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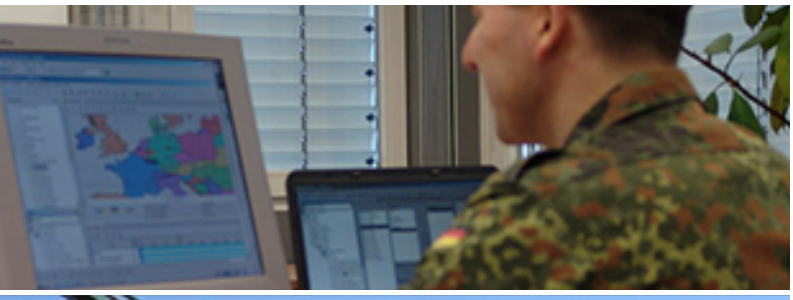
Satellite Communications for Net-Centric Warfare

Second Quarter 2007 Vol. 1 No. 2



Providing Support for the Warfighter

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MILSATMAGAZINE

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NOTES from the EDITOR

"Winning the Peace"

Someone once said that the objective of war is to win the peace. This issue's theme is "Providing Support for the Warfighter." As we will see from the articles in this issue, satellite communications can not only provide critical battlefield support for the warfighter but can also provide other support to the warfighter such as access to communications with their loved ones or for personal development such as getting a degree online (see article on page 18, "Another Kind of Support for the Warfighter"). The access that satellite communications provides can be just as vital to the overall well-being of a soldier in the field.

It also heartening to note, that there can be a "peace dividend" from conflicts such as the rebuilding of Afghanistan's communications infrastructure chronicled in the case study on page 31. Previously shut off from the modern world by the Taliban, Afghan citizens are now enjoying a boom in telecommunications services that has opened them up to the world and spurred a modest economic growth.

Satellite communications is really a potent medium for social change and development. This has been proven throughout its short history where it has made possible the phenomena of globalization and the empowerment of individuals by opening up access to a world of information. However, as a medium, satellite technology is by itself neutral and can be used for many purposes including those that can be detrimental to society as Maj. Gen. James Armor, Director of the National Space Security Office correctly points out in the interview featured on page 34.

The key is always to remain vigilant against these threats to ensure that satellite communications continues to have a positive impact on our modern society.

Virgil Labrador

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MilsatMagazine accepts article contributions from the industry and the military community. For more information or to submit proposals for possible articles, send a one-paragraph or less abstract of the proposed article to virgil@satnews.com

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CALENDAR OF EVENTS

July 11-12, 2007
Military Space and Satellite Systems 2007
Thistle Marble Arch Hotel, London, UK
Contact: Yousuf Malik
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July 30-August 1, 2007
GRIDCOM Summit
Georgetown University Conference Center
Washington, D.C. USA
Contact: Scott Kirby
Tel: +1-973-256-0211
Email: info@idga.org

Aug. 21-23, 2007
LandWarNet Conference 2007
Ft. Lauderdale, FL, USA
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September 12-13, 2007
Network Centric Warfare 2007
Singapore
Contact: enquiry@iqpc.com.sg
Tel. +65-6722 9388

Oct. 9-10, 2007
MILComms 2007
London, UK
Contact:Amir Sebahat
Tel. +44 (0)207 368 9870
E-mail: Joanna.edwards@wbr.co.uk
Web: http://www.wbresearch.com/milcommseurope/

Oct. 29-31, 2007
MILCOM 2007 - Military Communications Conference
Gaylord Convention Center, Orlando
Florida, USA
Contact: AFCEA Exhibits Department
c/o Spargo & Associates, Inc.
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E-mail: milcom@jspargo.com
Web: www.milcom.org

November 5-8, 2007
Transforming Space
Sheraton Gateway Hotel
Los Angeles, CA, USA
Contact: Scott Kirby
Tel: +1-805-349-2633
Email: event@californiaspaceauthority.org
Web: www.californiaspaceauthority.org/conference2007

November 6-9, 2007
TechNet Asia-Pacific
Sheraton Waikiki and Ryal Hawaiian Hotels,
Honolulu, Hawaii USA
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E-mail: events@afcea.org
Web: www.afcea.org/events/asiapacific

Nov. 28-29, 2007
Aerospace & Defense Finance Conference
New York, NY, USA
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E-mail: janow@aviationweek.com
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INDUSTRY NEWS

Raytheon Wins $1 Billion NMT Satellite Communications Contract

Washington, D.C., -- The Raytheon Company has won the $1 billion Navy Multiband Terminal (NMT) satellite communications program over Harris Corporation.

The U.S. Department of Defense said Raytheon will be the prime contractor for NMT, which will provide communications terminals for the U.S. Navy and allies like the U.K., the Netherlands and Canada. The terminals will be deployed on ships, submarines and on-shore installations, and it is intended to work with a wide variety of military communications satellites. In all, some 300 terminals are required, which will begin fielding in 2010.

Raytheon won an initial $21 million contract that is worth up to $960 million if all of its options are exercised, the Pentagon said. Work is expected to end by 2011, but if all options are used it could extend through 2015, according to the contract announcement.

The Navy Multiband Terminal (NMT) will allow U.S. military vessels to use a single antenna to communicate with different satellites, saving space and logistics costs. NMT is a system of submarine, shore-based and shipboard communications terminals for the transformational satellite communications (SATCOM) component of the U.S. Navy's FORCEnet concept.

NEWS

Harris said it was disappointed but hoped to reuse its technology on other programs. “We did do a lot of work on this program, developing a lot of communications expertise that we believe we can use in other programs and other satellite opportunities in the future,” said Harris.

The NMT program, led by the Space and Naval Warfare Systems Command (SPAWAR), seeks to exploit the extended data-rate (XDR) capability that will be offered by the Advanced Extremely High Frequency (AEHF) satellite communications system. NMT terminals will be more reliable than existing terminals, provide more bandwidth and be compliant with the Software Communications Architecture (SCA), enabling coherence with the Joint Tactical Radio System (JTRS) program.

U.S. to Test Internet via Satellite for Warfighting

BETHESDA, MD, The U.S. government has embarked on an industry-government collaboration to demonstrate the viability of conducting U.S. military communications through an Internet router in space.

U.S. soldiers on patrol in Iraq. (US Army photo).

The Department of Defense’s (DoD) “Internet Routing in Space (IRIS) Joint Capability Technology Demonstration Project” represents the next generation of space-based communications. IRIS will serve as a computer processor in the sky, merging communications being received on various frequency bands and transmitting them to multiple users based on data instructions embedded in the uplink. Intelsat General Corporation will manage IRIS, one of seven projects funded and announced in fiscal 2007 as a Joint Capability Technology Demonstration (JCTD) by the DoD.

”The IRIS architecture allows direct IP routing over satellite, eliminating the need for routing via a ground-based teleport, thereby dramatically increasing the efficiency and flexibility of the satellite communications link,” said Don Brown, vice president of Hosted Payload Programs for Intelsat General. “IRIS is to the future of satellite-based communications what Arpanet was to the creation of the Internet in the 1960s.”

Space Systems/Loral will manufacture the satellite scheduled to carry the IRIS payload. The satellite, IS-14, is set for launch in the first quarter of 2009. It will be placed in geostationary orbit at 45 degrees West longitude with coverage of Europe, Africa and the Americas. The payload will convert to commercial use once testing has been completed.

The IRIS payload will support network services for voice, video and data communications, enabling military units or allied forces to communicate with one another using Internet protocol and existing ground equipment.

The IRIS payload will interconnect one C-band and two Ku-band coverage areas. The IRIS architecture and design allow for flexible IP packet (layer 3) routing or multicast distribution that can be reconfigured on demand. With the on-board processor routing the up and down communications links, the IRIS payload is expected to enhance satellite performance and reduce signal degradation from atmospheric conditions.

The Defense Information Systems Agency (DISA) will have overall responsibility for coordinating use of the IRIS technology among the government user community and for developing means of leveraging the IRIS capability once the satellite is in space.

Intelsat General, a wholly owned subsidiary of Intelsat Ltd, is the first commercial satellite company to be awarded a JCTD program. The IRIS JCTD is a three-year program that allows DoD to collaborate with Intelsat General and its industry team to demonstrate and assess the utility of the IRIS capability.

Awarding a JCTD for the IRIS program had the strong support of the U.S. Strategic Command (USSTRATCOM), which sees the program as a path to more efficient communications between warfighters around the globe. USSTRATCOM is a joint military command whose responsibilities include space operations, missile defense, intelligence, reconnaissance and global command and control.

Global networking firm Cisco will provide commercial IP networking software for the on-board router. SEAKR Engineering, Inc. will manufacture the space-hardened router and integrate it into the IRIS payload.

Concerto Advisors, a financial advisory firm, is organizing equity financing for a new company to provide the funds to design, build and operate the equipment used for the demonstration. Following the JCTD testing period, Concerto’s affiliate will own the equipment, and Intelsat will operate the equipment on Concerto’s behalf to provide services for government and commercial users.

.

SWE-DISH Receives 70 MSEK (US$ 10 mil) Order

Stockholm, Sweden, SWE-DISH Satellite Systems AB, has been awarded a close to 70 MSEK (US$ 10 mil) order for a complete satellite communications system from FMV – the Defense Material Administration – the procurement authority of the Swedish Department of Defense.

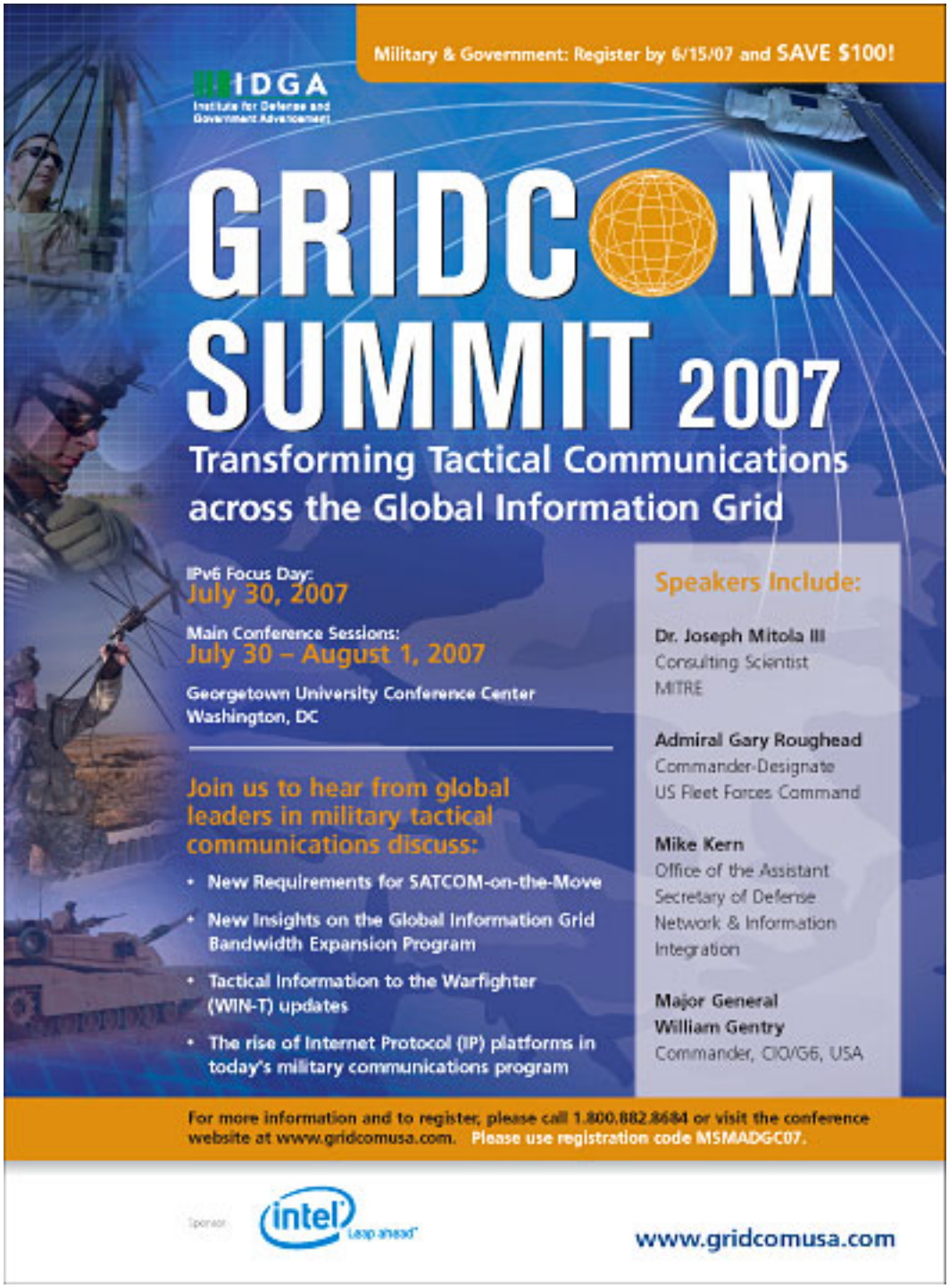
INDUSTRY NEWS

The system is specified as a backbone of the internal communications within the Nordic Battle Group forces, a unit that will be operational under European Union command as of January 2008.

The system contains mobile Suitcase 0,9 meter, and Fly-Away 1,5 meter antenna systems for broadband connectivity and a network solution for up to 40 nodes based on iDirect technology. There is a considerable amount of training and support included in the deliveries. Delivery of the system will start immediately and end before the end of 2007.

”The order is very important for SWE-DISH since FMV is valued on the international market as a highly professional military procurement authority. We will now have an excellent reference when presenting our world class satellite systems to the international governmental markets” says Åke Jönsson, Vice President Sales.

”The choice of the FMV of our satellite systems for the Nordic Battle Group confirms the fact that the military organizations of the world are relying more and more on satellite communications equipment as part of their modern net-centric warfare strategy. We are convinced that this is only the beginning of a multitude of governmental defence organizations that will invest in our solutions, and I would like to extend our greatest appreciation to the FMV for choosing SWE-DISH in this procurement” said Lars Jehrlander, CEO, SWE-DISH Satellite Systems AB.



INDUSTRY NEWS

General Dynamics to Produce USMC Tactical Satellite Communications Terminals

NEWTON, N.C., -- General Dynamics Satcom Technologies has been awarded a $30.5 million follow-on order for satellite communications terminals that will be used in the U.S. Marine Corps Support Wide Area Network (SWAN) program.

The U.S. Army Communications-Electronics Lifecycle Management Command, Ft. Monmouth, N.J., is the contracting authority. The order is the first of four options on an indefinite delivery/indefinite quantity contract that has a total potential value of $160 million if all options are exercised.

The terminals will provide deployed warfighters with beyond-line-of-sight communications for a broad spectrum of information services including video, multimedia, data and imagery. Under this order, the U.S. Marine Corps is requesting quantities of General Dynamics Warrior 120 (1.2-meter) and Warrior 180 (1.8-meter) very small aperture (VSAT) flyaway terminals and 2.4-meter trailer-mounted terminals for quick-setup tactical communications.

The Marine's SWAN program is acquiring this equipment through the World-Wide Satellite Systems (WWSS) contract, which is intended to provide communications systems that are capable of overcoming existing and projected bandwidth constraints for Department of Defense transformation programs worldwide. WWSS is available to support all federal communications missions, including disaster relief and homeland security efforts.

$750 Million GSA Satcom-II Deal Goes to 24 Firms

WASHINGTON DC,-- Defense industry heavyweights took most of the contracts awarded by the U.S. Government Services Administration (GSA) for its $750 million Satellite Services-II (Satcom-II) program.

Satcom-II will provide federal and defense agencies with the next generation of high quality, worldwide satellite communications solutions and will serve as the primary replacement vehicle for the existing GSA Satellite Services contracts. The program includes current commercial satellite service offerings, as well as those that anticipate the future needs of GSA customers. In addition, the Satcom-II program will maintain a timely contract modification process to ensure that customers have access to the newest technologies and services available within the industry.

Satcom-II consists of five-year, indefinite delivery, indefinite quantity contracts, and will replace the existing GSA Satellite Services program. Satcom-II offers competitive pricing throughout the life of the contract, as well as flexible ordering and billing.

Large business awardees are Americom Government Services, Inc., Arrowhead Global Solutions, Inc., Artel, Inc., AT&T Corp., DRS Technical Services, EDS Corp., Global Communications Solutions, Inc., Hughes Network Systems, LLC, Intelsat General Corporation, Mackay Communications, Inc., Segovia, Inc., Stratos Mobile Network, Inc., Telecommunications Systems, Inc., Telenor Satellite Services and ViaSat, Inc.

Small businesses comprise over one third of the Satcom-II awardees. They are CVG, Inc., DasNet Corporation, E&E Enterprises Global, Knight Sky Consulting and Associates, LLC, New Orleans Teleport, Inc., Psi Systems, Inc., RiteNet Corporation, Satellite Communication Systems, Inc. and Skjei Telecom, Inc. Small business awardees comprise more than one-third of the Satcom-II awardees.

Satellite provides the only network available where no phone or cable lines exist, which is usual for federal workers fighting wilderness wildfires, patrolling remote borders and rescuing injured citizens from devastating hurricanes or tornadoes. With the rapid and reliable communications networks provided by this contract, federal workers can use hand-held receivers similar to cell phones as well as access full broadband computer networks anywhere in the world.

These networks begin with a compact satellite station that fits in a car trunk but provides all computer, e-mail and broadband Internet capability normally found only in the office. These stations can even operate from aircraft and ships. Satcom-II's broadband access also makes possible broadcast services as well as distance learning for federal customers in areas throughout the world that don't have a normal communications network, because it enables audio and video transmission of educational material.

Satcom-II offers GSA customers unique opportunities—a special small business set-aside component for satellite professional support services and an innovative way to stay ahead of the technology curve. The set-aside helps agencies better involve America's outstanding small businesses in serving citizens, and a new modification process keeps Satcom-II current with new technologies and services as they become commercially available.

Last April, GSA awarded its $48 billion Networx Universal telecommunications contract to Qwest, AT&T, Inc. and Verizon Communications, Inc. GSA estimates that the government would spend $20 billion under the contract, although the contract ceiling is set at $48.1 billion. AT&T, Verizon and Qwest will compete for task orders under this massive program. MSM

PERSONNEL CHANGES

XTAR Appoints William R. Schmidt as Vice-President of Government Services

ROCKVILLE, MD.-- XTAR, LLC, a joint venture between Loral Space & Communications and HISDESAT, appointed William R. Schmidt vice president of government services. Mr. Schmidt will be responsible for the business development, sales, and marketing of XTAR's unique X-band services to the civil and military sectors of the U.S. government, including the Departments of Defense, State and Homeland Security, as well as allied governments. He reports to Dr. Denis Curtin, chief operating officer of XTAR.

Mr. Schmidt is a senior level executive with over 25 years experience leading teams in winning and performing on multi-million dollar domestic and international information technology, defense, aerospace and commercial projects. He joins XTAR from ARTEL Inc., where he served as director, global solutions. As a senior member of ARTEL's management team, he was focused on growing its overseas business and contributing to the implementation of ARTEL's strategic direction.

Prior to joining ARTEL, Mr. Schmidt brought his expertise in management, strategic planning and business development to multiple clients as a principal with Turner Consulting Services. Under his leadership, Turner helped its clients' book over $85 million in new business. Previously, he moved his career into telecommunications, information technology and information security by joining Data Systems Analysts, Inc., as director of business development, federal sector, where he helped double the size of the company's federal business.

After serving three years as a U.S. Army Air Crewman, Bill began his career in aerospace and defense as Manager, Government Training & Operations with the Link Division of Singer, where he held P&L responsibility for multi-million dollar U.S. government contracts. From program management, he moved into business development and marketing for Link, winning many domestic and overseas projects. He continued in positions of increasing management responsibility, working for other large multi-billion dollar multinationals such as Figgie International and Honeywell, where he led the team that won the largest Navy simulator procurement of $153 million.

A graduate of the University of Maryland, Mr. Schmidt holds a BS in market management and operations research. His security clearance is Secret.

Comtech EF Data Expands Government Business wth the Appointment of Robert Turner as Vice-President, Government Group

Robert Turner

TEMPE, Arizona-- Comtech EF Data Corporation expanded its government programs group with the appointment of Robert Turner to vice president, government programs. Turner will manage the government programs group, which is the company's primary interface to government, military and civilian agency customers. Turner brings nearly 20 years of leadership experience in sales and marketing for service providers and telecommunications companies serving government sectors.

Prior to joining Comtech EF Data, Turner held management positions with SES New Skies, Equant, Global One and Sprint. His background involves working with federal, state and local governments, civilian agencies and armed forces on telecommunications and satellite-based projects.

"We are pleased to have Robert Turner join our team," said Bob Hansen, senior vice president global sales and marketing. "His vast experience with government customers will enable us to better serve these markets."

Turner holds an MBA from the University of Maryland University College and a bachelor's degree from the University of Maryland, College Park.

Northrop Grumman Appoints Tom MacKenzie, Vice President of Naval Programs

ARLINGTON, VA,--Northrop Grumman Corporation has named Thomas L. MacKenzie, vice president of naval programs. In this position, MacKenzie reports to Larry Lanzillotta, vice president of customer relations within Northrop Grumman's government relations organization.

PERSONNEL CHANGES

As vice president of naval programs, MacKenzie will serve as the company's primary liaison for government customer maintaining effective customer contact, relations and a full understanding of the company's naval customers' requirements.

MacKenzie joined Northrop Grumman in 2005 as corporate director of navy programs. Before coming to Northrop Grumman, he had spent seven years as the senior professional staff member of the Senate Armed Services Committee where he was responsible for providing recommendations on oversight of all aviation, shipbuilding and associated weapons systems development and procurement programs.

Previously, MacKenzie spent 29 years in the U.S. Navy as an aviator and in program management. He culminated his flying career as a commander of an F-14 Tomcat squadron and spent four years as program manager for air-to-air missiles.

MacKenzie earned a bachelor's degree in aerospace engineering from the U.S. Naval Academy and a master's degree in systems management from the University of Southern California.

BAE Systems Names John Jarman Vice-President of C3I Systems

SAN DIEGO — BAE Systems has named John Jarman vice president and general manager of its Command, Control, Computing and Intelligence (C3I) Systems business, based in San Diego.

C3I Systems serves the defense, homeland security, and intelligence communities with solutions for imagery exploitation and analysis, systems integration, targeting, data fusion and archiving, and mission planning. C3I Systems employs 2,500 people at more than 10 U.S. sites that include San Diego; Reston, Virginia; Omaha, Nebraska; Rome, New York; Mount Laurel, New Jersey; and Pittsburgh.

PERSONNEL CHANGES

Jarman previously served as vice president and deputy general manager of BAE Systems' National Security Solutions business. He joined the finance organization of General Dynamics in San Diego in 1984 and transitioned with the business through multiple owners until its merger with BAE Systems in 1999. In 2001, he became vice president of business operations.

He holds a bachelor's degree in information systems and master's degree in finance from San Diego State University.

HYPRES Names Glenn Flack Director of Strategic Programs

Elmsford, New York --- HYPRES Inc.named Glenn Flack director of strategic programs. Flack is responsible for developing business opportunities in both the commercial and government sectors.

Flack brings to HYPRES more than 20 years of experience in relevant industries, including expertise in conception, design, program management and product line management for a broad range of electronic products and systems. He has held a number of management positions with a variety of leading companies, including DRS Technologies, AutoWorks Performance, and General Atronics Corporation.

Flack earned an MBA in marketing and management from Rutgers University, as well as a bachelor's degree in business management, also from Rutgers. Flack is a graduate of the United States Navy Electronics Technician Class A-C School, where he finished first in his class. MSM

NEW PRODUCTS AND SERVICES

ND SATCOM Launches New *Sky*WAN® Platform for Government and Defence Applications

Singapore --- ND SatCom is extending its *Sky*WAN® line with new modem technology integrated in the ND SatCom *Sky*WAN® IDU 7000. This Indoor Unit (IDU) is the new flagship of *Sky*WAN®'s product family and supports flexible, secure and cost efficient satellite network solutions especially for government and defence institutions.

ND SatCom's SkyWAN® IDU 7000. (photo courtesy of ND SatCom)

The new satellite modem provides efficient Turbo Coding based on a patented Turbo-˜ algorithm. Specifically optimized for MF-TDMA VSAT systems, this increases the air interface efficiency of these networks. "With this feature, ND SatCom sets a new benchmark for VSAT networks and brings us ahead of the competition in terms of modem performance and efficiency", explains Dr. Gerhard Bommas, Managing Director & CTO of ND SatCom. Additionally, *Sky*WAN® IDU 7000 provides faster transmission speeds that now exceed 10 Mbit/s, which suit key applications such as high-quality image transmission for border surveillance. The combination of more efficient bandwidth and higher transmission speeds, enable mission critical applications with smaller antennas and higher performance.

ND SatCom provides enhanced security features with the new modem. *Sky*WAN® separates the user from network management data traffic via a dedicated IP network. Unauthorized access to the network is minimized via a new automatic authentication feature in the network management system, *Sky*NMS. Defence against frequency interference is another key element of the security feature-set.

*Sky*WAN® IDU 7000 is IPv6 ready and therefore suitable for seamless integration into the terrestrial world.

ViaSat MD-1366 EBEM Satellite Modem Receives Full DISA Interoperability Certification

Carlsbad, CA –- ViaSat Inc. (Nasdaq:VSAT) has been granted Full Certification for its MD-1366 Enhanced Bandwidth Efficient Modem (EBEM) for operation over the Defense Satellite Communications System (DSCS) Network by the Defense Information Systems Agency (DISA). Certification means the ViaSat EBEM can be used on all DSCS satellite networks, is interoperable with legacy modems, and can operate in advanced spectrum efficient modes.

The objective of the EBEM program, a combined project of the Project Manager Defense Communications and Army Transmission Systems (PM DCATS), DISA and the U.S. Navy, has been to create and implement a more efficient, high-speed modem to replace older legacy equipment. Interoperability is a key attribute during the time-phased transition to the advanced EBEM.

"Through this combined effort the MD-1366 will save U.S. forces significant dollars annually in leased bandwidth costs by increasing the capacity of each circuit," said Ray Jefferson, EBEM program manager at ViaSat. "This certification signals that the MD-1366 meets the military's technical requirements and can be trusted for efficient, high-speed satellite communications."

The ViaSat MD-1366 holds several key advantages over deployed legacy modems:

- Tighter carrier spacing on satellite transponders to increase throughput
- Information Throughput Adaptation (ITA) to convert power margin to higher data rates that far exceed legacy modems in normal weather conditions and provides automatic improvements in modulation and coding in the presences of adverse conditions.
- Embedded AES 256-based Transmission Security (TRANSEC) for overhead and control channel protection and bulk encryption of baseband traffic.

- Automatic error-free antenna handover when line-of-sight view to the satellite is blocked due to ship movement.

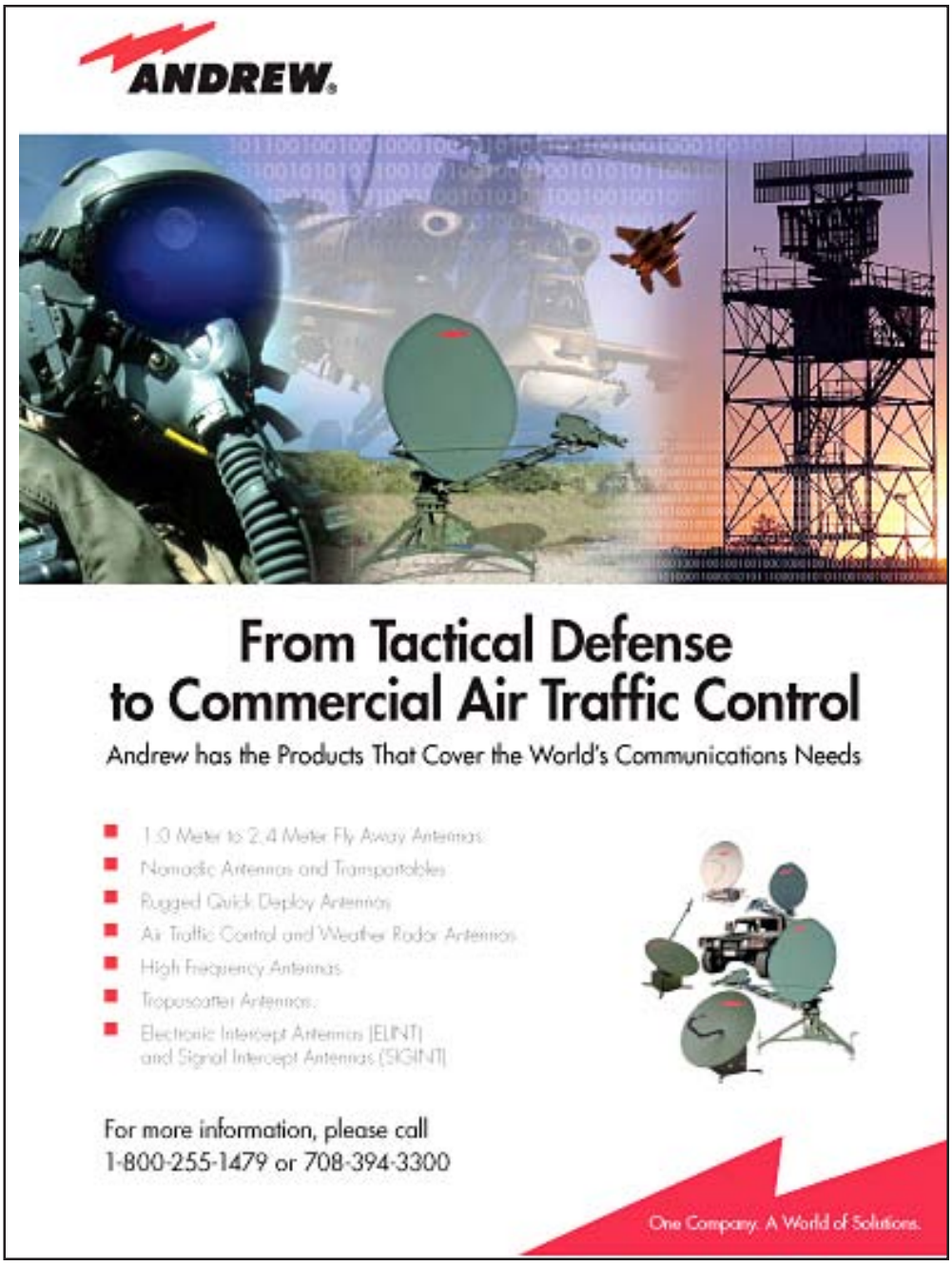
"The advanced modulation in EBEM enables users to squeeze more data into the same bandwidth and more traffic into each trunk, so the EBEM certification from DSCS is critical," said Johnny Ng, PM DCATS project leader. "The certification gives users confidence that the modem is interoperable with existing military satellite equipment and won't degrade the overall system performance."

A test program administered by the U.S. Army Joint Satellite Communications Engineering Center (JSEC) demonstrated ViaSat EBEM interoperability with five different legacy DoD modems (OM-73, BEM-7650, SLM-3650, MD-1340 and MD-1030B) from four different equipment vendors. In addition, the tests confirmed the operation of the higher-order modulation schemes implemented in the ViaSat EBEM to further advance its bandwidth efficiency. The EBEM successfully operated using 8 Phase Shift Keying (8PSK) and 16 Asymmetrical Phase Shift Keying (16-ASPK), while still communicating with legacy terminals that use simple modulation schemes.

The ViaSat MD-1366 is the new FDMA (Frequency Division Multiple Access) standard and next state-of-the-art modem to support communications, command, and control requirements of today's highly mobile, joint U.S. forces using military and commercial satellites at C-, X-, Ku- and Ka-band frequencies. In addition, the MIL-STD-188-165 Working Group plans to incorporate the advanced features and capabilities of the MD-1366 EBEM into MIL-STD-188-

HYPRES Receiver Directly Digitizes Wideband X-Band Signal

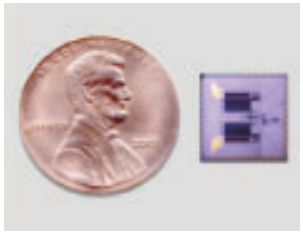
HYPRES Inc., a developer of superconducting microelectronics technology and the All-Digital RF™ product line, announced that the X-Band version of its All-Digital Receiver (ADR) recently completed a successful



NEW PRODUCTS AND SERVICES

series of livecommunication demonstrations over an XTAR satellite.

The ADR was integrated into the current military infrastructure's GSC-39 terminal at the U.S. Army Fort Monmouth's Joint SATCOM Engineering Center. The demonstrations were coordinated by Project Manager, Defense Communications and Army Transmission Systems, and the Communications-Electronics Research, Development and Engineering Center.



The ADR Chip is smaller than a penny. (HYPRES photo)

With the demonstrated ability to directly digitize a wideband X-Band signal (above 7.6 GHz in frequency—the first time anyone in the world has directly digitized these frequencies), the ADR is capable of eliminating up to 80 percent of the costly and bulky analog components—such as frequency converters, splitters, IF wave guides, etc.—associated with the front-end of typical MILSATCOM ground stations currently in the field today.

The ADR is a key element in HYPRES' overall effort to develop an All-Digital Transceiver product line, which will combine the ADR with the All-Digital Transmitter under development.

For more information, call 914-592-1190, ext 7794, or visit www.hypres.com.

Data Link Solutions successfully demonstrates MIDS-JTRS capabilities

CEDAR RAPIDS, Iowa – Data Link Solutions LLC and the MIDS JTRS Industry and Military Team recently conducted a live demonstration of the Multifunctional Information Distribution System Joint Tactical Radio System (MIDS-JTRS).

The demonstration involved a MIDS-JTRS form-fit terminal interfacing with a legacy MIDS Low Volume Terminal (LVT) radio and a Tactical Air Navigation (TACAN) beacon simulator. The Link 16 waveform communicated with position and track data being transferred between the radios, while another radio provided range and bearing data from a TACAN beacon simulator.

The demonstration was performed for the Joint Programs Executive Office board of directors at the Pentagon. MSM

COVER STORY

Providing Support for the Warfighter

by Lisa Daniel

When it comes to supplying satellite communications on the move, few markets are as tough to satisfy as that of warfighters'. The challenges, from engineering to business processes, are as vast as they are unique: How do you get a satellite signal to pass through rotary blades? How small can you build a vehicle-mounted terminal and maintain quality communications? How do you design a system that can be standardized across applications and services and one that forward-deployed troops can control themselves?

These are some of the central issues for the growing list of companies and military organizations that provide satcom on the move. While the commercial sector is meeting many of the military's needs, there still is a long way to go from both a technology and a business perspective, leaders on both sides say.

When it comes to supplying satellite communications on the move, few markets are as tough to satisfy as that of war fighters (photo courtesy of Telenor Satellite Services).

Col. Edward Eidson, technical director and operations officer of the Army's Battle Command Battle Lab at Fort Gordon, Ga., describes the Satcom on the move market as ripe with competition and invention, but one where technology still doesn't meet the demands of today's U.S. military. Even the Army's Joint Node Network, a modular system which is supposed to be the service's "bridge to the future," does not meet the needs of today's fluid battlefield, Eidson told an audience at Military Satellites 2007, a conference sponsored by the Institute for Defense and Government Advancement and held in Arlington, Va., in May.

"It's good equipment at the hull, but it's not good on the move," Eidson told the mostly commercial sector audience. "We'll probably run out of money and bandwidth before the JNN reaches its full potential."

The Army's wish list, Eidson says, is on-the-move capability that is highly adaptive and "self-healing." Soldiers need a system that is easily transportable, can handle high amounts of data delivered down to the company level and can support multiple security user enclaves, he said. Moreover, the Army wants control over satcom in theater, and most of all, the service can't get enough bandwidth. Its current 90 megabits of data throughput needs to double, Eidson says.

For commercial companies that want to sell satcom on the move to war fighters, Edison stressed the Army's need for Ku-band.

"Watch the news and see where we need Ku band," Eidson said. "Those folks that have Ku in those parts of the world where we need it will have no lack of business."

Companies are lining up to take the challenge of serving the war fighters, but some business leaders worry that the military payout won't match the years of research and development before new systems can be deployed.

Pay "is always an issue," said Rob Shaughnessy, vice president for business development and engineering services for Circadence, a Boulder, Colorado-based company that sells a software suite to the military to mitigate communication latency.

COVER STORY

Shaughnessy points to congressional cuts in Lockheed Martin's TSAT and TMOS programs, Transformational Communications Satellite and the Transformational Mission Operations System, two keystones of military satellite communications for network centric warfare. Billions of dollars have been paid into the system, but "there's no product, there's no satellite, there's nothing to show for it," he said. Congress's rollbacks of such spending will make it harder for private companies to take on major projects, he said.

The constantly changing status of projects like TSAT and TMOS and overall lack of standardization among the many military satcom programs "is a significant challenge," Shaughnessy said. "There literally are dozens of programs with on-the-move communication requirements and all have their own mix on it," he said.

At Circadence, leaders study which programs "have the most internal program traction," the most budget support and are growing at a good rate to determine where they will focus their efforts, Shaughnessy said.

Also, as in the case with its Web Assured Response Protocol, or WARP, software mentioned earlier, Circadence developed protocol for a commercially marketed product – in this case, simulation games – which caught the attention of the military for its data prioritization and acceleration. After selling off its gaming section, Circadence moved forward with its latency mitigation software with the Army in mind.

"Imagine you're in a humvee bouncing around Afghanistan and you pass by a building that puts your dish in shadow and interrupts the signal," Shaughnessy said. "They don't use communications like we do. They may only be online for two minutes. When that happens, you need to maintain those applications even when the dish goes into shadow."

The issue of the "dish," or antenna, for satcom on the move remains one of the biggest challenges for war fighters. A typical three-foot antenna mounted to a vehicle will not allow the vehicle to fit inside a C-130, the military's principle transport plane. And, as of today, there is not room on either the Bradley or Abrams tanks for satcom on-the-move. The Army recently had 12 vehicles built for satcom on-the-move, but all were held back because of weight problems, Eidson said.

Dan Fraley, senior vice president and chief technical officer of Hughes Network Systems, based in Rockville, Maryland, says the size problems of antennas are the result of the application being in "the embryonic state." Hughes has tested about a half dozen antenna types to work with its HX terminal ground equipment, which integrates fixed and mobile satcom. The antennas can be folded flat to avoid many of the size problems and they are newly available, Fraley said.

But, Fraley says, the military will have to trade some technical capabilities for the new, smaller size. "The better the performance you want, the bigger the antenna gets," he said. "It may be that for satcom on the move, they have to sacrifice bit rates for the smaller size.

Meeting the Military's Requirements

Andrew's Milsatcom Nomadic Antenna

One company that has been earnestly courting the military market is Westchester, Ill.-based Andrew Corporation. Having had success with its commercial earth station antennas, Andrew found that some of its products can be configured military use. Andrew came in rather late into the military market, having only pursued it about three years ago, according to Joe Pryzgoda, Andrew's Product line Manager for Milsatcom. Andrew markets fixed, tactical and transportable antennas to the military market.

According to Pryzgoda, while some of its products to the military market are of the commercial off the shelf (COTSs) type, the military has specific requirements that are different from commercial customers. One of this is the wider temperature ranges where the antenna has to operate. The military requires antennas to operate in temperature ranging from -40 to +55 degrees C. Another requirement is transportability, so the antenna has to be compact and easily packed for rapid deployment. They should also be of higher durability to withstand battlefield conditions and be able to travel off-road. They should also be able to operate in harsh environments.

COVER STORY

"If they're willing to compromise on the capabilities, this is the best on the market," Fraley said. "The last thing you want is to be visible to the enemy. If you're driving around in hostile territory, you don't want this big bubble on the back."

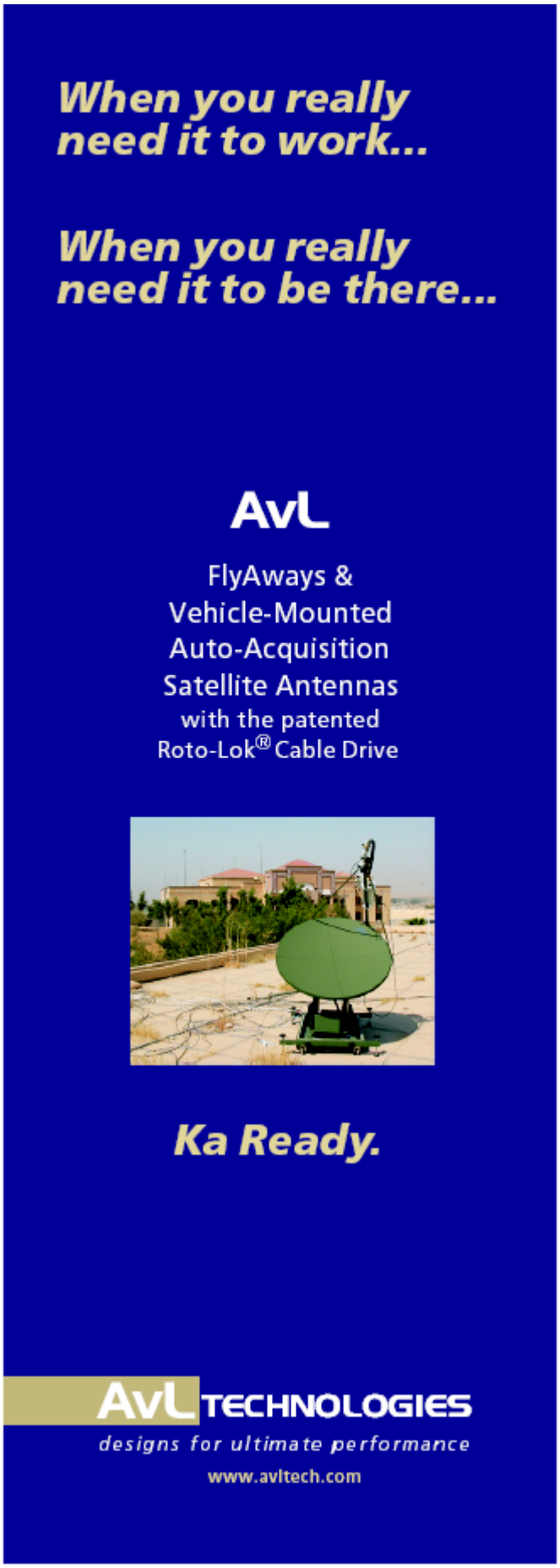
The component of satcom on-the-move that seems to be working best is the space component. In an effort to meet the demand for bandwidth and to streamline military applications, Boeing Space and Intelligence Systems in August plans to launch the first of five satellites that will supply the Air Force and Army with service on the X-band and the new Ka-band, also known as the "federal band." The $1.3 billion system, known as Wideband Global Satcom, or WGS, will give users the unique ability to communicate between the two bands and will serve as an interim system toward implementation of TSAT.

Mark Spiwak, program director for WGS, called the system "a game-changer" for the military that will provide "significant flexibility with high-speed voice, video and data capability to prosecute the global war on terror. This first WGS satellite provides greater bandwidth and capability than the current constellation of satellites it will eventually replace."

By using a more powerful satellite, Spiwak said, the military can use smaller equipment on the ground.

If WGS is a success, it will lay the groundwork for the type of full-service communications package both the users and suppliers of satcom-on-the-move say is critical: an interoperable system that provides high transfer data rates through very small terminals that also allows for user autonomy. Only then will warfighters receive the full benefit of satcom-on-the-move. MSM

Lisa Daniel is a journalist with specialties in covering the military and commercial satellite industries. A former senior writer with Army Times News Service, she has covered all branches of the U.S. military. As a freelance writer, she has written about the military for *Boston Globe* and *The United Press International*, Military.com and various military association magazines. She has covered the satellite industry for various publications and is the editor of *The Orbiter*, the newsletter for the Society of Satellite Professionals International at www.sspi.org. She can be reached at daniel2@verizon.net.



COVER STORY

Another Kind of Support for the Warfighter

by Virgil Labrador

In the olden days, serving on a naval ship was a no frills type of job that provided the maximum amount of discomfort for sailors that they had to be press-ganged into serving. But in the new all-volunteer navy, the current leadership is out to provide the ordinary sailors with all the support they require to enable them to fulfill their mission. This includes not only their military requirements, but their needs in terms of their morale and personal development. This was the gist of the keynote address by RADM Michael Bachmann, Commander, Space and Naval Warfare Systems Command of the US Navy during the Military and Government Requirements Forum at ISCe 2007 in San Diego.

RADM Bachmann said that the bandwidth requirements of the US Navy will only continue to increase due to the demands of their sailors for communications and other applications on-board ship. He said that the Navy has "ever increasing data rate requirements needed on all platforms." The demand is not so much for tactical requirements which are already being met, but rather for young sailors whom he refers to as belonging to the "millennium generation" who are used to broadband access for gaming and other applications and have needs such as keeping in touch with family and friends while on deployment, he added.

"The main demand pull for our increasing requirements are our young 18- or 19-year old sailors," said RADM Bachmann. He said that for these young sailors being on a ship for extended periods of up to six months at sea, is almost like being incarcerated. He also cited that some ships in the navy have less communications bandwidth than some individual consumer cell phones. While these might suffice for basic operational communications, it certainly will not be able to serve the broadband needs of sailors during their deployment.

Sailors need broadband access for their personal communications needs and also for their career development through distance learning courses. They need to pursue continuing education and and obtain special training and pursue degree courses.

With some surface ships of the Navy like nuclear-powered aircraft carriers operating almost like little cities with over 5,500 personnel , complete with all the necessary recreational facilities like theaters and athletic facilities, it is only logical that the provision of broadband internet access would follow.

Given the increasing demand for bandwidth in the Navy, RADM Bachmann said that it will have to rely on the commercial sector in order to make up for the gap in the Navy 's ability to provide for their requirements. "The Navy has many requirements that will require huge amonuts of bandwidth," he said.

"Our reliance on satellite communications will only continually increase," he said, "and can only be met with the help of the commercial sector," he added. He then emphasized the need to understand each other's concerns and issues, manage expectations and build a better partnership between the commercial and military sectors. MSM

Virgil Labrador is the Managing Editor of Satnews Publishers. He is responsible for all editorial activities worldwide. He edits the Daily subscription service, *Satnews Daily* and the monthly e-magazine, *SatMagazine* and the quarterly, *MilsatMagazine*. He also manages the web portal, Satnews.com. He is co-author of the book, *Heavens Fill With Commerce, a Brief History of the Satellite Communications Industry*, for which he was nominated for the Eugene Emme Science Literature award in 2005. He has worked in various capacities in the satelite industry and holds a master's in communciations management from the University of Southern California. He can be reached at virgil@satnews.com

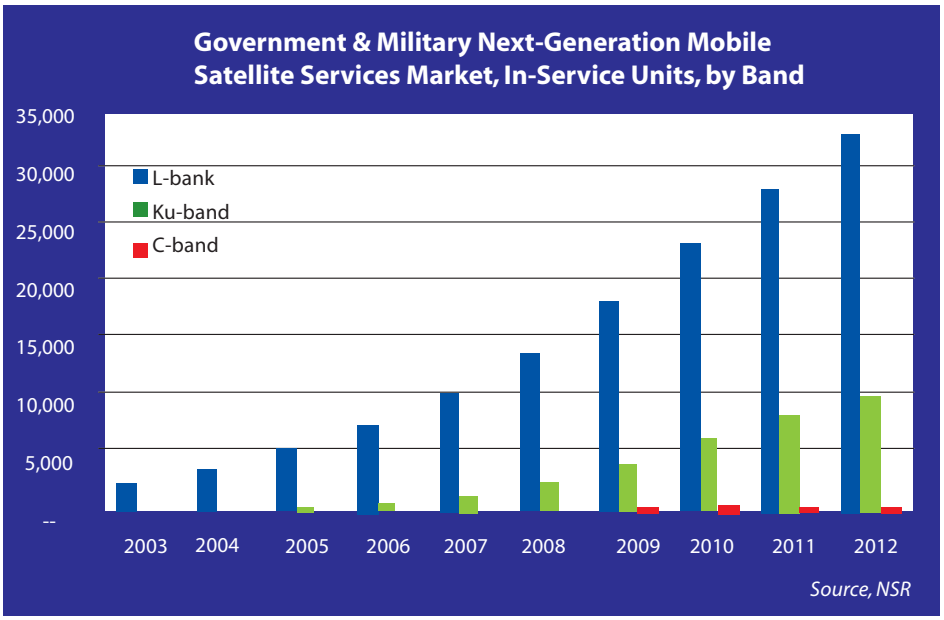
FEATURE

Commercial Satellites for Fixed and Mobile Military Communications

Claude Rousseau
Analyst, Satellite Communications, NSR

The true value of commercial satellites have come to light in recent years in the eyes of defense space communications architects and planners for such key programs as the U.S. Global Information Grid (GIG). Its immediate availability when defense systems were delayed or over-subscribed has made it an intrinsic component of a network-centric battle space that is increasingly adopting IP as a standard to match a diverse set of systems (C-, Ku-, L- and X-band all play a part) and missions.

The military has largely served as a promoter of and an anchor tenant in the development of communications-on-the-move (COTM), the newest thrust in the battle for ever more efficiencies and supremacy in the air, at sea and on the ground. But it has yet to be confirmed through long-term contracts for various reasons, such as fears that funding may be curtailed or simply removed. It is no longer questionable that satellite communications assets and infrastructures to the modern armies of the world have often been overlooked in their importance. There is not a single standard across various countries, some are either far advanced in their hardware procurement while others have almost obsolete equipment and systems or average grade quality material. This is certainly a reflection of funding or long procurement cycles that dictate the requirements for a twenty to thirty year window or the slower development pace of equipment due to stable requirements in times of peace.



In some cases, military requirements stated a couple of years ago for a commercial product launched today no longer meet the basic requirements of troops either deployed or in exercise. Furthermore, the new breed of soldier and officers are more technologically-savvy and expect broadband in the field the way they can have it a home.

So as the market advances, so do the technologies and the products that go with it. But all is not as simple as putting in a proposal to obtain the financing. It is also a case of delivering the right product in the hands of the war fighter at the right time at the right place. A story to illustrate this point is the commercial X-band satellites deployed to meet the needs of the military in particular. The X-band satellite owned and operated by X-TAR LLC was built specifically to provide coverage for the U.S.

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Government and its allies mainly in Europe, the Middle-East and Africa. It was commissioned into service two years after Operation Iraqi Freedom had started, which required extensive communications links for all kinds of commercial capabilities for non-critical and welfare services to and from the theater of operation.

It is no secret that L-Band (mobile and fixed) as well as C- and Ku-band (fixed) commercial satellites filled the gap. It proved to be a strong growth factor for an industry that was slowly coming out of a series of depressed years due to overcapacity. Inmarsat for example reportedly increased its uptake of call-minutes from the U.S. Department of Defense (DoD) by 40% between 2004 and 2005. Even more interesting is the amount of bandwidth and revenues from the DoD for all commercial operators, which tripled since the beginning of 2003.

On another front, NATO has publicly stated that its Afghanistan campaign has increased its bandwidth demand by a factor of five. And more recently, DoD officials at a conference pointed to on an ongoing 3 to 5 Gbps shortfall in capacity from their proprietary systems. In short, there is a bountiful future for some commercial vendors and operators but a missed opportunity for others. Even if the future may look brighter and there is funding for satellite communications, the fact remains that X-TAR found itself late in the market playing catch-up with operators that locked service contracts with the military when they caught the wave in 2003.

The drivers today are very much pointing in the direction of an increased pie size, and room for all is available. But at the ground level, more research and thus programs are needed to investigate and develop packages with leading-edge technology for more or better throughputs in harsh environments in smaller packages. Among the key drivers are video for Blue Force Tracking, target avoidance, videoconferencing and multimedia content delivery. This is leading operators to consider technologies such as spread spectrum, mobile spot beams (that change size, shape and location), small lightweight rugged and high-power multi-frequency terminals, miniaturized power packs, bandwidth optimization tools, anti-jamming and nulling antennas and secured encrypted carrier channels. The engineers of the commercial satellite industry are developing sophisticated solutions that fit onto portable, transportable and mobile platforms for deployment either regionally or globally.

In this general framework, while conflicts erupt in various parts of the world and the military is tasked with an ever increasing spectrum of support missions for civilian government, there is now a solid and lasting need for continued communications access to satellites from “anywhere” at “anytime”. This connectivity has driven the evolution of mobile satellite equipment to a higher level.

These requirements mirror the demand from war fighters for highly-portable mobile communications tools that enable greater communication capability in various situations. It was probably the impetus for the development of Iridium small troops’ Expeditionary Tactical Communications System (ETCS), which has a 3" by 5" flat dual antenna (Iridium/GPS) held in the cover of the helmet for over-the-horizon communications up to 200 miles. It has since evolved to make use of the handset as a networked push-to-talk function. The customer that initially procured the ETCS noted that Iridium was selected because it was available and could be integrated very rapidly.

Another illustration of the innovation that goes into ever smaller mobile packages is Norsat’s Globetrekker, which provides transmission in Ku, Ku- extended, X- and Ka-band and can be dropped by parachute and installed within minutes with a fully automated auto-acquire capability in a package that weights less than 50 lbs.

Sometimes, a low data rate tool will suffice, but far from being complicated, the kits need to be easy-to-use and lightweight for transportation purposes. Thus, as commercial mobile and fixed operators are responding to the mobile defense communications needs with perhaps more C-, Ku-band and L-band offerings in the foreseeable future, additional X-band and Ka-band frequencies may prove more nimble and flexible for broadband highly mobile platforms with quick-deploy, smaller but more powerful antenna.

To make this happen, it is not just the technology that must develop concrete mobile perspectives, but also the policies. Over the next few months and maybe years, discussions on the future, the type and scope of interventions will take place that will

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affect these developments. For the industry to see longer term COTM contracts with the US DoD and allied armies, this may prove to be a wait-and-see period while these issues are sorted out.

One thing is certain, and both sides recognize it. Commercial communications satellites are in the field for the long-haul, first because they are readily available and two, it provides the connectivity with lower power terminals that is sufficient for a variety of non-critical field applications, many of them mobile. While the picture on the ground may not be completely clear as to standards, stable requirements as well as funding, many parts of the military on land, in the air and at sea have plans to use commercial satellite communications systems for voice, data, and video on the move in the coming years. MSM

Claude Rousseau is Analyst, Satellite Communications for NSR. He can be reached at croussaeu@nsr.com

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FEATURE

Galileo comes out of the closet

By David Mulholland

A row over funding Europe's Galileo satellite navigation constellation is semaphoring the long unspoken reason for the project: military independence.

After the companies in the Galileo consortium walked out on the program – saying they did not believe they could make money from the system since the U.S. provides essentially the same service for free with the U.S. Air Force's Global Positioning System (GPS) – the European Commission (EC) advocated that the program's shortfall, 2.4 billion euros ($3.2), be funded with public money.

Everything seemed set to continue the fiction that Galileo is a purely civil system until the U.K. and the Netherlands balked at paying for a duplicative satellite navigation system. Their argument is that NATO uses GPS, which the U.S. Air Force is going to upgrade with the GPS III constellation, so why pay public money for what was supposed to be a commercial system. The crux of the disagreement is that U.K. and Dutch officials took the Galileo system's justification at face value, something other backers of the Galileo system did not do.

The real justification for Galileo is military independence, senior French government and industry officials told *MilsatMagazine*. They added that Galileo is necessary for Europe to remain at the cutting edge of satellite navigation technology, which has become a military technology of critical importance. Many of the advances in military technology since the end of the Cold War have been based on GPS. It is now used in navigation, logistics, intelligence, targeting and weapon guidance. Like the internet or mobile telephony, once you come to rely on it, you wonder how you ever survived without it. Also, since satellite navigation has become part of the transport infrastructure, having one's own system is reassuring.

Galileo satellite about to be launched on a Soyuz rocket. (photo courtesy of the European Space Agency)

The admission that Galileo is a military system was dropped with more of a whimper than a bang, when EC Transport Commissioner Jacques Barrot said in May that Galileo will be "civilian controlled … but there will be military users." While it was a bland statement, it meant that the EC was now publicly admitting that at least part of Galileo's justification was military, something that the EC has studiously avoided saying until now.

Admitting the existence of a military aspect to Galileo opens the door to funding from European ministries of defense. Even with opposition from the U.K. and the Netherlands, there is speculation that Galileo will proceed with as a project that is more openly military.

Vive la France

The most ardent backer of Galileo has been France, which jealously guards its independence and has long pushed for an independent European military capability. The real concern is that the U.S. could turn off the GPS signals in an area where a European military force was operating against the will of the U.S. As one French executive noted, the U.S. stopped France and the U.K. from taking back the Suez Canal in

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1956 after it was nationalized by the Egyptian government. How much easier would it have been to do that if the U.S. controlled the French and U.K.'s navigation, targeting and guidance systems.

The U.S. invasion of Iraq in the face of widespread opposition and the subsequent childish French-bashing has only hardened the resolve of many Europeans to develop and maintain an independent capability. The U.S. Congress' symbolic gesture of renaming French fries "freedom fries" just as sour kraut was renamed "liberty cabbage" during the First World War did little to reassure Europeans that the U.S. would act rationally in the future, especially since the U.S. was not at war with France as it had been with Germany.

There is also the concern that the U.S. could blackmail Europe by turning off the Global Positioning System (GPS) constellation over Europe, although that fear is given little credence by most because if the U.S. turned off the GPS, Europeans could use the system that the Chinese are developing in response to their own concerns about safe-guarding their independence of action.

Perhaps the most telling indication that Galileo is a military system is that European defense companies developing and producing precision-guided munitions have long planned to have dual GPS and Galileo guidance.

One example of this is the Taurus KEPD 350 cruise missile that is in production for the German Air Force and manufactured by TAURUS Systems GmbH, a joint venture between LFK and Saab Bofors Dynamics AB.

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FEATURE

Failed business plan

The funding issue is critical. Industry has stopped work on the program on the basis that without government funding for the deployment of the 30-satellite Galileo constellation the project is not financially viable. The EC is now pushing for European Union governments to provide the funding this year to keep the Galileo program alive with an eye to making it a government-run program rather than a public-private partnership where industry pays for two-thirds. As Abba Eban said, “When all else fails, men turn to reason.”

Originally, there was much talk about Galileo having more precision than GPS, which could be useful for a number of applications, such as aircraft and ship navigation. However, executives have noted that these are niche markets with potential revenues far too small to pay for the entire constellation.

For the military, Galileo will not be appreciably more accurate than GPS’ more precise military signal. This is especially true for GPS III, which will roll out only a few years after Galileo.

Currently the program is in a place-keeper state with the Galileo In-Orbit Validation Element-A (GIOVE-A) and GIOVE-B satellites from Surrey Satellite Technology Ltd., which specializes in small low-cost satellites, using the frequency band to maintain their frequency filing. If they stop using it, the International Telecommunications Union may revoke the license.

Where’s the Profit?

Galileo had been led by industry under the direction of the EC and European Space Agency (ESA). The cherished fiction that industry would provide two-thirds of the money to develop and launch Galileo to reap distant and uncertain profits has foundered. Like a rash of European projects in recent years that have turned over to industry functions that have historically been the domain of government, this one too seems to be faltering on the logic of industry. Executives at the companies involved in Galileo have said privately that they were being asked to invest substantial sums into Galileo without a firm revenue model. Furthermore, even if the rosiest assumption came true, the profits would be many years in the future, long after the executives making the decisions today have retired.

The chief corporate players are Europe’s EADS, France’s Thales Alenia Space, Italy’s Finmeccanica; Spain’s Aena and Hispasat, the U.K.’s Inmarsat, and a German alliance led by Deutsche Telekom.

The reason that a revenue model is so difficult is that the U.S. Air Force controlled-GPS constellation is free for all to use. How, executives and observers have long wondered, is Galileo supposed to compete?

Even if civil users could somehow be induced to pay for what they receive for free from the GPS, the signal would first need to be encrypted. But that encryption would be relatively easy to crack since the GPS also the content of the signal – time and location – from the GPS. Cracking Galileo encryption would likely become a hacker hobby as, indeed, cracking the encrypted signals from the Galileo prototype satellites became.

Governments Take Over

The EC recommended on May 16 that governments finance the program themselves as it would be cheaper than keeping the private sector involved.

The commission estimates that the Galileo project will be able to return about 10 billion euros to the public sector from revenues generated by Galileo by 2030. But most of these profits will come late in the program.

Continuing with the public-private partnership that has been lauded since it started in the late 1990s will cost up to 14 billion euros, with the system unlikely to be in service before 2014. After accounting for revenues through

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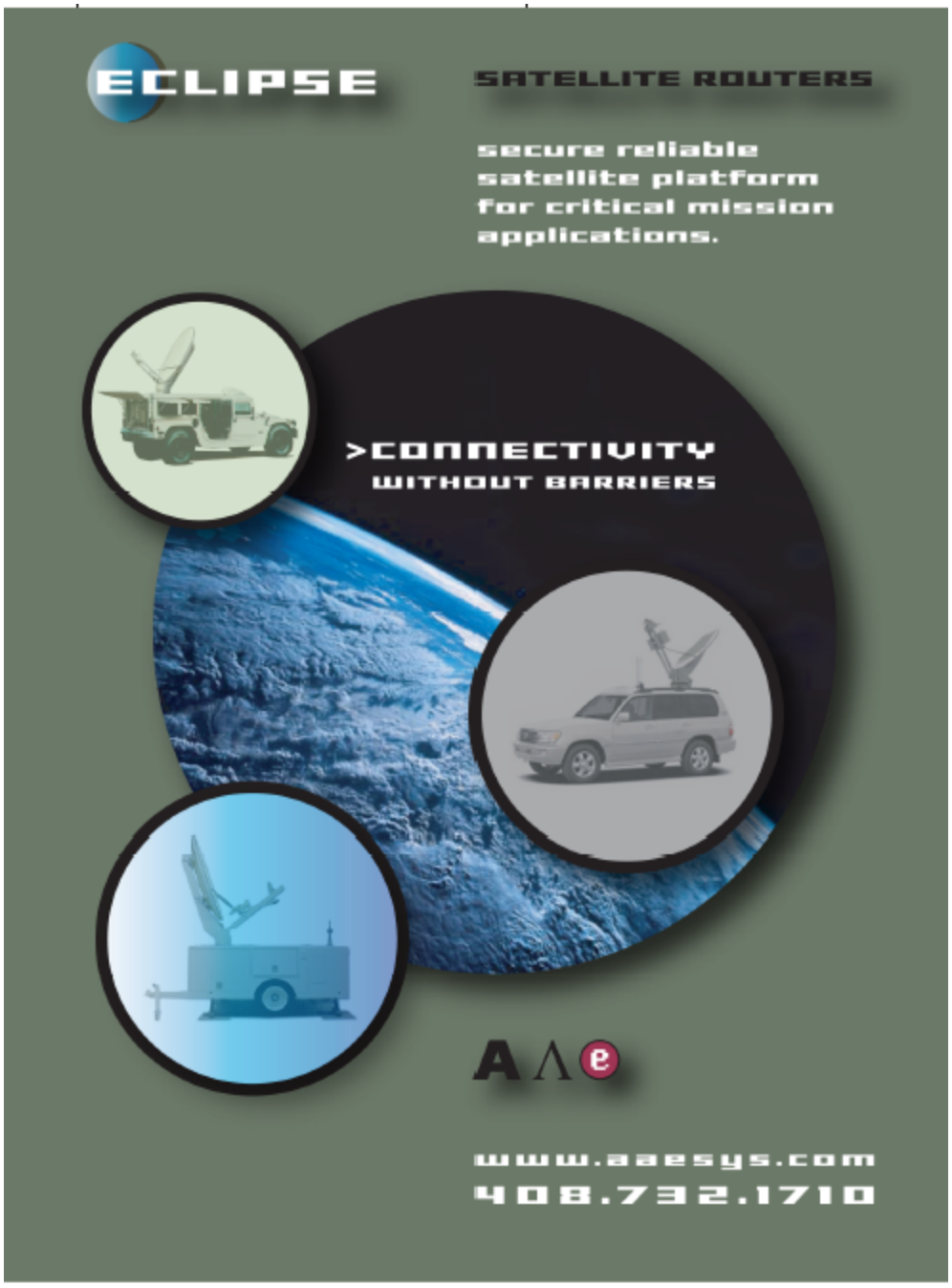
Artist rendition of the Galileo satellite (image courtesy of European Space Agency)

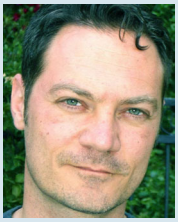
2030, the net cost to taxpayers would be around 1.8 billion euros.

The original Galileo funding model called for 1 billion euros of public funding and 2.4 billion euros of private funding to develop and launch the first and second generation of satellites in return for a 20-year concession to run Galileo for profit.

There is little that the EC and the ESA can do to force the companies to invest in the system if they deem it a money-losing proposition.

The EC is now proposing to take full control of Galileo and to delegate procurement oversight to the ESA. The consortium members will be punished if this happens by having the remaining satellites opened up to competitive bidding. That, however, is not much of a threat since the consortium already has all of Europe's satellite manufacturers. And since one of the goals of the Galileo program is to support Europe's space industry, it is inconceivable that the ESA would look outside of Europe for the satellites. MSM





David Mulholland has covered military affairs for more than a decade reporting on NASA and US Department of Defense for New Technology Week, the USAF for Defense News, aviation and business for Jane's Defence Weekly, and logistics as co-founder and editor of Military Logistics International. He can be reached at dmulholland100@hotmail.com.

FEATURE

Escalating Complexities and Costs in Space Programs – TSAT's Strategies to Maximize Performance and Capacity

By Wendy Lui

Transforming the future was the theme for the 19th National Space Symposium held a few years ago. "The industry showed up in record numbers to hear from the nation's space policy leaders and talk together about transforming the future of space." as reported by the Space Foundation's *Spacewatch*. The Transformational Communications Architecture (TCA) defines a long-term view for transition, Internet Protocol (IP) driven net-centric operation; and the extension of local Warfighter networks and the Global Information Grid (GIG) to users without access to terrestrial connectivity. It is a whole new architecture comprising of terrestrial infrastructure, network and management, terminals and space segments to support our war-fighting efforts for the US intelligence, defense, and space agencies.

With a modernized constellation of five satellites worldwide, a satellite operations element (TSOE) for on-orbit control, TSAT Mission Operations Systems (TMOS) to provide network management, and GIG Border Element (TGBE) as ground gateways, the Transformational Satellite Communications (TSAT)

Space-Based Capabilities (Dollars in Billions)

Space Programs		FY07	FY08	FY07/08
EELV	Evolved Expendable Launch Vehicle	0.9	1.2	+0.3
TSAT	Transformational Satellite	0.7	1.1	+0.4
GPS	Global Positioning System	0.6	0.9	+0.3
MUOS	Mobile User Objective System	0.7	0.5	+0.1
AEHF	Advanced EHF Satellite	0.6	0.6	---
WGS	Wided and Gapfiller System	0.4	0.3	--0.1
MLV	Modular Launch Vehicles	0.2	0.1	--0.1

serves as the space backbone of the TCA. TSAT is to deliver high data rates with crosslink and onboard network routing capabilities using both radio frequency (RF) and laser communications for Space and Airborne Intelligence, Surveillance and Reconnaissance (SISR, AISR), tactical communications on the move (COTM), and strategic users. New technologies will be making maiden voyage in space in addition to the unprecedented complexities built into the system, over 1.7 billion dollars has already been funded for fiscal year 2007 and 2008 alone on this ambitious program. It is slated to be launched by the first quarter of fiscal 2016 according to the *DefenseNews.*

Funding of Space Programs

In the US Department of Defense's (DoD) defense budget estimates for FY2008 released this

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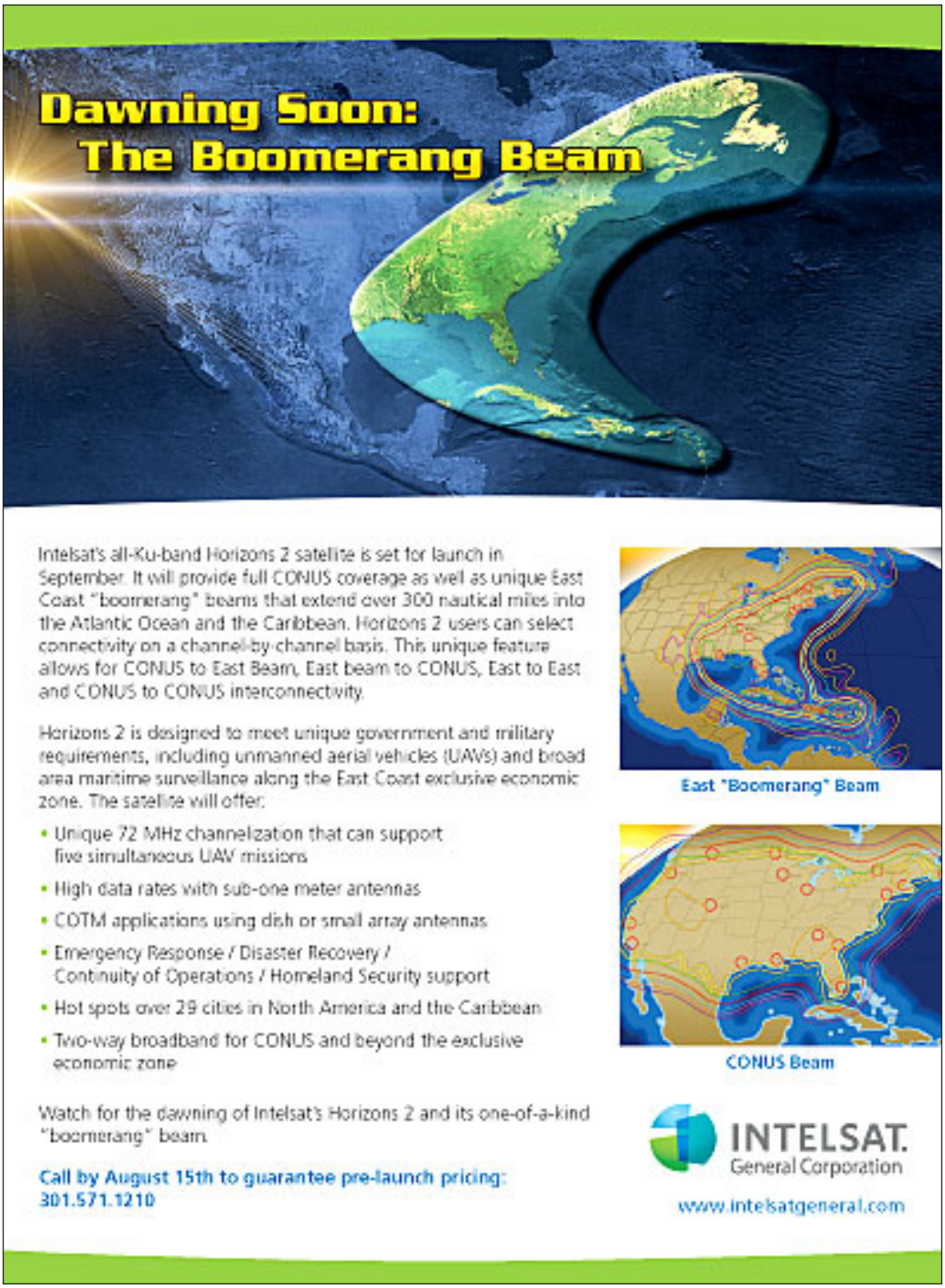
February, the budget for space based programs has increased by 1.2 billion from 4.8 billion dollars for 2007. This 6 billion dollar budget includes the continuation of protected wideband Military Satellite Communications (MILSATCOM) systems such as Advanced Extremely High Frequency (AEHF), Wideband Global System (WGS), and TSAT. It also includes any new and continued efforts on the Global Positioning System (GPS). As the only satellite global navigation system at present, GPS is faced with the revival of the Russian GLONASS, the introduction of the European Union Council's Galileo, the Indian Regional navigation System (IRNSS) and the Chinese Compass navigation Satellite System.

With the war on terror and the quest to continue to improve space-based capabilities, there is no question that all space programs are under tremendous pressure to reduce costs while still promising to deliver all the functionalities and capabilities desired. To realize a complex development such as the TSAT system, the challenge really is how to exploit new techniques and emerging technologies in designs which are suitable for operating under conditions and environments required. Here are some of the many strategies studied, employed and demonstrated to maximize efficiency, performance and capability.

Maximize Throughput with Dynamic Resource Allocation

Unlike other traditional MILSATCOM systems where bandwidth is dedicated to each user, the TSAT is designed to



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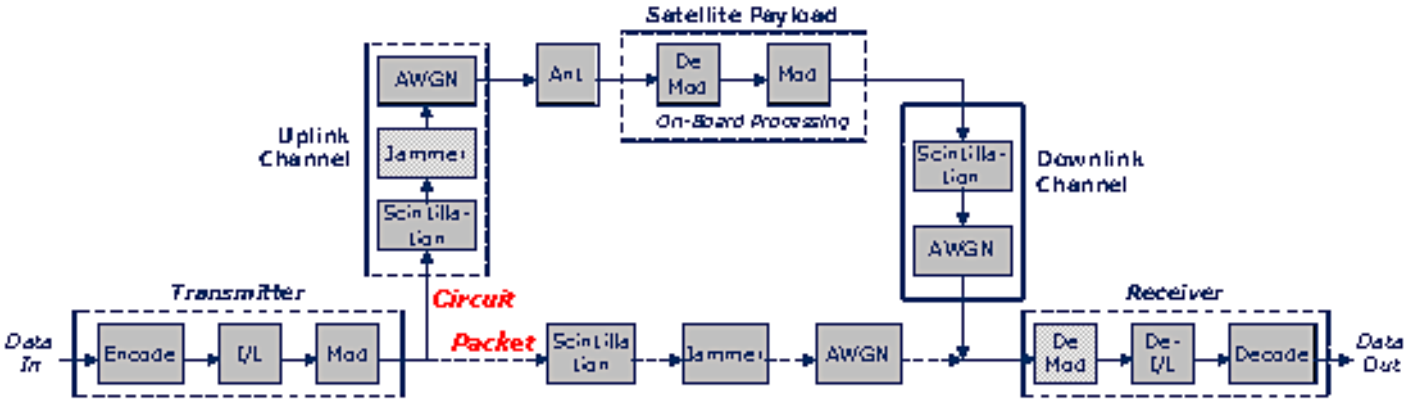

Modeling and Simulation - Notional illustration

accommodate dynamic, uneven IP-like and packet switching traffic. Several users may simultaneously and seamlessly share the same pipe effectively offering an "IP-Gain". This maximizes the total usable bandwidth available at all times yielding more bits per Hertz.

TSAT's Next Generation Processor/Router (NGPR) also implements a dynamic bandwidth and resource allocation (DBRA) technique which changes the modulation index, coding and data rate of the transmission when sudden changes of terminal signal are detected. Attenuation due to rain, clouds and any form of obstruction is particularly apparent at high frequency bands and therefore reducing link availability which may make transmission inadequate for quality desired. Ability to adaptively adjust waveform and transmission data rate is desirable as change in environment and link conditions is inevitable. With DBRA, link margin reserved for weather can now be used to send the voice, data and video at a higher data rate whenever channel conditions permits.

Use of Bandwidth and Power Efficient Modulation Modes

The TSAT system supports RF Enhanced Extended Data rates (XDR+) at least up to 45 Mbps. Each TSAT satellite is to deliver several times the capacity of an AEHF satellite. It is required to serve thousands of terminals ranging from small COTMs to powerful teleports simultaneously using the limited EHF/SHF spectrum. Bandwidth efficient and power efficient signaling techniques are necessary to meet these challenges. The adaptive feature along with DBRA makes possible the use of a more bandwidth efficient modulation whenever environment and link conditions allow, and use of a more power efficient modulation whenever bandwidth is available; thereby improving power and spectral efficiencies.

Coded Waveform for Efficient Signaling

MILSATCOM systems use frequency hopping to provide protection from hostile jamming for low probability of intercept and low probably of detection. The TSAT system takes advantage of elaborate iterative coding schemes to attain the level of protection needed while still using power and bandwidth resources efficiently. Turbo decoding has been developed in the early 90's by the educational and scientific sectors, more recent studies on trade offs between performance and complexities have demonstrated great success.

Serial Concatenated Coding (SCCC) can contribute as much as 4 dB coding gain or 2.5 times power savings than using a convolutional coding with Viterbi decoding scheme. This means higher data rate is achievable for the users with the same power or provides better performance under the presence of some interfering bursty environments such as jamming. This benefit is realized at the cost of increased complexity.

In MilCom 2006, an innovative algorithm was introduced by LinQuest in an effort to reduce the complexity of the decoding device for any applications using SCCC in

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a field programmable gate array (FPGA) or application specific integrated circuit (ASIC) implementation. Funded by the DoD Air Force's Small Business Innovation Research Program (SBIR), prototypes have been constructed with ongoing testing to verify the integrity of performance. In addition, performance under radiation and scintillation environments is also being studied to assess the potential for space applications. This could be promising in reducing weight, power and costs for both satellite payload and ground terminals.

Laser Communications for High Data Rate Transmissions

The TSAT portion of the TCA will incorporate laser communications (Lasercom) links at tens of Giga bits per second to meet defense and intelligence community requirements for high data rate, protected, assured, scintillation survivable communications. Although the optical technologies used for high data rate laser communications were developed over twenty years ago, there is currently no Satcom based system, adequately meeting space standards, in operation.

As the beam width of an optical terminal is extremely small, the challenge is to scan intelligently, point with great precision, ,and maintain tracking to lock on to and communicate with a traveling terminal subject to atmospheric turbulence. As a risk reduction measure, several increments of testing have already been conducted by the Lockheed Martin and Northrop Grumman TSAT team and the Boeing TSAT team to demonstrate technology maturity, systems engineering and integration. Lockheed Martin Space Systems serves as the prime contractor while Northrop Grumman is responsible for the communications payload, including laser and RF communications and on-board processing. Boeing, a prime contractor, has teamed up with Ball Aerospace and Technologies Corporation on the Lasercom effort.

About LinQuest Corporation

LinQuest with heritage that goes back to 1974 provides clients comprehensive network and communications engineering development, integration, and deployment along with advanced training and support. Recognized as a leader in providing precise, clear, in-depth, informed and innovative solutions to engineering development, deployment and operation of state-of-the-art network and communications systems, LinQuest is headquartered in Los Angeles with nine other locations throughout the US.

Modeling and Simulation to help with Design Trades

The process of establishing transmission, allocating resource dynamically, and changing terminal locations and antenna coverage areas under various operating conditions while needing to maintain the desirable performance for acceptable signal quality is a complex problem. The expectation is certainly difficult to comprehend. End-to-end models are frequently utilized throughout the development phase to simulate the multitude of effects of encoding, interleaving, modulation, jamming, fading and such to estimate link performance. With fast computer processing power, software based models can be constructed quite quickly to perform simulations down to the bit level mimicking Mega bits of data going through the various stages of the system subject to effects and characteristics of the channel. Modeling and simulations do offer low cost and immediate solutions to better understand many design trades and risk reductions concerns.

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Conclusion

Although radically different from earlier systems such as Milstar and AEHF, TSAT assures interoperability with circuit based operations and also providing Internet-like reliable, secure, and protected connectivity with not only RF but laser communications capabilities. Gigabits of data with IP routing free of terrestrial landline dependency are to be realized within the next decade bridging satellites, space and airborne vehicles, large teleports and small communications on the move mobile platforms. Significant progress and success have already been realized and demonstrated with the development of next generation processors and routers, lasercom, coded waveforms, and clever power efficient and bandwidth maximizing techniques. Many technical and programmatic challenges still remain needing continued support to realize this crucial space backbone of the Transformational Communications Architecture. MSM

Wendy Lui works for Linquest Corporation. Prior to this, she was senior vice president marketing and founding member of Pacific Century Matrix. She also served as vice president for Pacific Century Group, director for Worldspace, regional manager for AsiaSat and engineer for Hughes. She has a MSEE and a BSEE from the Univ of Southern California. She can be reached at: wendy.lui@linquest.com

CASE STUDY

Rebuilding Afghanistan's Communications Infrastructure

by Virgil Labrador

No matter how you slice it, war is a nasty affair. But sometimes it maybe necessary to effect positive changes in a society. One country that has had its share of the destructive effects of war over the centuries is the landlocked Central Asian country of Afghanistan. Just in the last 20 years it has been invaded by the former Soviet Union, then overrun by the Taliban, embroiled in a bloody civil war and then came Operation Enduring Freedom after the September 11 attacks on the World Trade Center. The endless conflicts has left the country impoverished and devastated.

To rebuild the country's telecommunications infrastructure, the World Bank issued a request for proposal in 2003 to construct a Government Communications Network (GCN) for Afghanistan's Ministry of Communications. The goal was to provide voice and data services to ministries and government offices in Kabul, Afghanistan's capital, and to provincial capitals.

The winning bidder was Hauppauge, New York-based Globecomm Systems. "The environment is about as challenging as it gets," said Globecomm vice president Paul Knudson, who managed the Afghanistan project. "Outside Kabul, there is little or no infrastructure, no roads and no electricity. Security is a continuing concern. We have had to unload trucks in the middle of nowhere, hand-carry electronics across a stream, then get the truck across and reload it."

"We are in the age of information and Afghanistan should be part of the information society. Information technology should be a part of everyday life in Afghanistan…the Afghan people as a whole will continue to benefit from these accomplishments, which provide Afghanistan with the communications infrastructure necessary for economic and political growth."
- Eng. Amirzai Sangin, Minister of Communications and Information Technology, Islamic Republic of Afghanistan.

To make matters more complicated, no sooner had the project been awarded than it began to change. Globecomm discovered that the Ministry of Communications had, under a separate contract, purchased CDMA mobile switches from a Chinese company. They were providing local mobile service in "telecom islands" but had no outside connections. Interconnecting the switches and linking them to long-distance circuits became an unexpected priority.

"It was a fundamental change," said Globecomm vice president Paul Johnson, who is the account executive for Afghanistan. "What we originally planned to be a private network rapidly became a public network. We are, in effect, the backbone for a public telephone system, providing bandwidth, trunking, bringing traffic back to Kabul and providing international voice, video and Internet service. That's in addition to meeting the government's urgent need for connectivity."

Another important change involved the identity of Globecomm's client. Globecomm developed each project under the management of the Ministry of Communications. But when the Ministry accepts systems upon completion, the assets are transferred to Afghan Telecom. "The goal is to make the Ministry a true regulatory body," said Knudson, "while Afghan Tel becomes the operator. With each new network, Afghan Tel gains assets and increased value that improve its ability to attract outside investment."

CASE STUDY

Multiple Projects

The IP-based Government Communications Network links 42 ministries and offices in Kabul via fiber and microwave, and extends this core network to 34 provincial capitals via satellite. Satellite bandwidth also links dozens of CDMA mobile switches in the provinces with Globecomm's Sat- Cell hosted switching system in the United States. All calls taking place within the footprint of each CDMA switch remain local, while calls between the switches or outside Afghanistan are routed through Globecomm's Network Operations Center.

The GCN turned out to be the first of multiple projects awarded to Globecomm by Afghanistan's government. Next came the District Communications Network (DCN), funded by US AID, which aimed to push service into rural areas. Globecom designed, installed and commissioned a satellite network connecting a hub in Kabul to police, fire and other essential services in each of Afghanistan's 337 legislative districts to provide voice and thin-route data as well as Internet access. Demand for the DCN has been tremendous, and Globecomm is working with Afghan Tel to expand the business plan and bring more revenue into the network.

IP-Based Platforms

An international gateway for voice, data and video, funded by the Afghan Reconstruction Trust Fund (ARTF), came next. The Ministry originally specified a DCME network, the standard technology, but accepted Globecomm's recommendation for an IP platform that was both less expensive and far more flexible. In addition to gateway service for Afghanistan, the ARFT also provides a backup satellite facility for the GCN.

In two other projects, Globecomm has installed PABX switches at National Army bases throughout the country and integrated them into an existing VSAT network, and also provided a custom-designed satellite truck to the Ministry for mobile spectrum monitoring. With so much of the nation's telecommunications depending on satellite, the truck will allow the Ministry to more effectively regulate spectrum, issue licenses and shut down illegal operators.

Much of the credit for Globecomm's success can be attributed to its Afghan partner, Watan Telecom, and its Chairman and CEO, Mr. Rateb Popal. "Mr. Popal worked with us early on to ensure that resources were in place to train the people needed to carry out the installation and commissioning of the work. Together, we have built the capacity of the Afghan workers and transferred a great deal of technology 'know how.' We now have Afghan technicians supporting the programs as they move from deployment to operations and maintenance," said Globecomm's CEO David Hershberg.

Lessons Learned

There were several lessons learned in the Afghanistan communications network project. One is that Globecomm's work in providing a satellite backbone was essential to the initial reconstruction efforts in Afghanistan. It again proved that "a little bit of satellite goes a long way." This was made clear when the nation's Minister of Communications, Amirzai Sangin commented that the capability of the new satellite-centric network enabled telephone, Internet and videoconferencing services to be available, and widely-used for peaceful purposes and economic growth for the first time. Afghan President Hamid Karzai has become a keen user of satellite technology and uses the broadband infrastructure to communicate with the provinces via video conferences. This is especially important during times of anti-government activities.

The government also realized that attempt is

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CASE STUDY

to become an "intelligent community," said Johnson.

"Among the organizational lessons learned was the need to be extremely flexible on the ground. The government was new, and satellite was not something that the nation had experience with in the past," said Globecomm's CEO David Hershberg. This resulted in a lack of engineers. To overcome this, a project manager hired by World Bank become the key technical individual and an extensive training program provided by Globecomm to the Afghan employees who were eager to learn and operate their new 21st Century network for the fledging start-up Afghanistan Telephone Company (AFTEL). The successful deployment and commissioning of the equipment to the provinces was through a local contractor, who was well respected and recognized throughout Afghanistan. The work has since been transitioned as part of a strategic alliance with AFTEL to further strengthen their technical resources and support of the network. AFTEL has now taken over the network and is performing with growing efficiency.

Eng. Amirzai Sangin, Minister of Communications of Afghanistan receiving the Intelligent Community Forum's "Visionary of the Year" award in behalf of the Afghan Ministry of Communications for successfully implementing a turnkey voice and data infrastructure in record time. (photo courtesy of Intelligent Communitiy Forum).

Already the reconstruction of Afghanistan's communications infrastructure is reaping dramatic results. There are currently over 1.6 million cell phone subscribers in Afghanistan– and this number is expected to double over the course of the next three years, after having achieved 4.8% penetration of the country in just the last three years. In addition:

- 110 out of 365 of Afghanistan's districts are now connected by phone, fax and internet access through the District Communications Network (DCN) – the USAID-funded VSAT-based network that will eventually link all 360 districts with Kabul and the world. 200 DCN nodes were operational by the end of 2006.

- Approximately 30,000 jobs have been created by the growth in the telecom sector.

- the Government of Afghanistan's telecom industry revenues rose from less than $20,000 in 2002 to over $ 66 million in 2006.

Eng. Amirzai Sangin, Minister of Communications and Information Technology, Islamic Republic of Afghanistan, probably summed it up best: "We are in the age of information and Afghanistan should be part of the information society. Information technology should be a part of everyday life in Afghanistan…the Afghan people as a whole will continue to benefit from these accomplishments, which provide Afghanistan with the communications infrastructure necessary for economic and political growth."

Sometimes out of the ravages of conflict, new infrastructures bring renewed promise and hope. MSM

Virgil Labrador is the Managing Editor of Satnews Publishers. He is responsible for all editorial activities worldwide. He edits the Daily subscription service, *Satnews Daily* and the monthly e-magazine, *SatMagazine* and the quarterly, *MilsatMagazine*. He also manages the web portal, Satnews.com. He is co-author of the book, *Heavens Fill With Commerce, a Brief History of the Satellite Communications Industry*, for which he was nominated for the Eugene Emme Science Literature award in 2005. He has worked in various capacities in the satelite industry and holds a master's in communciations management from the University of Southern California. He can be reached at virgil@satnews.com

SPOTLIGHT INTERVIEW

Interview with Maj. Gen. James Armor, Jr.

At the recent ISCe Conference and Expo last June 8, Maj. Gen. James Armor, Jr., Director of the National Security Space Office (NSSO), Office of the Under Secretary of the Air Force spoke with MilsatMagazine Managing Editor Virgil Labrador. The NSSO is responsible for creating strategic focus and unity of effort across National Security Space to advance US space power. In a candid interview, Maj. Gen. Armor spoke on the US' priorities in satellite communications and how industry and government can improve their partnership, among other issues. Excerpts of the interview:

Maj. Gen. James Armor, Jr. empahsizing a point at the recent ISCe Conference in San Diego where he was one of the keynote speakers.

Q. *For the benefit of our readers, can you give a brief description of the National Security Space Office's mission?*

A. Certainly, The National Security Space Office is the staff office supporting the Department of Defense (DoD) executive agent for Space, which is currently the Undersecretary for the Air Force. We are the focal point for Department's Space activities. I support the Undersecretary in Space Policy, International Relations, in working with the industry and representing him in interagency Space working groups. We also work with concerned agencies on the Space budget cycle annually and on space program acquisition and oversight issues.

We also maintain a number of space architectures including the one for satellite called Transformational Communications Architecture (TCA), and another for Position, Navigation and Timing (PNT) and we are starting one for Integrated Surveillance and Reconnaissance.

Q. *What influence does your office have in the procurement of satellite communications services?*

A. It's only a *moral* authority (laughs)- and I'm stretching the point there. When we build an architecture like the one for satellite communications-TCA, we do not have the title 10 authority to procure services--that resides in the respective government agencies concerned. However, when we build a common architecture, we facilitate the process so that all the branches involved are on the same page in terms of the budget and a common specs and standards. The process is not perfect, and we can't shout orders for everyone to comply but we do our best to work things out.

> ***"...Space is cool. But more than, space is a vital national asset that needs to be cherished and taken cared of and prospered. Our economy depends on space..."***

Q. *How important is satellite communications to the US' overall defense strategy?*

A. It's very important. Every year we do an annual National Security Space Plan that lays out guidance for the budget, and invariably satellite communications is listed as number one in priority. Satellite communications is a critical part of the military infrastructure from the very highest level --the President and Commander and in Chief--to the lowest level of the warfighter in the field.

Q. *What do you think should be the priorities of the satellite program of the US military?*

A. One area where we have had improvement is the area of protection. As you know, there are some "bad actors" in the world that will do nefarious things such as jam satellite signals for their own

purposes. It would be helpful for everybody both the industry and the military to have space situational awareness to be able to find, locate and take action on such threats.

***Q**. So do you consider this a top priority considering the Chinese recently tested an anti-satellite weapon on one of their own satellites?*

A. Yes, I do consider this a top priority and we are already taking action. We have regular sessions with satellite communications CEOs, together with the Joint Space Operations Center out of Vandenberg Air Force Base in California. The purpose is to sort of share notes and we've given them briefings to the extent that we can share it, on possible threats that they may face and we've given them the right phone numbers and even secure proprietary phones in case they ever have a problem. We're trying to build a workable relationship and that's going pretty well so far.

Q. You mentioned some preliminary results of a study you did on the space industry during your luncheon speech today. Can you highlight some of your findings?

A. Certainly. We found that the government lacks insight on the space supply chain. There are many workforce issues—such as the lack of experienced and trained people and the supply base is being eroded domestically due to outsourcing and other factors.

How can the partnership between the commercial sector and the government be improved?

A. It is already a very strong partnership. I would hope that we would continue to incrementally improve that partnership at every level. As the government, we need to become better customers. We need to understand the market constraints of the commercial satcom sector so that we can ask for the right things that don't undermine a commercial company's market position. We are not good at doing that yet. I'm convinced we can incrementally be better at that.
We also need to leverage what the commercial sector brings to the table in terms of new technologies and new techniques.

***Q.** Any final thoughts?*

A. Space is cool. But more than that, space is a vital national asset that needs to be cherished and taken cared of and prospered. Our economy depends on space. Space is important to the world, it is critical and it is not possible to state how important space is to the nation.

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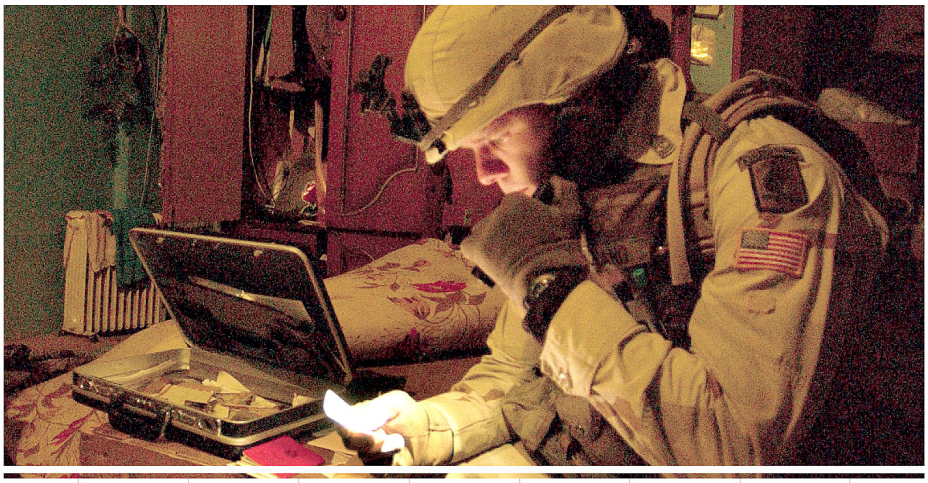

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BUSINESS OPPORTUNITIES

Follows are listings of contracting opportunities with U.S. Federal Government as posted on the Federal Business Opportunities website. In future issues we will also feature other opportunities worldwide.

Project: Space Based Infrared System (SBIRS) Production of one additional Geosynchronous Earth Orbit (GEO 3), two additional Highly Earth Orbit (HEO) Payloads (HEO 3&4), and an option for an additional GEO 4

Posted Date: Jun 21, 2007

Contracting Office Address

Department of the Air Force, Air Force Space Command, SMC - Space and Missile Systems Center, 483 North Aviation Blvd, El Segundo, CA, 90245-2808, UNITED STATES

Description

Notice of Proposed Contract Action (NOCA)

The Space Based Infrared Systems (SBIRS) Program Office intends to issue a contract for the production of one (1) additional SBIRS Geosynchronous Earth Orbit (GEO) satellite (GEO 3) and two (2) additional Highly Elliptical Orbit (HEO) payloads (HEO 3&4). An option will be included for an additional Geosynchronous Earth Orbit (GEO) satellite (GEO 4). GEO 3 (and GEO 4 if exercised) and HEO 3&4 are anticipated to be derivatives of the existing designs developed under the SBIRS Engineering and Manufacturing Development (EMD) contract with minimal modifications. GEO 3 (and GEO 4 if exercised) is intended to continue deployment of the full SBIRS High constellation. HEO 3&4 are planned as replenishments for the first two HEO payloads. The new GEO satellite and HEO payloads must integrate with the existing ground operations and maintenance support infrastructure with minimal changes.

The SBIRS program office anticipates releasing the sole source RFP in July 2007 with a contract award in January 2008 (See numbered note 22). It has been determined that Lockheed Martin is the only responsible source and no other supplies or services will satisfy our requirements. The contract type will be cost-plus award fee and cost plus incentive fee. The intended contractor is Lockheed Martin Space Systems Company (LMSSC), 1111 Lockheed Martin Way, Sunnyvale, CA 94089-1212.

The SBIRS Program Office has contracted with LMSSC over the last 11 years and they possess the required data and prototypes necessary to produce the items described above. LMSSC has the capability to fulfill this contract without the SBIRS Program Office having to expend significant funds on another contractor to reach the equivalent capability. Contractors interested in subcontracting opportunities should contract LMSSC directly. The NAICS code is 336414 (size standard: 1,000 employees).

The technical point of contact is Lt Col Richard Pierce, Program Manager, (310) 653-4421 or email:

richard.pierce@losangeles.af.mil

The contracting points of contacts are:

Gregory S. Brown, Contracting Officer, (310) 653-3489 or email:

gregory.brown@losangeles.af.mil

Shanika Richardson, Contract Negotiator, (310) 653-4502 or email: shanika.richardson@losangeles.af.mil

Point of Contact

Shanika Richardson, Contracting Specialist, Phone 310-653-4502, Email Shanika.Richardson@Losangeles.af.mil

Project: Global Positioning System (GPS) Block III RFP Release

Posted Date: Apr 05, 2007

Contracting Office Address

Department of the Air Force, Air Force Space Command, SMC - Space and Missiles System Center, 483 North Aviation Blvd, El Segundo, CA, 90245-2808, UNITED STATES

Description

The Global Systems Positioning Wing will post the final Request for Proposal number FA8807-06-R-0001 for the GPS IIIA Space Vehicle to the GPS Bidder?s Library on 19 April 2007. The Navstar GPS is a satellite-based radio navigation system that serves military and civil users worldwide. GPS IIIA will maintain constellation sustainment, provide existing capabilities, plus introduction of a new L1C civil signal, increased earth coverage M-code power for authorized military users, a graceful growth path to achieve full CDD threshold requirements, and continuing support for the NDS mission, to serve the evolving needs of GPS military and civil users. GPS IIIA is an Acquisition Category 1D program. The GPS must comply with 10 United States Code (USC) ? 2281 that requires that the Secretary of Defense ensure the continued sustainment and operation of GPS for military and civilian purposes and 42 USC ? 14712 and comply with certain standards and facilitates international cooperation. This acquisition effort executes these statutory mandates.

Original Point of Contact

Felicia Brown, Contract Specialist, Phone (310) 653-3756, Fax null, Email Felicia.Brown@LosAngeles.af.mil - Andrew Mitchell, Contract Specialist, Phone 310-653-3882, Fax null, Email andrew.mitchell@losangeles.af.mil

Current Point of Contact

Felicia Brown, Contract Specialist, Phone (310) 653-3756, Fax null, Email Felicia.Brown@LosAngeles.af.mil - Alan Mak, Contracting Officer, Phone (310) 363-1741, Fax null, Email alan.mak@losangeles.af.mil

BUSINESS OPPORTUNITIES

Project: Satellite Imagery at Various Locations

Posted Date: Jun 21, 2007

Contracting Office Address

Department of Homeland Security, United States Coast Guard (USCG), Commandant (G-ACS), U.S. Coast Guard Headquarters, 2100 Second St., SW, Washington, DC, 20593-0001, UNITED STATES

Description

This is a combined synopsis/solicitation for commercial items prepared in accordance with the format in FAR Subpart 12.6, in conjunction with FAR 13.5, as supplemented with additional information included in this notice. This announcement constitutes the only solicitation; proposals are being requested and a written solicitation will not be issued. The solicitation number is HSCG23-07-R-TE4197 and is issued as a request for proposal (RFP). The solicitation document and incorporated provision and clauses are those in effect through Federal Acquisitions Circular FAC 05-16. The North American Industrial Classification System (NAICS) code for this procurement is 517410.

The objective is to purchase GlobalStar equipment (brand name or equal to) and airtime service packages for prototyping the habitability onboard a United States Coast Guard (USCG) cutter and ensuring that the GlobalStar spatial and terrestrial networks (brand name or equal to) can support USCG networking needs.

The USCG requires the following line item numbers (CLINS) for a testing period of twelve (12) months with a six month option based on network architecture issues.

CLIN 00001 10 GlobalStar (brand name or equal to, with salient characteristics) MCM 4M data units. Warranty period to commence after the MCM 4M data units are activated on the GlobalStar network (brand name or equal to). Units shall include free firmware or software upgrades. GlobalStar MCM 4M data units (brand name or equal to) will be peers to a software bonding server within the provider shore based network. The GlobalStar MCM 4M data units (brand name or equal to) send de-multiplexed signaling through the RF spectrum. A bonding server located within the provider earth station teleport then multiplexes the signaling converting to IP which is then sent on to either the Internet or a customer provided T-1.

QTY: 10 data units

CLIN 00002 48K airtime minutes per modem between 8 MCM 4M data units, which consist of 4, 9.6 Kbps modem cards, for a total of 32 modems. MCM 4M units must be able to be brought on the GlobalStar network (brand name or equal to) using this airtime upon receipt of the MCM 4Ms. Airtime is exhausted when the modems use up the time. Monthly billing statements to the MCM 4M original purchaser is required. Airtime usage should be able to be provided with a phone call to Technical Support. Airtime minutes will not expire according to a calendar date, but will expire when used on the GlobalStar network (brand name or equal to). Also included will be any applicable one-time USF fees.

QTY: 32 modems
Period of Performance: 12 months

CLIN 00003 16.8K airtime minutes per modem between 2 TISCOM (USCG?s Telecommunications & Information Systems Command) Lab MCM 4M data units, which consist of 4, 9.6 Kbps modem cards, for a total of 8 modems. MCM 4M units must be able to be brought on the GlobalStar network (brand name or equal to) using this airtime upon receipt of the MCM 4Ms. Airtime is exhausted when the modems use up the time. Monthly billing statements to the MCM 4M original purchaser is required. Airtime usage should be able to be provided with a phone call to Technical Support. Airtime minutes will not expire according to a calendar date, but will expire when used on the GlobalStar network (brand name or equal to). Also included will be any applicable one-time USF fees.

QTY: 8 modems
Period of Performance: 12 months

CLIN 00004 Shipping.

CLIN 00005 Technical support availability for the equipment shall be M-F 8:00am to 5:00pm EDT. Trouble ticket or technical support ?call backs? shall not exceed 2 hours from initial ticket or trouble call submission. Gross failure of GlobalStar equipment (brand name or equal to) may require a technical support visit to the TISCOM test laboratory, otherwise technical support can be done via telephone or email.

Period of Performance: 12 months

OPTIONAL CLIN 10002 48K airtime minutes per modem between 8 MCM 4M data units, which consist of 4, 9.6 Kbps modem cards, for a total of 32 modems. MCM 4M units must be able to be brought on the GlobalStar network (brand name or equal to) using this airtime upon receipt of the MCM 4Ms. Airtime is exhausted when the modems use up the time. Monthly billing statements to the MCM 4M original purchaser is required. Airtime usage should be able to be provided with a phone call to Technical Support. Airtime minutes will not expire according to a calendar date, but will expire when used on the GlobalStar network (brand name or equal to). Also included will be any applicable one-time USF fees.

QTY: 32 modems
Period of Performance: 6 months

OPTIONAL CLIN 10003 16.8K airtime minutes per modem between 2 TISCOM (USCG's Telecommunications &

BUSINESS OPPORTUNITIES

Information Systems Command) Lab MCM 4M data units, which consist of 4, 9.6 Kbps modem cards, for a total of 8 modems. MCM 4M units must be able to be brought on the GlobalStar network (brand name or equal to) using this airtime upon receipt of the MCM 4Ms. Airtime is exhausted when the modems use up the time. Monthly billing statements to the MCM 4M original purchaser is required. Airtime usage should be able to be provided with a phone call to Technical Support. Airtime minutes will not expire according to a calendar date, but will expire when used on the GlobalStar network (brand name or equal to). Also included will be any applicable one-time USF fees.

QTY: 8 modems
Period of Performance: 6 months

OPTIONAL CLIN 10005 Technical support availability for the equipment shall be M-F 8:00am to 5:00pm EDT. Trouble ticket or technical support call backs shall not exceed 2 hours from initial ticket or trouble call submission. Gross failure of GlobalStar equipment (brand name or equal to) may require a technical support visit to the TISCOM test laboratory, otherwise technical support can be done via telephone or email.

Period of Performance: 6 months

The Contractor shall furnish all labor and materials necessary to deliver the required items. The Government will be responsible for installation and architecture of government equipment to use the GlobalStar network (brand name or equal to), but may require technical assistance from GlobalStar technical representatives (brand name or equal to) via telephone or email. The Government will be responsible for downloading any patches, software or firmware upgrades which are available for the MCM 4M units.

Inspection and acceptance are FOB destination.

Point of Contact

Todd Blose, Purchasing Agent, Phone 202-475-3205, Fax 202-475-3904, Email todd.w.blose@uscg.mil - Eric McDoniel, Contracting Officer, Phone 202-475-3209, Fax 202-475-3905, Email eric.c.mcdoniel@uscg.mil

Place of Performance

Address: USCG/TISCOM 7323 Telgraph Road Alexandria, VA
Postal Code: 22315-3940
Country: UNITED STATES

Project: Satellite and Line of Sight Communication Capability

Posted Date: Jun 25, 2007
Contracting Office Address
P.O. Box 190022, North Charleston SC 29419-9022

Description

SPAWARSYSCEN Charleston intends to issue a commercial contract on a sole source basis to Harris Corporation, 1680 University Ave, Rochester, NY 14610. This procurement is for the purchase of supplies as listed below that are required by the Government to provide vital Satellite and Line of Sight Communication capability. Harris Corporation is the manufacturer and has the proprietary rights to the design. The Contractor shall provide 16 each of the Tacmobile transit case, Multi-band power amplifier, RF-5051 green power supply, M-VAU kit speaker, and RF-5055 to VAU cable assembly. A Firm Fixed Price type contract is anticipated. The applicable North American Industry Classification System (NAICS) Code is 334220 and the size standard is 750 employees. Any questions relating to this announcement are due 5 days from the date this notice is published. POC is Janet Maldonado, Code 026MJ, telephone (843) 218-5528; fax (843) 218-5947; or e-mail address janet.maldonado@navy.mil. Reference NOTE 22.

Point of Contact

Point of Contact - JANET MALDONADO, Contract Specialist, 843-218-5528; Joanne Banks, Contracting Officer, 843-218-5953
Email your questions to Contract Specialist at janet.maldonado@navy.mil

Project: Technical Support, Systems Engineering and Engineering Services

Posted Date: Apr 11, 2007
Contracting Office Address
Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Acquisition and Grants Office, SSMC4 - Room 7601/OFA61 1305 East West Highway, 7th Floor, Silver Spring, MD, 20910, UNITED STATES

Description

The U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), Acquisition and Grants Office intends to issue a Request for Proposal (RFP) for the acquisition of Technical Support, Systems Engineering and Engineering Services.This acquisition will be conducted as a partial small business set-a-side utilizing the procedures outlined in Federal Acquisition Regulations (FAR) Part 15, and FAR Part 19. The North America Industry Classification Systems (NAICS) code is 541611 with a Size Standard of $6.5M.

The successful Contractor shall provide all necessary personnel, material, and services to provide technical support, systems engineering and engineering services for two major components of the NESDIS satellite systems: (1) The Space Systems which consist of polar and GEO-stationary satellites/spacecrafts and (2) the Ground Systems which consists of a Command, Control and Communications Segment (C3S) and the Interface Data Processing Segment (IDPS). The effort required

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by this acquisition includes for technical support, systems engineering and engineering services to include the resolution of space and ground systems issues as well as the preparation of plans, briefings, and documents in the areas of strategic planning; design/requirement analysis; systems engineering processes and procedures; program advocacy; data management; contract administration; and, acquisition support.

The Government reserves the right to award two or more contracts, one for technical support services as a Small Business Set-Aside and one for systems engineering and engineering support under full and open competition. Small business may submit its response to both, the technical support services requirement as well as the systems engineering and engineering services portion of this solicitation. The Government anticipates the award of Indefinite Quantity, Indefinite Delivery contracts with Task Orders issued on a firm-fixed price or cost-plus-fixed-fee basis. The resultant contracts shall be for a period of one year commencing on or about August 1, 2007 and will include four 12-month option periods. For informational purposes, the Government estimates the annual level of effort for this acquisition is approximately 134,719 labor hours. The small business portion of this acquisition is estimated at 83,527 labor hours. Under full and open competition the estimated number of labor hours is 51,192.

The solicitation for this acquisition will be posted to the Federal Business Opportunity website, www.fedbizopps.gov, on or about 15 days from the date of this notice. All future information regarding this acquisition, including amendments, will be distributed solely through this website. Hard copies of the solicitation will not be available. Interested firms are responsible for downloading their own copy of the solicitation and amendments (if any) and monitoring the website to ensure that they have the most up-to-date information regarding this acquisition.All evaluation factors will be outlined in the solicitation. Technical evaluation factors (i.e., technical approach. past performance, and staffing plan/personnel) are significantly more important than price. This acquisition will require contract personnel to have different levels of security clearances.

All responsible sources registered with the Central Contractor's Registration (CCR) at http://www/ccr.gov may submit a proposal which shall be considered by the agency. Proposal/offers shall be submitted in accordance with the guidelines outlined in the solicitation document.

Point of Contact

Rubie King, Contract Specialist/Contracting Officer, Phone (301) 713-4751, Fax (301) 415-0399, Email rubie.b.king@noaa.gov

Place of Performance

Address: Silver Spring, MD
Postal Code: 20910
Country: UNITED STATES

Project: Extension of Contract DCA200-95-C-0080 for Transportable Communications Service (T-Comm Service)

Posted Date: Jun 21, 2007

Contracting Office Address

Defense Information Systems Agency, Procurement and Logistics, DITCO-Scott, 2300 East Dr. Building 3600, Scott AFB, IL, 62225-5406, UNITED STATES

Description

The Defense Information Systems Agency, Defense Information Technology Contracting Organization (DITCO), located at Scott Air Force Base, IL intends to extend existing contract DCA200-95-C-0080 for up to six months, effective 1 September 2007. The purpose of this extension is to provide additional time needed to complete acquisition actions necessary to award a new T-Comm contract sole-source to AT&T Corp. DITCO's intent to award a new T-Comm contract sole-source to AT&T Corp. was previously publicized via an FBO synopsis during May 2007 and there were no industry responses. The existing T-Comm contract provides full duplex, 15 channel, voice and data communications service over a T-1 circuit path between certain suitably configured aircraft operating anywhere worldwide and the U.S. Air Force Northstar Network. T-Comm connectivity with an aircraft is accomplished via Ultra High Frequency (UHF) radio or direct physical connection. Connectivity with the Northstar Network is accomplished via use of a terrestrial circuit or a satellite link. Service is provided as needed by means of teams of personnel and equipment on call for departure within 24 hours to any service location. Performance of the contract requires access to classified information and personnel must have a secret security clearance. No subcontracting opportunities are available under this contract. DITCO contacts are Ms Joyce King, Contracting Officer, e-mail joyce.king@disa.mil or Mr. Stan Schellenbach, Contracting Officer, e-mail stan.schellenbach@disa.mil, no later that 6 July 2007.

Point of Contact

Joyce King, Contract Specialist, Phone 618-229-9646, Fax 618-229-9440, Email joyce.king@disa.mil - Stanley Schellenbach, Contract Specialist, Phone 618-229-9126, Email stan.schellenbach@disa.mil

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The SPADE Defense Index(R) was launched in cooperation with the American Stock Exchange and serves as a benchmark for the value that the markets ascribe to companies involved with defense, homeland security, and space. The Index has 57 constituents, 60% of which have space or satellite business lines including DirecTV, Echostar, XM, and Sirius.Details on the SPADE, including its calculation methodology, rules defining selection criteria, current constituents, performance, as well as our 'SPADE Investor' newsletter can be found on the www.spadeindex.com website.

Highlights for the Second Quarter of 2007:

SPADE Defense Index Statistics

SPADE Defense Index Statistics

YTD Return:	14.87%
QTR Return:	10.05%
May Return:	5.37%
5/31/07 Close:	2419.34

	SPADE Defense	S&P500
Month	5.37%	3.25%
Quarter to Date	10.05%	7.72%
Year to Date	14.87%	7.92%

YTD 2007 Leading Gainers

1	Force Protection	64.53%
2	Armor Holdings	56.66%
3	Precision Castparts	52.73%
4	EDO	41.41%
5	L1 Identity	41.31%
6	Cogent	40.24%
7	Taser	38.50%
8	Goodrich	30.60%

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