together defeat the "Not Invented Here" syndrome and benefit from our collective experiences. Please send your thoughts to the GeoBase Forum at IITA care of brian.cullis@usafa.af.mil.

Disclaimer

The opinions stated in the USAF GeoBase Forum do not reflect official USAF policy unless otherwise stated.