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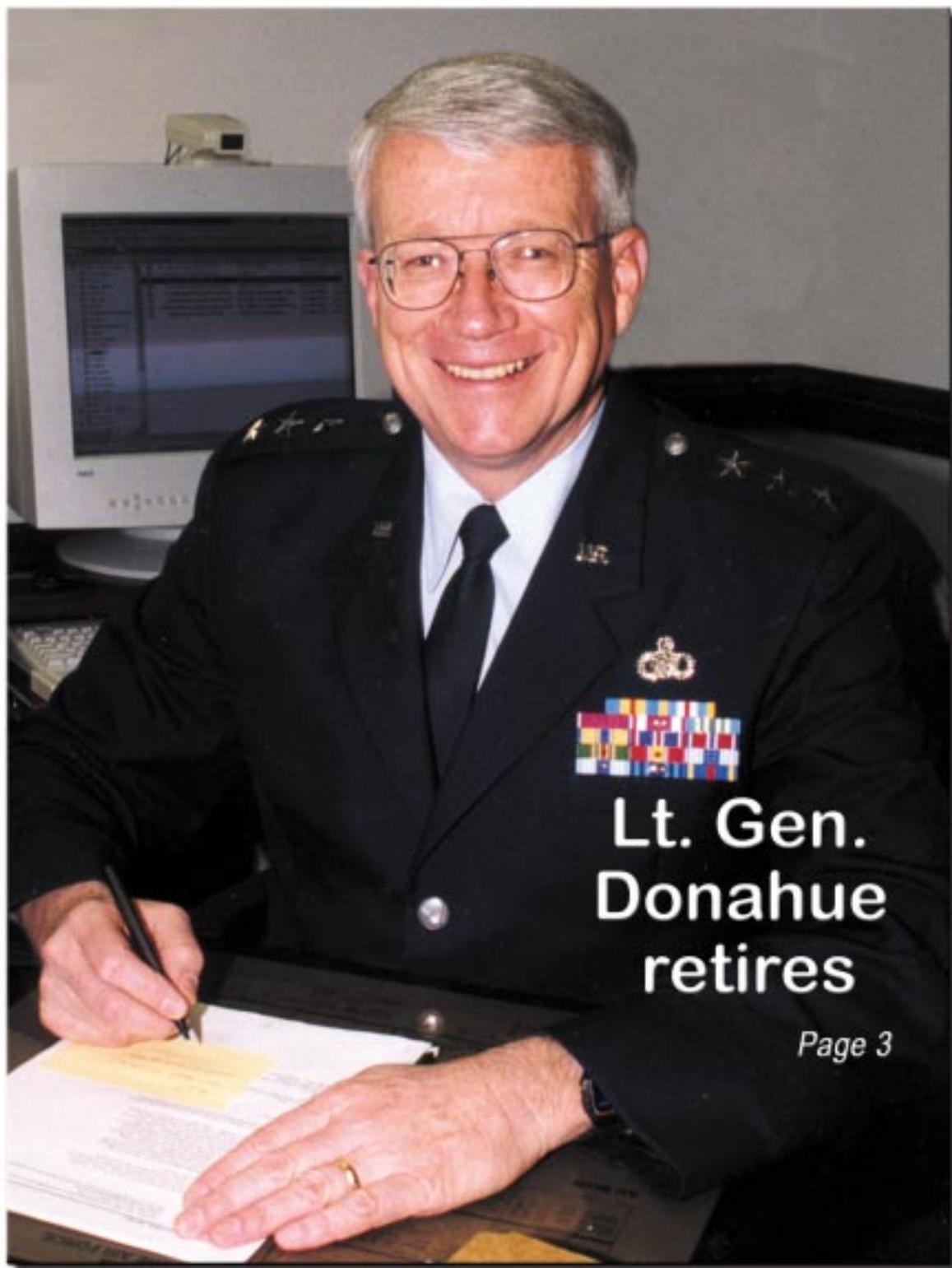


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# intercom

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The editorial content is edited, prepared and provided by the public affairs office of the Air Force Communications Agency.

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Lt. Gen. Donahue retires after more than 33 years of service.



Lt. Gen. Donahue photo by Joe Collaso

# Lt. Gen. Donahue shares parting thoughts

*Lt. Gen. William J. Donahue, director of Communications and Information, Headquarters, U.S. Air Force, and commander, Air Force Communications and Information Center, Washington, D.C., retired last month after more than 33 years of military service. Before his departure, he spoke about the past, present and future in an interview with Air Force Communications Agency historians Dr. Thomas Snyder and Larry Morrison.*

## **How did you see your future in 1966 when you entered the Air Force? Did you have your sights set on being the top communicator?**

When I entered the Air Force from a small town in Kentucky, my objective was to serve my military obligation. I had just completed my degree in mathematics, and I liked leading edge technology. I knew the Air Force was a technology leader, and I felt I could best serve my obligation in the Air Force. I was within 90 days of separating after my first four years when the Air Force offered me a deal I couldn't refuse—education and future challenges and opportunities that I found interesting and exciting.

I probably couldn't have told you who was the top Air Force communicator for the first eight years I was in the service. It was not in my sights. My objective was to just learn as much as I could, do as good of a job as I could, and enjoy what I was doing ... and I did. In fact, that is really what kept me in. My wife and I discussed it many times (over the years) and we decided that as long as we were having fun in what

we were doing, enjoying life (the job, the people, and the opportunities), and being able to do a good and important job for our nation, we'd stick with it. That was our motivation for the duration of our career.

## **What are the significant changes you've seen in this business over the years?**

When I first came in, I was the officer in charge at Kindsbach Communications, just outside of Ramstein, Germany. We had a torn-tape teletype relay and we had computer security equipment called the SSM-33, a one-time tape cryptographic equipment—you might find one in a museum. Very few communicators remain on active duty who know anything about a one-time tape system. We had a manual switchboard operation, which was your classic manual cord switchboard where you physically had to



**Donahue in 1966**

ring down a circuit at the other end. We had a torn-tape weather relay operation which had a satellite receiver that received a crude picture from a satellite when it made its pass. On a very crystal clear day, when the equipment was working perfectly, you might be able to pick out the boot of Italy. It was a very different environment. HF radio with KWT-6s was large and very maintenance intensive equipment.

During my first assignment at Ramstein, the Defense Communications Agency was coming into its own. We were just starting to go with AUTODIN. Down in Siegelbach, Germany, about five miles from Ramstein, there was an old Plan 55 relay, which was a semi-automatic switching system. We



**Lt. Gen. William J. Donahue speaks at his retirement ceremony April 7 at Bolling AFB, Washington, D.C.**

were still working with a telephone system, an RP 40, which in fact, was developed in World War II by Germany. This was the system we were using for main line communications at Ramstein.

Our secure voice equipment at the time was a KY-9. It was in a safe that was about four feet high and weighed about 500 pounds. It truly gave you Donald Duck voice quality. It was enormously difficult to understand what someone was saying to you. The secure voice equipment we have now sits on your desk and has voice recognition quality — a tremendous improvement over what we had then.

The Air Defense computer system at Kindsbach (Sector Operations Center 3) consisted of large screen displays driven by colored oils that floated through these hot projectors and gave you the projections

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## DONAHUE

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on screens. Today we use super VGA and high-resolution, high-definition TV. So we've made a pretty incredible technological leap, and it has been very interesting and exciting to be a part of it.

One of the things that hasn't changed, in my view, is the dedication of the comm and information people. They've always worked very hard to support the mission and their customers and under very trying conditions. Many limitations they faced over the years have not been budget, not been policy, but the laws of physics and science. Issues of bandwidth, power, frequencies, all of these things have clear foundations in science and our people were always pushing science to the limit. But they've worked magic; they worked with a zeal and initiative that clearly showed that they didn't know what they couldn't do. They would support the mission with a dedication that was always refreshing, and it always motivated me to keep up with and support them.

**What goals/objectives/character did you have when you walked into the AF/SC position? Do you feel that you've met them?**

There were several main goals and objectives that I had (when I took the position). The first was to go out and make sure we really had a program to train our people in this rapidly changing information technology. The enlisted and officer training had to make the new technology mission relevant. The tech-

nology was changing so fast and this was causing an immense challenge to keep the people current in both the new technology and on the current mission of the Air Force. On one hand I'm going to be tough on myself because I didn't achieve all that I wanted to achieve, but I am very proud of what we have achieved. If you go down to our Keesler schoolhouse and look at the investments we've made there, look at the quality of the training and the quality of the equipment there, it's world class—second to none. I want the people who come through Keesler to see first-hand the equipment they're going to see when they hit the field. So we are equipping the schoolhouse with that equipment. We're giving them frontline training. Can it get better? Yes. Will it get better? Yes. But we put our focus down there because the most important thing we have is the people.

The second thing that I have worked hard on is the information technology infrastructure. Keeping the infrastructure programs funded so we can get the cable in the ground so we can provide the network services that we need. We've done OK through the funding process, not as well as I would have liked ... again I said I was going to be tough on myself. I would have liked to have it fully funded. I've been on a campaign with the functional leadership in the Air Force and with all the functional and operational communities to get the support for this. By and large, if you look at the funding and the plus-ups we've had, we have had about \$1 billion in plus-ups. For a \$3 billion program, which is now



**Captain Donahue**

about a \$4 (billion) plus we've made progress, but the demand for information technology infrastructure continues to grow. Those plus-ups are going directly toward building the infrastructure and providing the capability that the operational forces are going to need. So the folks who have worked that in our comm and information panel and all of our program element monitors, all who have worked together, including support from Congress, have been important. Could I use more? You are doggone right we could use more. Funding is the best it has ever been but we need more. We are number three on the unfunded priority list and we are going to have information technology requests on the unfunded priority list for the foreseeable future. We don't have all the resources we need, but we have more than we've ever had.

The other objective I set out (to accomplish) really followed from the objectives that were put out in the



Photos by Joe Collaso

Air Force Vision Statement — that we are all air and space operators. The objective I set for myself was to work very hard to make sure that the comm and information community was viewed as a valued and trusted mission partner — when the fight's on, the operational commanders view us as equal partners in the mission success. Again, I'm being tough on myself ... we have made some progress there but we still have a way to go. We have got to be viewed as, not just a bunch of rule enforcers, but as people out there providing service and mission support. We have to anticipate those service needs, and we have to deliver those service needs in ways that make us the preferred provider. There are lots of ways they can get their service out there; we need to make sure that they come to us, because we're good, because we are relevant to the mission and we are a full-up partner. We've made a lot of progress in that; we still have some things to do.

Let me wrap this section up with some comments about my initiative and objective to Operationalize and Professionalize the Network — OPTN. It was very clear to me that our networks were critical to mission success; that the home grown style of our data networks and the “county options” we had with hardware and software were detrimental to mission operation. It was clear that we needed to treat the networks like the weapons systems they had become. That meant training our people, equipping our networks, and organizing for success — the professionalizing side. Operationally, it meant rigor — mission tasking, crew positions, standardization, operational reporting, and rules of engagement. We have made enormous progress in this area; we've been combat tested both in Kosovo and in our daily operations with an unrelenting series of attacks against our networks. Our networks are trusted, the information in them is assured, but the threat is real and it is dangerous so we have to keep getting better — and we will.

So the bottom line, we had some objectives and some goals ... we worked very hard and we've done pretty good but we still can do better and we will ... because I know that the people will carry on.

**What do you consider to be the most significant thing to happen during your tenure as AF/SC?**

A lot of significant things happened, but I think the most significant one during my tenure is what the Air Force did—Air Force people achieving enormous success in combat operations. The success we enjoyed in Kosovo is a real testimony to the whole Air Force team;



*Photo by Joe Collaso*

**Air Force Secretary F. Whitten Peters makes a presentation to Lt. Gen. Donahue. Gen. Michael Ryan, Air Force Chief of Staff, (left) also took part in the general's retirement ceremony.**

testimony to what air power brings to the national security equation. To be a part of the U.S. Air Force, the winning team, was the crowning achievement in my career ... and I'm just ecstatic that I was allowed to be a part of it.

The other thing that was significant, actually it was more interesting than significant, was the Y2K challenge. I'd long been the lone spokesman saying that it was the technology people that got us into this problem and the technology people who'd get us out of it. We basically started by working through the technical solutions to Y2K in 1994—I can well recall the puzzled looks and sometimes the “guffaws” when I was championing Y2K remediations in 1994. But the fundamental issue was to communicate to the leadership of the Air Force that we could continue to do the mission of the Air Force no matter what the computers did. I fully knew that we would not get all of the (Y2K issues) fixed because of how much software and information technology has invaded our society ... it's a part of everything we do. You simply can't get it all, and we didn't get it all, but we caught all the big stuff. I long expected that the worst thing we would have would be a series of nuisances that we could well manage with the people we had. And that is what happened.

We gained a lot of confidence as we were conducting mission tests on systems supporting the mission essential tasks of the United States Air Force—air sovereignty, ground attack and suppression of enemy air defense, etc. When we tested ourselves against those missions with the computer clocks ratcheted up, we started sending a message and developed confidence that no matter what the computers did, we could keep



**Lt. Gen. Donahue returns the salute of the U.S. Air Force Honor Guard as it passes in review at his retirement ceremony.**

**DONAHUE**  
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the mission going. And that was good. What was also good about this Y2K effort was the fact that the comm and information community was able to rise up to this enormous challenge and made the Air Force a lot better as a consequence of our efforts. We didn't just spend a lot of money on Y2K; we spent money and resources making the Air Force better. We have a better telephone system than we had before, we got rid of old infrastructure, we got rid of old systems that we didn't need to have and we are a far better institution as a consequence of our Y2K efforts than we otherwise would have been.

So the money was well spent and it was necessary. I think we met the challenge that the public and the American people put before us ... to make Y2K a non-event ... and so we did. That was necessary and I'm very proud of the team that did that. There is a down side to this Y2K effort—I get frustrated and impatient with those who challenge us on whether this Y2K effort was necessary. We had a mission to accomplish, the nation expected us to work it, and we were successful. Don't ask me to justify our success. That's like the coach saying, "Why'd you win the Super Bowl by 20 points? One was good enough." Such questions give "hogwash" a bad name.

**Where is the Air Force headed and where do communications and information professionals best fit into that picture?**

The Air Force is continuing to head down this path of the Expeditionary Aerospace Force. I think we are going to be the service of choice when things threaten

our national security. We are going to continue to be light, lean, lethal, and we're going to be globally engaged. We are going to be a precision Air Force and we're going to be an agile Air Force. The comm and information community has got to be viewed as a trusted partner in every core competency and mission of the Air Force. The way we do that is taken from the Air Force Vision—we are all air and space operators. No matter what your career field is, we are all air and space operators. The Air Force needs the contribution that each career field brings to the equation ... the comm and information contribution is important to mission success.

People have heard my speeches and they've heard me when I've talked to the schoolhouses. We all have to be viewed as air and space operators first, who bring a unique contribution, and that is our comm and information contribution. The Air Force vision is that way to make sure that every functional member is an air and space operator who contributes to the combat operations and success of the Air Force—and to draw upon an expression from a previous commander of mine "...and no one is more or less important than anyone else." The communicators will best fit into that picture if they see that as the future course—air and space operator first and foremost. Knowing how to exploit air and space power to achieve national security objectives, how to employ air power, and how this great Air Force operates so that they can be true partners in success.

**How is information technology enabling an Expeditionary Aerospace Force?**

Information technology enables us to deploy forward only those forces which are needed to do combat operations. We can reach back to the United States for the support activities we need: personnel, logistics, finance, etc. The equipment we'll deploy forward is going to be commercial off the shelf and it's going to be light, lean and high capacity. That is how we are equipping the Air Force with our theater deployable communications equipment. It is the same equipment, the same models, and the same architecture as our combat information transport systems for our fixed bases. When we deploy forward, the comm and information unit will deliver the same kind of communications and support that they deliver at their home stations. That's the way we need to operate. The way we operate deployed and in combat is pretty much the way we operate day to day. The comm and information community needs to be there as true AEF partners ... they will and they are.

**What impact did comm have on the Kosovo**

## **operations and what impact will Kosovo operations have in the future?**

The Kosovo operations largely combat tested our communications and information visions. Light, lean, lethal, high capacity, commercial equipment that was deployed forward, reaching back to the continental United States for the support services. All of these things we've talked about in our vision statements, precision, global, lethal, distributive, collaborative, etc., were all the things that we did. Being on the network, web enabled, protected, were parts of our visions and those are the things we did in Kosovo operations. The comm community really needs to stand tall and proud for the great support they provided to that operation. This truly was an information-intense operation and the communications contribution was enormous, it was important, and it was very high quality.

## **Looking back on your career are there any lessons learned or special memorable experiences or influential people?**

Interestingly enough, the most influential people I have experienced in my career would be the junior people who have worked for me. They were always high energy, always focused and dedicated and always working hard with high initiative — their enthusiasm was infectious. The work I do with the young people continues to this day to give me enthusiasm. It always was a special trust that I felt the nation gave me ... to go out and lead and supervise these young folks. And to watch them do good made me immensely proud. So every time that they did good gave me a memorable experience.

To look back at the young airmen who worked for me, I clearly remember them making senior airman below the zone, watching them become airman of the quarter, and watching them become the 16-year chiefs—it has been a real kick — that's been an incalculable reward. That feeling is going to be hard to replace after I take this uniform off. They are going to be some of the most important and enduring experiences — working with the people I have encountered throughout this Air Force experience.

All of my assignments have been good; I haven't had a bad assignment whether it was overseas in Europe, in the Pacific or a remote tour in Iceland. Every single one of them was an experience that money couldn't buy. I have had opportunities to see, do and participate in ways that you simply couldn't do in the private sector. It will always be something that will be a fond memory, and one that I would highly encourage to anybody in the Air Force. There are no bad assignments out there; every assignment is one that will get you promoted. I'm not sure that I had a standard career path. I didn't command until very late in life. In my first command I was a lieutenant colonel, and as it ended up I came out on the colonel's list before I ever had my first OER as a commander. I commanded three times and each time it was a unique responsibility.



**Lt. Gen. Donahue commissions his son Gregory as a second lieutenant in the Air Force April 7 prior to his retirement.**

I have served in nearly every command in the Air Force. So I got a good look at airlift, at the tactical side of the house, at the strategic side, and at space. It was a good opportunity and it gave me a feel for how the Air Force operated and allowed me to make sure the comm and information support was directed toward making the Air Force better in its operation.

## **What would you say to communicators about keeping a technological edge?**

We have to maintain the technological edge. We do not ever want to have a peer competitor in this technology game. We need to continue to stretch, reach high, and understand the technology, but more importantly, we need to understand how it applies to making the Air Force better. Technology by itself is not good; it's the application of that technology to making the Air Force better that's good. We have to understand the technology and more importantly understand how the Air Force can apply that technology to mission success.

## **What does retirement mean for you?**

Quite frankly, I've been so busy in the Air Force that I really haven't had the time to do much detailed planning for life after retirement. I will be forever connected to the Air Force and I will continue to serve the Air Force even when I'm retired. I'm absolutely convinced that I won't retire. I fully intend to stay physically and mentally active. So what it means is a transition. I'm going to wait until I take the uniform off before I really work the transition issues. I'll take the time to reacquaint myself with my extended family and then I'll start doing more detailed planning on life after the Air Force.

# Air Force uses palmtops to boost efficiency

By 1st Lt. Patrick Swackhammer and Jane Guidicini  
*Air Force*

*Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** — As the Air Force continues to do more and more with less and less, tools and procedures need to be updated to support airmen on the job and allow them to do their work as efficiently as possible. One of the newest tools for doing this is the handheld computer. These miniature marvels are making a reality not only of the “paperless office,” but also the “paperless flight line” and the “paperless remote site.”

Two organizations that incorporate handhelds into their day-to-day operations are the 412th Test Wing at Edwards AFB, Calif., and Air Mobility Command’s Inspector General at Scott AFB, Ill. The 412th uses the Palm Vx to speed delivery of necessary information to commanders and other key personnel. AMC/IG is integrating the Palm V into its new inspection methods, using it as part of a mobile network that can be taken to a site to allow collected data to be consolidated quickly in a standardized format.

There are two types of handheld computers, and two different major operating systems. Handhelds come both with and without keyboards, and run under the Palm OS or Windows CE operating systems. Handhelds with keyboards resemble small notebook computers. They generally run Windows CE, a Microsoft product that is designed specifically for handhelds, and is compatible with other Windows systems.

The handhelds without keyboards, sometimes called palmtops, are smaller and lighter. They have a touch screen for selecting programs, and use a simplified alphabet to hand-write in numbers and letters with a stylus. Both types use docking ports or cradles to load programs and files from a desktop computer. Depending on the manufacturer, they run on either Windows CE or Palm OS.

AMC/IG is doing a complete overhaul of the way it does business, using palmtops as an integral part of



**The Palm VII**

their new approach. This is due partially to a change in the way inspections are conducted. Previously, one to three units were inspected at a time. Now the IG is inspecting 20 to 30 Unit Type Codes during each visit, including the people and logistics that support a specific capability.

Previously, inspectors used pen and paper to take notes, and fill-in-the-dot surveys with “bubble sheets.” They consolidated the information on notebook computers at the end of the day, and then hand carried the disks back to the main database. Now they have gone to a self-contained mobile local area network at the inspection site. The information is input to the Palm V, which is loaded with software written by AMC Computer Systems Squadron’s rapid application development office. The information is then loaded onto notebook computers connected to the mobile network and consolidated onto the mobile server. It’s downloaded to the main database when the unit returns to home station. The data is then put on the web server and made available to field units. This allows inspectors to perform inspection analysis, since they can gather six to eight times more data in the same time than with previous methods.

See **PALMTOPS** next page

# AFCA faces challenges of fielding wireless local area networks

By Rob Beutel

*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** — Wireless communications are proliferating throughout the Air Force as industry produces an increasingly diverse array of new and innovative wireless communications services and products. Many Air Force organizations and programs are applying these wireless communications solutions to improve communications and overall operations. There are many benefits in commercial-off-the-shelf wireless communications, yet because the Air Force must operate globally it is encour-

tering problems in the deployability and use of these solutions in foreign countries.

AFCA is playing a lead role in addressing the main issues associated with one of the most relevant forms of wireless communications: wireless local area networks.

What does a wireless network mean? To the user the WLAN appears the same as any local area network. But the media being used isn't wires, it is the air around you. Radio frequency transmissions are used to transport the bits of information from point-to-point. The result being a LAN without a wired infrastructure.

This provides for several potential benefits. These benefits include: mobility, installation speed and simplicity, reduced life-cycle cost, and scalability. They give you much greater mobility as compared to wired LANs. Since there is no need for wired infrastructure, the limitations of geography created with wires do not exist. Also, without the need for pulling wires from destination to destination, WLAN gives better installation speed and simplicity. Since there isn't the need for the wired infrastructure, overall life-

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## **PALMTOPS**

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The Palm V was chosen because it's easy to work with, lightweight, legible in sunlight, and can operate on a rechargeable battery for a week or more between charges.

As the number of pilots in the Air Force declines, their time must be used more efficiently. One of the ways that the 412th Test Wing is accomplishing this is by using handhelds to quickly consolidate and deliver information for its key leaders. With the number of pilots at a little more than half of what they had when the 412th TW started, keeping information current and flowing quickly is necessary to maintain the 412th's operations at peak effectiveness.

The wing uses palmtops as "brain books" for commanders to store current information, such as the wing commander's weekly briefing slides, latest drafts of important documents, and up-to-the minute news. As with AMC/IG, the Palm Vx was chosen because of its small size, long battery life and ease of use. The 412th uses Install Buddy, a third party software package, so that relevant documents that are in Word, Excel or .pdf formats can easily be converted to a Palm-compatible format.

The 412th is also moving to a paperless system called Ops Online to manage flying operations. It will cover scheduling through post-flight review, but also provide automated checks and balances to ensure nothing critical is missed prior to authorizing a flight. The Palm fits perfectly into this scheme. In the future, op-

erations officers will download the daily flying schedule to their Palms, empowering them to make scheduling/resource decisions from anywhere and cutting their umbilical cord to the ops desk.

As with any new technology, security must be considered. Since handheld computers can help get information quickly and efficiently to the people who need it, they may also be used to unintentionally transfer sensitive information to unauthorized people.

For example, one model of palmtop, the Palm VII, comes with a wireless e-mail service. However, since this service requires the e-mail to go through a commercial server, it cannot be used for official correspondence. There is also a problem with clearing the device if classified information is inadvertently entered into it, such as when taking notes at a meeting.

There is no authorized way of clearing the memory to ensure that the classified information cannot be retrieved. Also there is no anti-viral software in place yet to guarantee that there are no viruses or Trojan horses in the software. As with all information protection concerns, security comes down to configuration management and control. Connecting personally owned devices to government systems defeats all that configuration management achieves. The bottom line for security is this: the handheld computer is subject to the same Air Force policy directives as the computer on your desk, to include certification and accreditation.

By taking advantage of the technological advances that put more computing power in the airman's pocket, the Air Force continues to keep its people operating at peak performance.

# Voice-over Internet Protocol enhances telephone service

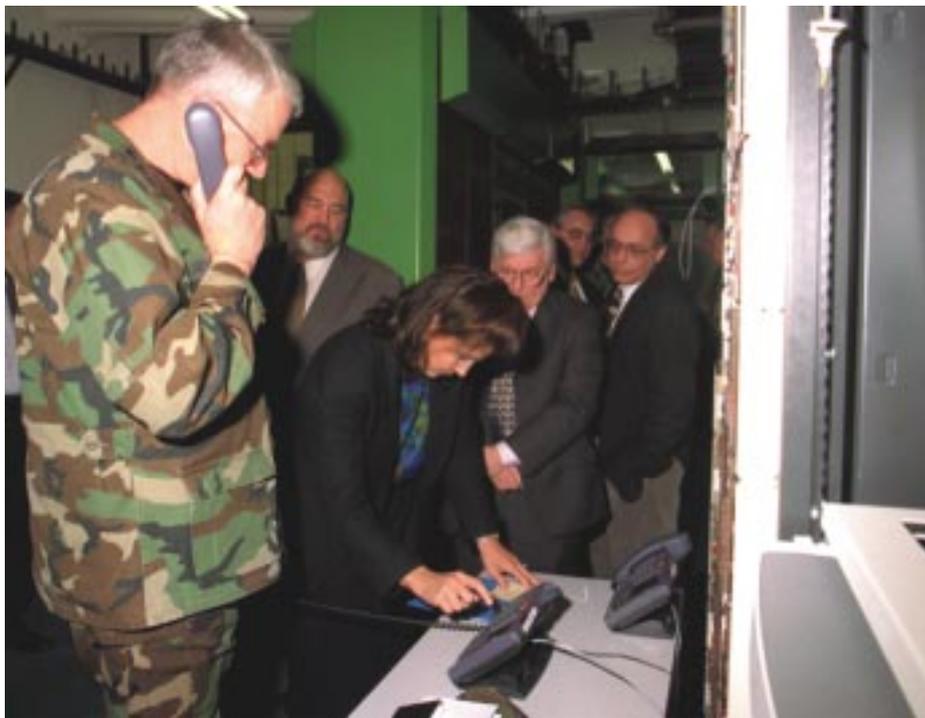


Photo by Staff Sgt. James Howard, 100th CS

**Lt. Gen. William Donahue, left, waits to talk on the phone using VoIP, as Mara Foulois dials the number.**

**By 2nd Lt. Chas McGee**  
*100th Communications Squadron*  
*RAF Mildenhall, England*

The Internet and computer networking have provided the world with countless conveniences. With a simple click of the mouse we can now shop, send electronic mail, and even pay bills at any time without leaving home. Now the Air Force is helping advance another Internet application: Voice-over Internet Protocol. VoIP is a technology that allows telephone calls to be placed over a computer network rather than conventional phone lines. As this technology advances, it is expected to revolutionize telephone service.

VoIP is not a new technology. Shareware programs that allow two Internet users with the proper hardware to have conversations have been around for years and use the same principles. But there have always been problems that prevented it from widespread implementation. The principal problem was the quality of service. VoIP has only recently been able to overcome poor connection and latency issues. Also, services such as call waiting, call transfer and caller ID were not initially offered with VoIP. It has now been proven to work in small commercial settings and the next step is to test it in a military environment. The second major problem was cost. In order for VoIP to provide services equal to that of a conventional phone system, it must be run over an expensive fiber-optic network. Today the costs

associated with installing fiber-optic networks are falling and fiber is quickly becoming the standard for computer network backbones. With cost declining and quality increasing, VoIP is becoming a viable alternative for traditional phone systems.

The Air Force is installing the first operational use of VoIP in the DOD at RAF Mildenhall, England. One of the main reasons for choosing Mildenhall as the VoIP test site was cost. The U.S. Government does not own any of the phone circuits on the base and has to rent them from British Telecom. The base has approximately 9,000 circuits, with an installation cost of \$575 per circuit and another \$200 per year rental fee. By transitioning over to VoIP the government will see significant savings in the future.

Another factor in the installation of VoIP at Mildenhall was the cost of renting phone lines. In 1988 phone circuits from BT cost about twice as much as today and the 100th Communications Squadron was searching for more cost effective alternatives. In 1990 the base started converting to a fiber-optic backbone for computer networking and had the foresight to install demarcation points, which now support VoIP for telephones in every building. In 1992 an Air Force program installed a common fiber infrastructure for all base networks. At that time, the Communications Squadron planned ahead and developed a plan to use the two

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## VoIP

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different fiber-optic backbones for voice and data.

VoIP at Mildenhall will be installed in three distinct phases. Phase I is the initial testing phase and involves setting up 170 IP phones within the Communications Squadron and other units on base. Also during this phase the software on the VoIP server, the switch, and the phones themselves will be upgraded to allow for new features and advances. After final testing of the first 170 users, Phase I will be complete and a proof of concept discussion will occur. This discussion will ensure all parties, both users and providers, are satisfied with the equipment and services. If VoIP is determined to be unsuitable, further expansion will be stopped. If the proof of concept is approved, then the project will advance to Phase II: installing 200 additional IP phones. After any issues with these phones are resolved, Phase III, basewide implementation, will commence.

With the exception of a new telephone and added features, the transition to VoIP should be transparent to end users. In the future, however, end users will see many extra conveniences. For example, since VoIP and computers run on the same network, telephones will be able to send and receive e-mail. With the application of voice recognition software, users will be able to dictate an e-mail message and send it from anywhere. They will be able to forward voice mail messages, as either a voice mail or an e-mail, to another user. Also, the potential to run an IP phone off a laptop connected to a wireless LAN can easily be seen. The future possibilities of this technology and the services it will offer are astounding.



**Command and Control Battlelab personnel use the suitcase model during a demonstration at the Pentagon.**

## *Reduced footprint technology a hit at JEFX '99*

**By Mike Vogel**

*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** — Compact computer workstations that fit into an aluminum suitcase are gaining favor with personnel who must deploy often or work in small, crowded forward operations centers.

At the request of the Command and Control Battlelab, AFCA last year researched and evaluated commercial off the shelf products, and packaged selected workstation components in a suitcase that can be transported as airline carry-on luggage.

The small UNIX workstations are made up of a laptop computer, an 18-inch flat-panel monitor and power strip. Other configurations contain a full-sized keyboard and mouse. The packaged units weigh 36 to 63 pounds. The largest unit is in an aluminum luggage container with wheels and a pull-up handle.

The Battlelab initiative termed Reduced Hardware Footprint replaces bulky and cumbersome UNIX command and control systems that are deployed for use in aerospace operation centers and other units with special operations. "The new, small

units represent a 75 percent reduction in weight and up to an 87 percent reduction in volume compared with current workstations," said Jerry Hall, AFCA engineer.

The suitcase workstations, combined with a tri-band satellite communications terminal and a wireless infrared local area network, achieve a reduced logistical footprint for the C2 architecture in the AOC.

AFCA engineers packaged 12 workstations and set them up for use in the Joint Expeditionary Force Experiment '99 at Hurlburt Field, Fla., in September. Four of the workstations were used in the operations section, four in plans, and four in the Joint Special Operations Air Component of the air operations center. Set-up of the compact 12 workstations for JEFX took only a few hours.

The JEFX '99 final report recommended the system be fielded, less the wireless LAN capability that will require further study, Hall said.

The C2 Battlelab recently informed AFCA that the F-16 and F-117 System Program Offices are going to transition to the reduced footprint concept demonstrated during JEFX '99 as soon as the equipment is procured.

# 'Reduced footprint' value demonstrated in MEDFLAG exercise

By Mike Vogel

*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** — Air Force Communications Agency engineers and technicians demonstrated the use of a small, lightweight prototype package to establish a communications link for MEDFLAG 2000, U.S. European Command's annual joint military medical exercise, conducted in Africa.

Network evaluations engineer 2nd Lt. Sean Beall and site engineer Jack Shipley deployed to Garoua, Cameroon in March, with a reduced footprint initial communications package (RFIC). Jack Hoffmann, system engineer, deployed to the Defense Satellite Com-

munications System in Lago Patria, Italy, a standardized tactical entry point near Naples. He ensured STEP communications equipment was configured properly for connectivity with the RFIC equipment in Cameroon.

The RFIC system is designed to provide telephone and Internet service from just about anywhere in the world. RFIC requires less than a short pallet for transport, about two hours to set up and have operational, and three or four people for 24-hour operations.

In Cameroon, the deployed medical exercise personnel used RFIC for telephone and NIPRNET unclassified data services, such as Global Decision Support System, and e-mail. It was also used for morale purposes, allowing deployed personnel to make phone calls and send e-mail home. Exercise personnel were excited about RFIC's potential as the Air Force looks to increase its ability to mobilize quickly.

"It really falls right into line with the Expeditionary Air Force," said Col. Theresa Casey, commander of the exercise in Cameroon, noting its specific usefulness for deployed medical teams. "We could quickly send medical records and reports from down-range without compromising privacy or operational security. In the past, I've seen situations where we faced having to use commercial e-mail accounts to send that kind of information."

The AFCA team members were enthusiastic about their roles in the operation. Shipley said, "We have better DSN circuits here in Cameroon than anywhere in Europe and better data throughput for the network than bases where I've been. We wanted to prove this system's worth to the Air Force, and I think we've done that."

The three-week MEDFLAG 2000 exercise involved nearly 200 medical and support personnel and tested medical teams' ability to mobilize and establish medical operations in austere conditions. Medical teams also made visits to six local villages to provide adult and pediatric primary care, basic optometric and dental care, and immunizations.

Word of the RFIC system spread.

"We only just got the thing working when we started getting calls from all over the Air Force, (from units) trying to get us to set one up for them," said Beall. "I guess you could say this was our 15 minutes of fame."



*Photo by Master Sgt. Keith Reed*

**Second Lt. Sean Beall, Air Force Communications Agency, fine-tunes the settings on the computers linked to the new Reduced Footprint Initial Communications system during a test at MEDFLAG 2000, in Garoua, Cameroon.**

# AFCA meets deployment needs with communications flyaway kits

By Cedric Mitchell  
*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** – In the initial stages of a deployment, there is a major push to move people and aircraft/operations support equipment. There also is a vital need to provide high quality, reliable communications capabilities for commanders.

Airlift space is at a premium, with only a few pallet positions available for communications equipment. Current deployable systems provide excellent communications for medium-to-large bases but this is more capability than needed during early stages of a deployment. The systems require several pallets for transportation.

With limited transport space, “flyaway kits” in small packages can provide secure voice and data communications capabilities that are interoperable with other deployed communications systems.

AFCA engineers and technicians work with operational users to determine requirements for deployable communications. Through research and evaluation, they identify promising commercial off the shelf products. As they match new or upgraded equipment to mission requirements, they share that information with Agency customers.

The Agency’s Technology and Interoperability Facility developed a prototype Reduced Footprint Initial Communications package to demonstrate at the Joint Expeditionary Forces Experiment ‘99 at Hurlburt Field, Fla. It was supported by command and control and Aerospace Expeditionary Forces Battlelab interests.

RFIC provides the required initial communications

for nearly 100 people. It is small, lightweight, easily transportable, yet maintains interoperability with a fixed DISN infrastructure. The system is designed to be easily configured or modified to suit user requirements, with the basic package providing telephone service, and Non-classified Internet Protocol Router Network and Secret Internet Protocol Router Network capabilities, along with servers for both networks.

The system consists of:

- \* A tri-band satellite terminal
- \* A tactical satellite signal processor emulator
- \* Cryptographic equipment
- \* An Integrated Digital Network Exchange based multiplexer
- \* Digital Subscriber Line technology

Contained in eight transit cases that fit onto one short shipping pallet, the system weighs less than 1,000 pounds. It costs approximately \$250,000 and includes a redundant set of baseband equipment for a war readiness spares kit.

The RFIC system can be assembled and operational within two hours. It requires two trained technicians skilled in satellite communications, tech control or computer networking. Only computer-based training and two weeks’ on-the-

job training are needed for proficiency.

In addition to its successful JEFX ‘99 demonstration, the RFIC system has been demonstrated in the Cope North 99-2 exercise in Japan; in a wireless AEF communications initiative at Mountain Home AFB, Idaho; and U.S. European Command’s MEDFLAG exercise in Cameroon. The AEF Battlelab, a primary customer, is working with a contractor to build and field RFIC-like systems.



*Photo by Master Sgt. Keith Reed*

**Second Lt. Sean Beall, Air Force Communications Agency, and Tech Sgt. Vaughn Jobs, 86th Medical Support Group, Ramstein Air Base, Germany, assemble the dish for a new Reduced Footprint Initial Communications system during a test at MEDFLAG 2000, in Garoua, Cameroon.**

# New test center troubleshoots networks

By **Timothy Fox**  
*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** – Tours of the Technology Interoperability Facility are a frequent occurrence, and there is plenty of unique and interesting equipment to catch a visitor's eye. In one corner there is a strange hybrid of old HF radios and modern computers. In another corner a dozen computers are equipped with video cameras and microphones in a collaborative tools testbed. However, one of the more impressive things in the TIF is the Air Force Network Test Center.

The room is filled with state-of-the-art network equipment. Eighteen equipment racks hold hardware typically found in a base network control center. AFCA engineers and technicians designed the Center to have the exact types of network components, such as routers, switches, and servers, that support thousands of users on Air Force bases throughout the world. A 100,000-BTU air conditioner – strong enough to cool a 3,000-square-foot home – struggles to keep up with heat dissipated in the room.

The Center has the equivalent of two main base networks. Each has a full Combat Information Transport System suite with the Network Management System/Base Information Protect System. The CITS suite

provides network security, management functions and networks that are at the heart of all Air Force networks.

The Center's base networks can be configured with an Asynchronous Transfer Mode backbone which emulates bases that have been upgraded to the Information Transport System. They can also be set up as legacy base networks with Ethernet backbones. This flexibility gives the Center the ability to reproduce a wide range of capabilities.

The Center is also set up to imitate two geographically separated unit networks. GSU networks are isolated networks that depend on a main base's network to provide connectivity and network perimeter security.

An emulation of a deployed unit network is also a part of the Center. The deployed network has a simulated Standardized Tactical Entry Point site with International Maritime Satellite to Integrated Services Digital Network connection. This capability allows testing to determine the effects of lag time introduced by satellite links on deployed systems.

The assemblage of so much powerful network equipment really gets the attention of visitors. A rack of a dozen quad-Pentium Xenon 550 servers – acting as a server farm – is particularly impressive. Core routers capable of handling all of the network traffic on a major base are side-by-side in the Center.

The agency designed the Center to be as flexible as



**Walter Patton, Technology and Interoperability Facility branch chief, talks with Patricia Katzer about configuration of Air Force Network Test Center equipment to replicate base networks.**



# Spiral Development teams provide innovations for warfighters

By Richard Guidicini  
Air Force Communications Agency

*The key to ensuring today's Air Force core competencies will meet the challenge of tomorrow is Innovation. Innovation is part of our heritage as airmen. The Air Force was born of a new technology—manned powered flight. Innovation will enable the Air Force to evolve from an air force to an air and space force on its path toward space.*

- GLOBAL ENGAGEMENT:

*A Vision for the 21st Century Air Force*

Technology and innovation are the hallmarks of Air Force culture. Those traits can be traced to the first general of the Air Force, Gen. Henry "Hap" Arnold, who established the Air Force Scientific Advisory Board (then known as the AAF Scientific Advisory Group) in 1944. Arnold's keen understanding of the link between technology, innovation and American air power remains an Air Force tradition today. This commitment to technological excellence has expanded in intervening years to include establishment of the Air Force Research Laboratories, the Air Force Battlelabs, the Air Force Communications Agency, the Electronic Systems Center,

and active participation in the Joint Expeditionary Force Experiment. The technological superiority that has become synonymous with the Air Force is a direct result of long-standing commitment to ingenuity.

The onset of the 21st century brings a new challenge to Air Force technological superiority. Technology is advancing faster than anyone could have imagined a generation ago. Emerging technologies can produce common household items before being incorporated into military systems. Some innovations can even be obsolete by the time they are fielded in military systems.

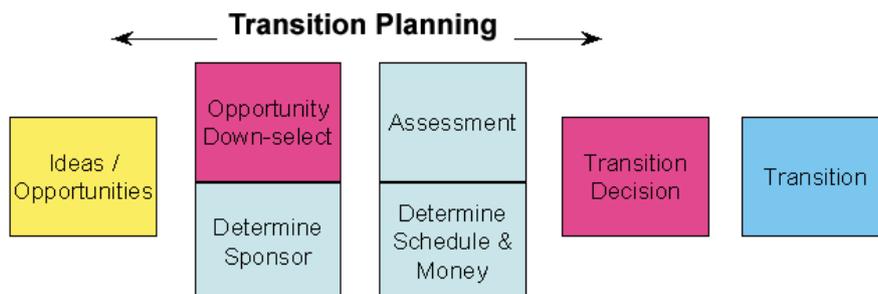
The problem of transitioning innovation into the field is now being met head-on with an Air Force initiative called the Command and Control & Intelligence, Surveillance and Reconnaissance Innovation Transition Process. Maj. Gen. Gerald F. Perryman Jr., AC2ISRC commander, has instigated this process to enable the Air Force to transition new technology to the field rapidly while minimizing the risks associated with emerging technologies. As depicted in the illustration, the new process streamlines innovation transition to the

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## Former Practice



## C2ISR Innovation Transition Process



## WIRELESS

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cycle costs may be significantly lower. These cost benefits are greatest in dynamic environments requiring frequent moves, additions and modifications, such as what is expected with an Air Force network. WLANs have a great deal of scalability. They can be configured in a variety of topologies to meet the specific needs of an application or installation. These configurations are also easily modified, as needs change. All of these benefits make WLAN an attractive option. This is especially the case in today's Air Force, where the emphasis is on the concept of the Expeditionary Air Force. We want to be light and lean when deployed, but with the same functionality as in-garrison. WLAN may be the answer to this, but there are some concerns.

Three main issues require consideration and resolution before

COTS WLAN systems can be readily fielded and operated anywhere in the global information grid. These issues pertain to the radio frequency spectrum, information assurance (security) and interoperability.

COTS WLAN products meet Federal Communications Commission frequency requirements and consequently can be freely used by the public and military in the continental United States. However, COTS WLAN products operate in frequency bands that must accept outside interference from other devices. Some sources of interference can severely degrade performance; however, in many instances this interference is insignificant. These frequency bands are also not authorized for military use in foreign nations. The frequency bands allocated for WLAN use in the United States are typically limited to private, non-military use while outside the U.S. Current COTS WLAN systems typically use three frequency bands.

These are unlicensed bands in the United States, but are largely designated for private use in foreign countries. COTS systems operating in frequency bands allocated for military use outside the United States are not available. Consequently, the Air Force will not be able to expeditiously deploy and operate COTS WLAN systems in most foreign nations because of host nation frequency restrictions.

AFCA is looking into modifying COTS wireless LAN products to operate in frequency bands that will be more suitable for military operation and include enhanced encryption to protect data at appropriate levels. Three federal-use frequency bands could be used in WLAN products that might resolve current frequency issues. Most COTS WLAN products could be easily modified to employ these frequencies because of

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## SPIRAL

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warfighter by performing several actions in parallel.

Modeled on the Spiral Development cycle that is becoming the standard for Air Force procurements, technological innovations developed by the Air Force will be assigned to specialized Spiral Development Integrated Process Teams responsible for bringing the new capabilities to warfighters. As codified in Air Force Instruction 63-123 (Evolutionary Acquisition for C2 Systems), there will be six IPTs, each assigned responsibility for sponsoring the fielding of distinct types of innovations.

Those pertaining to the Global Information Grid will be subdivided into four separate SDIPTs for Infrastructure, Agile Combat Support, Joint Aerospace Applications and Information Management. The infrastructure SDIPT will be chaired by the vice commander of the Air Force Communications Agency and will include the broad range of services and end-user appliances common to Air Force systems. The Agile Combat Support SDIPT, chaired by AC2ISRC/C2A, will sponsor Agile Combat Support software applications for Chaplain, Manpower, Contracting, Judge Advocate, Logistics, Plans, Services, Personnel, Maintenance, Supply, Finance, Civil Engineering, Munitions, Transportation, Security Forces, Weather and Medical Services. AC2ISRC/C2J will chair the Joint Aerospace Applications SDIPT, whose sponsorship will include innova-

tions in application software for Nuclear Forces, Missile Defense & Space Operations, Mobility, Special Operations, and Expeditionary Aerospace Operations. The Information Management SDIPT, headed by AC2ISRC/C2P, will sponsor innovations pertaining to information repositories and database exchange mechanisms.

The fifth SDIPT is responsible for fielding initiatives pertaining to Warrior Operations, such as Intelligence Groups, Exploitation Centers, C2 modeling and simulation capabilities, and training of C2 professionals. The Warrior Operations SDIPT will be chaired by AC2ISRC/C2C. The sixth SDIPT will deal with innovations related to Intelligence, Surveillance, and Reconnaissance Sensors and Platforms. This SDIPT will be chaired by AC2ISRC/C2R and will include sponsorship for airborne, overhead sensors and radars.

Future innovations will incorporate transition planning early enough to take full advantage of emerging technology opportunities. The C2ISR Innovation Transition Process seeks to apply lessons learned from previous experiences, ensure decision makers have the necessary information for the decision at hand, require early sponsor participation, and provide a cross-Air Force framework for nominating transition candidates with the goal of increasing technology transition effectiveness to satisfy warfighter needs. Detailed information on the C2ISR Innovation Transition Process is published in the C2ISR Innovation Transition Guide, which can be requested from Larry McKee, 757-825-8526, or LMcKee@mitre.org

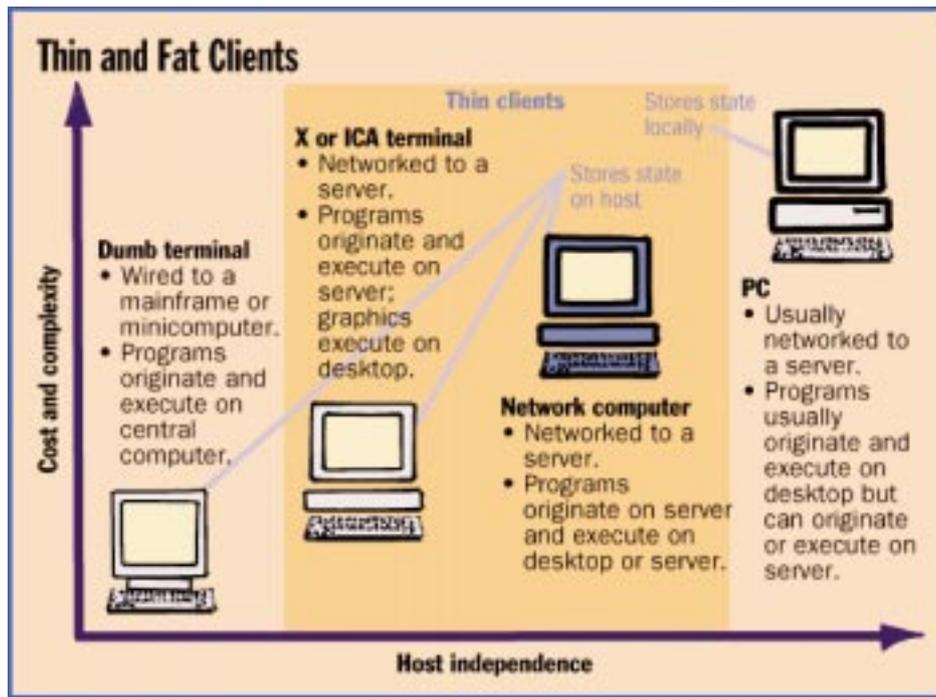


Figure A

# Thin Client offers advantages over PC

By 2nd Lt. Marc Moreland

83rd Communications Squadron, Langley AFB, Va.

One certainty in today's Air Force is rapidly changing technology. At the interface end of the global grid, one form of technology that is changing faster every day is the personal computer. Just as we upgrade our desktops with the "latest and greatest" PCs on the market, they seem already out of date. At \$2,500 - \$3,000 or more for a state-of-the-art PC, it is cost-prohibitive to keep up with these changes; however, there may be an alternative.

One piece of technology that has been around for years could save us from the expense and hassle of upgrading every year, keeping network maintenance to a minimum. "What technology would that be?" you ask. The answer is Thin Client. If you ever used a dumb-terminal connected to a mainframe, then you used Thin Client. From a technical aspect, Thin Client is a synonym for the Net PC or the network computer (NC)—personal computers for businesses that are designed for central management and central configuration. They have a minimum of hardware built into them, and are devoid of CD-ROM players, diskette drives, and expansion slots (and therefore lower in cost). The term Thin Client derives from the fact that small computers connected to networks are called "clients" of the local area network and other servers (see Figure A). Since the idea is to limit the capabilities of these computers to only essential applications, they will tend to be purchased and remain "thin" in terms of the client applica-

tions they include. In other words, a Thin Client terminal is nothing more than a motherboard and video card, a network connection, and keyboard/mouse interface all connected to a server through a network.

Now that we know what Thin Client is, let's address how it works. The Thin Client terminal is connected via a network to one or more client servers. Remember the old 486 or Zenith Z-100 that we had on our desks not too long ago? By using Thin Client technology, that same 486 or Zenith 100 could perform as well as any Pentium III on the market today. This is possible since all of the processing and storage is done on the server—only video and keyboard/mouse clicks are traveling the network ... no more waiting for huge files to download. It can also speed up your network access, because network slowness is mostly due to excessive traffic. Video/keyboard/mouse updates use much less bandwidth than having an actual file transverse the network bouncing from PC to server and vice versa ... perfect for either NIPRNET or SIPRNET applications.

There are other benefits to Thin Client in addition to faster computing. Suppose you are working at your desk and the power in your office goes out. Hopefully you were periodically saving your work and did not lose much. With Thin Client, the server with uninterruptible power supply protection would maintain your login session even if the client terminal itself were without

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power. Once the power returned, the session between the client and the server would resume without any unsaved work missing. Also, by having additional servers mirrored to the client server or servers clustering, the down time is reduced in cases of crashed servers. Add network storage devices that are accessible to everyone through any of your servers, and you have a streamlined, fault tolerant networking solution.

The Thin Client's most significant advantage to military networks is security. For example, when the Air Force Computer Emergency Response Team releases new information vulnerability advisories, computer security personnel scramble to implement them on hundreds of individual PCs. This is where Thin Client becomes a great time saver. Vulnerabilities can be patched on a few client servers rather than hundreds of desktops. This ensures easier compliance, since fewer machines need patches installed. Also, with no diskette or CD-ROM drives, only a few individuals have access to the network. So, Thin Clients can increase security substantially.

Also substantial are the savings. Thin Client technology is a tried and true alternative to the desktop PC. At a cost of \$500-\$600 per terminal, it is definitely more cost effective, even including the server cost. One might also consider taking advantage of investment in outdated PCs by turning them into Thin Clients. In conclusion, the client server and Thin Client package allows faster access, requires less manpower to maintain, and ultimately is more reliable than PCs. So when the time comes to upgrade your desktop PC, consider Thin Client.

# Software makes circuit tracking easier

By Staff Sgt. Beverly Isik  
Standard Systems Group  
Public Affairs

**MAXWELL AIR FORCE BASE - GUNTER ANNEX, Ala.** – Technical controllers throughout the Department of Defense are getting improved automated tools, thanks to a team at Standard Systems Group's Software Factory.

At more than 250 DOD sites around the world, technical controllers use the Facility Circuit Information Tracking system to track communications systems such as telephone and digital switches, wide and local area networks, satellites, radio systems and base cables.

The technical controller tracks a lot of information: circuit and equipment inventory, quality control records, the status of circuit and equipment outages, who performed quality testing, and when, and what outages must be reported up the chain, explained FACIT project manager 1st Lt. Luke Bentley.

"FACIT provides the tools to do all of this," he said.

On the battlefield, FACIT plays a vital role in command and control of communications, assisting system controllers in engineering the communications infrastructure prior to deployment, and providing essential data necessary to effectively manage communications systems while deployed, according to Staff Sgt. Paula Flynn, a tech control functional analyst who has worked closely with programmers in SSG for nearly three years.

"Right now the system is used by all of the military to include Navy ships, submarines, the White House and the Pentagon," she said.

As part of a three-phase development plan, SSG released Version 3.0 in November 1999 and expects worldwide implementation of 3.1 in October.

Version 3.0 got more people using the same software, database and application, according to FACIT technical lead Tech. Sgt. Ken Smith.

Tracking wasn't always so easy. "I remember when I came in the Air Force several years ago, we had thousands of pieces of paper with typewritten information and lots of pen and ink changes," Flynn said. "People moved, phone numbers changed and communications systems changed with emerging technology. It was a mess."

FACIT relates a large amount of information in a small amount of space, she explained. "And with the database, it's easy to go in and make changes."

The upcoming release focuses on the automated transfer of data between locations and will allow the establishment of a global, consolidated database at the Defense Information Systems Agency headquarters.

Customers will also see some of their requests fulfilled on the new release. "In addition to replication, Version 3.1 will incorporate several customer-requested enhancements," Smith said. "For example, a tool bar modification to allow frequently used processes to be quickly accessed, increased sizes for some data fields, and the implementation of a user-definable ad hoc report generation process."

With worldwide implementation of phase three completed by the end of fiscal 2001, FACIT will connect about 90 percent of all DOD tech control facilities in the world, according to Smith.

In early 1997, FACIT was the first system in the Department of Defense to receive Year 2000 certification.

For more information, contact the FACIT program manager, Richard Hayner, at DSN 596-1458.

# New comm system means 'portable' C2 for nuclear forces

By Navy Journalist 1st Class  
Michael J. Meridith  
*United States Strategic Command*

OFFUTT AIR FORCE BASE, Neb. (AFPN) – The recent employment of new communications technology has expanded the ability of U.S. Strategic Command to assure command and control of the nation's nuclear forces.

The Single Channel Anti-jam Man Portable terminal is a secure, easily transportable communications system that allows strategic forces to communicate, even after a nuclear conflict has begun. A fixed-site configuration, specifically designed for USSTRATCOM, went operational Jan. 31 at 15 bomber, reconnaissance and tanker bases. Another 14 fixed-site terminals are slated for additional air refueling wings later this year. The transportable SCAMP will also be sent to strategic mobile teams this year.

Air Force Lt. Col. Kirk H. Pridell, who helped shape the system's strategic requirements, said SCAMP has all but revolutionized command and control of strategic forces. "SCAMP provides the final linkage between our command centers, the shooters, and mobile support teams," said Pridell. "This is the first time these command posts have had a truly survivable communications capability."

According to Pridell, distributing the system to the strategic task forces was a collaborative effort bringing together technical experts from USSTRATCOM, the Electronic Systems Center, Air Combat Command, Air Mobility Command, the Army Procurement Office and Rockwell Collins.

The four-year effort did more than create an efficient communication system — the SCAMP's fixed-site configuration introduced cost savings exceeding \$40 million over its predecessor, the antiquated Ground Wave Emergency Network system. The fixed-site GWEN system was judged obsolete and shut down nearly two years ago.

"GWEN was becoming increasingly expensive to operate. SCAMP has given us newer technology, better capabilities and survivability. This is a significant accomplishment and a real success story."

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their modular architecture. Perhaps they can even be militarized or developed into a form of government-off-the-shelf WLAN system. Future versions of modified COTS WLAN products may include frequency agile transceivers that can work in multiple frequency bands via plug-in modules or software selection.

Another issue concerns the information assurance or security needs, which are unique to the military. Currently none of the COTS WLAN systems meet DOD encryption policy or standards. WLAN systems do have built-in security mechanisms, which, if implemented correctly and paired with other compensatory measures, may provide adequate protection for sensitive but unclassified information dependent on a level of acceptable risk. Current encryption policy requires that non-compliant encryption mechanisms only be used if reviewed and a waiver is granted (limited to a case-by-case basis). AFCA is looking at an alternative that would overlay policy compliant encryption solutions on the WLAN. To adequately meet mission needs, these security requirements must be met prior to implementing a WLAN system to ensure they do not compromise security or violate governing security policy to protect information.

Yet another issue is interoperability. Many Air Force organizations are already implementing WLAN systems. While standards and specifications exist for WLANs (e.g., the IEEE

802.11 standard and the Wireless LAN Interoperability Forum's Open Air specification) there is no guarantee of interoperability or compatibility with all products, particularly across vendor product lines. AFCA is working to find WLAN systems for inclusion in the JTA-AF. Inclusion of WLAN systems in the JTA-AF would address the issues of interoperability by recommending solutions that would be interoperable and compatible.

AFCA will continue to work with vendors of COTS WLAN products to address the unique requirements necessary to meet military needs. AFCA will evaluate the ease and cost of modifying COTS WLAN products to meet military requirements. Once the overall military unique requirements have been thoroughly resolved, AFCA will inject WLAN systems into the JTA-AF and assist users in making decisions on what type of systems meet their needs.

Wireless communications and WLANs in particular will play an increasingly important role in in-garrison and deployed military environments. Wireless systems may replace many wired networks and communications systems and meet Air Force deployment needs for lighter and leaner systems. WLAN technology can also enhance in-garrison mission effectiveness globally. The stated issues prevent the Air Force from making expeditious and full use of this valuable technology in the global information grid. AFCA will play a lead role in resolving this dilemma for the Air Force.

# Battlelabs revolutionize comm thinking

By Richard Guidicini  
*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, ILL.** — The Air Force's Battlelabs put creative thinkers in an environment where they can experiment with new operational and logistical concepts and measure how well those ideas contribute to the Air Force mission.

The six Battlelabs are Information Warfare, Unmanned Aerial Vehicle, Space, Force Protection, Air Expeditionary Force, and Command and Control.

Since they became operational July 1, 1997, the Battlelabs have rapidly and economically proven new concepts by excelling in field ingenuity and out-of-the-box thinking. Small and highly focused by design, each Air Force Battlelab consists of 15 to 25 officers and enlisted personnel. Though few in number, these men and women of the Air Force Battlelabs are advancing Air Force core competencies by identifying innovative operational and logistical concepts to improve how the Air Force plans, organizes, trains, equips, executes and commands.

Communications is a principal focus in many Battlelab initiatives. To measure the potential worth of new concepts, the Battlelabs draw upon the capabilities and expertise of established Air Force organizations such as the Air Force Communications Agency.

Communications initiatives are evaluated using a variety of techniques ranging from modeling and simulation to actual employment of exploratory capabilities in operational environments. These initiatives provide the Air Force with opportunities to leverage emerging commercial communications developments and to test the viability of new innovations to improve deployability, reliability and effectiveness of deployed communications.

Four recent Battlelab communications initiatives are the Space Battlelab's Commercial Application for Combat Effectiveness and the Command and Control Battlelab's Collaborative Tools, High Frequency Data Messaging and Hardware Footprint Reduction initiatives.

The CACE initiative investigated the military use of existing commercial mobile satellite systems. CACE was evaluated on a global scale including testing of Iridium handsets onsite in Bosnia. Only slightly larger than cellular telephones, the handsets provide worldwide mobile service. The CACE demonstration proved that scarce Military Satellite Communication can effectively be augmented with commercial technology. The CT, HFDM and HFR initiatives also showed tremendous potential for improving Air Force communications effectiveness. CT is software applications that provide the capability of integrating interactive voice,

video, and document sharing into the Air Force information infrastructure to improve data transfer for more efficient use of scarce bandwidth resources. AFCA established a test bed for further study on how to integrate CT into Air Force networks. The recently completed HFDM initiative demonstrated how new computer control technology, modems and internet digital communications protocols can enhance high frequency data messaging (HF e-mail). This technology is now slated for implementation and operational testing in support of USCINCPAC Reconnaissance Command and Control. The HFR initiative dramatically diminishes the volume and weight of equipment that has to be carried to support deployed operations. The HFR initiative leverages commercially available equipment items, such as wireless networks, flat panel displays and small laptop computers.

Current Battlelab communications initiatives are showing great promise for inclusion in the Air Force communications infrastructure. The Command and Control Battlelab is evaluating the potential speech recognition software for use in the Joint Air Operations Center environment. This technology could expedite reaction time by allowing an operator to say to his computer, "Provide list of all F-15 units," rather than click through layers of menu items.

A Command and Control Battlelab initiative which is scheduled for Test Flight demonstration in May 2000 will implement a UHF/VHF multi-channel communications relay package for roll-on/roll-off operational use on selected KC-135 aircraft. Dubbed the Airborne Communications Relay, the initiative will extend the range of Command and Control communications links between deployed Air Operations Centers and combat aircraft.

The Information Warfare Battlelab is investigating the OPSEC impact of releasing data via open sources such as the Internet. This timely initiative uses software filters to search for related information that could be compromising when combined. This initiative is urgently needed now that so much diverse information is readily available through the World Wide Web and other electronic media. A new planned initiative by the Air Expeditionary Force Battlelab will identify problems in accessing information from forward-deployed locations. This initiative, the Dedicated Expeditionary Data Structure Analysis, will address bandwidth and latency issues affecting information throughput.

This is only a sampling of the Battlelab initiatives that are pointing the way ahead for continued Air Force communications superiority. By leveraging the ingenuity of the Air Force's warfighters and taking full advantage of the Air Force's technology resources and expertise, Battlelabs are proving to be one of the best success stories of the 21st century Air Force.

# AFCA leads JEFX 2000 network characterization

By Frank Lee

*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** — Air Combat Command's director of Communications and Information has asked the Air Force Communications Agency to perform overall management of network characterization for Joint Expeditionary Force Experiment 2000.

What is network characterization? One could think of it as being an overall assessment of the network, but it entails more. Besides taking bandwidth measurements and looking at how initiatives affect the network, there are numerous other areas to consider.

JEFX 2000 is the Air Force's third large-scale experiment, building on results of EFX '98 and JEFX '99. It is paving the way to develop and field an Expeditionary Aerospace Force. The main focus for this year's experiment will be Agile Combat Support. Continued exploration will also occur with integrated C2, Air Expeditionary Operations, Information Operations, Common Operational Picture, and medical readiness.

A key enabler for a successful JEFX is a robust communications architecture/network to support the experiment. HQ ACC/SC is committed to the challenge of leading the design and implementing the communications architecture for JEFX 2000. In addition to building a capable network it also affords the communications community opportunities to experiment with new network technologies and innovative ways to implement them. Lessons learned from prior years are also being incorporated into the JEFX 2000 design.

As the network for JEFX 2000 evolves, it becomes increasingly complex. For example, in the past two years, a single reachback facility gave tactical nodes access to the CONUS strategic sites. In an effort to increase survivability and robustness of the JEFX 2000 network, through contingency planning, an additional reachback node will be used. This year, a DISA Standardized Tactical Entry Point will be implemented in parallel with the Langley AFB, Va., reachback facility.

Another enhancement to the architecture for JEFX 2000 will be the use of switched Ethernet instead of the standard Fiber Distributed Data Interface rings. Switched Ethernet will be on the floor of the deployed section of the Air Operations Center and will allow easier insight into traffic patterns and network utilization.

Also under experimentation for JEFX 2000 will be Border Gate Protocol-unique routing techniques, increased use of multicasting, and equipment that allows for better throughput on tactical satellite links. This should enhance management of the available resources

and ultimately improve quality of service for the users.

To accomplish the network characterization, data will be collected through probes located at key points in the network. Critical locations will be the Langley and DISA STEP site reachback facilities. The data will provide a wealth of information related to the bandwidth and traffic patterns of the information traversing the network from tactical to strategic sites. Not only will we be concerned with the amount of information, but where it originates and terminates, the busiest times of day, types of latency the information experiences, and how well the network performs in relaying the data.

Probes will be located throughout the network to evaluate Local Area Networks and Wide Area Network links, with emphasis on tactical sites. Data collected from these probes will be analyzed to determine how well the overall network performed. Data collected on information flow will be time stamped to determine peak use periods during the operational day. Identifying the best times for performing non-time sensitive data transfers (database replication procedures, for example); will help optimize network resources. Relating information flow to battle rhythm allows the comm community to make recommendations to system administrators on scheduling and prioritization.

The network characterization team will assess tools used to analyze network data to determine if they can enhance network management capabilities. Although the team will place the probes, collection tools and sniffers on the network, the intent is to be transparent to network operations. It will not be part of the Network Control Center, but many times will be able to diagnose potential problems on the network and assist the NCC staff with troubleshooting. Recommendations will be made on effects of these tools and probes and the best ones to use.

The Communications Integrated Product Team and AFCA are in planning phases of the tasking. Primary members of the network characterization team will be ACC, AFCA and ESC. Much work is needed to get ready for JEFX 2000 execution in September. We will be addressing overall network architecture, defining locations of probes, and assessing manpower and funding. A final report will analyze the collected data and make recommendations.

The ultimate goal is to help the communications community make decisions for designing networks of the future. The goal is to be more robust, increasing management capabilities and quality of service for users. Look for the JEFX 2000 Network Characterization Report to be completed in November 2000.

# Agency provides quick response for Bosnia peacekeepers

By Stephen Grant  
*Air Force Communications Agency*

**SCOTT AIR FORCE BASE, Ill.** – The Air Force Communications Agency demonstrated its ability to respond quickly to customer requirements when technicians from its Technology and Interoperability Facility fabricated 10 Global Broadcast Service video equipment suites to support current operations in the European theater. GBS video suites are used to receive Joint Broadcast Service video broadcasts.

The request for the equipment suites came last spring from USAFE in anticipation of an increase in the number of JBS video channels used to support the Bosnia-Herzegovina peacekeeping effort. JBS is used to broadcast unmanned aerial vehicle surveillance video throughout the European theater.

GBS is a DOD program using commercial direct broadcast satellite technology. It satisfies the warfighter's critical communications need for high bandwidth broadcast capabilities, and can quickly send large data files and quality full-motion video to forward-deployed forces. The JBS, operated by the Bosnia Command and Control Augmentation program office, is part of the proof-of-concept for GBS.

USAFE requested the new suites be capable of simultaneously receiving and decoding up to five video streams. The original GBS/JBS equipment fielded in 1996 contains a single satellite receiver/decoder and processes one video signal at a time.

Technical design was relatively simple and straightforward. It packaged multiple receiver/decoders, sharing common monitoring equipment and a single antenna, into one transit case. The real challenge was to provide the equipment in a short time and ensure it was compatible with existing equipment.

The goal was to field the new equipment in less than 10 weeks and assure it could be supported by processes already in place for the existing equipment. To accomplish this, it was necessary to duplicate much of the equipment produced and fielded four years earlier.

The heart of the current GBS/JBS suite is a modified commercial DBS set top receiver/decoder. With the exception of some government unique computer program code stored on a memory chip in the unit, it is the same product that was sold commercially in the mid-1990s to receive commercial DirecTV programming.

A problem was finding more than 50 discontinued receivers that could be modified and used for the project. An extensive search led to a small business in North Carolina that could supply the necessary reconditioned receiver/decoders within the required time frame.

A formidable challenge was getting the equipment



**Dan Casey, engineer, shows a circuit board he designed that is being fabricated in the Technology and Interoperability Facility for use in the Joint Broadcast Service suites now operating in Europe.**

to the field quickly, given the engineering time and the amount of equipment that needed to be procured, assembled, and tested. This task drew upon the experience and dedication of AFCA's engineers and technicians, coordination with the BC2A program office, and a great deal of support from the 375th Contracting Squadron at Scott AFB.

About eight weeks after receiving USAFE's request, AFCA shipped 10 fully assembled and tested receiver suites to Europe. In addition to providing the equipment, AFCA sent a three-person team to train users to help set up the receivers at Aviano Air Base, Italy, and Sembach AB, Germany.

Responding quickly to satisfy customer requirements is not new to the people who work in AFCA's Technology and Interoperability Facility. The TIF has supported many projects, including the initial deployment of GBS suites in 1996. At that time TIF personnel worked directly with the National Reconnaissance Office to help design and fabricate the original receiver suites that were deployed to Europe to provide operational support for the United Nations peacekeeping effort in Bosnia-Herzegovina.

# AIM circuits enhance Information Assurance with new encryption technology

By Capt. John A. Ortiz  
83rd Communications Squadron  
Langley AFB, Va.

Technology is growing at an exponential pace, especially in the area of communications and information. Many estimates say it is doubling in capability every 18 months. Components on the leading edge just a few years ago are now used in children's toys. One area of tremendous growth is development of integrated circuits. Another (in the unclassified world) is the field of cryptography. Together these two technologies provide a powerful and versatile tool that will be a cornerstone of Information Assurance and Information Dominance into the 21st century.

The multitude of cryptographic communications equipment is stovepiped, expensive and often classified. There are completely separate systems for voice, data, satellite and radio applications. Some devices are compatible with others, but not all. Key management is difficult, expensive and cumbersome.

The solution is here today. The Advanced INFOSEC Machine (Figure 1) developed by Motorola, is a high-speed, low-power, fully programmable, interoperable, scaleable and *unclassified* integrated circuit capable of using any cryptographic algorithm.

AIM is the largest integrated circuit dedicated to cryptographic functions. It was developed in close conjunction with the National Security Agency from the outset, ensuring it would meet the stringent Type I cryptographic security requirements. Recently, it received final approval from the NSA. The chip is manufactured using Complimentary Metal-Oxide Semiconductor technology, used for general purpose, high-speed and low-power applications.

The chip by itself is unclassified, so it can be manufactured at any state-of-the-art commercial facility without any special security precautions. (Often times, classified facilities are two or more years behind in production capability – a generation in this high-tech arena.) The ability to use normal, commercial facilities significantly reduces manufacturing costs and increases efficiency.

Low power is another advantage of AIM. With CMOS technology the amount of power consumed is directly related to clocking speed. When the chip is not being clocked, power consumption is almost immeasurable. At full speed power consumption may be a few watts. At slow speeds, sufficient for mobile radio communications, it may be less than 4 milliwatts.

AIM is a complete cryptographic system on a single chip with separate plaintext and ciphertext interface processors, two fully-programmable cryptographic processors, a key management processor, a random number generator, a time of day and linear sequence generator, on-chip shared memory, and a built in Secure Operating System.

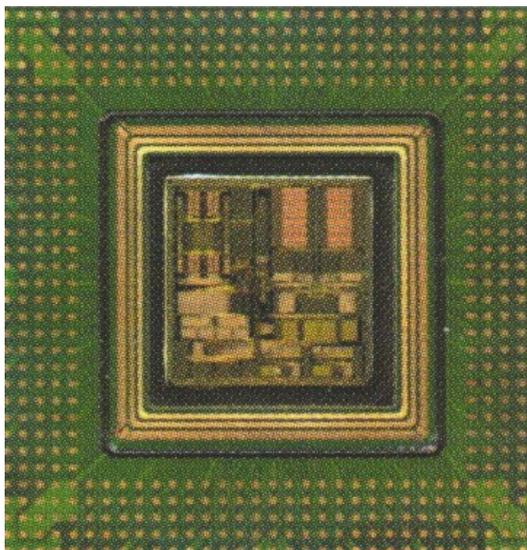
SOS incorporates all the checks, balances and redundancies required by NSA to run Type I encryption algorithms. The operating system software and the encryption algorithms are stored off chip. When AIM is powered up, it authenticates its software. If it is not authenticated, the AIM shuts down. tamper alarms can sense power variations and will cause AIM to clear itself and shut down.

AIM can run up to eight different algorithms with 1,024 key streams simultaneously. It can switch between algorithms in a single clock cycle, allowing it to interoperate with multiple cryp-

tographic devices, as well as do Multi-Level Security applications. For example, a KG-84, KY-58 and a KG-194 could all be interfaced in a single system. This not only makes it compatible with current cryptographic equipment in the field, but also allows the seamless integration of coalition and/or future systems.

And finally, the chip is scaleable. When a larger throughput is required to cascade several chips – they are designed with this in mind. Each chip has both a serial port and a 32 bit parallel port allowing maximum flexibility and expandability. Cascade 4 chips together and you have 128 bits processed each cycle.

AIM has a variety of useful applications. Since it is so flexible and versatile, it is difficult to imagine a situation requiring encryption that could *not* take advantage of AIM's capabilities. These applications include



Advanced INFOSEC Machine circuit

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# Applied C4I: Warfighter's weapon system for the 21st century

By Maj. Scott Rutherford  
and Steve Schlembach  
*Air Force Command and Control  
Training and Innovation Group,  
Hurlburt Field, Fla.*

Sunlight breaks over the Choctawhatchee Bay in northwest Florida, illuminating the angled brown metal roof of the Aerospace Operations Center with a burnt orange glow. Uniformed people in tan desert camouflage, green and blue flightsuits, and traditional woodland battle dress move with silent purpose to and from this facility. Inside, the overhead fluorescent lighting provides only slightly more brightness than the radiation emanating from banks of computer monitors. Displays filled with a variety of textual and graphical battlefield information give these seasoned warriors the facts they will need to successfully plan and execute an air war against enemy forces an ocean away.

Located on the Air Force Command and Control Training and Innovation Group's campus at Hurlburt Field, Fla., these command and control warriors have been using this unique facility for the last 72 hours to direct military action against a simulated enemy; an enemy that exists only in the virtual world created by AFC2TIG's 505th Exercise Control Squadron. Another mission accomplished.

With Blue Flag 00-2 not yet a faint memory in the minds of AFC2TIG personnel, another request for the group's weapon system is fragged. A short notice tasking to support a Theater Battle Management Core System test at a site in Colorado is answered with the 'deployment' of the AFC2TIG Command, Control, Communications, Computers and Intelligence weapon system in less than one week. The 505th Exercise Control Squadron generates a scenario, while members of the 605th Test Squadron establish the event. By using SIPRNET via DISA's DISN-LES, electrons flow and the mission is accomplished. In less than a week, systems were identified, a network architecture created, data paths coordinated and established, network protocols determined, IP addresses disseminated and advertised, and then accreditation packages created and signed. Another mission, another success.

While this goes on, other teams of professionals are preparing the AFC2TIG C4I weapon system to support BF 00-3 with 8th Air Force that will take place at Barksdale AFB, La. This time, dedicated T-1 wirelines and a satellite communications shot will feed their C2 environment with the necessary information for them



*Photo by Master Sgt. Kevin Hoeth, 16th SOW/PA*

**Ninth Air Force Command and Control personnel and 609th ACOMS members use the Air Operations Center to direct a simulated air war at a BLUE FLAG exercise at Hurlburt Field, Fla.**

to conduct their C2 exercise. Additionally, a communications team with a Distributed Wargaming System kit is dispatched to Barksdale to establish the interface between the C2 architecture of 8th AF systems and that of the virtual environment of the AFC2TIG and other model and simulation systems across the U.S. military.

From tests to exercises to experiments and demonstrations ... how is it possible to support event after event? The task is given to the professional men and women of the 505th Systems Squadron. The squadron's mission at the AFC2TIG is to plan, set up, operate, maintain, and finally reconstitute the communications infrastructure, the AOC, C2 and M&S systems in support of the C2 mission. Their task is to keep these systems "combat" ready much like the mechanics and crew chiefs do with F-15s on a flight line — ready to respond in minimum time to taskings in direct support of C2 warfighters worldwide.

The 505th Systems Squadron didn't start out with this mission. Its heritage comes from the Ground Tactical Air Control System world. Reorganized in 1999, the squadron now not only operates GTACS equipment, but provides communications and computer support operations for the AFC2TIG and accomplishes the mission via three functional flights and the C3 Operations Center.

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## WEAPON

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The plans and programs flight takes care of event planning, infrastructure engineering and configuration control, resource allocation and management, and system accreditation. The operations flight operates and maintains the AOC, the AFC2TIG ATM backbone, more than nine networks and their associated systems/services (more than 40 systems), the professional control force operations center, and the M&S systems.

The maintenance flight assumes responsibility for the myriad of tactical equipment, both organic and transitory, that supports the AFC2TIG. Finally, the C3OC acts just like a wing command post on a base and ensures all missions are properly supported by conducting daily operations meetings and publishing (via Remedy) the Communications Tasking Order, much like the Air Tasking Order generated by an AOC. Within the C3OC, information is displayed on large wall-mounted screens showing circuit and system status for each event.

The ability to quickly respond to taskings is accomplished by a concept called “Distributed Persistent Infrastructure,” or DPI. Its goal: move electrons, not people and equipment. The entire campus of the AFC2TIG is designed to support C2 events and is connected with several sites across the U.S.

As Rome once was the center of the known world, the AFC2TIG is the center of the virtual world for the Air Force. On the campus of the AFC2TIG, systems from across the U.S. military are confederated together via high-tech networks, creating an environment so real that C2 warriors operating within an AOC can't tell the difference.

The AFC2TIG infrastructure and associated systems are unique. This weapon system is designed with one intent in mind – support the C2 warrior. Just as fighter aircraft can't fly without all of its parts, neither can the AFC2TIG C4I weapon system perform its mission without all of its sub-systems. Whether it's providing information to our customers via web servers on NIPRNET, SIPRNET, or JWICS, access to numerous external networks (e.g., SIPRNET, NIPRNET, JWICS, DISN-LES, ACCE) connecting locations together, providing additional phones via the ATM-based phone system, temporarily assigning e-mail accounts from the AFC2TIG exchange servers to TDY personnel, or supporting the day-to-day requirements of AFC2TIG personnel, this weapon system is ready and can handle it. This C4I weapon system is a system of systems—a synergy that isn't found anywhere else.

The men and women of the 505th Systems Squadron stand by awaiting orders to “deploy” the AFC2TIG's C4I weapon system in support of America's C2 warriors.

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## AIM

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the F-22 Raptor, portable radios, multi-level network security, the Predator, and voice and data communications.

AIM is already being incorporated into the F-22 to handle Communications Security. This is a critical system since, without COMSEC, the F-22 will not fly. It is ideal since the COMSEC keys can be loaded using the Electronic Key Management System, which simplifies the entire key management process.

The portable radio is an excellent candidate for the AIM-R, when power consumption is a premium. The soldier in the field can have portable, secure communications. Additionally, his/her identity can be authenticated irrefutably. In the face of imminent capture, the AIM algorithms can be cleared. The opponent will not be able to obtain the algorithm or the keys, or even make use of the chip.

Since AIM can run a variety of

algorithms/keys simultaneously, it is ideally suited for Multi-Level Security applications. Top Secret, Secret, and coalition data can share a network with the assurance that only authorized personnel will have access to data.

AIM can be incorporated into Predator and other UAV platforms when risk of enemy capture is a primary concern. Currently, Predator sends its information over an unencrypted channel. AIM greatly mitigates the risk of the compromise of encryption technology. If a UAV descends below a certain pre-programmed altitude, the “zeroize” feature is invoked, and the chip becomes just another piece of silicon (assuming it survives situations such as a crash).

Using AIM, all DOD *unclassified* communications can be encrypted. To the user, it is business as usual, pick up the phone, dial a number and talk. Behind the scenes, AIM authenticates the caller as well as the person called, and encrypts the entire conversation.

Physical security of the telephone is not a concern, since the AIM is tamper proof. Remove the chip or disturb the power and any classified algorithms are gone.

The Advanced INFOSEC Machine is a revolutionary step for encryption technology. It is a high-speed, low-power encryption machine that is completely flexible, scaleable, and suited to a host of applications. It is ideal for many applications considered too risky today, and it is geared toward allowing future interoperability.

Information Dominance is one of the Air Force's core competencies. As the reliance on communications networks continues to increase, Information Assurance becomes ever more critical. The AIM chip, all by itself, will not solve all of these problems, but it goes a long way toward reaching the goal of secure, authenticated communications – getting the right information to the right people, at the right time.

# Voice-activated program increases speed, accuracy of mail delivery

By Chris Zdrakas  
78th Air Base Wing  
Public Affairs

**ROBINS AIR FORCE BASE, Ga. (AFP)** — Most of us in fits of frustration will talk to an inanimate object, but few of us get answered. One exception is the postal team that sorts Robins Air Force Base mail.

At the Robins Base Information Transfer Center, the place most of us call the “mailroom,” mail handlers are talking to a machine and getting

answers — accurate ones 98 percent of the time.

The machine is known as “Sort-It,” the newest kid on the postal block and the first in the Air Force. On voice command, Sort-It will tell mail handlers the route and bin in which to place a piece of mail. It cuts out much of the research that formerly went into determining routes and bins for pieces of mail that had incomplete addresses or that were addressed to people new to the base.

It also reduces from three months to 30 minutes the amount of time it takes to train a new mail handler. Before Sort-It’s arrival, handlers were required to be trained in routes, symbols and the location of the 116 stops made daily.

Ron Hoyt, chief of the Administrative Communications Branch, said the bottom line is that the handlers can spend more time delivering and less time sorting mail. Speeding up sorting gives the mailroom the ability to add more stops to established routes, which makes customers happy because they have faster, easier access to their mail.

Hoyt said the additional stops are planned for large organizations housed in multiple buildings.

Under the former sorting system, when improperly addressed mail or mail to newcomers came in, handlers were required to do time-consuming research.

They would begin by checking the global addresses on the base electronic mail system, and if that didn’t provide an answer, they would call the base locator.

Now mail handlers just call out a name — a person or street. Sort-It repeats the name and a computer-



Photo by Sue Sapp

**Verna Wiggs, Robins Air Force Base Information Transfer Center, uses the voice-recognition program to sort mail more quickly and accurately.**

generated voice directs the handler to the proper color-coded route and bin in which the mail belongs. Handlers are equipped with headsets, wireless microphones and battery packs when working at the sorting bins. Since there are no wires, handlers can walk freely back and forth in front of the bins.

“This works with 98 percent accuracy, even if you have a cold,” Hoyt said, “because the machine recognizes voice patterns.”

On the market for less than a year, the system underwent successful testing in several major industries. Hoyt said he saw opportunity open up for Robins mail when he witnessed a successful demonstration of the equipment.

Sort-It has already given the mailroom the ability to deliver to nine 116th Bomb Wing locations, instead of the former one.

The mailroom handles a huge volume, about 50,000 pounds — 25 tons — per month of combined incoming and outgoing mail.

The mailroom has taken one other step in new technology, this one a mail manifesting system purchased as part of the base Y2K plan. A system known as “Ascent” allows postal workers to shop for the most economical method of dispatch and is used on all mail with the exception of first class letters.

Because of on-line confirmation of delivery with the U.S. Postal Service, the average cost to track delivery of mail, vital in technical order distribution, has gone from a minimum of \$3 to a minimum of \$1.40 using Ascent.

The system weighs packages and determines the shipment method that is most economical. For pieces such as technical data and priority mail dispatched through the post office, the system can track mail delivery times.

On-line confirmation of delivery is another first for Robins and possibly the Air Force, Hoyt said. Robins is the only customer in the U.S. Postal Service South Georgia District currently using this technology.

# Smart Card debuts at Eskan Village

By Senior Airman Jeffrey Bishop  
*320th Air Expeditionary Group Public Affairs*

**ESKAN VILLAGE, Saudi Arabia (AFP)** – More than 1,300 people deployed here were a little smarter when they received their Defense Department Smart Cards.

What makes the card smart is an eight kilobyte embedded computer chip, which gives the card a range of capabilities, such as storing medical and personnel records and controlling access to restricted areas.

Packed with potential, the card is making a modest, although important, debut here. Use of the card at the dining hall should improve head-count accuracy over the current paper sign-in process, said Lt. Col. George Hargrove, 320th Air Expeditionary Group deputy commander. Knowing the correct number of diners is key to fair and accurate billing.

Use of the card will also make the sign-in process more efficient, as diners will simply insert their cards into a reader for a few seconds. Now, diners must sign their names, units and the last four digits of their social security numbers.

From April 2 to May 5, diners were required to do both — sign in and use their cards. The process is called dual validation, and ensures the system is running properly and giving an accurate count.

“It will also give diners a chance to try the card reading system,” said Marine Corps Capt. Russell Graham, U.S. Central Command Logistics and Security Assistance Directorate. Graham is overseeing the installation of the system here.

To get the system going, the 320th Air Expeditionary Group Personnel Support for Contingency Operations, or PERSCO, unit and the Army Central Command-Saudi Arabia personnel office are working an aggressive timeline, creating and issuing more than 1,300 cards in about two weeks. PERSCO started issuing cards March 17, and had issued almost 400 cards in the first four days.

“With both stations running, we can issue from 50 to 60 cards an hour,” said Senior Airman Chad Newsome, PERSCO manning specialist, here from Minot Air Force Base, N.D.

Other capabilities of the card — controlling access to restricted areas, manifesting and tracking inventories, and deployment readiness and processing — mean



*Photo by Senior Airman Jeffrey Bishop*

## The new Defense Department Smart Card.

the card could be used for more than just food service accountability.

“Since the card will be issued DOD-wide shortly, we intend to capitalize on as many of the card’s capabilities in the USCENTCOM area of responsibility as we can,” said Graham.

Eskan Village is the first location in Southwest Asia to use the Smart Cards. Hargrove said lessons learned here will be used when the cards are issued at Prince Sultan Air Base, Saudi Arabia, in the future.

“We are not testing the program, we are implementing it. But what we learn will help our neighbors down the road get their program going,” he said.

The card, the same size as a credit card, has a picture of the member on it, as well as service, duty status and date of birth. DOD intends to replace the current active and reserve-component military identification cards with their smarter cousin.

Graham said the chip in the card has a security application that encrypts and compresses all stored data. Access to that data requires a four-digit personal identification number, which the member selects when the card is issued. He said defense officials chose the Smart Card system because of the intense security built into it.

Former Deputy Defense Secretary John Hamre authorized the department to implement the Smart Card program, which military officials have been working on in one form or another for more than a decade, according to an American Forces Press Service story from October 1999. The decision follows a series of tests done by the services over the past two years, primarily in U.S. Pacific Command, according to Graham.

Congress designated the Navy, under the direction of DOD’s chief information officer, as the lead agency for the \$145 million program, which is to be implemented from fiscal 2000 to fiscal 2005. The cost of implementing the program in fiscal 2000 will be about \$13 million, according to the 1999 article.

# SECAF dispels outsourcing, conversion rumors

By Senior Airman A.J. Bosker  
*Headquarters United States Air Force*

WASHINGTON - Seeking to dispel common misconceptions about ongoing A-76 competitive sourcing studies, the Air Force's top civilian leader recently reiterated the primary goals of the studies—saving money but, more importantly, placing people into positions where the Air Force needs them most in order to accomplish the mission.

Secretary of the Air Force F. Whitten Peters said the service is not conducting A-76 studies to reduce the number of active duty troops — repeating a promise made by himself and Air Force Chief of Staff Gen. Michael E. Ryan.

According to the secretary, the A-76 process evaluates whether government functions can be performed more efficiently by the private sector vs. the current military and civilian workforce.

"Every time we conduct A-76 competitions we figure out better ways to do business," he said. "Whether the government or private sector is chosen to provide the service, there is always a reduction in cost averaging between 30 to 40 percent."

"The A-76 process is often misunderstood by troops in the field when referred to as 'contracting out' or 'outsourcing,' implying we automatically lose something in the process, whether jobs or capability," said Brig. Gen. Michael C. McMahan, director of manpower and organization, Headquarters Air Force. In reality, the opposite is true. "The Air Force and its people benefit from A-76 competitions," he said. "We gain an increase in capability — by freeing up military manpower from non-wartime requirements and migrating them to functions directly supporting the combat mission — and save money to reinvest into quality of life programs — benefiting all Air Force members."

"However, some of our active duty airmen incorrectly equate reengineering and competitive sourcing with losing their jobs," Secretary Peters said. "I want to dispel that rumor. I want them to know the Air Force needs them — they are our most valuable resource."

The Air Force will not ask military members freed up through the A-76 process to resign from the Air Force. They will first be offered reassignment to another location. In situations where there is excess manning in a career field, they will have the opportunity to retrain into another career field. "We don't want to lose the people who want to stay with the Air Force," he said.

"The people affected by the conversions are our primary concern," General McMahan emphasized. "We understand people are worried about their future and there may be some anxiety. Change can be uncomfortable but it is also an opportunity for the Air Force to become more agile militarily and more efficient economically."

"The ideal situation, for military members, is to move them to another position at the same installation or to another base that is undermanned in their same career field," the general said. "We have invested a tremendous amount in these professionals and they know how to fight 'the war,' and the Air Force wants to retain these highly trained and experienced people."

"The Air Force also takes care of government civilians affected by A-76," he said. "They will be offered placement assistance, at the same base if possible, or at another government location. They also have the right of first refusal — choosing to leave civil service and work for the contractor. Our civilians are a vital part of the total force and every effort will be made to keep them on the Air Force team."

"We are being scrupulously fair, and making every effort to assist people whose jobs shift to the private sector," Secretary Peters said.

People at locations receiving services from an organization that was converted to contract can expect no change in the level of customer service, according to Robert E. Corsi Jr., deputy director for manpower and organization. "There should be no loss in capability. The A-76 study is not about doing 'less with less.' It is about providing the same amount of service in a more efficient manner."

"Our people work hard, and the recent Chief of Staff Quality of Life survey showed most work well over a 40-hour work week," Secretary Peters said. "The problem we have is that most of our bases are not 100 percent manned. Currently, when people deploy, it really comes out of the hide of the people left behind. They must work even harder and longer to make up for the absence of the deployed members."

To alleviate this, the secretary said the Air Force, by the end of fiscal 2001, will have moved almost 6,000 positions from the non-deploying portion of the Air Force into forces available to support the EAF. This will substantially assist EAF manning, decreasing operations tempo for individuals and providing even more stability for Air Force members and their families.

# Registrants update records on line

By Karen A. Beyer  
Randolph Air Force Base, Texas

"People come and go so quickly here," as Dorothy observed in "The Wizard of Oz." The same is true for technology. What is in vogue today may be outdated tomorrow. However, emerging technologies provide many benefits. One example is the Communications and Information Career Program, which not only provides registrants easy access to personal information from their computer, but in the near future will enable them to update their personnel records. The Air Force civilian personnel community has already provided this capability for various personnel actions. In the future we are likely to see increased use of similar technologies. But it also requires employees to keep their records updated.

The Communications and Information Career Program website <http://www.afpc.randolph.af.mil/cp/cicp> provides a wealth of information. Registrants can access their personal records to verify recorded training, identified geographical locations, awards and any penalties issued. Some of the other available information includes Special Vacancy Announcements, Career Program sponsored FY00 on-site course schedule, Career Broadening information, the *CICP Whole Person Score Guide* and the *CICP PALACE Acquire Handbook and Guide*.

We encourage registrants and supervisors to subscribe to the **CICP list server**, which replaced the former CICP newsletter. To subscribe, contact this website [http://www.afpc.randolph.af.mil/cp/cicp/list\\_server.htm](http://www.afpc.randolph.af.mil/cp/cicp/list_server.htm).

Here are a few of the changes that you can expect to see soon:

**Position Vacancy Announcements.** Eventually position vacancy announcements will be made via the Internet and the CICP list server. Individuals interested in applying for these career program positions will need to provide a current resume using the job kit available at the following website <http://www.afpc.randolph.af.mil/dpc/eis/>.

**Career program registration** and updates will become available via our web site. Registrants will be able to update geographical locations and add or change career programs on-line.

Advertisement for these services will be announced on our website and through the CICP list server.

Although technology is changing the way we do business, the Communications and Information Career Program is committed to you, our customers, and your future career needs. Yes, we're evolving due to technological changes. However you can still talk to a career counselor by calling DSN 665-3691. Our motto is simple: "People are our business and your priorities are our priorities."

## Global Internet Mail goes commercial

**SCOTT AIR FORCE BASE, Ill. (AFPN)** — People using Air Mobility Command's Global Internet Mail, better known as GI Mail, may find they don't have access to their old account, but can still open a new one.

That's because the system was upgraded April 1, and is now accessible through commercial Internet service providers. Previously, GI Mail was restricted to service members with accounts through ".mil" domains for security and performance reasons. Now, users can take advantage of this new GI Mail improvement by accessing [www.gimail.af.mil](http://www.gimail.af.mil) and establishing a new account on the GI Mail "2000" server.

"We strongly encourage you to do this right away as the 'old GI

Mail' will disappear in 60 days!" said Capt. Everett Shaver, AMC Network Operations and Security Center. A link and instructions on the "old GI Mail" home page will help users establish a new commercially accessible account.

Beginning May 1, users will access their new "GI Mail 2000" accounts through ".com" domains at the site's home page. Users will access old e-mail via a link from GI Mail 2000 (and can forward their old e-mail to their new commercially accessible accounts).

Beginning June 1, the old system will be taken offline and any e-mail left on the old system will be deleted.

GI Mail provides morale e-mail service for families to communicate with deployed service members. Deployed AMC aircrews and personnel

can also use this e-mail service for official, unclassified e-mail traffic.

Unlike other commercial e-mail services, GI Mail is an Internet-based e-mail system owned and operated by AMC. It is the same as most commercially provided e-mail services, but with three advantages:

\* GI Mail services are protected by being placed inside the government network behind a firewall.

\* GI Mail allows people to forward correspondence from their home base to their GI Mail account when they are on the road.

\* GI Mail improves e-mail communications by using available bandwidth and eliminating ads used by most commercial e-mail service providers. (Courtesy Air Mobility Command News Service)

# EAF Online offers electronic gateway for AEF deployments

By Capt. Wilson Camelo  
*Air Combat Command Public Affairs*

LANGLEY AIR FORCE BASE, Va. (AFPN) — To help ensure people deploying as part of the Expeditionary Aerospace Force concept are fully prepared for their arrival in theater, the Aerospace Expeditionary Force Center unveiled the first version of an electronic one-stop shop for AEF deployments April 15.

Called EAF Online, the Web site features training templates airmen can access to obtain information on actions they need to complete — specific to their Air Force Specialty Code — before deploying, said Lt. Col. Gordon Bennett, the web site project officer.

The restricted web site is only available via military computers at <http://aefcenter.acc.af.mil/eafonline>.

The April 15 version features training templates for communications, legal and maintenance AFSCs deploying for Operation Southern Watch. The completed version with training templates for all AFSCs deploying to support any steady state deployment will be available by October, Bennett said.

“The goal is to have EAF Online serve as the backbone for all AEF actions for people deploying to support Air Force worldwide operations,” he said.

“We want everyone identified for an AEF deployment to go to this site first to obtain the information on actions they need to complete so they are ready to hit the ground running when they arrive at their deployed location.”

Those actions include required training, shots, and qualifications for each AFSC and location. Once logged onto EAF Online — accomplished by entering a career field, AEF number, deployment location and home base in specific fields — people can access the requirements and training needed for the deployment, such as weapons, chemical warfare and air base ground defense. The site will also feature force protection and geopolitical issues, lessons learned from previous rotations and links to related news articles.

“We want to make people smart and do as much training as we can on this side of the ocean,” the colonel said. “This will benefit the people on the other side of the ocean when they receive a fully-trained, fully-briefed airman.”

Conducting briefings and training on this side of the ocean also has positive implications for the large number of reserve forces filling AEF taskings, according to Bennett.

“Giving reservists the ability to obtain their training and complete their requirements at home will pay off big down the line, and make this critical portion of our Air Force even more effective in a deployed environment,” Bennett said.

Air National Guard and Reserve members are filling approximately 10 percent of the AEF taskings.

As the web site is developed other aspects such as “Right Start” briefings, travel arrangements, and issues such as orders, pay and outprocessing actions will be added.

Bennett stressed that EAF Online’s

success depends on feedback from airmen in the field. The web site will let users provide feedback directly to the AEF Center. “We hope people of all specialties will visit the site, and suggest ways to improve our information. The site is for the deploying troop — we are trying to present information they will need, and consider valuable. Feedback is essential for our success,” he said.

The October upgrade to EAF Online will also benefit commanders by allowing them to track the readiness status of their units and people. More importantly, it will help them manage individual operations tempo by providing a database of assigned people that can be sorted in various fields, including number of days already spent on temporary duty assignments.

The AEF Center is a centralized, cross-functional, total force team designed to facilitate EAF operations. Its mission is to assist EAF operations in the sourcing of AEF assets, identifying and refining training requirements, monitoring readiness, and guiding deployment and redeployment planning.



# Standard Systems Group SPO tests wartime capability

Story and photo by Staff Sgt. Beverly Isik  
*Standard Systems Group Public Affairs*

**MAXWELL AIR FORCE BASE - GUNTER ANNEX, Ala.** – Standard Systems Group called in the Army and Marines to help develop procedures for using the Standard Procurement System in a contingency environment.

During a five-day Procurement Force Experiment in March, contracting and computer specialists from the Air Force Contracting Information Systems Program Office worked with contracting troops from the other services to test operational concepts and procedures for deploying the system during contingency operations.

More than 18,000 soldiers, airmen and Marines at 600 installations around the world will use SPS for routine day-to-day contracting transactions. But, according to Air Force Space Command Contracting Superintendent Chief Master Sgt. George Dupin, experimenting in a contingency environment is a key factor in the success of any software that will be used by all the services during real-world deployments.

“We’ve had several PFXs, but this was the first ‘go to war’ exercise,” said Tech. Sgt. Cheryl Martin, chief of the functional analysis team. “Our customers asked for it and we were glad to have the opportunity to provide it.”

The PFX showed that the system could be used during the sustainment phase of deployment. “But we identified some areas that need enhancements before it can be used in all phases of deployment,” Dupin explained.

Some enhancements are already projected in the next version scheduled for release to the Air Force in the next few weeks, according to Martin. Additional functionality will also be provided with each subsequent release from the DOD program management office and their contractor, American Management Systems.



**Tech Sgt. Cheryl Martin checks a laptop in a Procurement Force Experiment kit. The kit contains 26 laptops with associated items such as mouse devices, power strips, cables, aero net cards, shock log and spare batteries.**

In the original design of SPS, the concept was to use commercial-off-the-shelf software to replace 47 major contracting systems used by the different services. “Contingency was not included in that,” Dupin said.

The greatest challenge, explained Director of Air Force Contracting Systems Col. Andrew Gilmore, continues to be reengineering the Air Force’s contracting processes to align with the commercial business model in SPS.

“Procurement Force Experiments have proven to be an invaluable reengineering tool” he said.

SSG is an element of Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio, and the Electronic Systems Center, Hanscom AFB, Mass.

# Retired generals meet to share perspectives on Air Force communications and information

**ANDREWS AIR FORCE BASE, Md.** — More than 20 retired Air Force general officers who served in the communications and information field met here April 12 for the Retired General Officers Conference.

The conference was opened by Lt. Gen. John “Jack” Woodward Jr., director of the Command, Control, Communications and Computer Systems directorate, J6, Joint Staff. Woodward has been named to succeed Lt. Gen. William Donahue as Air Force director of Communications and Information, pending Senate confirmation.

“I appreciate our retired general officers and their families taking the time to be here and sharing their perspectives on our efforts to provide the Air Force with world class communications and information services,” Woodward said. “It has provided us a great opportu-



**Hall of Fame members, standing from left, Col. Glenn Giddings, Maj. Gen. Robert L. Edge, Dr. Richard Farman (representing his father, Brig. Gen. Ivan L. Farman), Lt. Gen. Lee Paschall and seated, Lt. Gen. Winston D. Powers. Gen. Paschall was the first inductee into the Hall of Fame presented at the 1999 RETGO conference.**

warfighter.

The day’s main event was a tribute to communications and information “foundation setters” and induction of the Class of 2000 into the Hall of Fame during an evening banquet. “We pay tribute to those who came before us and honor others for their lasting contributions to our business,” said Woodward. The Class of 2000 are: Lt. Gen. Winston D. Powers, Maj. Gen. Robert L. Edge, Brig. Gen. Ivan L. Farman and Col. Glenn Giddings.

“Their dedication, vision, patriotism and honor have established a proud legacy upon which we continue to build today’s information superiority,” Woodward said.



**Conference attendees listen to one of many briefings held at the Andrews Officers’ Club.**



*Photos by Tech. Sgt. Mike Leonard*

**Attendees watch a video honoring the Communications and Information “Foundation Setters.”**

nity to interact and learn from each other.”

The conference agenda included briefings by the major command directors of Communications and Information; the Joint Chiefs of Staff director of Command, Control, Communications and Computer Systems; and the Defense Information Systems Agency. The Air Force Communications Agency gave a presentation on C4I Support Plan and Networthiness. Other topics included communications contributions during Kosovo; a view of the Communications and Information career field and its future; career field training opportunities; a Year 2000 update on the most challenging information technology issue of our time; and discussions on Information Assurance and the enabling role of wide area, local area and tactical networks.

Discussions centered on the continued need for protected, assured, interoperable communications for the



*Editor's note: As the years go by, people come and go, but a few make an indelible mark on the Air Force. Their extraordinary service touches many people and leaves a lasting legacy. This is the first of a new series, entitled "comm legends", which spotlights people who have dedicated a long and distinguished career to the comm and info mission area and established a record of achievements that few can match.*

*Please e-mail your own "comm legends" features to [intercom@scott.af.mil](mailto:intercom@scott.af.mil).*

## 'Mr. MILSATCOM' Jack Miller

**By Maj. Susan E. Kolmer**  
*Air Force Space Command  
Peterson Air Force Base, Colo.*

What do CNN, cell phones, round-the-clock weather information, knowing precisely where you are, and Mr. Jack Miller have in common? Astute communicators know the connection between each of these conveniences and Mr. Miller: satellite communications.

Although Miller staunchly denies it, friends and colleagues insist among the hundreds of people who made satellite communications a reality, it is Miller who deserves the title "Mr. MILSATCOM." He's been in the business since 1968. Currently the MILSATCOM Systems Division chief for Headquarters, Air Force Space Command, Miller maintains, "The real people responsible for developing military satellite communications gave this to me to manage. I feel quite honored. If they hadn't backed me, I wouldn't have gotten anywhere."

However, Miller does acknowledge his role as a spokesperson and teacher of MILSATCOM. Maj. Gen. (ret) John Randerson, former deputy chief of staff for Communications-Electronics at HQ Strategic Air Com-



**Jack Miller**

mand echoes Miller saying, "No one knew it [MILSATCOM] as well as he. He was a marvelous advocate that wouldn't be denied. And he was also a great teacher."

Advocacy was vital in the early days of SAC's satellite program, when no one knew exactly what to expect from satellite communications. SAC needed a global, nuclear-survivable communications system. In the '60s,



**(Early 1980s) From left: Brig. Gen. John Randerson, Tech. Sgt. Joe Wyatt, Jack Miller, Maj. Brooks Williams and Maj. Gen. Jack Watkins.**

with the Cold War heating up, SAC realized its line-of-sight high frequency communications could not satisfy those criteria.

Miller recalls, “Everything was tough. Radio was primarily analog, but we started to go with digital in the late ‘60s, much of which was developed at the Electronic Systems Division at Hanscom. I helped install the tactical satellite equipment for our proof-of-concept on the EC-135, Looking Glass.”

Using 75 bits per second teletype, the concept worked. As the program developed, one of Miller’s goals as Special Projects director at HQ Strategic Communications Division was to equip nearly every airborne strategic platform with a SATCOM terminal. Miller focused not only on developing the global, survivable communications system SAC needed, but also on equipping the warfighter with the best communications system possible.

Maj. Gen. (ret.) Robert Ludwig, a former Air Force Communications Command commander, explains, “The need for robust strategic C3 systems became a U.S. priority, and Jack was there in the front row. He helped to define the requirements and articulate the need for the group of MILSATCOM programs.” To that end, Miller pushed the limits of ultra high frequency technology. In the early ‘70s, digital synthesizers were a dream, but Miller persevered until they became a reality.

As it became clear UHF degraded in a nuclear environment, Miller, SAC’s director for Space and Satellite Communications Systems at the time, pushed the development and deployment of super high frequency

single channel transponders. Although the transponders only allowed for one-way communication, they could survive nuclear effects and jamming, and provide warfighters with backup communications, enabling mission completion.

STRATCOM’s Deputy J3, Al Buckles, lauds Miller’s emphasis on providing the warfighter with the best communications possible. He states, “He [Miller] knew how to marry warfighter needs to technical capabilities. Very few people have this knack.” Buckles shares Miller was so intent on supporting SAC and its warfighters, he was known to take away Presidential support circuits and give them to SAC, simultaneously convincing the White House it was the right thing to do.

Today, the Air Force is pursuing acquisition and deployment of an advanced extremely high frequency follow-on to Milstar. Miller laments the history he sees repeating itself, “We don’t have enough terminals to make our satellite networks work well. The terminal community needs more attention and production dollars.” He worries about today’s tactical and strategic aircraft lacking the satellite terminals needed to ensure the most effective C2 and mission success possible.

Although advancements in satellite communications are notable, and those operating in the SHF range are mostly impervious to both jamming and nuclear effects, Miller notes, “No one communications system is a panacea. There are always vulnerabilities.” But as long as Miller remains involved in satellite communications, the chances of enemies finding and exploiting vulnerabilities before Miller comes up with yet better technology are indeed slim.

