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Graphic design by Tech. Sgt. George Jumara, AFCA

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Cover design by Staff Sgt. Kevin Williams, AFCA

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 The requirement to provide more information faster and more reliably to those at the tip of the spear is the key to a vibrant and responsive information technology strategy employed daily by the U.S. Transportation Command.

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 The 86th Comm Group delivers communications support to the deployed warfighter through the DOD's largest overseas systems control facility, red telephone switch, and telephone switch with state-of-the-art commercial and DOD satellite terminals.



Visit the Computer Based Training System Web site at <http://usaf.smartforce.com>



C2 key to optimizing information operations

By Gen. Hal Hornburg

*Commander, Air Combat Command
Langley AFB, Va.*

Consider the following: Coalition forces mount a concentrated psychological operation against enemy forces along the front lines of the battlefield. Leaflets are dropped and the stage is set for a massive surrender of enemy forces. However, due to poor coordination between coalition planners, aircraft and artillery strike the wrong enemy troop concentrations. Rather than the massive surrenders expected, enemy forces resist, requiring the coalition to fight their way through a determined, dug-in enemy. Although the scenario is fictitious, the key point is that a lack of integrated command and control of all battlespace effects could easily generate just such a circumstance. As information operations matures, the potential for this type of misstep increases. This is why we must focus today on the seamless integration of kinetic and non-kinetic effects that result in solutions to real military problems. C2 is the key to achieving the full potential of IO. However, obstacles stand in our way.

First, we must understand what we are talking about. Ask five people you work with to define IO and my guess is you will get five different answers. Not only is there disagreement within the U.S. Air Force, but also between the services and the Joint community. Likewise, I find many people misunderstand C4ISR. Many use it as if it were a noun. It isn't. C-4-I-S-R is a descriptor of things that come together to allow control, which gives leadership the means to command. In other words, the science of control enables the art of command. My philosophy on C2 boils down to this: "If you don't control it, you can't command it. And if we don't, somebody else will." This is especially true for IO.

Second, there are C2 disconnects that result



My philosophy on command and control boils down to this: "If you don't control it, you can't command it. And if we don't, somebody else will." This is especially true for IO.

Gen. Hal Hornburg

because the military services are bound by Title 10 of the U.S. code, while the national intelligence community is bound by Title 50. In my experience, too often we get tied up determining who the "shooter" should be. Honestly, it doesn't matter who pulls the trigger for non-kinetic weapons, provided the joint force commander is the one who decides who gets shot and when. The only way to ensure this happens is to continue strengthening the operational relationships between our combat air forces and the national intelligence community.

One way to do so is to continue working special access program classification policies that currently restrict effective integration of IO at the operational level of war, thereby limiting combatant commanders' confidence in non-kinetic force application as a reliable, precise option to complement traditional kinetic capabilities.

Third, we must organizationally normalize the C2 of information operations. By consolidating our C2 and IO forces under 8th Air Force, we have already realized dividends from this integrated capability that is organized, trained and equipped to support the joint force commander through the JFACC. It's a great first step but, functional baggage still creates unproductive stovepipes. Tribes from many circles compete for their slice of IO. Worse, there is a constant tendency to both con-

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Network centric warfare: key to combat power

By John P. Stenbit

Assistant Secretary of Defense for Command, Control, Communications, and Intelligence and DOD Chief Information Officer

Adopting new information age technology – and adapting our behavior to exploit its capabilities – will enable us to fight better jointly and to win in the post 9/11 world. Putting information age technology in place and achieving the necessary changes in our organizational and individual behaviors are at the core of the transformation under way throughout the Department of Defense.

The merger of broadband communications and computing technologies means that it is now possible for nearly unlimited quantities of data to flow instantaneously among all mission participants wherever they are located, because they all will be connected to a secure, ubiquitous network of fiber optic cable, RF and laser links. Exploiting information age technology will allow us to achieve an agile, fast-reacting network centric warfare, or NCW, capability. This is the capability we need to face the new and widely varying threats of the 21st century.

Moving power to the edge

When we have achieved the transformation to a fully mature NCW capability, mission participants from all the services will be seamlessly connected to the net. Moreover, that network will be central to all their operations and behavior, because in NCW, the single greatest contributor to combat power is the network itself. Everyone connected to the network will have a responsibility to post information without delay *and* the authority to use its resources. Thus, problems can be solved as soon as they are encountered. This will harness together the combined information and assets of all the services and *move that power to the edge*.

Whoever confronts a problem is “on the edge” – whether the leader of a special forces unit oper-



Photo by Staff Sgt. David Donovan

Maj. William Gerhard Jr., 397th Expeditionary Communications Squadron commander, shows John P. Stenbit, Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, and DOD Chief Information Officer, around the communications compound during his visit to Southwest Asia in January.

ating in Afghanistan, or the Secretary of Defense working at the Pentagon. Whoever is on the edge with a problem to solve must be able to pull a solution from a network populated with information and with continually changing coalitions of subject area experts who will come together as needed to provide the solutions demanded by those on the edge. *In short, moving power to the edge empowers the individuals most directly confronting problems or threats, giving them the information and freedom to do what makes sense regardless of their place in the organizational hierarchy.*

Becoming an “edge organization”

Widespread information sharing and a pre-dominance of peer-to-peer relationships characterize an “edge organization.” Those “at the edge” not only have the responsibility to respond to the problem or threat; they also have real-time, direct access to the information they need to make sense of the situation and the wherewithal to work with others – wherever they are and whatever their service – to pull together the available means to

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AFIWC: putting intelligence at your fingertips

By Wm. F. Winters

Air Force Information Warfare
Center
Lackland AFB, Texas

The CONSTANT WEB program began as an effort to fuse general military intelligence with technical intelligence from other sources. Its purpose is to support the Air Force's information warfare mission by presenting comprehensive views of an adversary's military command, control, and communications infrastructure.

Over time, CONSTANT WEB became integrated with national and military service-specific databases to establish the Department of Defense's national database for general military intelligence, the Modernized Integrated Database. The MIDB is considered a conglomerate of intelligence on units, facilities, networks, equipment, and a number of other components stored in a relational database needed by many, but usable by few. While MIDB works well from a producer's perspective, it fails to satisfy the needs of the joint warfighter it is designed to serve. With no direct access to MIDB, the warfighter relied on the combatant commanders' Joint Intelligence Centers to post database extracts via an assortment of fragmented Web sites. Unfortunately, this process was cumbersome and often resulted in the information becoming outdated before it was ever accessible.

To eliminate time lags and ensure timely data delivery, CONSTANT WEB analysts and programmers created the INTELINK Command and Control Warfare Network Analysis application, a Java-based graphical user interface for accessing the MIDB. The early version of IC2WNA began with more than 500 customers on the Joint Worldwide Intelligence Communications System with approximately 60 percent being from the Army, Navy, Marines, and national agencies. The current version of IC2WNA provides simple read-only access



Advanced Unit Query screen shot with a sample of a map product.

to the MIDB via both JWICS and SIPRNet. The GUI makes use of the latest Java technology that provides a very compact applet that communicates via TCP/IP with one of AFIWC's data servers to increase the capabilities of the product. The server side software was created with a modular design so future modifications of the data source could be integrated without affecting the look and feel that the users are accustomed to seeing. For graphical visualization of the data, IC2WNA 3.0 makes use of Openmap, an open source mapping product. Openmap provides a Java-based graphical structure providing easy creation of layers related to the IC2WNA hit lists. IC2WNA enables MIDB novices to generate orders-of-battle on demand, "quick query" adversary subordination reports, list military equipment holdings, or identify airfields with just a few clicks of the mouse. A user familiar with MIDB format and codes can use the "advanced queries" option for better detailed data. Currently, query results are formatted textually or graphically. Future enhancements will export data to FALCON VIEW. Responsive to customer

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requirements, the GUI also contains links to intelligence community products such as military country studies, threat assessments, imagery databases, and an online chat room. Through the use of pop-up windows for legal values and a comprehensive online help function, users can start pulling data in a matter of minutes.

Information operations systems today require a fully integrated, multi-source picture, and a granularity of detail never before envisioned.



To remain relevant, CONSTANT WEB is embracing, adapting and responding to these requirements. Undoubtedly, these requirements will demand larger, potentially more complex, database architectures and a collection of supporting analytical tools. AFIWC is ready to meet these demands. AFIWC products and services can be accessed on JWICS and SIPRNet via the AFIWC homepages: SIPRNet: <http://www.afiwc.aia.kelly.af.smil.mil/home/index.cfm>

JWICS: <http://www.afiwc.aia.ic.gov/constantweb/index.html>

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control and execute information operations at the highest levels of command, and not empower our military forces at the operational and tactical levels of warfare. While there may be continuing requirements for high levels of release authority, we must decentralize execution of IO. As professional warriors, we inherently know this is how we achieve the best possible results. We must get beyond our stovepipes

and non-operational hierarchy. We must focus on operational effects in order to normalize IO as part of our kinetic and non-kinetic arsenal.

IO is not maturing at a rate I'm comfortable with. I see a future in which the time-of-flight of the weapon is measured in milliseconds, not seconds. Seamless C2 of information operations will result in these capabilities maturing into what I see as perhaps the only, with the exception of the S/A-22, truly transformational military capability in the

next 10 years. I challenge you to identify what you can do to help exploit our opportunities to change the way we fight and decisively deter and defeat our adversaries. We'll know we are there when the joint force commander can provide component commanders the direction, rules of engagement, and authority to rapidly achieve coordinated kinetic and non-kinetic battlespace effects.



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respond to a situation as it unfolds.

In edge organizations, information flows unimpeded by bureaucratic barriers or middlemen. This not only speeds the flow of information, but also minimizes the risk that information will be distorted as it is relayed from one middleman to another down a long chain of command. In edge organizations, the distinction between line and support personnel also disappears, and the stovepipes endemic to hierarchic organizations are minimized. In sum, edge organizations are inherently collaborative, inclusive, agile, and quick to react to changing circumstances. The hierarchic model served us well in the circumstances that characterized the Cold War, but it will not serve us well in the entirely different post 9/11 world.

Eliminating anti-collaborative behaviors

Moving power to the edge and arming ourselves with NCW capability require changing the very nature of DOD – our behaviors as well as our technology. We need to understand, particularly, that anti-sharing and anti-collaborative behaviors can no longer be tolerated. Those behaviors will prevent us from exploiting Information Age technology to our fullest advantage and deny us the agility we need to face a wide variety of potential adversaries.

We must replace the current collection of disparate networks with a seamless, common network linking all the services. Building that common network will require relatively little investment in new resources but will have a huge payoff, harnessing together the services' assets and moving them to the edge so as to generate their fullest potential value and power.

607th ACOMS achieves new level in combined air operations center warfare

By **2nd Lt. Shawn Patterson**
607th CS/SCL-2
Osan AB, Republic of Korea

Picture this: two countries held apart by a 50-year-old armistice agreement suddenly come to blows in a naval battle resulting in the sinking of one country's vessel and the death of four sailors, with 20 others wounded. Such was the situation June 29, 2002 in the waters surrounding the Republic of Korea (ROK – South Korea) and the Democratic People's Republic of Korea (DPRK – North Korea). With tension raised and relations between the two countries becoming somewhat strained, the U.S. Air Force top leadership on the peninsula began to analyze their current assets and found they required a senior level collaborative environment for joint, combined command and control coordination of all theater air assets. Total battlespace awareness for senior officials is critical to the coordination of an air war and the full use of the Air Operations Center as a weapons system, a concept that is quickly growing in importance within the modern Air Force. In answer to this need Lt. Gen. Lance L. Smith, combined forces commander and commander of 7th Air Force, presented a vision for a combined "Battlecab" in the Air Operations Center at Osan AB. The 607th ACOMS stepped up to this challenge and began the process of creating such an environment and making the AOC a fully functioning, cohesive and adaptable weapons system.

When the 607th ACOMS oriented itself on realizing the general's vision, it started with what was basically a closet with a couple of phones and a beat up table and transformed it into an advanced C2 node with access to key C2 systems on the peninsula. A massive planning effort ensued, spearheaded by Maj. David Schilling, Tech. Sgt. Jerrod



Staff Sgt. Dennis Wilson and Senior Airman Hans Barre, 607th ACOMS with Nelson Hee, SAIC contractor, set up the advanced Osan AOC Battlecab.

Roth and Staff Sgt. Matthew Lally of the 607th ACOMS and the 51st CS. With the plans laid, the troops went to work. Staff Sgts. Dennis Wilson and Chadrey Murphree, of the 607th ACOMS Maintenance Flight, led a team of SAIC contractors into the closet and wired the entire room for network access for multiple workstations and phones at all security levels. Video teleconferencing was next to be installed, followed by flatscreen monitors and a cutting edge reverse-projection video wall. The video wall itself was a massive success, borrowed from Hitachi as a preview of the technology with a more permanent arrangement being engineered by PACAF and Lt. Col. J. Thomas Walrond, 607th ACOMS commander. By using the squadron's manpower and expertise, the 607th ACOMS had transformed this closet, in only two weeks, into the revolutionary command and control, communications, computer, intelligence,

surveillance, and reconnaissance environment that the ROK and U.S. generals needed to run an air war.

The Battlecab now makes use of the latest technology, software and hardware available to the modern communications warrior. The real challenge presented by this project was giving the peninsula's leadership the ability to communicate and interact with every component of the Combined Forces Command. This challenge is one shared by the entire Air Force in its modern role in coalition warfare. The answer to this issue is the use of the RELROK network, a ROK/US combined backbone upon which rides a Korea specific version of Global Command and Control System, Theater Battle Management Core System – Force Level, and Automated Deep Operations Coordination System. While most of the worldwide Air Force C2 efforts are coordinated over secure Internet protocol network, these three applications allow the CFC to work hand-in-hand with our ROK allies. In addition to data sharing over RELROK, combined voice and video connectivity is being realized through the use of Microsoft NetMeeting. The use of these applications smooths the coordination of multinational forces, though the full use of them is a work in progress as more and more information pathways migrate to the combined arena. To support and coordinate with all joint service air components, full SIPRNet capability was also added to the Battlecab. The Common Operational Picture, a product whose air component is created within the 607th ACOMS and displayed

using Command and Control Personal Computer, gives a simple, comprehensive picture of air, sea and land forces for the entire peninsula, combining information from all ROK/US components. With this tool, senior officials are given total battlespace awareness in a combined environment, allowing them to coordinate actions, act and react at the speed of information. Though all information flows have yet to coalesce onto a single network, this cohesive environment achieves the highest level of ROK/US interoperability to date.

The Osan AOC and its revolutionary vision of a combined, joint Battlecab sets the bar for future AOCs. The 607th ACOMS has laid the communications foundation, but in no way is the job finished. Communications is a rapidly evolving enterprise with new technologies and new capabilities being realized at a faster pace than almost any other sector. In the pursuit of its Block 10 configuration, the AOC achieves an incredible level of battlespace awareness, but this weapons system and the role of communications in modern warfare is constantly developing. As the senior Air Force leadership orients itself to deal with modern, post-Cold War threats, the AOC and the communications backbone that allows it to function in a joint, combined environment will become more and more critical. The 607th ACOMS will continue to lead the charge in upgrading and maintaining the Korean Theater's AOC and setting the benchmark by which all other AOCs, permanent and temporary, will follow.



Photo by Senior Airman Tammy L. Grider

Calling home

Airmen can talk on six phones in this forward-deployed base's morale tent. People can make one 10-minute phone call home per week, and they have access to the Internet on six computer workstations. The airmen are assigned to the 410th Air Expeditionary Wing supporting Operation Enduring Freedom.

38th EIG, 738th EIS, AFCA collaboration improves SWA networks

By Steve Reynolds

*38th Engineering Installation Group
Tinker AFB, Okla.*

During October 2002, members of the 38th Engineering Installation Group, 738th Engineering Installation Squadron and Air Force Communications Agency deployed to several Air Force contingency locations in Southwest Asia.

Personnel from the 38th and 738th have



John Guinn, 38th EIG, records a cable location with GPS.

been deploying to SWA quarterly in their role as systems telecommunications engineering managers since October 2001, providing communications infrastructure planning and engineering support. AFCA was performing its SCOPE Network visit to assist local communications squadrons in network optimization and management.

During AFCA's SCOPE Network efforts at Prince Sultan AB, the deployed personnel discovered that the redundant

connections between the major network nodes, or ITNs (Information Transfer Nodes), did not function as designed. While cable ran from each ITN to at least two other ITNs to provide a backup link, the network would not switch over to the backup when a failure occurred. The team discovered that the cables from all the ITNs were connected to the Network Control Center only, without a separate link to another ITN. The 38th and 738th personnel reconfigured the connections from the network switches to the cables between the ITNs, and established proper backup operation. They also documented network connectivity to more than 500 buildings and identified needed switch upgrades.

"The network was designed properly, and probably worked as originally designed, but lack of documentation meant that subsequent rotations of personnel did not have the information needed



From left: Tech. Sgt. Edward Chilliest, and 2nd Lt. Carlos Serbia, 738th EIS members, locate and document network cable between facilities.



Master Sgt. Mike Santillo, 738th Engineering Installation Squadron, Keesler AFB, Miss., documents network switch.

to maintain the redundancies,” according to Dave Smith, deployable STEM (STEM-D) for Prince Sultan AB. “The 38th is working to collect and include this data in its blueprint process, to allow it to be readily accessible to the maintainers, network managers and planners, ensuring that configuration integrity is maintained.”

These blueprint improvements will ultimately allow Web-based access to network connectivity diagrams with a layered approach, allowing connections to be viewed via physical or logical routing, or a combination of both. Impacts from new facilities in terms of capacity, or from cabling running through the site of the facility, can be quickly identified and plans made to resolve. New rotations of base communications personnel can then easily view network

upgrades needed during their deployments. Base personnel can also update the data as changes are made, providing the STEMs with the latest baseline upon which to perform their planning. A classified system is also being developed to handle the unique security requirements of the bases in Southwest Asia.

“It was a tremendously successful visit ... (It is) indicative of the AEF turnover problems we experience here at PSAB,” noted Lt. Col. Gary McAlum, 363rd ECS commander. “We look forward to their return visit to complete installation and continued on-site support. Again, great team and we appreciated their mission-focused support.”

38th EIG and 738th EIS engineers will continue to document this data and perform this analysis at other major Air Force locations in SWA during their future visits, complementing the SCOPE Network team’s semi-annual visits.



Dave Smith, 38th Engineering Installation Group, Tinker AFB, Okla., documents ITN equipment.

USTRANSCOM TCJ6: In-transit visibility via information technology

By Lt. Col. Kenneth Tingman
*Chief of Command and Control Systems Branch,
USTRANSCOM J6
Scott AFB, Ill.*

We all have heard that the three most important words in real estate are location, location and location. In investing they are timing, timing and timing. In the world of support to our joint warfighters the three words grow to six: information technology, information technology, and information technology. The requirement to provide more information faster and more reliably to those at the tip of the spear is the key to a vibrant and responsive information technology strategy employed daily by the U.S. Transportation Command. Providing these reliable, user-driven, command

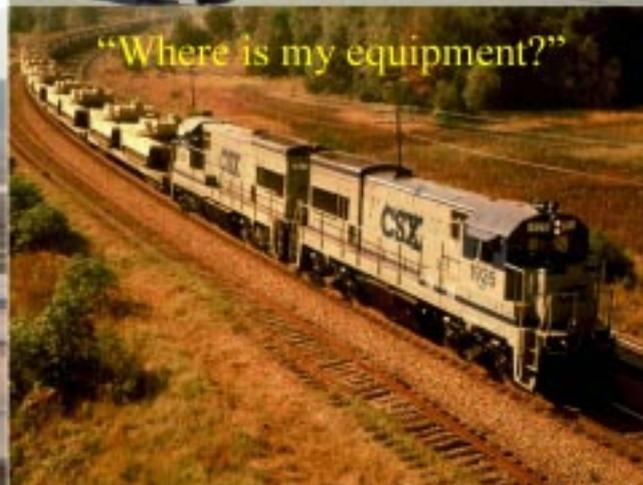
and control IT tools to the warfighter is the responsibility of USTRANSCOM's TCJ6 directorate.

In-Transit Visibility - Answering the Question, "Where's My Stuff?"

Information technology has become a necessary component of just about every aspect of military operations. The business of keeping track of military assets as they move from one location to another, or In-Transit Visibility, is no exception. This is the business of USTRANSCOM, charged with the responsibility to provide and manage global air, land and sea transportation for the Department of Defense in peacetime and in times of war. As Gen. John W. Handy, commander of USTRANSCOM, has said many times, "It is information technology that allows us to do the things we do today." The keeper and provider of the in-



Integrity - Service - Excellence



formation about everything that moves in the Defense Transportation System is a system called the Global Transportation Network.

Global Transportation Network:

Answering the Basic ITV Questions

GTN provides information aggregated from many different commercial and DOD sources so that the secretary of defense, combatant commanders, USTRANSCOM, and other transportation information customers can plan, have visibility of, make decisions on, and execute the global transportation mission.

Even before Sept. 11, 2001, which greatly emphasized the need for in-transit visibility of all DOD assets around the globe, USTRANSCOM already had a vision that would bring the best that technology had to offer in terms of ITV. Overall, GTN is an automated information system that aggregates data from 25 government and 40 commercial transportation systems. These source systems feed information to GTN through electronic transactions that are then integrated into one database. GTN gets an average of 2 million transactions per day with information concerning cargo, passengers, medical patients, and more. Once the information is in the database, it is made available to any airman, sailor, soldier, Marine, and civilian DOD employee that has a valid GTN user account.

Transporters access GTN from anywhere in the world via a worldwide Web browser on both classified and unclassified networks. Commanders, staff logisticians, or supply personnel can track anything that moves as long as it has a mission or transportation control number. But, in the future, a system that is more flexible and responsive to change is needed; hence, the vision for GTN 21, the evolution of the current GTN system. GTN 21 is the replacement system for GTN that will provide this crucial transportation information and keep it accurate and timely well into the new millennium.

The concept for GTN 21 is to redesign the ex-



TRAC²ES : ITV for Patient Movement

isting GTN database, to include the integration of data within the database, while taking advantage of emerging technologies for everything from backup and recovery to new Web technologies. The end result will be a more flexible and robust GTN user interface. More importantly, GTN 21 will be able to meet those operational requirements that cannot be met by the current GTN system.

Another unique and highly effective initiative is the TRANSCOM Regulating and Command and Control Evacuation System (TRAC²ES). USTRANSCOM developed and fielded TRAC²ES, the single global patient movement automated information system for DOD, which achieved initial operational capability in July 2001. The system was deployed to all patient movement requirements centers and more than 300 joint medical treatment facilities worldwide. TRAC²ES provides one Web-based system (same system, peacetime or war) for all users involved in patient movement, from the initial requestor to those receiving the patient and the AIS matches the patient to the optimal bed destination via the most expeditious transport. The system is used with all branches of the Service, to include Navy ships, and has proved invaluable in providing near real-time information for medical and disease trending. The first real-world test of TRAC²ES occurred immediately following the tragic events of Sept. 11. TRAC²ES

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ITV

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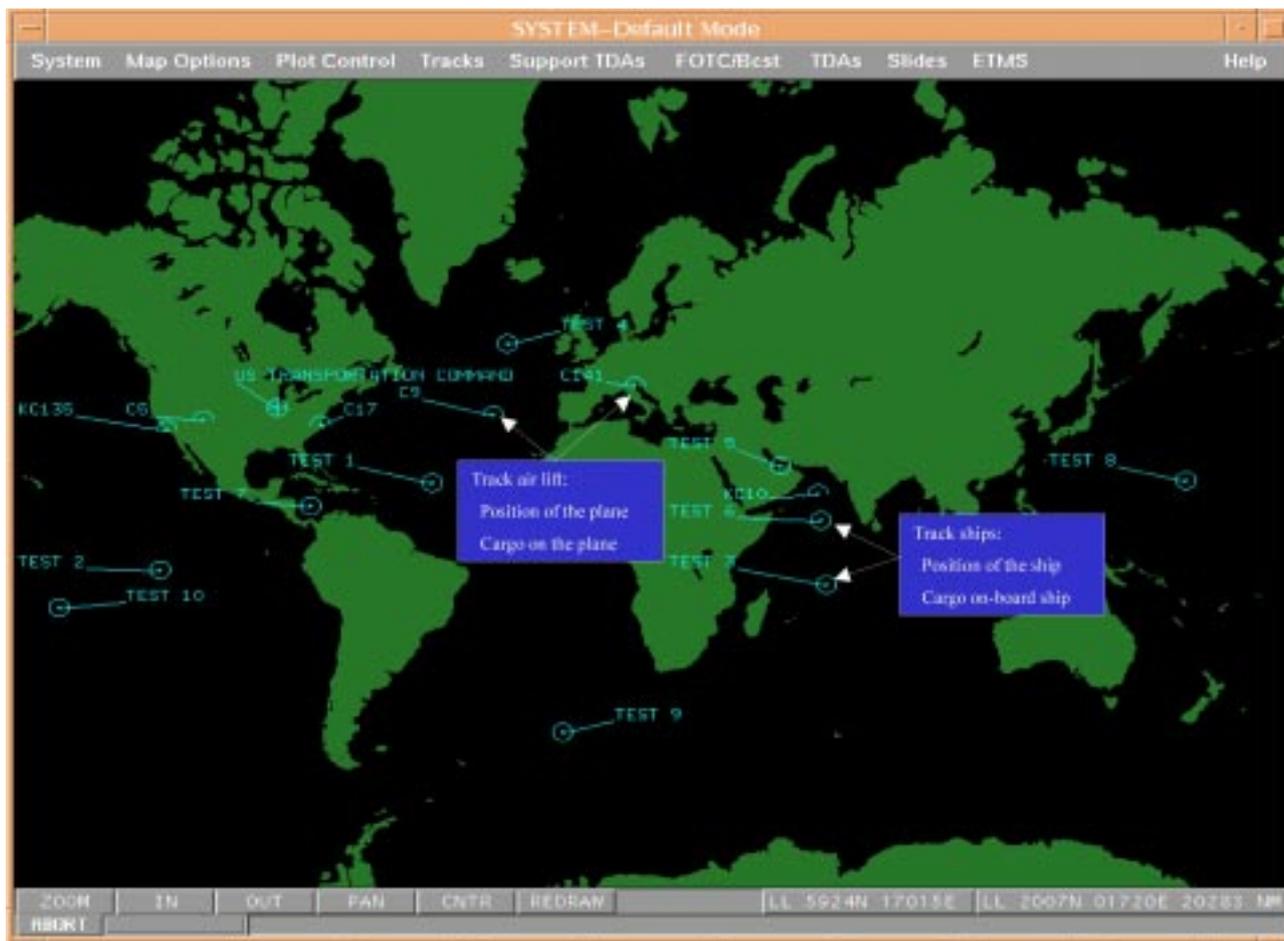
performed as designed and has since expeditiously moved more than 1,400 patients/soldiers in direct support of OEF to appropriate treatment facilities for care while providing 100 percent ITV en-route.

Command and Control - Providing Decision Ready Information

One of the most flexible and useful planning tools available for warfighters is the Single Mobility System. SMS is a Web-based search and retrieval tool that provides requirements planners and unit schedulers a single entry point into visibility and management of air and sea mobility requirements matching unfilled requirements against available assets. SMS provides visibility of planned and scheduled air missions, Military Sealift Command ship schedules, commercial liner service, sea port reference data, and various other decision support tools, such as a mission monitor,

port locator, cost calculator, empty leg finder, and air metrics. SMS operates in the unclassified and classified network environments at USTRANSCOM, interacting with other systems to provide over the horizon visibility.

All combatant commanders are concerned with having an accurate and usable Common Operational Picture. USTRANSCOM accomplishes this via the Transportation Common Operational Picture, an initiative to enhance the joint command and control system with "fused" transportation information. TRANSCOP is a "one-stop shop" for transportation situational awareness and ITV that is available in a near real time mode to anyone in DOD participating in U.S. missions and exercises. TRANSCOP provides the operator with a single geographical display of transportation assets around the world to enhance situational awareness. With TRANSCOP, the operator is able to drill-down on these transportation assets to obtain detailed transportation information. This mission



TRANSCOP: Real Time Visualization of Transportation Assets

support application provides commands around the world with a significant visualization tool in support of Operations Enduring Freedom and Noble Eagle. The value of TRANSCOP was apparent on Sept. 11, 2001, as combatant commanders and the National Military Command Center were able to immediately account for all their air and sea assets.

Another vital development after 9/11 was the partnering of the TCJ6 and TCJ3/4 staffs to rapidly deploy a collaborative planning tool. During the six weeks following 9/11, collaborative tool usage grew from 35 clients positioned locally to 135 clients installed worldwide at 21 separate commands and agencies. Following this initial fielding, real time collaboration use has expanded to more than 600 accounts around the world. Today, the command is at the forefront of DOD collaboration usage with deployment planners located at up to 53 sites around the globe meeting daily in cyber space to discuss, and coordinate near-term movement requirements in support of the global war on terrorism. Additionally, future operations are discussed in regularly scheduled sessions while smaller groups draft policy, conduct briefings, and coordinate activities in ad hoc meetings. All these meetings are convened at the desktop, bringing people together productively without the need for travel.

IT: Improving DOD Transportation Services in the Future

For our fighting forces, the future holds the promise of a continued high ops tempo and an increasing level of involvement around the globe. To meet this challenge, USTRANSCOM must stay ahead of potential problem areas and make our IT initiatives more creative and efficient than ever. In the near future, USTRANSCOM customers will be able to submit their transportation requirements seamlessly through the USTRANSCOM portal via the Integrated Customer Support system. ICS is under development to provide worldwide customers with a single point of entry into the Defense Transportation System for the submittal of transportation requirements to 10 existing DTS transportation systems. With ICS, the worldwide DTS customer will be able to price, place, change and track their transportation requirement. ICS will also provide a cross-modal, cross-functional integrated view of DTS processes,

information sources, and systems. ICS will effectively reduce movement request processing time and automate status notifications and updates providing faster responses to requirement inquiries.

Another future initiative with unlimited potential is Agile Transportation for the 21st century. AT21 is an Advanced Concept Technical Demonstration under development. Its objective is to obtain and transition technology tools to assist in transportation mode determination and optimization to support USTRANSCOM's mission. AT21 will provide USTRANSCOM the ability to provide modal alternatives to satisfy deployment and sustainment delivery requirements as identified by the supported theater commander. AT21 envisions a capability to channel all deployment requirements through a mode optimization tool, which then seeks out the required scheduling decision information needed with respect to modal assets, weather, particular routing information, and infrastructure data. AT21 will be able to select and allocate sealift-qualified, movement requirements to increase availability of scarce airlift assets, reduce costs, and optimize mission critical movement requirements. AT21 will demonstrate a methodology for synchronizing and optimizing many DTS deployment operation functions through unit level execution. An effective collaboration tool will be developed through the use of modern technologies.

IT improvements and initiatives will allow all of us to do things more efficiently, faster, better, and in some cases, completely differently than we used to. Being able to do the same old things in new and better ways is vital to mission success in the 21st century. We do not want to relive the mistakes of the past, nor do we want to become irrelevant to the future. IT allows us to put less people in harm's way today than we had to 10 years ago, and it will continue to be used to save lives in the future. However, IT is not a stand-alone solution. We must make them work for us, not vice versa. There may be limitations, associated costs, and unintended consequences. Therefore, we must identify IT capabilities, match them with the emerging operational requirements, and produce a product that allows our nation to defend freedom and democracy in a dynamic global environment.

DISA initiative enhances warfighter support

By Betsy Beuke Flood

Chief of Public Affairs

*Defense Information Systems Agency
Arlington, Va.*

The Defense Information Systems Agency is among the first Department of Defense organizations to get International Organization for Standardization, or ISO, registration for a major product or service quality management system, or QMS.

DISA's Defense Information System Network CONUS QMS is now registered to the international standard ISO 9001:2000. DISN is the preeminent provider of information systems delivery support to warfighters and senior DOD leaders.

"Registration to the ISO 9001 standard demonstrates our ability to enhance warfighters' satisfaction, while consistently providing products that meet their requirements," said Lt. Gen. Harry D. Raduege Jr., DISA director. "Our warfighting customers can be assured our processes are customer-focused, standardized and consistent, to ensure repeatable, quality DISN services."

DISA's Network Services directorate led the effort to develop and implement the QMS. The registered QMS supports all DISN CONUS services and networks, including its Unclassified but Sensitive Internet Protocol Router Network, Secret IPRNet, Defense Switched Network, Defense Red Switch Network, DISN Video Services, and DISN Transmission networks. Serviced locations include the National Capital Region, and DISA's Columbus, Ohio, and Scott AFB, Ill., facilities.

ISO international standards are process-oriented. The idea that processes and their inter-

faces should be subject to analysis and continuous improvement is the key conceptual basis for the ISO family of standards, and is the fundamental building block for a QMS. The philosophy is based on two cornerstones: minimizing variation and controlling processes, and continual process improvement.

General Raduege had tasked a process improvement initiative to implement a DISN QMS based on ISO 9001 international standards, and to seek ISO 9001 registration. The DISN CONUS QMS

addressed all processes, from requirements definition, planning for DISN services, engineering, through the entire life cycle management, and other support processes, to acquiring, deploying and maintaining DISN. DISA plans to implement an ISO 9001-based DISN QMS in its European and Pacific theater facilities. In meeting the requirements of the ISO 9001, DISA had to demonstrate that it had documented all its DISN CONUS critical business processes, followed the documented processes, measured performance of the processes, and had all of this verified by independent external auditors.

Registration was certified by Orion Registrar, Inc., of Arvada, Colo., which is accredited by the American National Standards Institute-Registrar Accreditation Board National Accreditation Program. ANSI-RAB provides government oversight and is the United States representative to ISO, headquartered in Geneva, Switzerland. ISO includes a federation of approximately 140 national standards institutes. Currently, there are more than 400,000 registered QMSs within private and public sector organizations in more than 150 countries.



Joint Tactical Radio System links combat forces

By Master Sgt. Jeffrey D. Wright

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Communications and Information Systems

Directorate

Langley AFB, Va.

Joint Tactical Radio System is a program mandated by the Office of the Secretary of Defense to overcome serious communications interoperability shortfalls in joint service operations. The mandate establishes a joint program for the development and acquisition of an affordable, high capacity, and interoperable family of radios. JTRS exploits software programmable and hardware configurable digital radios to overcome already saturated Beyond Line Of Sight/Line Of Sight communications from 2 MHz to 2 GHz.

JTRS is the enabler for achieving network connectivity across the radio frequency spectrum and provides the means for digital information exchanges, both vertically and horizontally, between joint warfighting elements, while enabling connectivity to civil and national authorities. JTRS transmits more than 90 percent of communications required to link combatant forces with critical information to all phases of the kill chain. The radios will communicate with software-ported legacy communications waveforms (i.e., Enhanced Position Location Reporting System, Link 16, and Ultra High Frequency Demand Access Multiple Assigned Satellite Communications) and have the flexibility to change waveforms on the fly.

JTRS was officially started August 1997 with a Joint Tactical Radio Mission Needs Statement. An Assistant Secretary of Defense/Command, Control, Communications and Intelligence memo on radio acquisitions was released in August 1998. This memo mandates that all radio purchases will be held in abeyance and that a JTRS waiver is necessary to procure any radios for new and/or changing requirements. ASD/C3I is the approval authority for all waivers within the DOD and is not approving waivers without a detailed migration plan to JTRS. In early 2002, the chief of staff directed that airborne acquisition be accelerated, and the Air Force Command and Control, Intelligence, Surveillance, and Reconnaissance Center was des-

ignated as "lead command" with the Air Force Communications Agency serving as "system affiliate".

JTRS is developing four domains of radios: tactical vehicular, handheld/manpack, fixed/maritime, and airborne. Fielding schedules are as follows:

- * Vehicular (Army lead): initial production—fiscal year 2005, full rate production—fiscal year 2007

- * Handheld/Manpack (Southern Command lead): initial production—fiscal year 2005, full rate production—fiscal year 2007

- * Fixed/Maritime (Navy lead): initial production—fiscal year 2005, full rate production—fiscal year 2007

- * Airborne (Air Force lead): initial production—fiscal year 2008, full rate production—fiscal year 2010

- * Future requirements will expand JTRS spectrum from <2MHz to 45GHz and will include a new space domain.

Currently, there are two domains that have been awarded contracts—Vehicular and Fixed/Maritime. The vehicular domain contract was awarded to a consortium of companies. If all options are exercised the total contract award will be approximately \$1.3 billion. Of the approximately 17,000 phase I radios within this domain, the Air Force's Tactical Air Control Parties will receive 560.

The Fixed/Maritime contract was awarded to General Dynamics. The product of this contract is the Digital Modular Radio. Current contract value is \$95.6 million and will produce 183 radios. The Air Force is slated to receive 3,083 radios.

JTRS answers warfighters' requirements for highly capable, flexible, and interoperable radio communications required to maintain full spectrum dominance. It is a crosscutting enabler to all mission areas. Current radios and architectures cannot respond or are slow to respond to the changing battle space. With implementation of cutting edge technology and COTS hardware, JTRS will provide the warfighter the flexibility to reconfigure communications equipment and maintain the interoperability required to meet changing mission requirements.

Collaboration, common operational understanding, common operational picture for the combined-joint warfighter

By Maj. Trisha Wilson

*U.S. Forces Korea
J6 Operations Programs Officer*

The immense power of all those tools (chat rooms, three-dimensional graphics and Web sites) will go to waste until we master the whole of C2 (command and control) and understand precisely where and when the tools play in the commander's decisions and responsibility to control the fight. (Adm. Robert Willard, October 2002, *Proceedings*)

Brig. Gen. John DeFreitas, deputy assistant chief of staff, C2, Combined Forces Command, agrees with Admiral Willard.

"We should take procedures that work, bring in new equipment and tools that improve warfighting ability," he said. "We should not get new tools for the sake of having them. There are risks associated with speeding up procedures and unplugging old systems. In some cases, basic understanding is lost."

Col. David Adams, deputy assistant chief of staff, C6, CFC, offers a way to master the tools. "From a technology perspective, with defense collaboration tool suite, data can be collaboratively shared across the suite as each of the disparate tools or technology within the tools matures," the colonel said. "Collaborative capability will increase without the loss of data access. In other words, I don't need to upgrade applications because I can still interact with systems even if I have an older version. I envision a time when we get operators assigned who are already trained and (communicators) have the capability users want independent of a specific box or type of pipe. Instead of asking me for a 3G box with a T-1 pipe, operators will say we need to collaborate with these people."

However, there are challenges to overcome.

"Communicators need to understand operator processes," said Colonel Adams. "As geeks, we've been guilty of providing technology as solutions to processes we did not know. It goes back to com-

Col. Mark Stevens, assistant chief of staff, G3, 8th U.S. Army, shows two Republic of Korea Army officers the features of the EAOC.



mon operational understanding (COU)—our ability as communicators to also understand the commander's intent, to better understand operational requirements. It also allows us to better provide solutions and create a faster observe, orient, decide, and act loop in the requirements process. Warfighters can talk more about capabilities, and we can talk processes."

"The common operational picture (COP) provides common operational understanding," said General DeFreitas. "The power of the COP is in taking advantage of changes in the situation for the enemy and the friendly forces. When you begin to define what goes on or in the COP, you end up with a picture that

provides the lowest common denominator, not helpful to anyone. The COP is a battlespace operating system based on different levels (strategic, operational, and tactical) and missions. It will vary dependent on different pieces of the pie. The way it should work is to have all information available in a database, where users manipulate the data to make it useful (to/for them). "There is no such thing as a common look at the battlespace. It's OK to have different pictures of the same battlespace," said the general.

From a slightly different perspective, "the elements of the theater COP can change based on the situation or the needs of the commander," said Lt. Col. Brian McKiernan, U.S. Forces Korea, J3, theater operations officer. "What you choose to show is the COP. Overlays communicate information concerning commander's critical information requirements. How it is presented depends on commander's needs, regardless of level or situation. It exists to facilitate information sharing and decision-making."

"We need standardized elements and a partnership with coalition (forces)," said Lt. Col. McKiernan. "We need a model for how coalitions feed into a COP. Korea should be that model. Today Naval and air components are able to establish and present friendly COPs. Once connectivity is established, we are able to track and see their operational pictures during exercises and real world operations. We need more inputs, and we need to pick a system. The only question is do you



During Ulchi Focus Lens 2002, the gateguard was responsible for checking on soldiers' bags before entering and exiting CP Oscar.

want to pay the price to integrate?"

Interoperability, from both the combined and joint perspective, is the biggest obstacle because sharing the COP is cumbersome. Our Republic of Korea counterparts use the command post automation system, which is not interoperable with C2 systems like the global command and control system-Korea network or the command and control personal computer application. There is still an air gap, but the CPAS interface has improved from manually inputting data to using a floppy disk. The joint side has its own procedural and training challenges since there is not a standard system of choice for CFC command posts. Different tools are not seamlessly interoperable. Even within staff sections, planners have lots of graphic tools that are air gapped to executors. Executors need digitally interoperable solutions.

Ultimately, whether we are addressing combined or joint operations "we must realize that technology alone will not solve problems," General DeFreitas cautions. "We need well-trained people, well-defined procedures, and senior leaders who understand what is involved in bringing technology to the fight. During this year's major exercise, one staff's leadership decided they must have the most recent version of the C2PC. However, the upgraded system was incompatible with everyone else's. The newest version does not present you with a turnkey solution. Leaders must have a sufficient level of understanding of the system."

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JOINT WARFIGHTER

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During Ulchi Focus Lens 2002, an annual joint and combined simulation-supported command post exercise that trains personnel with wargaming computer simulations and C4I support infrastructures, according to Colonel McKiernan, “there was a night and day difference” in the leadership’s COU and the COP between UFL 2001 and UFL 2002.

“In UFL 2001, there was no effective use of or emphasis on the COP,” said Colonel McKiernan. “People really did not have a sufficient level of understanding of the tools. Sharing situational awareness was accomplished through scripted PowerPoint presentations held twice a day with information that was four to eight hours old. Then there was a VTC with subordinate commanders where everyone communicated sequentially versus collaboratively. The commander would talk to them one-on-one or make decisions regarding COAs under consideration, and decisions alone would take at least 48 hours to be made.”

“Although overall refinement is needed and procedures need to be codified, UFL 2002 changed the way the commander used his C4I tools and made decisions,” Colonel McKiernan said. “The function of the commander relied on the COP – the way he thought, digested information, and made decisions was based on the collaborative tools he had available. Those included C2PC, automated deep operations, control system, GCCS-K network and Netmeeting. The commander was able to look at the same situation visually with his component commanders, discuss options, reach a common understanding, and make resource and allocation decisions on the spot. For example, during one collaborative session, the Marine Expeditionary Force Commander recognized an opportunity and suggested a course of action that led to the development of a branch plan. Per JP 3-0, “branches



Staff Sgt. Richard W. Spencer, billeting NCO, HHC 8th U.S. Army, ensures all soldiers have a place to stay during Ulchi Focus Lens 2002.

add flexibility to plans by anticipating situations that could alter the basic plan. Such situations could be the result of enemy action, availability of friendly capabilities or resources, or even a change in the weather or season within the operational area.” That was an unprecedented event and would not have been possible in 2001. The Plan, Decide, Execute cycle was reduced by at least 24 hours. We had the right people listening and collaborating – not a scripted briefing.”

The theater operations officer concluded, “once warfighters are familiar with the tools, they can facilitate C2 decisions in innovative ways. During a real world operation, General LaPorte used an air and missile control system designed for situational awareness of enemy air and missile assets to track friendly helicopters.” His intimate knowledge of the tool enabled him to use the art of C2 and successfully accomplish his mission.

“The commander of CFC is leading the way. His ability to make his senior leaders aware of the synergy that comes from the visualization of C4I COU is predicated upon the fact that everyone has an echelon understanding of the warfighter (situation),” said Colonel Adams. “Different echelon perspectives of the same common picture are based on the same real, near-real time data.”

AFSPC NOSC provides mission capable site picture for NORAD networks

By Capt. Kevin P. Wilson
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Peterson AFB, Colo.

The Air Force Space Command Network Operations and Security Center has provided North American Aerospace Defense Command a first-ever network management solution that provides a site picture for situational awareness for the NORAD Enterprise Network, or the NEN.

After Sept. 11, NORAD J6 received Defense Emergency Relief Funds to enhance the NEN. The window of opportunity to expend the funds was short and AFSPC responded accordingly. Within two weeks, the AFSPC Enterprise Network Management Facility validated NORAD's requirement, developed the technical solution, and initiated the procurement of the entire hardware/software suite.

LCol. Richard Gervais, Canadian Forces, NORAD J64, architecture and integration, wanted a network management capability that provided a site picture of network status for the air operations centers for the NORAD regions and sectors. These regions and sectors provide air defense against aircraft approaching North American airspace, a mission that proved extremely crucial after Sept. 11.

This \$1.2 million system consisted of commercial-off-the-shelf hardware/software products. These tools are integrated via HP Operations, known as a manager of managers. HP Operations provides a standardized common operating picture, integrating the capabilities of all these products into one console.

This concept was procured, engineered and installed organically by the AFSPC ENMF. Typically, a Program Management Office handles a project of this magnitude. However, AFSPC used its newly formed ENMF engineering section to perform this function. Travis Steele, a contractor with Computer Sciences Corporation, is the lead engi-

neer for the AFSPC ENMF. Steele evaluated relevant COTS solutions and provided a robust design to NORAD within two weeks. Using CITS NMS/BIP as a template, Steele used the best CITS had to offer, augmented by HP Operations. HP Operations is the piece that fully uses and provides event correlation of all these network management tools. Essentially, this equipment is a CITS NMS suite on steroids, but tailored for NORAD.

Installation and configuration was also handled organically. The ENMF engineering section consists of seven personnel. Three contractors, led by Steele, provided engineering support to NORAD. The contractors rotated, spending one week on site at each region and sector, installing and configuring the equipment.

Once installed and configured, the challenge was training the four enterprise controllers who monitor the NEN at the ENMF. Good Tactics, Techniques, and Procedures development were key to success. Existing TTPs used for monitoring the NIPRNET/SIPRNET side of AFSPC were used as templates. Coupled with good checklist discipline and a solid standardization/evaluation process, these TTP's ensured excellent situational awareness and event escalation capability.

Though this is a "first of its kind" concept, it has been successful in many dimensions. Perhaps the most successful facet of this project was the teamwork realized by the many organizations involved in its execution. Members from USNORTHCOM J6, NORAD J6N, AFSPC Network Operations and Security Center, Northrop Grumman, Science Applications International Corporation, and Computer Science Corporation all worked together to translate network defense to air defense. Air Defense depends on our ability to maintain and defend our operational networks. Network situation awareness is a core capability the ENMF and NEN intend to cultivate to preserve our combat advantage.



Information Assurance – the three pillars

By Maj. Shari Miles
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Coordination Center,
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Scott AFB, Ill.

United States Transportation Command, Scott AFB, is one of nine unified commands within the Department of Defense. The commanders of the unified commands are often referred to as the “warfighting commanders” because their commands are the only organizations authorized to conduct combat operations in the DOD. USTRANSCOM’s mission is to provide the air, land, and sea transportation for the DOD both in time of peace and in time of war. In order to execute this mission, USTRANSCOM is the single manager of America’s global Defense Transportation System and is tasked with the coordination of people and transportation assets to allow our country to project and sustain forces, whenever, wherever, and for as long as they are needed. USTRANSCOM gets the transportation assets it needs from its three component commands: one Air Force, one Army, and one Navy. For example, the airlift assets come from the Air Mobility Command, USTRANSCOM’s Air Force Component Command. Responding to the DOD’s warfighting commander’s transportation requirements is USTRANSCOM’s number one priority.

Gen. John W. Handy, commander of USTRANSCOM, stated that USTRANSCOM is an information-intensive organization where information technology is as central to the mission as the planes, trains, trucks, and ships that support our warfighters every day around the globe. We would not be able to support the warfighting commanders if the information is not flowing. The operational status of the entire command, control, communications and computer and intelligence systems supporting the DTS is monitored by USTRANSCOM’s Global C4 Coordination Center.

The GCCC was established in April 2001 and is an information fusion center that collects, analyzes, and presents a comprehensive, near real-



time view of USTRANSCOM’s C4IS availability and performance. The GCCC provides this vital C4IS situational awareness to USTRANSCOM’s key decision-makers in a Web-based capability called the Information Assurance common operating picture (COP).

IA COP used in the GCCC

The GCCC developed and fielded the IA COP within one week of the September 2001 terrorist attacks. In fact, the events of Sept. 11 totally changed the way the GCCC was operated and manned. To manage the massive amount of information pouring into the GCCC and to keep the information flowing to the decision-makers, the GCCC established 24/7 operations, five years ahead of schedule. To meet this new manning requirement, USTRANSCOM turned to the armed forces reserve components. Four officers and eight enlisted personnel, representing all uniformed services, were activated and deployed into the GCCC. Overcoming a steep learning curve, these individuals quickly learned the skills required to execute the GCCC duty officer and duty controller tasks, becoming the human resources that enable success in the GCCC.

The GCCC also plays an integral role in resolving critical C4IS outages supporting the DTS and tracking the current Operation Enduring Freedom missions. The GCCC staff coordinates required actions with the forward deployed coordination center, signal battalion, and field technicians around

the world in order to restore services ensuring the entire DOD has visibility to sensitive cargo and passenger movement data.

USTRANSCOM's Information Assurance Fusion Center

The GCCC uses a methodology called 'Information Assurance' in order to accomplish its mission. IA is composed of three pillars: Service Assurance, Information Protection, and Network Management.

1. The Service Assurance Pillar includes proactive event management and customer-centric monitoring. With regard to proactive event management, we've installed event management software on the application servers allowing system administrators to automatically monitor and correct server-level faults before customer service has been impacted. This provides for proactive administration and management, vice reactive. Customer-centric monitoring views critical applications from the customer's perspective ensuring all information technology layers are functioning in a proper manner to provide the customer with the required service levels. The Service Assurance Pillar provides the GCCC with an automated, near real-time mechanism to determine the availability and performance of USTRANSCOM applications.

2. The Information Protection Pillar provides a defense-in-depth strategy that actively monitors the security of information flowing throughout USTRANSCOM's C4IS enterprise. This strategy protects and defends information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. The Information Protection Pillar gives the GCCC the ability to quickly identify potential in-

formation security threats and real attacks on the USTRANSCOM C4IS assets.

3. The Network Management Pillar adds the capability to proactively monitor the voice, data and video components of USTRANSCOM's classified and unclassified networks. The ability to move DTS data through the various electronic communications channels is paramount to USTRANSCOM's mission success. This pillar assures network availability and that performance parameters are being met. The Network Management pillar provides the GCCC the information needed to coordinate responses to outages by facilitating restoration or identifying alternate means of communication.



IT accelerates the delivery of useful, decision-quality information to enable more efficient and more effective lift for the warfighting commands. The GCCC is right in the middle of all IT activity for USTRANSCOM, providing the necessary data collection, performance analysis, timely reporting, and enhanced situational awareness of the C4IS supporting the DTS to the right people. USTRANSCOM is successfully accomplishing its mission every day by getting cargo and passengers where they need to be and when they need to be there through the power of IT.

USTRANSCOM focuses on interoperability, integration

By **J. Michael Doolin**

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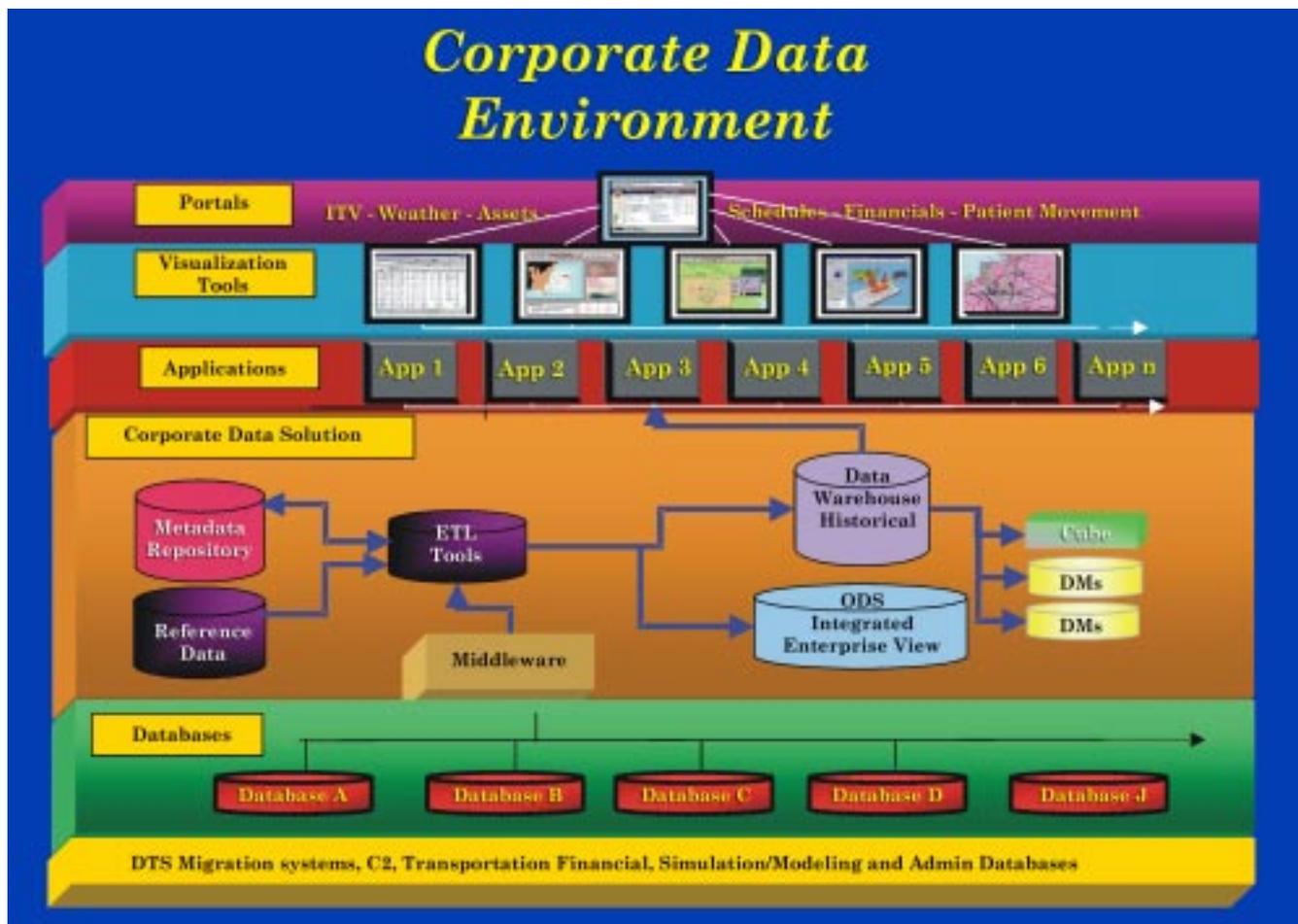
Information and information technology are key enablers for every U.S. Transportation Command activity. The effective and efficient employment of strategic mobility forces depends upon accurate, reliable, trusted and timely information. To provide that information, USTRANSCOM must have interoperable, integrated and protected systems that enable worldwide command and control of strategic mobility forces. Successful implementation provides the war fighter with enhanced situational awareness and the ability to implement critical planning and execution decisions across the spectrum of transportation operations.

The key to interoperability lies in a tightly managed integrated environment. According to the commander, USTRANSCOM is an "information

driven command" dependent upon accurate and timely in-transit visibility of warfighters and warfighter assets. The underpinnings supporting the USTRANSCOM mission are the four building blocks that ensure world-class, cradle-to-grave management of IT assets: enterprise architecture; corporate data environment; chief information officer program review process; and enterprise change management. These building blocks enable the successful integration of the diverse and global information systems within the Defense Transportation System and ensure that USTRANSCOM provides timely and cost-effective transport of the warfighter and warfighter supplies and equipment worldwide.

Enterprise management

USTRANSCOM, following the DOD command, control, communications, computer, and intelligence, surveillance and reconnaissance architecture framework approach, has developed a DTS enterprise architecture composed of three views:





CIO Program Review Process



operational, systems and technical. The DTS EA is designed to lay the blueprint for a future DTS IT environment that supports the joint warfighter and is reliable, rapid, secure, responsive and survivable. It is designed to collect, collate and present information in user-tailorable formats, using standard applications wherever and whenever needed by warfighters and supporting elements. This architecture is used as a tool to facilitate sound and strategic IT investment practices by evaluating new and improved systems against the target architecture presented in the DTS EA.

The DTS EA *operational view* presents a clear, easy-to-understand picture of the total DTS process. It is the intention of the *systems view* to provide decision-makers and program managers with the strategic blueprint and the rationale for moving the system-specific, interface-centric applications of the current DTS information environment to an interface-transparent, enterprise-centric target information environment.

The likelihood of successful interoperability is increased through the use of a common set of standards, presented in the *technical view*. As part of the whole enterprise system, the technical view provides technical services that support the DTS EA, and combines expertise from various DOD authorities into a single reference source that can be

used to guide tightly integrated transportation systems development and future upgrades.

Corporate data environment

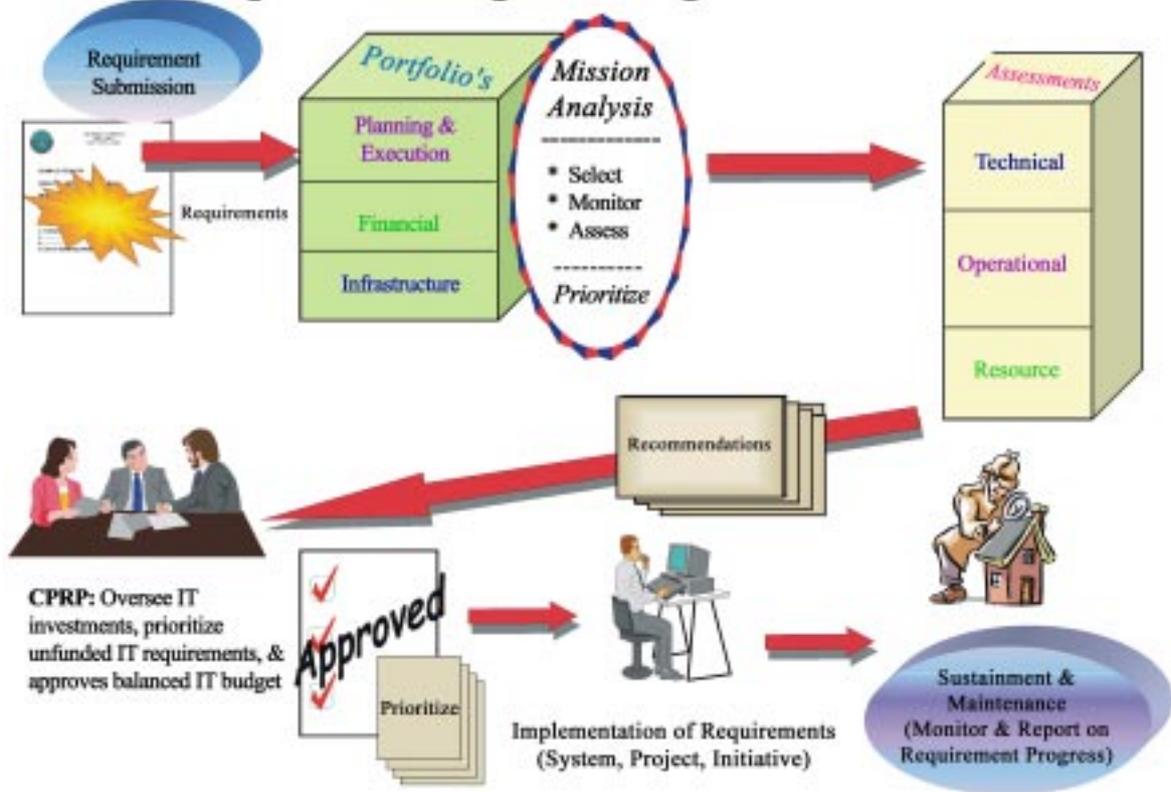
The second building block is the *corporate data environment*, the collection of principles, procedures, processes and structures USTRANSCOM uses to manage its data as a corporate asset.

This provides USTRANSCOM the capability to deploy the tools and resources necessary to support an integrated data environment, apply easy-to-use processes and procedures to access the environment, and enable it to scale to meet increasing business needs.

DTS organizations expend millions of dollars and thousands of work hours every year dealing with the effects of poor data quality. The CDE enables USTRANSCOM to improve data quality through enterprise data quality monitoring and analysis. It also provides an enterprise *metadata repository* to support understanding of the data being used within the DTS. A corporate *logical data model*, known as the USTRANSCOM master model, provides the blueprint for all USTRANSCOM database construction.

The implementation of data standards within the DTS provides the ability to import, capture,

Enterprise Change Management Process



INTEROPERABILITY

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cleanse, transform, integrate, store and load standard data from multiple source systems. The CDE uses Extensible Markup Language (XML) to maintain the separation of the user interface from the structured data. This separation of data from presentation enables the integration of data from diverse sources and promotes successful integration of information for the warfighter.

CIO program review process

The third building block is the CIO Program Review Process, with primary responsibility for overseeing IT investments. The CPRP ensures IT programs are operationally sound, technically feasible, supportable, and analyzed for requirements, duplications, gaps, and redundancies. It determines and prioritizes the unfunded IT requirements and approves a balanced IT budget.

The CPRP is supported by three assessments: technical, operational and resource. The technical assessment ensures sound DTS IT programs through technical evaluations in accordance with the DTS EA. The operational assessment evalu-

ates all IT programs for mission capability, operational risk and operational redundancy. Finally, the resource assessment reviews fiscal integrity, manpower and cost issues for each program, identifying and analyzing support issues over the life cycle of an IT initiative.

Enterprise change management

The fourth building block is enterprise change management, which is an integrated process that captures, evaluates, monitors and manages all enterprise change initiatives and new requirements prior to implementation. ECM provides USTRANSCOM leadership and functional users with an integrated view of the enterprise, promoting understanding of the interrelationships among component organizations, their operational processes, and the supporting IT systems. This enterprise view of new and emerging requirements enables USTRANSCOM to manage technological advancements to ensure modernization efforts do not negatively impact other DTS systems, and encourages application of common IT standards and implementation conventions throughout the DTS community to achieve the joint goal of developing optimized IT systems.

Airman finds joint assignment an eye-opener

By Airman 1st Class Jason A. Powers
886th Communications Squadron
Sembach AB, Germany

After a little more than two years in the service of our country, my story is already a source of personal pride and wonder. A worthwhile life is one lived in the good graces of childlike awe coupled with the passion of grown folks. Here is a snapshot story of two people who found awe and passion serving their country.

Boy enlists in the Air Force. Girl enlists in the Air Force. Boy and girl go through basic training in the same squadron, but never meet. They both chose the same small career field and attend the same technical school. They end up in the same training class, sit side-by-side most of the time, but maintain only a cordial acquaintanceship. For their first assignment the boy and girl coincidentally get assigned to the 3rd Combat Communications Group at Tinker AFB, Okla. Only there do they finally fall in love and marry. After 14 short months at Tinker, boy and girl get an exciting yet curious new assignment ... to an Army Airfield in Ansbach, Germany. They wonder what the Army wants with Air Force personnel, and they soon find out.

My wife and I found out that the Army wanted us to provide and maintain diverse communications services for U.S. and NATO forces in central Europe. In practical terms, that means we drive all around Germany maintaining a variety of weather forecasting electronics. We support air cavalry units, NATO aircraft, combat training installations, live fire bombing ranges and a now-familiar variety of missions at other posts. Our weather equipment helps determine the flying conditions for more than 40,000 annual sorties. We are a geographically separated unit under the command of the 886th Communications Squadron, Sembach, Germany. There are 14 Air Force personnel assigned to our post, eight communications personnel and six weather forecasters. No matter what branch of the service my wife and I are assigned to, we still live and work on Army terms. The nearest Air Force installation is hours away.

My wife and I make up more than 14 percent of the Air Force personnel in the entire Ansbach area.

At first, Army life required some adjustment. Helicopters were a novelty for us; we had only seen fixed wing Air Force aircraft (which was a novelty itself at first). Driving past moving tanks in our own vehicle for the first time, can be quite a humbling experience. Warrant officers were, until recently, a nearly mythical figure. Then, I spoke with one.

But in all honesty, the biggest adjustment has been realizing that life isn't nearly as different as we had envisioned. We are not ostracized for belonging to a different branch of the service. Granted, my wife and I are fresh out of combat communications, so the warfighter aspect isn't alien to us. The big revelation instead lies in day-to-day life. We had expected strange looks and perhaps an unwillingness to help us out. However, we were routinely greeted warmly. Our Army brothers and sisters-in-arms have made us feel welcome and then more.

In our professional life, what I think we will take away from this assignment more than anything is seeing how our different branches meld. Given our previous combat comm experience, we've been on many exercises. In those exercises, we had to simulate the role that the other services would play. It's been a real eye-opener to now see exactly how the Army prepares for the real-life role we had simulated them playing. It has already been an invaluable experience for us here with the Army. Now we get to see the bigger picture. The Air Force is no longer a house grown-in upon itself for us, but instead a valuable component in the larger defense mission. Joint force is a concept that not only works, but is the only one that works to the utmost satisfaction of our nation's larger needs. In my humble opinion, members of every branch should be so lucky as to be granted an assignment in the service of another branch at least once in their career. When we break it down to basics, we're all putting ourselves in the line of fire to protect the way of life we expect to find when we journey back to the United States from wherever we go.

86th CG delivers bandwidth to joint warfighter

**By Master Sgt. Ron Rouse
and 2nd Lt. Bryan Wicks**
*86th Communications Squadron
Ramstein AB, Germany*

What do you get when you combine DOD's largest overseas systems control facility, red telephone switch, and telephone switch with state-of-the-art commercial and DOD satellite terminals? Unparalleled communications support to the deployed warfighter. Where do you find this satellite capability? In the 86th Communications Group based at Ramstein AB, Germany.

The Ramstein satellite communications facility consists of one defense satellite communications satellite terminal and two commercial-off-the-shelf terminals. The commercial terminals, one Ku-band terminal and one C-band terminal, were installed as a U.S. Transportation Command initiative to alleviate its reliance on costly commercial INMARSAT usage. The original concept for DOD-owned commercial terminals was developed after Operation Allied Force. Critical shortages in military satellite bandwidth forced planners to develop short-term solutions to this problem. Ramstein was selected as one of the first sites due to its low defense satellite communications system usage.



Eric Anderson (left) and Airman 1st Class William Gulick remotely configure commercial SATCOM terminals.

The commercial terminals were originally installed to support up to three links with a maximum data rate of 1.544 Mbps. Since then, recent upgrades and baseband enhancements have increased that capability 10-fold. The system currently provides communications to 10 bases supporting Operation Enduring Freedom, Operation Joint Forge and Exercise Internal Look. Additionally, the system is a vital link for global intelligence, surveillance and reconnaissance operations. The system serves as a critical downlink for ISR platforms supporting myriad operations worldwide. During OEF, the system not only provided day-to-day Internet and voice services, but allowed rear-echelon commanders to video teleconference with forward deployed units and a near-real-time view of unfolding battlefield events.

Key to the 86th CG long-haul success is a Marconi-based asynchronous transfer mode network, which provides base-wide transport from nine key points on Ramstein. The system is a key component capable of moving data and voice trunks from the satellite terminals, system control, red switch, DSN switch and the U.S. Air Forces in Europe intelligence squadron patch and test facility. Operating and transferring communications at rates up to 622 Mbps (OC-12), the network



Staff Sgt. John Noble configures and tests the Marconi ATM switch.

See **BANDWIDTH** next page

Solution bridges radio, network operations

By Capt. Kevin Johnson
Air Force Special Operations Command
Hurlburt Field, Fla.

I was recently deployed to support Operation Enduring Freedom as the director of communications and information for the joint special operations air component, or JSOAC.

My division was divided into two teams. One team supported all the e-mail, file and Web servers for the headquarters. Additionally, they maintained the internal infrastructure of switches and hubs within the building. They ensured every user in the headquarters had reliable network connectivity.

My second team provided flight following support for all of our missions. They operated and maintained the joint base station – an integrated system of radios to provide secure communications. To increase the system's flexibility, it includes an audio monitoring system to distribute secure voice and data to consoles throughout the JSOAC. Unfortunately, there weren't enough consoles for everyone to receive the audio directly at their desktops.

As Operation Enduring Freedom progressed, more and more people had a need to access this audio system to increase their situational aware-

ness of ongoing operations. With the limited consoles, our team could not provide everyone the access to the system. After a month of requests, I knew I had to find a way to meet this requirement.

One evening I was talking with a radio maintainer about the consoles – how they worked and how they were wired. I asked him how difficult it would be to connect the console to some form of an audio jack. He said, "Piece of cake." BINGO! I had a solution to ensure the customers who needed the access could have voice and data from the consoles. We used cable to connect a console to the audio input jack on the back of a computer. With this connection, we could then use streaming audio to distribute the audio over our network. After a few days of testing, I had a way to give anyone in the JSOAC who needed access to the radio traffic audio directly from their desktop.

As communicators, we normally divide radio and network operations into two completely separate worlds. One side rarely talks with the other. This solution simply provided a bridge to connect the two. Sometimes coming up with new ideas does not always mean developing new technologies but figuring out new ways to use existing ones.



Ku- and C-band commercial off-the-shelf terminals at Ramstein AB, Germany.

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feeds critical command, control, communications, computers, intelligence, surveillance and reconnaissance into and out of the satellite facility. Planned upgrades will provide an OC-12 connection to the Landstuhl satellite facility, giving theater communications planners unmatched flexibility in supporting the warfighter. What does this all add up to?

Theater commanders gain the ability to move large volumes of information into and out of theaters of conflict. The commercial satellite capability affords DOD the opportunity to buy and use blocks of commercial satellite transponder space, albeit at a premium. The payback is the ease with which information is delivered and processed at the base or moved to other locations throughout the globe. The base-maintained ATM network is directly connected to the Defense Information Systems Agency ATM point-of-presence, offering seamless connection to any DOD site. The ability to move large amounts of data throughout the global information grid is critical to the U.S. military maintaining information superiority over competing nations or groups. The bottom line is that the operators and maintainers of the 86th CG are supporting the warfighter.

Tech transformations rely on IM touch

YOKOTA AB, Japan — Ten years ago, an information manager's job included preparing, transmitting and safeguarding various information media. Today, although fundamentals remain the same, the scope of responsibilities and accompanying problems has expanded tremendously.

As the military faces challenges of maintaining the mission while hedging manning shortfalls against a high ops tempo, our reliance on technology continues to increase. Just about anyone who uses a computer often seeks the support of an information manager to assist with technological growing pains, from working the glitches out of a Form Flow package to providing up-to-date battlespace data. A well-trained, motivated "IMer" is a must-have resource for any office or staff.

One such motivated IMer works the computer and personal communications networks at Headquarters, 5th Air Force, Yokota AB. After beginning his Air Force career eight years ago as an aircraft maintainer, Staff Sgt. Hamp Lee is now tackling his second Air Force career as a 3AO. At 5th AF, Lee undertakes the challenges of processing information and working problems that might arise from the more than 20 personnel in the 5th AF's staff judge advocate's office. In addition to his duties as the IM NCO-in-charge of the legal office executive support division, he also does graphic design for various units, around 5th AF, and was the first 3AO at Yokota to pass the Microsoft A+ certification test on the first attempt. During a recent deployment, Lee served the operational communications needs of airmen, soldiers, sailors and Marines at Prince Sultan AB, Saudi Arabia.

While deployed, Lee and his crew of information technicians helped to maintain the communi-



Staff Sgt. Hamp Lee, Yokota AB, Japan, assists one of his many customers.

cations infrastructure between several coalition forces. Their problem-solving tactics greatly impacted command, control, communication, and computer network capabilities at HQ Joint Task Force-Southwest Asia.

"Protection and production of information is more and more a part of the military and the theater battle management career field," Lee said. "With so many 'geek' systems out there to maintain, real-time decisions affecting thousands are vital—the impact is immediate."

As the NCO-in-charge of PSAB's networks and computer support center (help desk), Lee encountered the challenges of supervising and working within a joint and multinational environment. His responsibilities ranged from training inexperienced and junior-level information managers and communications technicians to maintaining the more than 1,200 computers operating on three separate networks. In addition, Lee's team of technicians was able to troubleshoot security concerns and improve security compliance from 5 percent to a whopping 95 percent.

See **IM SUPPORT** next page

DOD recognizes top info technology performers

RAMSTEIN AB, Germany – U.S. Air Forces in Europe Network Operations and Security Center here was selected as the team award winner for the 2002 Department of Defense Chief Information Officer Award.

The USAFE NOSC developed information technology solutions to improve information assurance for more than 40,000 customers across 10 European and Asian countries. The unit also developed a more efficient, computerized “one-stop” personnel-processing system that greatly enhances quality of life for USAFE service members, family members and DOD civilian employees.

The CIO awards program recognizes outstanding achievement in at least one of seven key areas of information technology: acquisition, architecture and interoperability, information assurance, management and standards, applications



(technology or process), capital planning and investment, and information management/information technology work force.

Also, Col. John M. Maluda of Headquarters USAFE, placed second in the individual category. He was cited for a computer security initiative that realized a 68-person staff reduction and established a common standard for computer security operations.

Recognized achievements provide better service, cost-savings and significantly impact DOD's IT mission.

Section 5123 of Clinger-Cohen Act of 1996 (co-named after then-U.S.

Sen. and former Defense Secretary William Cohen) requires DOD to leverage IT and adopt related goals toward improving efficiency and effectiveness across the department. (*Information compiled from American Forces Press Service and USAFE News Service*)

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Lee also spearheaded the development of a standardized global address list format, providing PSAB users a one-stop shopping address book for their e-mail needs, and also successfully helped coordinate the installation of network assets with the George Washington Battle Group, improving communications between ground and naval forces throughout the Southwest Asia area of operations. Lee's strong commitment to customer service and his ability to overcome linguistic and cultural barriers was his trademark and also helped provide network access and e-mail to foreign coalition forces.

“Staff Sergeant Lee's exceptional customer service greatly contributed to molding a cohesive multi-national force,” said 1st Lt. Richard Wallace, then officer-in-charge of PSAB's networks and computer support center. “His commitment to ensuring adequate training and identification of workgroup managers was a first for JTF-SWA.”

The JTF-SWA workgroup manager system

implemented by the help desk not only alleviated stress on a small support staff by decreasing the network downtime, but also increased the reliability of network resources directly contributing to more than 20,000 combat sorties over Iraq and Afghanistan.

Implementing the program with an eye on the future helps the Air Force avoid recurring problems from the cyclical nature of the Air Expeditionary Force environment. “This approach will work for any AEF with a minimum of training and documentation,” Lee said.

Lee was humble about the programs he helped initiate at PSAB, saying he hopes they will help future deployments and other AEFs, and that follow-on information managers will sustain and add to the programs.

“The Air Force's greatest resource is people—quality people,” Lee said. “Many come back to support the mission even after leaving the military, so I always try to be an example to whomever I work with, because you never know where people might wind up.”

Air Force transforms global comm for warfighter

By Lt. Col. Kim Crider

*IMA to the Director, Directorate of
Communications Operations
HQ USAF/ILC
Washington*

Transformation is not a buzzword – it's a core philosophy, a penchant for innovation that has been a hallmark of our Air Force tradition since the Wright brothers first took flight over Kitty Hawk. Even so, the tragic events of Sept. 11, 2001 and the ensuing global war on terrorism have made the need to transform the way we plan, organize, equip and execute air and space capabilities more critical than ever. We now find ourselves in a highly unpredictable security environment, requiring our military to adapt and respond rapidly to a variety of potential threats and scenarios. Success in this new environment relies upon integrated planning and execution, robust capability and decision-quality information to deliver specific warfighting effects at the right time and the right place.

Getting decision-quality information into the hands of the warfighter in today's operational environment depends considerably on a robust, worldwide communications capability. The directorate of communications operations, or AF/ILC, under the deputy chief of staff, Installations and Logistics, is committed to ensuring Air Force communications and information professionals are organized, trained and equipped to provide that capability, whenever and wherever needed. This commitment is reflected in a family of "transformational initiatives" for Air Force communications operations captured in the AF/ILC Strategic Plan. The initiatives promise to advance comm and info effectiveness over the next five to 10 years, and ultimately act as a key enabler to increased warfighter capability throughout the full spectrum of operations. This article highlights four important initiatives in the ILC plan—unit type code, transformation, theater deployable communications, ops



Photo by Airman 1st Class Nichole Adamowicz

Tech. Sgt. Ricky Anderson, a 31st CS videographer craftsman, documents flight line activity at the 555th Fighter Squadron compound as they prepare to launch a simulated strike during a Local Salty Nation exercise. LSN helps the unit prepare for an upcoming tactical evaluation.

tempo improvements, and network optimization—describing how each will contribute to the availability of robust, global comm and info capability to support Expeditionary Air Force requirements in today's dynamic operational environment.

Communications and Information Unit Type Code Transformation

AF/ILC recently chartered a working group, with representatives from all Air Force communications and information specialties, to review and reshape comm and info unit type codes, or UTCs, transforming them from large, mission-based UTCs, to smaller, more flexible, capabilities-based packages designed to support Air Expeditionary Force operations. Thus far, more than 200 UTCs have been validated with significant findings for improvement: 12 percent will be revised to ensure appropriate, scalable packages are available to support full spectrum operations, and more than 38 percent have been recommended for deletion – eliminating redundancy and obsolete needs. Topline changes are already under way and will be implemented in upcoming AEF cycles. Next steps include updating policy and concepts of

operations, as well as ongoing revalidation. MAJCOM planners applaud the results, stating, "It was a long time coming!"

Theater deployable communications

In joint and combined operations, the Joint Task Force commander must have access to the status of subordinate forces from all involved services. This requires communications interoperability between all Air Force elements, the JTF commander, the forces of other Services and CONUS/theater command and control centers. To meet this need, the Air Force is developing and fielding theater deployable communications, or TDCs, a light-weight, modular, high-capacity, integrated, deployable communications capability which includes switching, multiplexing, network management, super high frequency satellite terminals, and multiband/multichannel satellite systems. TDC packs a robust set of communications capability in a small package. Built on open standards and designed specifically to allow command-



Photo by Tech. Sgt. Jack Braden

Tech. Sgt. Clark Healey, assistant team chief with the 379th Expeditionary Communications Squadron, inspects fiber optic network connections at Al Udeid Air Base, Qatar.

ers to "take-what-they-need," TDC provides a highly flexible capability to help make our deployed AEFs lighter, leaner and more lethal. System fielding is well under way, with 50 of 122 suites delivered, and will continue through fiscal year 2008.

Expeditionary Air Force ops tempo improvements

Today, 65 percent of the Air Force's combat comm capability, and 90 percent of its engineering and installation capability are provided by the Air Reserve component. Increased requirements to support ongoing deployments have resulted in partial mobilizations and extended tour lengths for reservists and guardsmen, which puts an additional strain on combat operations planning. AF/ILC is looking hard at this problem and has initiated a bottom up review to find ways to reduce extensive mobilization to satisfy ongoing mission needs or pop-up crisis operations. The review will be completed in May and will result in a set of recommendations for ways to meet EAF requirements while decreasing over-reliance on mobilizations and extended tour lengths. The study will also be available to other functional communities as a guide to help manage their own combat support and sustainment force planning.

Network optimization

AF/ILC has set off a series of initiatives to optimize Air Force network operations, maintenance and readiness. These initiatives include partnering with the Air Force Communications Agency to tie



Photo by Staff Sgt. Tony R. Tolley

Staff Sgt. Daniel Vorlander, 48th CS satellite comm craftsman, 48th Fighter Wing, RAF Lakenheath, United Kingdom, works on a USC-60 satellite.

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Photo by Staff Sgt. Tony R. Tolley

Staff Sgt. Celina Smith, (left) postmaster, and Airman 1st Class Ashley Gibbs, a financial postal clerk, assigned to the 321st Expeditionary Comm Squadron, prep mail and packages for travel destinations during receipt and dispatch at a forward-deployed location in support of Operation Enduring Freedom.

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SCOPE Network field knowledge directly back into combat information transport system modernization planning, to certify and accredit all Air Force



Photo by Staff Sgt. Lanie McNeal

Tech. Sgt. Louis Ellcessor, 355th CMS, calibrates an IFR AM/FM communication system monitor used for testing and aligning ground radios.

non-secure Internet protocol router network circuits by January, and to fully automate system and network compliance management. Additionally, AF/ILC is coordinating with the major commands and other air staff and DOD agencies to implement a global information grid bandwidth expansion capability across 31 Air Force bases by fiscal year 2004. The selected bases will mark the first step in transforming the Defense Information System Network into a global, robust, trusted, high-speed terrestrial network. Thirdly, AF/ILC is working to normalize network operations and security center operations via a standard set of processes, equipment, tactics, techniques and procedures. The CITS program will provide a standard tool suite to the NOSC's and this year will provide remote management, firewall upgrades, mail relay, and an automated/enhanced C4 status page. Equipment standardization will be complemented by publication of revisions to AFI 33-115, Vol. 1, *Network Management*, and AFI 33-115, Vol. 2, *Licensing Network Users and Certifying Network Professionals*. Additionally, standard NOSC TTPs will be vetted at the Black Demon exercise this year, and published for distribution Air Force-wide.

These efforts are just a sample of transformational initiatives in the AF/ILC strategic vision. Others include transformation of Air Force postal operations, communications and information integration at Silver Flag, defense automated publishing system implementation, ePubs expansion, strategic sourcing of Air Force Pentagon Communications Agency, information technology asset management, and satellite communications operations optimization. These initiatives are representative of the total commitment by AF/IL and AF/ILC to provide the Air Force with the absolute best in robust communications and information capability—anytime, anywhere—to meet the challenges of today and tomorrow. For more information on the AF/ILC Strategic Plan and transformational initiatives, please contact Lt. Col. Kim Crider, DSN 478-1737, or e-mail kimberly.crider@pentagon.af.mil.

New switch upgrades base's phone services

By 2nd Lt. Aaron D. Madolora
Project Officer, Mission Systems Flight
82nd Communications Squadron
Sheppard AFB, Texas

The 82nd Communications Squadron at Sheppard AFB, made the most dramatic transformation in voice communications for the base in more than 15 years by installing a new telephone switch. The base is home to the 82nd Training Wing, the largest technical training wing in the Air Force. It also hosts the 80th Flying Training Wing, home of the Euro-NATO Joint Jet Pilot Training Program, which conducts more than 350 daily sorties. To posture the base to attract additional training missions and to fully realize its vision to become the Air Force training center of choice, a \$3.2 million Avaya definity switch, the first of its kind in the Air Force, was installed. It replaced the aging Nortel PBX system and now the new switch provides more than 3,000 additional telephone lines, totaling 12,500 and, if needed, can be easily expanded to 25,000 lines. The new switch allows for increased secure line encryption through the use of digital phones, improved analog phone features to mimic digital facilities at half the cost, and voice-over Internet capabilities to serve future Sheppard AFB needs.

After the cutover in mid-November, most users immediately noticed enhanced service. The improvements include a three-fold increase in voice mail account capacity and the ability for callers to record messages for up to 10 minutes. In addition, caller ID information is readily available on all base phones. Each phone provides user-programmable buttons to set speed dials, call pickups, and additional functions such as transferring, conferencing, and forwarding incoming calls.

Changes in voice communications impact virtually all work centers, but none more apparently than the 82nd Medical Group. With the new switch's innovative call center and menu services



Photo by Capt. Stephen R. Kifer, 82nd CS/SCM
Staff Sgt. Ted Paisley, 82nd Communications Squadron, inspects the Avaya G3 switch shortly after its delivery. The new switch came online in November.

system, patrons can dial a single number and select from a variety of options to reach the appointment desk, pharmacy, or any other hospital service they wish to contact. It is a win-win situation because changing the way we do business today and effectively using technology to relieve manpower shortfalls save both time and money without sacrificing high quality service.

Additionally, the implications of the new switch reach beyond the base. Since Sheppard is home to the telecommunications 2E6X3 school, the success of this switch installation may determine who the Air Force buys its telephone switch services from in the future. In fact, the schoolhouse is already looking into installing an Avaya G3 switch for training purposes. The ability to share experiences and lessons learned from the base switch installation will help the schoolhouse as it prepares to train the next generation of telephone systems technicians.

To fight tomorrow's battles, we must train for them today. In an Air Force where airpower reigns supreme, it may seem strange to see the 1st Mission Support Group on an AETC base as the leading edge of the sword of transformation, but training is the Air Force's lifeline. For Sheppard and the communicators of the 82nd CS, the new base telephone switch is more than just a change – it's a transformation.

'100 percent digital' transforms VI operations



Photo by Staff Sgt. S.C. Felde

Senior Master Sgt. Brian Duke, videographer from the 52nd Comm Squadron, Spangdahlem AB, Germany, documents night patrols while deployed to Kyrgyzstan in support of Operation Enduring Freedom.

By Senior Master Sgt. Brian Duke
*52nd Communications Squadron
Spangdahlem AB, Germany*

"A picture is worth a thousand words" is a phrase we commonly hear, but those images lose their punch if we can't quickly and efficiently deliver them to the customer. The transformation to 100 percent electronic media processing has truly changed the way the multimedia community completes its mission, especially for Spangdahlem AB's 52nd Communications Squadron multimedia center. Eliminating hazardous chemicals from the work center and lightening the load when deploying, only scratch the surface of improvements offered to base and command customers.

At home station, going digital has completely transformed the processes used to get products into customers' hands. For instance, getting a simple studio portrait required multiple visits to the photo lab, usually spanning three to six days. Now, using a state-of-the-art digital camera linked to a desktop computer, the customer can have the portrait completed in less than a half-hour, and leave the studio with the print in-hand. Studio work represents only the tip of the iceberg in our digital transformation.

Our out-of-garrison mission was completely

transformed, too. The amount of equipment required to successfully operate in a deployed environment has been drastically reduced. What once required multiple pallets can now be hand-carried to the deployed location. This light and lean posture was instrumental in successfully completing several combat documentation missions in a host of austere locations (more than 800 man-days of deployments supporting Operation Enduring Freedom and AEF). Most importantly, the processes used by our multimedia technicians to support in-garrison or deployed operations are identical.

Documenting our recent operational readiness inspection highlighted the versatility and ease of digital imaging, and allowed our technicians to hone their imaging skills. As events unfolded, our photographers and videographer were able to quickly respond, document the action, and return to their work center to process the imagery. At any point during their shift, technicians were able to electronically transmit the imagery to the U.S. Air Forces in Europe command media server <https://media.usafe.af.mil>. The photos, videos and graphic illustrations are then available for download on MILNET, and are electronically transmitted to the Joint Combat Camera Center at the Pentagon. At the Pentagon, the pictures and video are used for a multitude of products for the joint

staff, and imagery cleared by our local public affairs officer streamlines the process, making materials immediately available to the American public.

In the past, sustained photographic deployed operations required a mobile photo-processing lab complete with printers and a host of perishable items. Now a photographer uses professional-quality digital cameras and a laptop computer to shoot, process and either burn to CD-ROM or electronically transmit imagery to the customer. While the process of videotaping an event hasn't changed much, how that imagery is edited has changed considerably. Powerful editing systems operating on laptop computers give the videographer unparalleled ability to edit, compress and either burn to CD-ROM or DVD, or electronically transmit motion imagery. Operating within a bare-base or deployed communications package, our multimedia technicians can begin transmitting imagery on the Internet to the command media server. In lieu of connectivity, imagery can be transmitted by other means, such as international maritime satellite.

The process of moving aircraft mission imagery, now referred to as weapons system video or



Photo by Senior Airman Rudy Mora

Tech. Sgt. Joe Springfield, a still photographer with the 438th Air Expeditionary Wing, documents special operations aircraft during takeoffs and landings at an undisclosed location in support of OEF. Springfield is assigned to the 52nd CS, Spangdahlem AB.

WSV (formerly called battle damage assessment or BDA), from the deployed base to a theater collection point has radically changed the air war tasking process. In the days of tape-to-tape transfers, a video tape would have to be methodically pieced together, properly marked and transported by any means available to get the imagery into the hands of senior decision-makers and mission planners. This was hardly a streamlined or speedy process. Today, as aircrew and intelligence personnel review a mission tape, the WSV technician can digitize, format, compress and attach required mission reports to a video clip and instantly move the clip via the secret Internet protocol router network to the central collection point. This single action greatly improves the time and reliability of information used to plan subsequent air combat sorties into hostile areas.

The transformation to digital has completely revolutionized our work processes. Our customers receive their finished products within minutes rather than days, centralized servers make multimedia products available across DOD, and our deployed footprint has shrunk from tons to pounds. The Air Force multimedia capability was literally reborn with the digital transformation.



Photo By Staff Sgt. Karen Z. Silcott

Staff Sgt. Tamiko Foster, a graphics technician, facilitates video teleconferencing operations while deployed to Prince Sultan Air Base, Kingdom of Saudi Arabia. Foster is stationed at Spangdahlem AB.

738th EIS supports counter drug effort

By 2nd Lt. Christopher M. Moore
738th Engineering Installation Squadron
Tinker AFB, Okla.

While America's eyes have recently focused on anti-terrorism efforts in Southwest Asia, airmen from the 738th Engineering Installation Squadron have quietly supported an equally important Department of Defense mission: counter drug operations. When Howard AFB, Panama, closed in 1999, the Air Force needed a new location to fly counter drug surveillance operations. The solution was Manta AB, Ecuador.

For the last two years, the 738th's operations flight, and its engineering and installation sections, have been coordinating installation of a communications infrastructure for a previously non-existent United States presence. The 738th is a geographically separated unit of the 38th Engineering Installation Group, Tinker AFB, Okla. The 38th EIG provides active duty advocacy and oversight for all EI related activities, such as peacetime workload used to hone wartime skills for supporting contingency deployments. The ANG is an important part of what we call the Total Force Group, the combination of ANG and active duty resources for communications planning and implementation. To help build camaraderie between the 19 Air Na-

tional Guard E&I units and the 738th (the only active duty E&I squadron in the Air Force), three ANG units were invited to participate in the engineering phase. This project was broken down into four separate, but essential, areas of concern to simplify the engineering. The project package was complete and ready to install after over a year of engineering and three site visits.

Sixteen NCOs and airmen from the 738th, and a 38th EIG civilian systems telecommunications engineering manager, recently returned from Manta after more than 60 workdays and numerous unique project challenges.

The 738th team was tasked to engineer and install a complete communications infrastructure for the new United States portion of Manta AB. This involved moving existing radio systems to a new location and placing them in a permanent fixed ground environment, providing copper and fiber optic connectivity for all of the base's new facilities, testing and wiring new facilities for network connectivity, and providing two new telephone switches. They also moved Manta's existing satellite earth station to prepare for future Defense Information Systems Network connectivity.

"I was really pleased with the dedication of the guys who were sent to Manta," said Tech. Sgt. Robert L. Murrah, 738th EIS team chief. "Without their 'Let's get this done and get out of here' attitude, we'd still be there right now."

With a broad range of communications experience, Murrah selected a team of installers with experience in radio and antenna, outside plant, inside plant, SATCOM, network, and crypto, and headed to Manta with adaptability and flexibility in mind.

When the 738th's full installation team arrived and conducted an initial site survey, only limited missions were being flown. No facilities had been constructed and the real communications needs were just beginning to emerge. Customers from the various DOD services were beginning to come forward with communications requirements unique to their specific mission. After numerous discussions with Manta leadership, the 738th adapted designs and installations on a continuing basis during most of the project. The 738th's installation allowed service to evolve from tactical



Staff Sgt. Robert McCoy installs a ladder rack in the SCIF of the ops facility at Manta Air Base.



Tech. Sgt. Matt Holder and Staff Sgt. Chad Goldston, 738th EIS, Keesler AFB, Miss., install a crossarm on a concrete pole at Manta AB, Ecuador, in preparation for the placement of land mobile radio and high frequency antennas.

communications, to a mix of fixed ground equipment and tactical equipment with fixed ground infrastructure. This allowed for a more robust and reliable system.

“This team was the most professional, dedicated group I’ve worked with in my 22 years in the Air Force,” said Lt. Col. Robert P. Spracale, 478th Expeditionary Operations Squadron commander. “No request was denied. They went ‘above and beyond’ at every chance. Every aspect of this install was done at an incredible rate. Without this project being done properly, my mission would have come to a complete halt. They provided my unit the capability to support our entire counter drug mission, to include supporting all services and the U.S. Customs service.”

After all was said and done, the team had installed:

- * 21,500 feet of copper cable, with

16 major splice cases

- * 86,000 feet of inner duct for fiber optic cable
- * 51,000 feet of fiber optic cable
- * 2,200 feet of low-loss radio frequency cable
- * 18 copper termination cable boxes
- * 10 equipment racks
- * 22 network switches and routers

They also terminated, tested and certified 655 category five cables in patch panels.

“I’m glad we picked this team because we had a lot to get done,” Murrah said.

However, as with most deployed projects, things didn’t always go as planned. The team’s patience was tested by incomplete material shipments, a lack of base-level bench stock and tools, a shortage of vehicles, and power outages. Even when their vehicles were broken into and tools were stolen, the 738th team persevered.

“Simple things like getting commonly-used parts, such as screws and clamps, weren’t so simple at a place like Manta,” said Master Sgt. Mike Bowers, overall project manager. “There were no civil engineers, no communications squadron and no discount or home project stores. Even the smallest tasks were sometimes great feats. This team went way above and beyond to ensure a quality product was installed. Members of that team should be commended for their superior performance.”

Lt. Col. Ismael Burgos Jr., 738th EIS commander, said, “Our mission is to install communications equipment that will meet or exceed warfighter requirements. If we fail, the mission will suffer. But I can assure you that, for an engineering and installation troop, failure is not an option.”



Tech. Sgt. Matt Holder and Staff Sgt. Joe Sheridan, 738th EIS, install fiber optic cable from a cable reel truck at Manta AB, Ecuador.

Installers from the 211th Engineering Installation Squadron, Fort Indiantown Gap, Pa., extend an LPH-89 antenna at the Western Air Defense Sector, McChord AFB, Wash.



211th EIS upgrades air defense system

FORT INDIANTOWN GAP, Pa. – The 211th Engineering Installation Squadron of the Pennsylvania ANG accomplished an antenna upgrade at the Western Air Defense Sector that expanded critical capabilities of our nation’s strategic defense system. Located on McChord AFB, Wash., the Western Air Defense Sector is the largest of three sectors responsible for peacetime air sovereignty, strategic air defense, and airborne counter-drug operations. This bi-national organization exercises operational control of eight ANG fighter aircraft on continuous alert at four locations and uses radar data and the radio capabilities of Joint Surveillance System sites located throughout the western United States.

The 211th’s mission was to modify an LPH-89 antenna by increasing its height 20 feet to enhance performance and strategic effectiveness of the system. This project presented “classic” engineering installations workload that has been less available recently due to the increased demand for voice and data system upgrades. The 211th proved that old habits die-hard by quickly accomplishing this upgrade and minimizing downtime of this critical

national defense system. Additionally, this project provided outstanding training opportunities for installation skill sets and project management.

The 211th’s accomplishments were made possible by the outstanding support provided by the host base. The civil engineer and communications squadrons greatly facilitated the installation by providing materials, manpower, and quick-response technical assistance.

“The outstanding support provided by the host base not only ensured the successful communications installation, but also made the entire project a pleasant experience,” said Tech. Sgt. Keith Schwartz, project team chief. “They provided everything from wire rope to water.”

This cooperation between host base and installation team is vital in providing high quality communications installation.

Based on the success of this project and the relationship developed between the 211th installers and the customer, future workload is planned for other mission-critical antenna sites up and down the West Coast.

612th ACOMS maintains high readiness posture

By Chief Master Sgt. Gordon A. DeVos

Chief of Maintenance

612th ACOMS

Davis-Monthan AFB, Ariz.

Readiness, preparation and practice are keys to military mission accomplishment and operational success. With that in mind, the 612th Air Communications Squadron put itself to the test in support of System Training Exercise 02-01 with the 133rd Test Squadron, Iowa Air National Guard for three weeks in November and December.

In conjunction with the three-day communications exercise supporting STE 02-01, the 612th ACOMS conducted an in-house mobility exercise.

"It had been a year since we packed, deployed and set up, and with the large change-over in personnel, this was an excellent opportunity to test our skills and provide much needed training in a low threat environment," said Master Sgt. Gilberto Gutierrez, 612th ACOMS support flight superintendent.

The first day began with an early morning recall and mobility "bag drag" preparations for the small-scale deployment. After mobility processing, personnel began packing and palletizing, preparing and mobilizing equipment, and vehicle maintenance for a 30-mile convoy. As each stage of the preparation was completed, maintenance



Tech controllers Senior Airman Kenneth D. McGhee and Staff Sgt. Michael J. Zukauckas, from Davis-Monthan AFB, install an FCC-100.

support readiness personnel inspected every pallet and vehicle to ensure compliance with Air Force mobility instructions. Lessons learned were documented and on-the-spot training was conducted to reinforce proper procedures.

The unit deployed to a field adjacent to the family camping overflow area. All facets designed to support a communications site were positioned and set up including tactical power generation, heat ventilation and air conditioning.

A number of first-time achievements were recorded during this exercise. Ground radio personnel transmitted facsimiles from the exercise area to various locations throughout the base using radio communications. The highlight of the test concluded with Brig. Gen. Scott Gray, 12th AF vice commander, sending a holiday greeting across the base. Other first-time achievements included ability to survive and operate, and self aid buddy care scenarios, data transmission by direct input to the satellite communications van, and intra-site connectivity of tactical phones with DSN link-up.

The exercise was a total success. Work center objectives, goals and training were all achieved. This exercise and others like it ensure the 612th ACOMS maintains a high readiness posture, and reinforce its status as the best small communications unit in ACC. The 612th ACOMS will always be "On Line, On Time."



Ground radio personnel from the 612th Air Communications Squadron go through a test in support of System Training Exercise 02-01 with the 133rd Test Squadron, Iowa Air National Guard.



Airmen 1st Class Lichella Spikes and Jonathon Morgan sort cards and letters after returning from the international airport. Both airmen are assigned to the 320th Expeditionary Communications Squadron's postal flight. The flight distributes an average of 6,000 pounds of mail daily.

Keeping mail flowing while deployed

*Story and photo by Staff Sgt. Pamela Smith
320th Air Expeditionary Wing
Public Affairs*

OPERATION ENDURING FREEDOM — On a daily basis, the morale of people deployed to the 320th Air Expeditionary Wing weighs on the minds of the base postal flight, and they want nothing more than to deliver.

"We're big-time morale boosters," said Airman 1st Class Jonathan Morgan, an information manager by trade. "That's our main mission."

Saturday through Thursday, the seven-person team is responsible for transporting an average of 6,000 pounds of mail between the local international airport and this forward-deployed location.

As the main mail control agency for this area, the group also dispatches mail to 10 other contingency locations throughout the area of responsibility.

"Mail comes here where it's sorted before be-

ing trucked to two different locations and flown by military or commercial air to the other eight," said Staff Sgt. Elpidio Abaya, postmaster.

Abaya and Airman 1st Class Lichella Spikes, both deployed from Rhein-Main Air Base, Germany, said this job is a lot different than what they are used to at their home station.

"At Rhein-Main we don't get the opportunity to handle the mail," said Abaya. "Our part of the process is mostly administrative."

At home stations, personal mail is handled separately from official correspondence, but here it all comes together.

At the airport, the postal workers handle everything from loading and unloading the trucks to separating mailbags and parcels by ZIP codes and completing all of the necessary paperwork with the customs officials.

Once they have returned to the base, mail is pitched into separate unit bins, based on the mail-

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Officials emphasize caution with APO addresses

By Staff Sgt. C. Todd Lopez

*Air Force Print News
Washington*

World events have Air Force postal officials re-emphasizing the need for security when using the military mail system.

In particular, postal officials are concerned that airmen might not use an appropriate amount of discretion when distributing their overseas mailing addresses.

To reduce the vulnerability of using the mail system as a means to attack military people abroad, the Department of Defense officially suspended all "any servicemember"-type mail programs in late 2000. Those programs allowed the general public to address letters and care packages to "any servicemember," and those items would in turn be delivered to military people serving overseas.

Those programs, according to DOD officials, were eliminated because they created an avenue to introduce biological, chemical or explosive materials into the military mail system, putting people in danger. At the same time, the programs left the sources of such material virtually untraceable.

Air Force officials have identified other potential vulnerabilities in the system. Those include Web sites that ask for overseas mailing addresses, publicly available sign-up sheets for phone cards or other goods to be sent overseas, said Bob Eichholz, the director of Air Force postal policy. It also includes local community efforts to gather up homemade goods and materials that can be sent from anonymous individuals to an APO address

provided by a well-meaning servicemember.

"These are all well-intended programs to support the military," Eichholz said. "In the past those programs worked well, but today the same programs open us up to attacks from unknown sources. We have to take as many safeguards as we can to protect our mail system."

Postal officials recommend that people be as prudent with their APO addresses as possible — limiting where they post their address and to whom they hand it out.

"We recommend ... that members not just give out and advertise their APO addresses," Eichholz said. "Keep it for your business purposes and for your correspondence, but don't advertise it on a Web site."

He said there are some Web sites asking for people's addresses. On other Web sites, people leave their address to get a pen pal.

"We recommend people don't do that," Eichholz said. "You don't know where that mail is coming from or who has access to that address. You need to safeguard your APO address a little bit."

While the Air Force is emphasizing that people keep a short leash on their APO addresses, officials recognize that the American public wants to show support for its troops. Fortunately, said Eichholz, there are avenues where people can do just that without jeopardizing their security.

"First, they've got the electronic 'any servicemember' programs," Eichholz said. "Also, you can support the United Services Organization and the Red Cross. Both organizations go overseas to help and support the troops. You can also help by supporting the various aid societies."

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ing address of the letter or parcel, and is picked up by the unit mail clerks. Individuals can go to their unit mail clerks for their mail after it has been picked up from the mail distribution center.

For most people assigned to the postal flight, this is a big change from what they are used to doing.

"I love this because it's a lot

different from what I do at my home station," said Senior Airman Marion Dumas, an information manager who works at the 18th Aircraft Maintenance Squadron at Kadena AB, Japan. "In our career field, unless you've worked in (base information transfer center), this is all new."

Having a great team to work with also helps, said Spikes.

"We're like a family, we're always together," she said. Besides working side-by-side, six

days a week, they also spend most of their off-duty time together as well.

The tight-knit circle includes their counterpart at the "tent city" post office.

"I enjoy seeing the expressions on people's faces as they send things home," said Airman 1st Class Norman Brown, the only postal clerk assigned to the tent city office. "We're helping them keep in touch with their loved ones."

86th CG transforms communications control

By 1st Lt. Eric Tucker
86th Communications Group
Ramstein AB, Germany

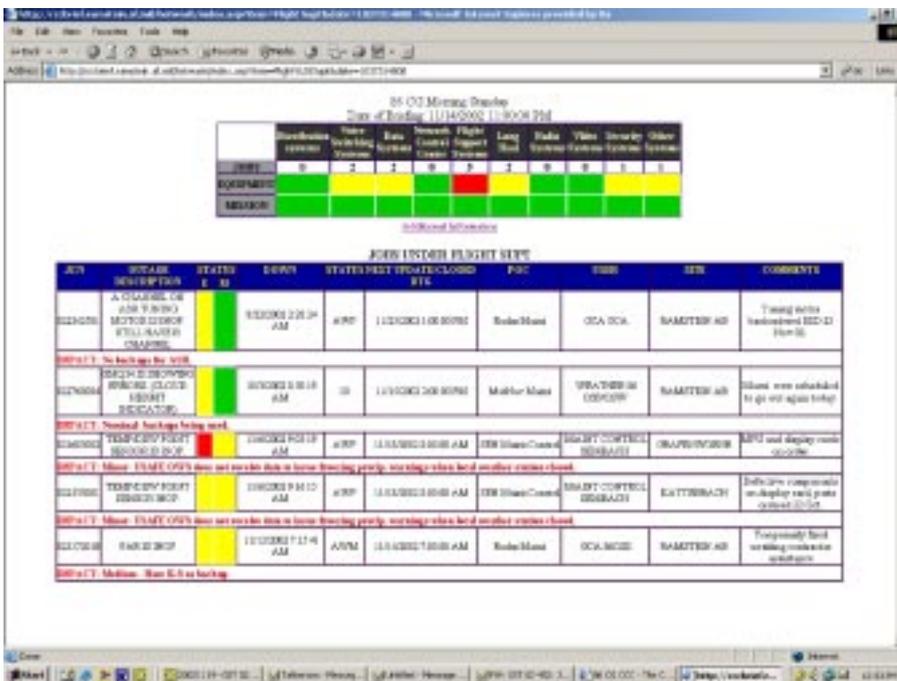
The 86th Communications Group created the communications control center at Ramstein AB in 2000 based on the need for a centralized control and reporting center. This integrated all communications assets within the group and its three subordinate squadrons: the 86th Comm Squadron, the 786th CS and the 886th CS. Under Capt. Pat Hanes, the CCC consolidates functions from 13 separate work centers. Previously, each squadron handled these functions separately, making it difficult for group leadership to acquire an accurate communications and information systems overview. This disconnected process also caused problems with users, who had to determine to which of several work centers to report outages. Additionally, the geography of the group posed several challenges. The 86th CG has work centers scattered throughout the Kaiserslautern area – an area approximately the size of the state of Rhode Island. However, after standup of the CCC, group leadership could call upon one work center at any moment for real-time systems updates and customers had a one-stop reporting shop.

During this period of evolution, the 86th CG CCC is relying heavily on technological prowess, using its current arsenal of data assets and creating innovative new tools. It hosts a daily standup for group leadership, briefing them by commodity on the health of base systems, highlighting high-priority outages, and updating the status of ongoing missions (Figure 1). Recently, two young airmen, Airmen 1st Class William Molina and Scott Churchill, devised a Web site which pulls information straight from Remedy, giving commanders real-time information at their fingertips (Figure 2). This innovation has received numerous accolades from both the wing and USAFE leadership. Another project under construction is a map-overlay system. This tool will allow a briefer to point and click on any base building and show the current status of its systems.

The mission breadth necessary for CCC crew duties calls for personnel highly trained and knowledgeable in a wide array of comm fields, including the different database reporting tools (Remedy and CAMS) used for tracking network and maintenance jobs. This requires a lengthy training period for airmen entering the CCC before they can achieve the required competency level. Without the commitment of squadron commanders and work center supervisors to provide their best enlisted personnel for over a year, the CCC concept would never have gotten off the ground.

The 86th CG has also leveraged the CCC concept to transform their ACE lieutenant program. Effective in summer 2002, all 86th CG lieutenants begin their tours in the CCC. This provides broad situational awareness and trains them on the impact of communications systems on the wing mission. During their CCC tour, ACE lieutenants serve as standup briefers and crew commanders. After one year, they move on to one of the squadrons and apply what they

learned in the CCC. This provides broad situational awareness and trains them on the impact of communications systems on the wing mission. During their CCC tour, ACE lieutenants serve as standup briefers and crew commanders. After one year, they move on to one of the squadrons and apply what they



Magic doesn't always include smoke and mirrors

By the Communications and Information Career Program Professional Development Team

*Air Force Personnel Center
Randolph AFB, Texas*

The Communications and Information Career Program professional development administrators are magicians that perform without a top hat and cloak. You won't see smoke and mirrors as we convert your annual paper documented training requirements to real classes; bringing the classroom to you or sending you to it. We expend large amounts of time and money to acquire and provide professional development opportunities to retain CICIP registrants and PALACE Acquire interns as viable Air Force assets.

As your CICIP professional development administrators, our emphasis is on "providing training guidance and opportunities" to assist you in managing your career.

The training we provide supports more than 10,000 civilian CICIP registrants and PAQ interns, working in telecommunications, computer, visual information, information management, communications, and engineering positions throughout the Air Force. All are engaged in the management support of Air Force mission requirements and modernization initiatives to fully establish the community's indispensable role in making our Global Engagement vision a reality.

The CICIP offers managerial development and training to enhance the professional development of program registrants and interns to include: tuition assistance and short-term courses (technical management, professional and executive development). In addition, the CICIP is investigating new methods to increase the number of training opportunities provided.

Tuition Assistance

Senior leaders encourage all registrants to have a continuing education plan that includes earning a degree and have dedicated training funds to provide support to assist in that effort. TA is offered to competitively selected career program acquisition and non-acquisition registrants with the goal of earning an undergraduate or graduate degree

in a mission related field. All registrants in the CICIP are eligible for TA. Rates paid for tuition varies based upon individual circumstances. For those interested in continuing their formal education, first get familiar with the TA Web page <http://www.afpc.randolph.af.mil/cp/guide/sec-3.htm> and second call, the training office for assistance/information specific to CICIP.

Short-Term Courses

Each year we bring courses to bases across the Air Force, responding to registrant training needs identified on their career enhancement plan. The career program Web page <https://www.afpc.randolph.af.mil/cp/CICP/default.htm> and the list server are your best resources for obtaining information about what courses are being offered at what locations, and on what dates, throughout the fiscal year. Check our Web site often.

Professional Military Education

An outstanding opportunity now exists for civilians in professional military education courses. You have the opportunity to fill positions that have historically been held by military officers. Career minded registrants with aspirations to achieve higher levels of responsibilities should consider PME. PME includes such institutions as the National War College, Air War College, Industrial College of the Armed Forces, Air Command and Staff College, Squadron Officer School, and Basic or Advanced Communications Officer Training. PME can be pursued through in-residence attendance (selection is made on an annual competitive process), on-base seminar, or correspondence courses. Your local training office can provide information on seminars and how to register for correspondence courses. Registrants interested in applying should review Air Force Catalog 36-2223; in addition, use the following Web site: <https://www.afpc.randolph.af.mil/cp/DPKD/CCDP/Default.htm>

Requesting Training and Maintaining Current Records

The primary method for career programs to determine individual training requirements is the

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AFCA offers C&I officers tech refresher training

By **Mary Innes**

Air Force

Communications Agency

Scott AFB, Ill.

The rapid evolution of information technology requires our communications and information officers to stay technically current. In an attempt to keep our officers up to speed, the Air Force Communications Agency has developed an officer technical refresh program to augment basic communications officer training and advanced communications officer training, and to fill the existing training gaps between basic skill development and capstone.

The key to this initiative is a regional training approach that minimizes the effects of two ma-

ior obstacles in obtaining training—time and money. AFCA will fund commercially available training and bring it to the organization's sites, thus reducing impacts to their resources for travel time and costs. AFCA is looking at regions with high concentrations of comm and info officers as the most effective course delivery points. The organizations will be given maximum flexibility to pick the course, time, and location that best meets their mission requirements. All comm and info officers and officer-grade civilians are eligible to attend these classes; however, the courses target officers with core 33S Air Force specialty codes. Reserve and Air National Guard members mobilized

on active duty or serving on an extended active duty tour are also eligible.

An officer tech refresh page has been added to the 33S officer professional development Web page, which contains a list of currently scheduled courses, with other courses added as they are finalized. The officer tech refresh page also contains a list of the major command OTR POCs from each MAJCOM/SC organization, and a database that links to more than 400 online sources of tech refresh information on a variety of comm and info technologies. The information at this site can be viewed online at <https://www.afca.scott.af.mil/33sx/> under education and training.

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career enhancement plan. The civilian personnel flight annually sends registrants a CEP during March and April. You and your supervisor jointly determine your training needs, record them on the CEP and send to the base CPF training office. It is important that you keep your training history current by providing completed course certificates to the base CPF training office. You will need to check your record periodically to ensure accuracy and completeness, not only of your training records but your entire civil service history.

List Server

Subscribing to the list server is a proactive way to gain access to valuable training opportunities. If you have subscribed to the list server you know about the information that is pushed to you via e-mail. If you haven't subscribed you need to. The career program office uses this method of 'pushing' information to folks to keep you informed on issues relevant to you and your career. If you haven't subscribed yet, now is the time to do it. You will find list server instructions at <http://www.afpc.randolph.af.mil/lists.htm>

Receiving training may seem magical at times, but it actually occurs through the deliberate planning and dedication of many people -- *no smoke and mirrors here*. We are here to assist you in managing your career, inclusive of your training requirements—just contact us at DSN 665-3691 or visit our Web site.

Helpful Web Sites

TA page

<http://www.afpc.randolph.af.mil/cp/guide/sec-3.htm>

Career Program page

<https://www.afpc.randolph.af.mil/cp/CICP/default.htm>

CCDP page

<https://www.afpc.randolph.af.mil/cp/DPKD/CCDP/Default.htm>

List Server page

<http://www.afpc.randolph.af.mil/lists.htm>

33S Officer Technical Refresher page

<https://www.afca.scott.af.mil/33sx/>

