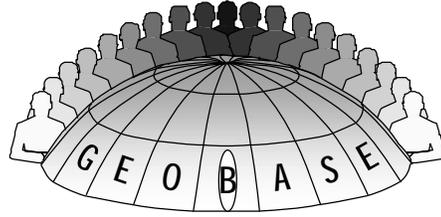


GeoBase Forum

Spring 00 (Apr-Jun)

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 GeoBase program. Previous Forum issues can be found at the GeoBase website: www.geobase.org.

Linking GeoBase and Operational Doctrine: A Strategy for Sustained Growth

Lt Col Brian Cullis, USAF
GeoBase Initiative Coordinator
Institute for Information Technology Applications

From front-line troops on defense installations around the world to senior flag officers at the highest levels of the Department of Defense (DoD), the GeoBase vision is being embraced as a vital, achievable component for our installations in the near-term. However, enduring changes in information behavior across the USAF and DoD enterprises can only be achieved if the GeoBase concept is woven into long-standing operational principles. This article will present the GeoBase Community with a context for understanding how the GeoBase effort is seeking long-term viability by linking with recent joint doctrine. This article is part of a more comprehensive GeoBase Executive Summary scheduled to be published later this summer.

During the GeoBase Decision Brief to the USAF Chief Information Officer Management Board (CIOMB) in Mar 00, the goal of the GeoBase Initiative was described as “providing installations with the organic capacity to access, maintain, and exploit one geospatial information infrastructure supporting mission needs.” The most challenging portion of any change initiative is bridging the wide chasm between the vision and the daunting obstacles of real implementation. A wise man once said “There is a fine line between a vision and a hallucination”. Indeed, we’d be hallucinating to believe “all installations are created alike”. Such grand assumptions are usually accompanied by corollaries such as “similar functional organizations follow the same business processes”. GeoBase success to date can partly be attributed to our acknowledging that even within the rigid DoD bureaucracy, there will be information behavior differences. Therefore, we must take every effort to understand the realities of the target environment as we build our GeoBase design.

Consider the challenges implicit in simply clarifying the term ‘installation’ found in the GeoBase goal statement. Most will agree that an installation (base) can be defined as a site containing facilities and infrastructure from which operations are projected/supported and these bases will vary in size, location, and operations. However, Figure 1 shows how a base can be characterized by mode, focus and identity as well.

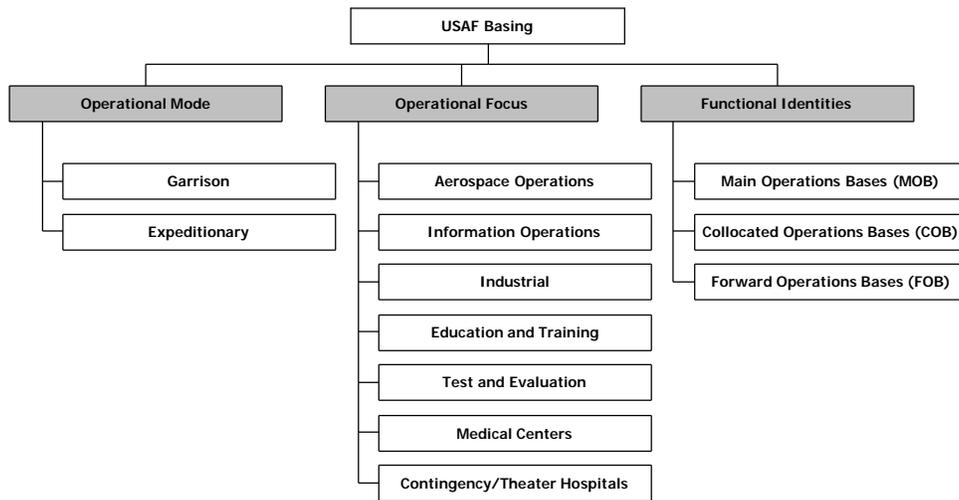


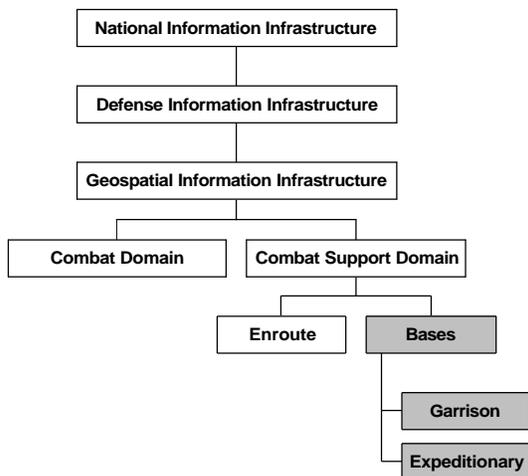
Figure 1. Characterizations of USAF Basing (AF Doctrine Document 2-4.4)

The nature of the Global Engagement strategy has led to two fundamental modes for USAF basing: garrison (existing fixed location) and expeditionary (contingency location). However, a site can be further described by the weapon system or weapon support system that forms the major operating focus of the base or installation. Bases are also labeled by functional identities such as MOB, COB, and FOB, with each identity carrying varied requirements for funding, personnel support, and weapon system operations.

The basing mode offers two different information environments for our GeoBase solution. A garrison base represents the traditional concept of an Air Force base, with developed infrastructure, permanent facilities, and an established workforce and generally applies to active, reserve, and National Guard installations as well as depots, training centers, and test ranges. Primary missions at a garrison base might range from power projection to a depot function mission, or an associated guard or reserve unit mission. The inclusion of families and their related support structures drive planning, programming, and operating requirements not typically found at expeditionary sites. At garrison bases, the maintenance of a sense of community and the perception of the overall quality of life can affect readiness and mission accomplishment. In addition to these internal relationships, USAF garrison bases must consider how operations impact the surrounding community. Furthermore, infrastructure and facilities are more formally programmed, developed, operated, and maintained on garrison bases which employ master plans to describe present and future conditions, constraints, and future development goals. Infrastructure and facility related work on a garrison base can be described as a continuous, cyclical process involving programming, design, construction, operation, maintenance, demolition, and back to programming.

More frequently, US forces are being deployed to a host nation as an expeditionary force to MOBs, COBs or FOBs. The expeditionary basing mode may find a task force commander being offered resources ranging from a fully equipped installation to a bare base with little more than a water source and bare land. The Pacific Air Forces have coined the term GeoReach to describe their efforts in extending GeoBase principles to expeditionary bases outside the battlespace where NIMA is sole provider of geospatial information and services. Therefore, the realities of the two basing modes and their relative distances from NIMA support mandates the GeoBase roadmap include two distinct yet overlapping geospatial information infrastructures.

If the GeoBase is to become an integral component of the larger defense information infrastructure, we must also appreciate the larger information infrastructure initiatives. In Sep of 99, the DoD Chief Information Officer defined the goal of the Global Information Grid as follows: "The globally interconnected, end-to-end set of information capabilities, associated processes and personnel for collecting, processing, storing, disseminating and managing information on demand to warfighters, policy makers, and support personnel. The GIG includes all owned and leased communications and computing systems and services, software (including applications), data, security services and other associated services necessary to achieve Information Superiority... The GIG supports all DoD, National Security, and related intelligence community missions and functions (strategic, operational, tactical and business), in war and in peace. The GIG provides capabilities from all operating locations (bases, posts, camps, stations, facilities, mobile platforms and deployed sites)". The all-inclusive scope of the GIG shows why the IITA staff closely aligned the GeoBase effort with the Global Combat Support System Requirements Integration Division at Air Staff since they are responsible for ensuring Air Force enterprise IT efforts are compliant with the GIG architecture.



It is proposed that a newly designated GeoBase Information Infrastructure (GBII) be focused on supporting garrison bases, while the GeoReach Information Infrastructure (GRII) will be designed to extend the GeoBase operating principles into the expeditionary environment. As noted in earlier briefings, both the GBII and the GRII are part of a "base to battlespace" geospatial information and services (GI&S) continuum with the aim of developing a "maintain as we fight with GI&S" capability in concert with long-established NIMA operational practices. Figure 2 portrays how both the GBII and GRII lie within the GII, which is defined by NIMA as "a collection of people, doctrine, policies, architectures, standards and technologies necessary to create, maintain, and sustain the use of geospatial information in the context of a geospatial framework."

Figure 2. Information Infrastructure Hierarchy

Extensive partnering between the respective members of the defense GII community will continue to be a critical precursor for GeoBase success. Additionally, reaching back to the guiding operational doctrine at the joint and service levels also presents a stable foundation for developing more detailed operational, system and technical architectures for the USAF GeoBase. Hopefully the concepts proposed in this article will serve as viable seed for sustained GeoBase growth.

Status of the USAF GeoBase IPT

The Jan-Mar 00 edition of the GeoBase Forum detailed the outcomes of a capstone briefing conducted on 29 Mar 00 to the CIO Management Board chaired by Dr Larry Delaney, AF CIO and SAF/AQ. The recommendations of the group included the establishment of an integrated product team (IPT) led by AF/ILE with ESC/DI serving as co-chair. The initial USAF GeoBase IPT meeting was held 9-10 May 00 in Crystal City, Virginia at the GCSS Requirements Integration Division offices.

The organizational representatives and assigned roles for the USAF GeoBase IPT included:

ILE	Maj John McDermon (USAFR)	Chair
38EIG	John Davis	Co-Chair
ILE	Lt Col Karl Bosworth	Member
SC	Bao Nguyen	Member
SC	Jim Thorstad	Member
GRID	Lt Col Mike Sheridan	Member
GRID	Maj Jack Manley (USAFR)	Member
497IG	Bryne Lee	Member
XOF	MSgt Tracey Johnson	Member
AFCA	Jerry Barton	Member
AFCEE	Maj Ken Rogers	Member
AC2ISRC	Capt Juan Kays	Member
ACC/CEO	Capt John Thomas	Member
PACAF/CEP	Capt George Forbes	Member
AMC/CEV	Jennifer Rock	Member
AFMC/SC	Gary Smith	Member
IITA	Lt Col Brian Cullis	Advisor

This IPT is charged with a five-month task of compiling a thorough and comprehensive study of the potential impacts of a formal GeoBase program for the USAF mission. To this end, the IPT will be studying impacts internal to the installation domain by evaluating and documenting organizational investments and use of geospatial information at three representative sites with relatively mature geospatial IT portfolios. The three sites targeted for the review include Hill, Vandenberg, and Edwards AFB.

Furthermore, members of the 38EIG from Tinker AFB will concurrently be evaluating the requisite base-wide communications configuration necessary to support a viable enterprise-wide GeoBase solution. The three sites to be visited present different operational and technical environments

that will help in assembling a proposed, comprehensive GeoBase target architecture.

The first site visit was conducted at Hill AFB from 19-23 Jun 00. A seven-person team gathered data from the Environmental Management GIS system along with general information about how organizations across the installation acquired and processed geospatial information.

Team members included:

Maj John McDermon	GeoBase IPT Chair
Maj Jack Manley	GeoBase IPT Member
Maj Ken Rogers	GeoBase IPT Member
Mr Brent Haught	38 EIG/GF
Mr Gary Lushbough	38 EIG/GF
Mr Stephen Planer	38 EIG/GF
Mr Rodney Sinclair	38 EIG (Hill AFB STEM-B)

During a very busy week the team visited over 20 separate organizations and met with over 40 individuals. Hundreds of pages of notes and several hours of taped interviews were collected for subsequent analysis and use in building a compelling business case for the envisioned GeoBase information infrastructure (GBII) at garrison installations.

The success of the Hill AFB visit would not have been possible without the help of Dr Dan Stone and the Hill Environmental Management GIS team who took time out of their busy schedules to support the review. A special word of thanks in this regard to Mark Holt, Sanford Moss, Nathan Nelson, John Zimmerman, Scott Beattie and Kent Francom.

Following the three site visits, select USAF GeoBase IPT members will be also assessing the potential contributions of the GeoBase infrastructure to existing and proposed downward-directed Air Force programs. The final GeoBase IPT Report is now expected to be briefed back to the Air Force CIOMB in late Oct 00 .

The USAF GeoBase Simulator

The DoD has always emphasized the need for constant innovation if we are to achieve information and decision superiority in all phases of defense operations. The new Joint Vision 2020 states:

“There is a high degree of uncertainty inherent in the pursuit of innovation. The key to coping with that uncertainty is bold leadership supported by as much information as possible. Leaders must assess the efficacy of new ideas...the potential drawbacks to new concepts, the costs versus benefits of new technologies, and the organizational implications of new capabilities... An effective innovation process requires...a means of interaction and exchange that evaluates goals, operational lessons, exercises, experiments, and simulations”

The GeoBase concept is clearly an information management innovation carrying a great deal of uncertainty as to its value to the USAF enterprise. This fact is underscored by the AF CIOMB directing the USAF GeoBase IPT to carry out its charter as a prelude to more focused investment discussion.

During a GeoBase briefing by Gen Jim McCarthy (USAF, Ret and IITA Executive Director) to Lt Gen(S) Raduege, (DISA Director), the issue of an experimental demonstration platform for the GeoBase was raised. This discussion led to the USAF Vice-Chief of Staff, Lt Gen Handy, authorizing funds to establish a GeoBase Simulator within the IITA Laboratory at the USAF Academy by the end of FY00. IITA subsequently hosted a small GeoBase Simulator Development Conference at the USAF Academy on 15-16 Jun 00 where details of the effort were discussed.

A select group of representatives from government and commercial organizations currently serving major roles in the USAF GeoBase efforts were invited to contribute their perspectives to the proposed GeoBase Simulator over the two days. Those in attendance included:

Lt Col Brian Cullis	IITA (Facilitator)
Maj John McDermon	IITA
Maj Ellen Fiebig	IITA
Mr John Davis	38EIG
Mr Danny Portillo	USAF/DFEG
Ms Deborah Locklair	AFCEE
Paulette Wells	NIMA/USSPACECOM
Andrew Wodder	NIMA/USSPACECOM
Mr Ed Riegelmann	CH2MHill
Ms Barbara Hough	BTG
Mr Dan Huber	Geo InSight
Mr Leon DeSouza	Earth Tech
Mr Mark Scott	URS
Mr Kirk Fisher	Oracle
Mr Matt Davis	ESRI

Lt Col John Boylan from HQ NIMA and Mr Bryne Lee from the 497IG were both invited but were unable to attend.

The effort is intended to prototype how commercial GIS technology can be used in concert with existing base communications infrastructure to yield an enterprise GeoBase solution. The IITA Laboratory presents a forum where a mock-up of an installation command post (Virtual AFB) will employ real-world geospatial information resources contributed by Kadena and Vandenberg AFBs to simulate crisis and routine mission decision support. The prime contractor for this effort, CH2MHill, will team with the 38EIG as well as other commercial and government GeoBase Simulator partners to ensure the final GeoBase data stores reflect full compliance with the Tri-Service Spatial Data Standards. This operational criterion will also allow a select number of GeoBase applications already developed and in use at the two sites can be demonstrated as to their ability to contribute to any Air Force GeoBase

environment in compliance with the Tri-Service Spatial Data Standard. MCB Camp Butler (Okinawa) has also volunteered select portions of their geospatial data stores to extend this interoperability demonstration to the joint domain.

Similar to the Joint Expeditionary Force Experiments held each year to simulate and evaluate benefits and challenges to employing proposed command and control solutions, the GeoBase Simulator offers great potential for assisting the larger GeoBase and GeoReach implementation agendas.

The tentative timeline for the effort shows the following key milestones:

Jun 16	Simulator Development Conference
Jun 22	Simulator Contract Awarded
Jul 10	GFE hardware and software delivered
Jul 10	Detailed Work Plan delivered
Jul 10	Full time contractor on staff at IITA
Jul 17	GFI Scenario components delivered
Jul 31	Systems installed, configured and tested
Aug 21	GFI databases installed and configured
Aug 28	GFI applications installed and configured
Sep 18	Databases and applications tested
Sep 25	Storyboards completed
Oct 2	Scenarios tested and exercised

You can track the exciting and fast-paced development of the USAF GeoBase Simulator over the next few months by checking the GeoBase webpage at www.geobase.org or contacting Major John McDermon at iita@usafa.af.mil.

Air Combat Command (ACC) GeoBase Activities

*Capt John Thomas, USAF
HQ ACC/CEO
Langley AFB, Virginia*

Air Combat Command Civil Engineer (ACC/CE) established a GeoBase Cell under the Operations Division in February. The ACC/CE GeoBase Cell is comprised of military, civilian, and contractor personnel who are dedicated to helping ACC bases plan, implement, and sustain GPS, CAD, GIS, Imaging, and tabular database requirements under GeoBase. In April, a contract was awarded to Earth Tech, Inc to develop strategic plans for all bases and an overall plan for HQ ACC/CE as well. Currently, the ACC GeoBase team has completed 12 onsite assessments and will complete all remaining bases by August, with the final GeoBase Strategic Plans being delivered in October.

To be able to better support individual base requirements, the ACC GeoBase team has developed a regionalized concept to support individual base requirements. This concept

establishes a central reference point for the bases to turn to for support. A total of four regional centers will be established across the command, with the first prototype region being established in Oct 00. The centers will provide bases with help desk support, training, sustainment, implementation planning, and application implementation. Training classes will begin in Sep/Oct 00 for the primary bases with existing GIS data. All classes will be conducted through a virtual website and through onsite services.

An open-ended photography and mapping contract has been established with the GSA FAST office, to support all command mapping needs. Ground control, aerial and satellite imagery, and mapping will be supported for all ACC requirements. Please direct any scheduling or delivery order questions to Chris Whidden, Mark Cave, or Capt Thomas at DSN 574-1921.

Lastly, Beale AFB was recently provided FASCAP funds to purchase survey-grade GPS equipment, and included all training to get personnel ready to use the equipment. Currently, the ACC GeoBase team is working individual requirements for each ACC installation to purchase 3 GPS rovers and a base station. Incidentally, for those that may not be aware, to establish a base station that transmits an RF signal, a DD Form 1494 (Approval to Operate) is required before any transmitting stations can be installed. The ACC GeoBase staff is currently working with the ACC/SC staff to establish command-wide approvals for any and all base stations. If you have existing base stations that have not been approved or have any other specific questions regarding the licensing, please contact Chris Whidden or Capt Thomas at DSN 574-1921.

Pacific Air Forces (PACAF) GeoBase Activities

*Capt George Forbes, USAF
HQ PACAF/CEPR
Hickam AFB, Hawaii*

High energy...that's where PACAF's GeoBase and GeoReach programs have been permanently engaged for the past year. Through the good fortune of a supportive senior tier of visionary leaders, PACAF took several positive steps.

In GeoBase activities, we focused on data gathering and updating aerial images of our installations in Japan. As a result, not only does Kadena AB own a centrally hosted Spatial Data Standard compliant Base Common Operation Picture (BCOP), so too does Yokota AB and Misawa AB. Elmendorf AFB and Hickam AFB are in the midst of aerial photo missions expected to be nearly complete by year's

end. In an effort to create minimum criteria for compliance for these efforts, as well as inject a commonality among our installations, the HQ PACAF GeoBase Working Group will be issuing pioneering GeoBase policy documents. We expect, with some standards, we will be able to achieve the vision of a similar look throughout the command.

We also recently received the first-ever Wing-Wide GeoBase Enterprise Strategic Plan for Kadena AB outlining the roadmap to infuse GeoBase into a Wing's daily business functions—from safety, to CE, from flying squadron to Services—GeoBase will begin to migrate into daily use. This effort is being aggressively followed by a similar strategic plan for HQ PACAF staff members to create a HQ PACAF GeoBase Enterprise Strategic Plan to light the “way ahead” and include GeoBase tenants into daily staff functions.

On the contingency operations front, we recently reached capability for GeoReach enabling PACAF to “Reach out and map someone” anywhere in our theater. Collaborating with NIMA to create a streamlined system to gather images, applications will be slaved to contingency BCOPs and notional & deliberate planning can now be conducted at foreign sites long before we ever send forces forward. Integration with contingency applications is underway and developmental discoveries are beginning to gain momentum. The newly created PACAF Operations Support Center and the Contingency Response Squadron will be able to work off the same georeferenced framework despite the vastness of the theater.

Through both GeoBase and GeoReach unconventional applications and analysis are starting to surface. Buy in from senior leaders helps to promote the aggressive approach our field units are taking to exploit the new tools being fielded. Integration with legacy systems like the Automated Civil Engineer System (ACES), is closing the gap between information management and information dominance within PACAF.

GeoBase Forum Editorial

The GeoBase Initiative as well as the GeoBase Forum will be undergoing several changes in the immediate future. First of all, you might have noticed that for the first time, two Air Force major commands contributed status reports on their respective GeoBase activities. Hopefully more major commands and other organizational elements ranging from installations to services will feel inclined to contribute as well. Secondly, for simplicity's sake, the GeoBase Forum will adopt a more logical Winter (Jan-Mar), Spring (Apr-Jun), Summer (Jul-Sep) and Fall (Oct-Dec) publishing

schedule where we capture highlights of the previous quarter. Finally, Lt Col Brian Cullis who has served as the IITA GeoBase Initiative Coordinator since its inception will be leaving for a ten-month assignment to Air War College at Maxwell AFB, Alabama. Stepping up to the plate as the new IITA GeoBase Coordinator and GeoBase Forum Editor will be Major John McDermon, USAFR. He can be reached at IITA through a new e-mail address at IITA@usafa.af.mil.

GeoBase Happenings

Jul 17-21 00. USAF GeoBase IPT Visit to Vandenberg AFB. (Vandenberg POC: Jane Goldberg)

Jul 31-Aug 4 00. USAF GeoBase IPT Visit to Edwards AFB. (Edwards POC: Emilio Rovira)

Recommended Reading

AFDD 2-4.4, Bases, Infrastructure, and Facilities
<http://afpubs.hq.af.mil/pubfiles/af/dd/afdd2-4.4/afdd2-4.4.pdf>

Joint Pub 2-03, Joint Tactics, Techniques, and Procedures for Geospatial Information and Services Support to Joint Operations,
http://www.dtic.mil/doctrine/jel/new_pubs/jp2_03.pdf

If you have found any directives, 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 iita@usafa.af.mil.

Disclaimer

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