Geospatial Information Interoperability Exploitation – Portable (GIIEP)
Operational Concept for 1AF and CAP (AF Auxiliary)

Introduction

Civil Air Patrol (CAP) genesis.
GIIEP is a National Guard Bureau (NGB) operational system. Prior to fielding, GIIEP was developed by US Army Space and Missile Defense Command Battle Lab (SMDC) in conjunction with AFNORTH/A8 to answer capability gaps in the AF Rescue Coordination Center (AFRCC) and for air component Full Motion Video (FMV)/Incident Awareness and Assessment (IAA). CAP, in its status as the Air Force Auxiliary, participated in many of the initial tests and evaluations of the GIIEP concept which incidentally demonstrated CAP's unique ability for employing GIIEP on many AFNORTH missions. In the fall of 2009, the NGB purchased the equipment and servers required to operate the system as described below for states use. Because of the relationships between AFNORTH, NGB, CAP (AF Aux) and SMDC (and because of the non proprietary government owned software inherent in the system), 1AF purchased an initial set of 5 GIIEP "Go Kits" (minus the Remotely Operated Video Enhanced Receiver (ROVER)) to partially answer gaps addressed in local Capabilities Based Assessments and are to be delivered in January 2011 for CAP (AF Aux) use. The 1AF kits leverage the existing NGB technology infrastructure. Additionally, 1 Go Kit resides with the 601 Air Operations Center (AOC)/Intelligence, Reconnaissance Division (IRD) was purchased with NGB funds and can be used by the AOC as required. Per agreement with NGB and SMDC, when CAP (AF Aux) is "Operational Control (OPCON)" to 1AF/AFNORTH, AF Aux utilizes the NGB imagery/Common Operating Picture (COP) servers for approved missions.

One of the three CAP congressionally chartered missions is Emergency Operations. Under Emergency Operations, CAP already produces imagery for customers In Accordance With (IAW) Secretary of the Air Force (SECAF) policy. The addition of GIIEP (providing real time imagery/FMV) legitimizes updated technology for CAP and AF use, reduces costs/wear of other DoD assets and has the ability to save lives and mitigate great property damage during disaster response or search and rescue missions.

CAP will receive training on GIIEP use from SMDC and will propagate the knowledge through the CAP via "train-the-trainer" techniques. It is important to note, CAP is a civilian volunteer organization and is not permitted to perform intelligence activities. As such, CAP does not produce analyzed or enhanced products but will only process imagery for delivery to customers (provides imagery direct to customers) after proper AF legal reviews. Refer to AFNORTH Information Collection/Imagery procedures for CAP as AF Auxiliary.

NGB genesis.
To understand how CAP fits in the overall scheme it is important to understand the NGB Concept of Operation (CONOP). Two (2) GIIEP systems are fielded to, and operational within,

the fifty-four (54) states and territories, at each state/territory Joint Force Headquarters. The GIIEP systems include the hardware pictured on Attachment 1 and the associated government owned non-proprietary suite of software, which includes Advanced Warfare Environment (AWarE) and the GIIEP application. One hundred twenty-eight (128) GIIEP systems were delivered, and all operators were trained by September 2010 on this Unclassified system. GIIEP FMV and still images will be accessible via the internet with a logon and password from user systems administrators managed at state J2/G2 levels. The GIIEP Communications Architecture showing network separation is pictured on Attachment 3.

For each state and territory, one of the two GIIEP systems will be delivered with a ROVER-5 receive/transmit unit, and the other GIIEP system will be delivered with a ROVER-4 receive only unit. CAP will not have a ROVER capability with 1AF purchased kits.

The GIIEP systems will be integral components of the National Guard IAA capability and will be fully integrated into and utilized within the National Guard IAA Campaign Plan. CAP's systems will be available for air component use supporting AFNORTH IAA CONOPS, the AFRCC or can be tasked via normal CAP tasking procedures to support federal, state or local contingencies.

Operational Concept

The GIIEP Operational View is pictured on Attachment 2. The GIIEP system will provide the means to perform the Processing, Assessment, and Dissemination (PAD) function of IAA – the ability to properly exploit, annotate and quickly and efficiently disseminate imagery and FMV. When CAP is tasked to provide imagery with GIIEP they are not providing PAD services, only the raw or unenhanced imagery. It is customer responsibility to assess imagery produced by CAP. For purposes of training, imagery depository and 1AF customer support, CAP has been named a "state" and has server storage constructs (partition) designated appropriately on the NGB servers. AFNORTH/A2 will manage the CAP partition of the NGB imagery server, including determining who will have user names and passwords to particular events. AFNORTH Contingency Action Team (CAT) A2 representative will be the primary POC during extended crisis operations or when the CAT is activated. Each trained CAP wing will have a designated POC and access to usernames and passwords for training or operational use (as provided by A2) in order to fully employ the GIIEP system.

System Functionality

The GIIEP system performs the following functions:
- Receives and disseminates Electro-Optical (EO) and Infra-Red (IR) imagery and/or FMV from airborne and ground assets (if ROVER present). Produces and disseminates FMV from airborne and ground assets using organic GIIEP system capabilities when external imagery and/or FMV are not available or insufficient

- Provides FMV to Incident Commanders, first responders, state and local leadership, and federal partners. The GIIEP system has a full "TIVO" like capability (pausing, rewinding, replaying, annotating) for analysis functionality and provides FMV either real time or near real time depending on existing communications.
- Provides still photography to Incident Commanders, first responders, state and local leadership, federal partners and national-level leadership.
- All FMV and still photography is associated with organic Geographic Information Systems (GIS) and is accessible to most disadvantaged users (i.e. "read only") through web-based access. GIS is capable of overlaying the latest space-based and other imagery (military/civilian) through the United States Geological Survey (USGS), which serves as a repository of Unclassified domestic imagery.
- Communications are maintained between any and all operations centers activated for a specific incident/disaster and air/ground assets using available means (cellular, satellite (Iridium) or other internet connectivity). Approved users can access and use GIIEP capabilities such as white-boarding, graphics dissemination, data distribution, a common operational picture, and a "chat" function through existing data communications nets.
- Provides an asset tracking capability for tracking air/ground assets using Global Positioning System (GPS) positional data and makes positional data available to Joint Information Manager (JIM) assets.
- Provides positional data into military data links such as Link 16.
- Hosts GIIEP software on NGB approved DoD and non-DoD Unclassified systems.
- Interfaces/interoperates with National Guard Bureau Joint Incident Site Communications Capability (JISCC).

GIIEP System Deployment

NGB deployment.
The Joint Force Headquarters in each state or territory deploys the GIIEP system with trained operators when directed to do so in support of contingency operations. The GIIEP system will be used as one means to provide IAA information to the appropriate local, state and federal authorities within an area affected by the contingency. IAA information provided by the GIIEP system will be used to assist authorities in responding to disasters for the purpose of saving lives, mitigating suffering, minimizing serious property damage and protecting vital infrastructure (NG IAA Handbook).

When deployed to a contingency location, the GIIEP system will disseminate FMV and imagery from all available sources; depending on the situation (potential sources include national assets, National Guard IAA platforms, CAP (AF Aux) and other assets). With the GIIEP system, users can collect, annotate and disseminate FMV and still photography.

The GIIEP system configuration enables a variety of deployment schemes, depending on the particular situation and requirements of the incident leadership. The ROVER-4 can be used independently to receive EO and IR imagery from available national assets, National Guard platforms, or other assets that have an organic transmission capability. The ROVER-5 can be used locally to transmit EO/IR imagery to the ROVER-4 on the ground, within line-of-sight. In the absence of other assets, the GIIEP system can provide FMV and still imagery using organic air card or iridium capabilities. GIIEP system FMV and still cameras and communications and processing equipment can be deployed on any available air, ground or water-borne platform and provide on-scene FMV and still EO images.

Once an FMV stream and/or still images are available within the GIIEP system, they can be disseminated to customers by multiple means. Temporary or permanent data links (internet access via fixed infrastructure or satellite communications) can be used if available. The GIIEP system has organic 3G cellular communications (primary) and satellite telephone communications (iridium, secondary). The GIIEP system transmits FMV and/or still images via the internet to the primary server farm located at the USGS in Sioux Falls, South Dakota and a redundant server farm in Huntsville, AL. All authorized users who have a username and password can access FMV and still images from these server farms making the system completely interoperable throughout the interagency spectrum.

CAP deployment/employment.
Typically a request for CAP (AF Aux) is injected at the CAP-LNO position in the 601st AOC or direct to CAP National Operations Center (NOC). Requests for CAP can support search and rescue, disaster relief or homeland defense. If the capability requested by a customer is compatible with GIIEP's capabilities then 1AF will approve AF Aux GIIEP missions per existing approval procedures.

The 1AF-CAP coordinated GIIEP basing plan is to reserve the provided systems at the CAP national level which means that deployment of the kits will be centrally controlled by the CAP national HQs. Ideally, kits will be delivered and used for training by the most appropriate CAP Wings in their respective states (hurricane states during hurricane season, flood states in spring time, fire states during that season, etc). For unanticipated missions, the GIIEP can be quickly shipped in its pelican cases or flown by CAP to the employment area. CAP members employ a train-the-trainer technique where knowledge is passed from Wing to Wing and individual to individual. The GIIEP system is not difficult to operate however, like any new system, there are some peculiarities which require attention. Both NGB and CAP will need to work Techniques Tactics and Procedures (TTPs) to ensure the best practices are in place to capture and deliver all imagery to the customer within required timelines.

Advantaged Users

The GIIEP system includes an integrated GIS with a Google Earth-based COP. "Advantaged Users" of GIIEP are users with access to GIIEP laptops and/or AWarE software installed on approved computers. Advantaged users host the GIIEP software on computing devices and can connect directly to the GIIEP COP and utilize all COP and GIIEP system capabilities. FMV and still imagery will be tagged with GPS location information. This information will be displayed within the COP along with the FMV/still imagery. The COP will also provide the ability to exploit and annotate FMV and imagery and collaborate with other users using chat functions and shared whiteboarding. CAP, however, will not perform any exploitation of imagery but will operate GIIEP at this level as another means of Command and Control (C2) of airborne assets in absence of a higher C2 authority. Access from .mil and .gov and .com accounts will be possible when access to the internet is authorized. 1AF and 601 AOC members may be granted access to state partitioned servers via a website managed by the contingency "state" J2/G2 or by establishing Memorandum of Agreements (MOAs).

Disadvantaged Users (read only)

Users who do not have access to GIIEP laptops or AWarE software are considered to be "Disadvantaged Users", aka "read only". These users will be able to access the GIIEP products via a web site, utilizing a username and password. They will be able to see/use a subset of system functionality, including situational awareness, still images and FMV depending on available bandwidth. CAP members will not need access to this website as the advantaged access provides C2 for CAP approved missions at the CAP Incident Command level when required. 1AF and 601 AOC members may be granted access to state partitioned servers via a website managed by the contingency "state" J2/G2 or by establishing MOAs.

GIIEP (AWarE) Training for 1AF Members

SMDC will provide training to all 1AF members that operate GIIEP systems or the AWarE software. As of December 2010, some members of the IRD have received training but are not proficient because of ongoing IA accreditation issues which prevent GIIEP software use on AF computers. IA accreditation does not affect the ability to use the stand alone supplied GIIEP laptops if using air card or connected to non .gov internet connections. The IA accreditation issue does not affect CAP unless they are supported at a contingency location by AF networks (Internet). AF IA issues are anticipated to be resolved by February 2011 as the US Army already has an Authority to Operate (ATO) for Army systems; 1AF anticipates a reciprocal AF ATO shortly.

Sustainment

SMDC provides sustainment for the GIIEP systems for training and technology (software) updates as long as NGB maintains GIIEP as an operational program. CAP National Technology Center and/or the CAP National Operations Center is responsible to work with SMDC representatives to ensure they have the latest updates for all CAP systems which are available via internet. SMDC also provides a 24/7 customer service line for real-time support.

The first year of cellular air card and Iridium service is included in the initial purchase. Training for use of the system is also included in the purchase price. Subsequent years of subscription service will be advocated for by AFNORTH/A8 and submitted to AFNORTH/FM for inclusion in the 1AF budget. CAP is not responsible for renewing subscription services for the equipment.

Summary

The GIIEP system will enhance the ability of each State and Territory Joint Forces Head-Quarters (JFHQ) to rapidly respond to disaster situations and perform the IAA mission with a robust organic capability. CAP, as AF Aux, will also be able to participate in this environment or provide imagery for customers as approved by 1AF or respond as the air component for DoD requests. This capability will provide FMV, still imagery, a COP and robust situational awareness to military and civilian first responders. The inherent flexibility of the system will enable operators to tailor their efforts to take maximum advantage of available assets and communications as they support disaster response operations.

Attachment 1. GIIEP System Hardware

(CAP does not receive ROVER equipment)
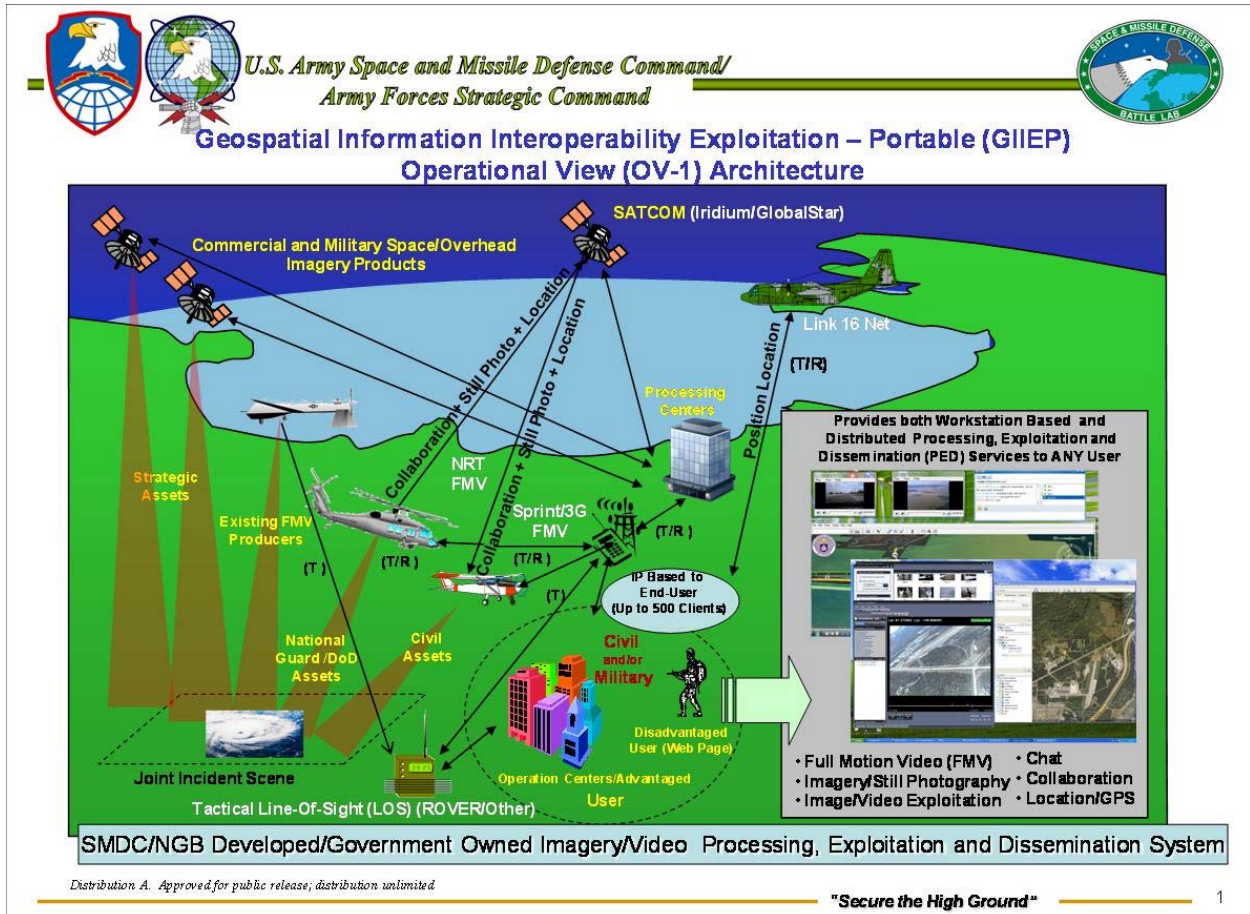
Attachment 2. GIIEP Operational Concept

Attachment 3. GIIEP Communications Architecture – Network Separation