SATCOM For Net-Centric Warfare September 2012

MilsatMagazine

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Secure SATCOM
A Look @ MILCOM 2012

An Altas V launch vehicle blasts NROL-36 to its orbit. Photo is courtesy of United Launch Alliance.

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COTS Satcom Technology
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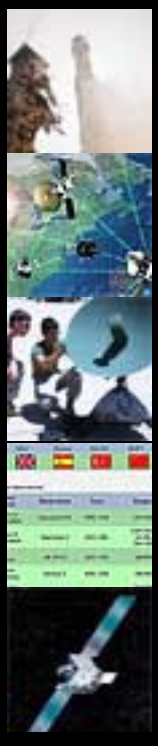
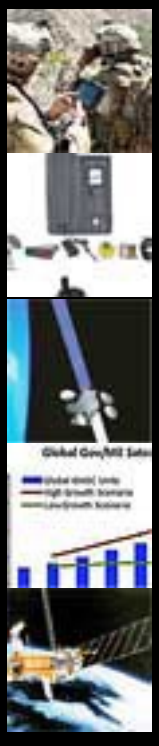

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FEATURES

JUNKYARD DOGS OR OUTHOUSE RATS?

I fear the Republic no longer functions, but we must keep our faith. I generally try to be as upbeat and positive as possible.

By Eilliot Holokauahi Pulham

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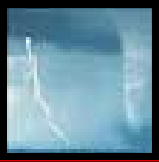
SATCOM TO THE RESCUE FOR CRIT COMMS



Communications infrastructure outages can occur for any number of reasons, from natural, weather-related disasters to man-made causes...by Karl Fuchs

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GORDON MCMILLAN, INMARSAT GLOBAL XPRESS

Gordon has responsibility for the strategic positioning and development of Inmarsat's future Ka-band business in the Government and Military sectors in the U.K., Europe, Middle East, Africa and Asia Pacific.

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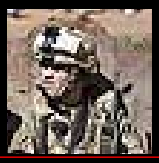
TRUSTED COMMUNICATIONS—A PRIORITY



Trusted communications and information sharing play a critical role in the operations and effectiveness of the U.S. Military.

By Wesley B. Covell

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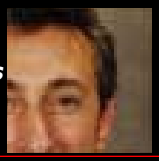
CHARLES H. CYNAMON, HUGHES NETWORKING



Chuck Cynamon is responsible for strategic initiatives to apply the company's broad range of SATCOM technologies and services to the worldwide defense marketplace and intelligence community.

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PROMO'ING AUSTRALASIA'S SATELLITE CAPABILITIES

Satellite communications is a growing global market due to an ever increasing demand for bandwidth to support fast, high quality communications across a wide variety of industries and geographical ...

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MILITARY INTELLIGENCE DEMANDS MOBILE SCIF

Trusted communications and information sharing play a critical role in the operations and effectiveness of the U.S. Military.

By Robert Turner

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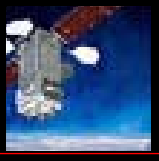
THE HPA CORNER: U.S. SPACE POLICY IMPACT



The HPA is a trade association composed of 14 member companies who are leaders in the space industry.

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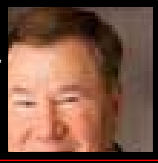
THE KELLEY PAGES: MARK CURRAN + SMD CONF.



Contributing Editor Mike Kelley spoke with Lt. Gen. (ret.) Mark Curran, V.P.of Army Programs and Huntsville Operations for L-3 Communications and adds in his take on the recent SMD Conference.

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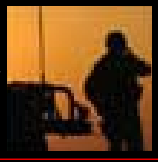
RECON ON THE GO...



The disconcerting spread of asymmetrical warfare represented by insurgents, terrorists, and drug cartels has forced military forces to change the way they operate—especially when tasked with reconnaissance.

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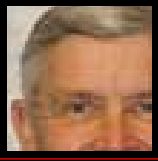
ED HANLON, LT. GEN (RET.), USAF + RAYTHEON



Lieutenant General Ed Hanlon is a retired United States Marine Corps general officer. His 38 years of service...

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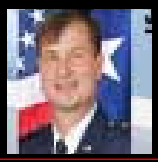
ISR DECISION MAKERS WILL BE PRESENT

Lower budgets resulting in smaller troops has lead to joint C4ISR being the most crucial asset in global MoDs reserve.



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FOURTH PAYLOAD PERFECTION

A United Launch Alliance (ULA) Atlas V rocket carrying a payload for the National Reconnaissance Office (NRO) lifted off from Space Launch Complex-3 here at 2:39 p.m. PDT today. Designated NROL-36, the mission is in support of national defense.

"Today's successful launch of the NROL-36 mission occurred on the same day as the national memorial service honoring American hero Neil Armstrong. The scientists and engineers developing and operating these remarkable current-day launch and spacecraft systems reflect Neil's incredible legacy to mankind," said Jim Sponnick, ULA vice president, Mission Operations. "Today's launch marks the fourth and final EELV mission for the NRO's Road to Launch 2012 accomplished in the last five months. This launch tempo is a tribute to all of the mission partners' dedication and continued focus on mission success—one launch at a time."

ULA launched NROL-25 April 3 from Space Launch Complex 6 at Vandenberg Air Force Base in California, as well as NROL-38 June 20 from Space Launch Complex 41 and NROL-15 June 29 from Space Launch Complex 37 both located at Cape Canaveral Air Force Station in Florida.

This mission was launched aboard an Atlas V EELV 401 configuration vehicle, which includes a 4-meter diameter payload fairing. The Atlas booster for this mission was powered by the RD AMROSS RD-180 engine and the Centaur upper stage was powered by a single Pratt & Whitney Rocketdyne RL10A-4 engine.

In addition to the NROL-36 payload, 11 CubeSats took advantage of available volume and structural capacity of the Atlas V launch vehicle for a ride share. The NRO and ULA partnered to develop an Aft Bulkhead Carrier (ABC) on the Centaur second stage, which is a platform for accommodating auxiliary payloads aboard Atlas V missions. Affixed to the ABC was an auxiliary payload called Operationally Unique Technologies Satellite, or OUTSat, carrying the 11 CubeSats in various configurations.

The CubeSats are sponsored by the NRO Mission Support Directorate and NASA's Launch Support Program, and were developed by the Space and Missile Defense Command, The Aerospace Corporation, University of Southern California, University of Colorado, California Polytechnic State University, Morehead State University, University of California Berkeley and the Lawrence Livermore National Lab.

"These auxiliary payloads are the first of their kind for an Atlas V mission," said Sponnick. "We are pleased we could support the NRO, NASA, and all of the associated institutions to deliver these important CubeSats which will study space weather and communications, debris mitigation, maritime shipping container tracking as well as space flight safety and orbit refinement."

Developed by the United States Air Force to provide assured access to space for Department of Defense and other government payloads, the commercially developed EELV Program supports the full range of government mission requirements, while delivering on schedule and providing significant cost savings over the heritage launch systems.

ULA's next launch is the Delta IV GPSIIF-3 mission for the United States Air Force scheduled October 4 from Space Launch Complex-37 at Cape Canaveral Air Force Station, Florida.

ULA program management, engineering, test, and mission support functions are headquartered in Denver, Colorado Manufacturing, assembly and integration operations are located at Decatur, Alabama, and Harlingen, Texas. Launch operations are located at Cape Canaveral AFS, Florida, and Vandenberg AFB, California.

#

SERVICE NEEDS COVERED

Encompass Government Solutions, a division of Encompass Digital Media, has been awarded a contract to become Inmarsat's satellite access station (SAS) in support of the new Global Xpress® constellation.

As one of two North American co-primary Teleports, Encompass will provide uplink/downlink services, collocation of Inmarsat equipment and interconnectivity to Inmarsat's terrestrial data networks. This next-generation, Ka-band satellite fleet offers high throughput with downlink speeds of up to 50Mbps and up to 5Mbps over the uplink from compact user terminals.

The Global Xpress launch program commences in 2013 and a third launch is scheduled for 2014. Inmarsat required a secure site that provided an optimum environment with minimal disruption risks, such as extreme weather conditions; and Encompass' Lino Lakes, Minnesota, facility renders a unique geographical location for radio frequency communication. Encompass will be supporting Inmarsat by collocating and managing a significant array of satellite ground segment equipment and routine maintenance services for a new 13.2m Ka-band antenna.

Encompass services will include a newly constructed 2,500 square foot cement building which will house equipment to manage, control and provide service to Inmarsat Global Xpress customers.

During the long-term contract, Encompass will provide SAS services pre-launch and throughout the life of the Global Xpress fleet in addition to 24/7/365 "hot hands" engineering and facilities support at the antenna hub.

#

CS2 APPROVAL

SES Government Solutions (SES-GS) has been awarded a Custom SATCOM Solutions (CS2) contract.

The contract has been awarded to eight companies and has a total funding ceiling of USD 2.6 billion over a base period of three years with two additional one-year options. With this award, the U.S. Government will be able to contract directly with the global satellite operator to obtain mission-tailored communications capability and solutions on SES' fleet of 51 communication satellites. #

A STEP TOWARD REPURPOSEMENT

ATK has been selected as a key participant to support the U.S. Defense Advanced Research Projects Agency (DARPA) Tactical Technologies Office (TTO) Phoenix Technologies Program.

The Phoenix Program is developing technologies to cooperatively harvest and re-use valuable components from retired, nonworking satellites in geosynchronous orbit. The planned repurposing of these satellite components, such as antennas, represents the potential to create new space resources at significantly less cost.

The DARPA Phoenix Program system integrator, the Naval Research Laboratory (NRL), has issued a solicitation announcing it intends to negotiate with ATK to modify an existing U.S.-built, U.S. government owned geostationary satellite bus for the Phoenix mission. NRL has identified ATK as the only responsive source for this service.

The bus, originally developed by ATK, is designed to be capable of supporting, for a minimum of one-year, robotic rendezvous and proximity operations, and a grapple-and-repair robotic technology demonstration mission. The bus is scheduled to be delivered by October of 2014 to the NRL for Space Vehicle integration and test.

ATK has also been selected for a contract award in response to a Broad Agency Announcement (BAA) from DARPA for the Phoenix Technologies Program for the primary robotics effort. ATK, in partnership with the University of Maryland's Space Systems Laboratory (SSL), will develop robotic servicing tools and software to enable re-use of the antenna and other working components of a nonfunctional satellite.

ATK's hardware is comprised of a Satellite Capture Tool (SCT) and an Aperture Grasp and Severing Tool (AGST). These tools provide applications for satellite grappling and control as well as salvage operations.

In addition, ViviSat, a satellite life-extension service owned by ATK and U.S. Space LLC, continues its development and is synergistic with DARPA's vision of sustainable satellite servicing. The goal of the Mission Extension Vehicle (MEV) is to robotically dock with satellites not designed for on-orbit servicing, extending the mission of the client spacecraft by one to 15 years.

Combined with ATK's new state-of-the-art Robotic Rendezvous and Proximity Operations (RPO) Lab, these services provide the tools to leverage DARPA-developed technologies and adapt new capabilities to specific commercial and military customers.

ATK's ViviSat

ATK Space Systems Division Vice President and General Manager Tom Wilson said, "Our existing expertise in spacecraft bus technology and robotic satellite servicing tools is a significant asset towards helping the DARPA Phoenix program achieve mission success. We have established a highly successful record of delivering servicing tools in support of the Space Shuttle, the Hubble Space Telescope Servicing Missions and the ongoing NASA Robotic Refueling Mission.

"Our ViviSat satellite life extension service and RPO Robotics Lab can also serve as a testbed for these tools in addition to the capabilities provided by our partners at the University of Maryland's Space Systems Laboratory."

ATK has flown more than 140 tools in space over the past two decades that have enabled human and robotic servicing of spacecraft and continues to maintain its position at the forefront of satellite servicing tools and technology development. The Phase 1 of the BAA primary robotics contract period is 14 months with a value of $1.7M.

#

Artistic rendition of the master satellite within the Phoenix program, System F6. Image is courtesy of DARPA.

50 YEARS OF STELLAR OPERATIONS

The Defense Weather Systems Directorate is celebrating 50 years of the Defense Meteorological Satellite Program.

On August 23, 1962, the National Reconnaissance Office's classified Program 417 launched its first successful low altitude cloud imagery satellite into space and began a new era of military satellite weather.

In the mid 1960s, the program was transferred to the Air Force Systems Command, and today the program continues under the leadership of the Air Force's Space and Missile Systems Center.

The program has transformed over the years from a spin stabilized satellite with a video camera, to a robust 3-axis stabilized spacecraft with precision sensors. Currently, DMSP holds the record for the longest running satellite program in SMC history.

DMSP has been collecting weather data for military operations for five decades, and over time has perfected the satellite and sensor design and operation. The current constellation consists of two operational satellites in polar, sun-synchronous orbits at approximately 458 (830km) nautical miles.

Artistic rendition of the DMSP satellite

The current version of DMSP (Block 5D-3) consists of a suite of eight different sensors. The primary sensor, the Operational Linescan System, provides visual and infrared imagery for cloud depiction and forecasting. (*continued on next page*)

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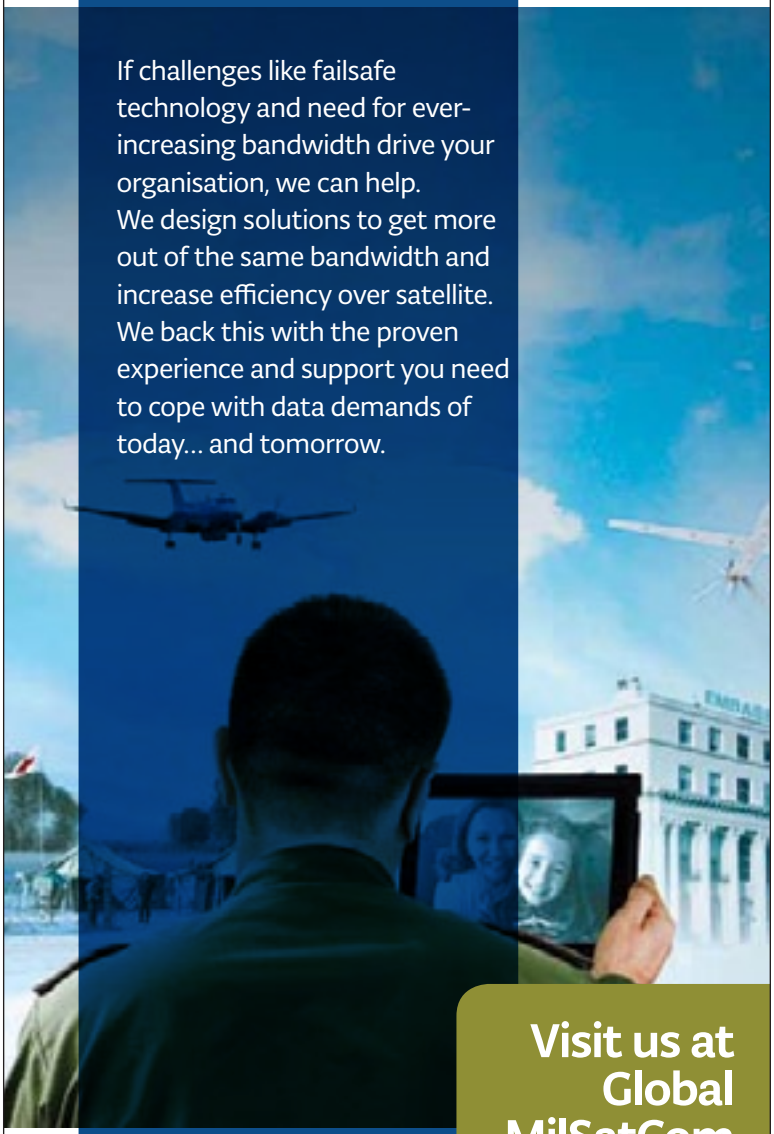

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The other terrestrial sensor on board, the Special Sensor Microwave Imager/Sounder, gathers microwave signals from the Earth and can detect sea surface winds, rain-rate, temperatures and humidity.

DMSP also hosts a suite of five space environment and space weather sensors that detect high energy particles in the spacecraft's vicinity, magnetic field lines, ultraviolet emissions and airglow profiles.

One of the keys to DMSP's long history of success is its supportive community of experts. The primary command and control of the satellite is jointly managed by the National Oceanographic and Atmospheric Administration (NOAA) and the Air Force 50th Operations Group Detachment 1. Both organizations operate out of the Satellite Operations Control Center in Suitland, Maryland.

Operations are also supported by a back-up facility located at Schriever Air Force Base in Colorado Springs, Colorado, under the leadership of the 6th Space Operations Squadron.

All DMSP data is sent to the Air Force Weather Agency for processing, modeling and forecasting. AFWA has a key role in generating and distributing critical DMSP weather products to forces in the field.

Data also is sent directly to the Air Force's Navy partners at the Fleet Numerical Meteorology and Oceanographic Center and to NOAA's National Geophysical Data Center. DMSP maintains an effective working relationship with its industry partners.

The satellite bus is built by the Lockheed Martin Space System Company in Sunnyvale, California, while sensor support is managed by Northrop Grumman Electronic Systems. The Aerospace Corporation plays a critical role in assisting the government with technical expertise and experience.

NOAA's Satellite Operations Control Center in Suitland, Maryland

#

PLAYING ITS ROLE

The U.S. Special Operations Command (USSOCOM) is using L-3 GCS Hawkeye™ III Lite 1.2M and Hawkeye III™ 2.0M VSAT terminals equipped with iConnex e800 satellite router boards from iDirect Government Technologies (iGT).

These products will be used to support the Special Operations Forces Deployable Node-Family of Terminals (SDN-Lite FoT) program.

The iGT iConnex boards are smaller in size and support data, voice and video connectivity in highly mobile military applications, including mobile platforms carried by forward-deployed troops.

iConnex e800

The boards feature high-speed data transmission, increased bandwidth capacity and higher network availability.

#

PRODUCTS + TALENTS

Globecomm Systems Inc. has been awarded various infrastructure contracts from U.S. Government Agencies valued at $5.9 million.

Under the contract terms, Globecomm will provide hardware, software and associated engineering services as follows:

- *GS certified SummitTM X band field terminals with integral AxxSys® Orion Monitor & Control Software*
- *Gateway Terminal Technology Refresh incorporating solid state amplifier hardware and AxxSys® Orion software*
- *Life Cycle Support services including spares, training, and installation*

Globecomm anticipates the completion of these contracts in the Company's fiscal year 2013 fourth quarter ending June 30, 2013.

Globecomm provides satellite-based, managed network solutions with a suite of system integration, system products, and network services, and an integrated approach of in-house design and engineering expertise combined with a global network and 24x7 network operating centers. These are now available to vertical markets, including government, wireless, media, enterprise, and maritime.

#

SUPERIOR SPACE SYSTEMS

Sir Martin Sweeting, Executive Chairman and founder of Surrey Satellite Technology Ltd (SSTL), accepted the 2012 American Institute of Aeronautics and Astronautics (AIAA) Space Systems award for the Disaster Monitoring Constellation (DMC).

The award, which was presented at the AIAA Space 2012 conference and exhibition at the Pasadena Convention Center in California, recognizes outstanding achievements in the architecture, analysis, design, and implementation of space systems.

The DMC was nominated for the award by Dr. Jerry Sellers of Teaching Science and Technology, Inc. in Colorado for "being an unprecedented example of international cooperation in the application of space systems to the mitigation of human suffering."

Sir Martin said on receiving the award, "I'm delighted to accept this award recognising the formation of the international Disaster Monitoring Constellation now in its tenth year. The constellation is unique in its use of advanced microsatellites providing rapid response Earth imaging and has become an immense humanitarian asset; showing that in the competitive world of space, diverse countries can work together for the good of mankind."

The DMC was conceived in 1998 and formally proposed in 2000 following the Vienna Declaration on Space and Human Development, which called specifically for the implementation of an integrated, global system to manage natural disaster mitigation, relief and prevention efforts through space activities. At that time, SSTL had lowered the price tag of Earth Observation satellites to the point where governments and organisations throughout the world could own an independent satellite. Sir Martin Sweeting and his team at SSTL recognized the potential of a multi-satellite constellation using these advanced small satellites to address disaster monitoring from space.

SSTL established the Disaster Monitoring Constellation with support from the former British National Space Centre (BNSC). The first satellite, AlSat-1, was launched in 2002 and was soon joined by UK-DMC, NigeriaSat-1 and BILSAT-1 in 2003 to form the original four-satellite constellation. The constellation has continued to evolve and innovate and today there are currently five active members of the DMC; U.K. (SSTL), Nigeria (NASRDA), Algeria (ASAL), China (BLMIT)

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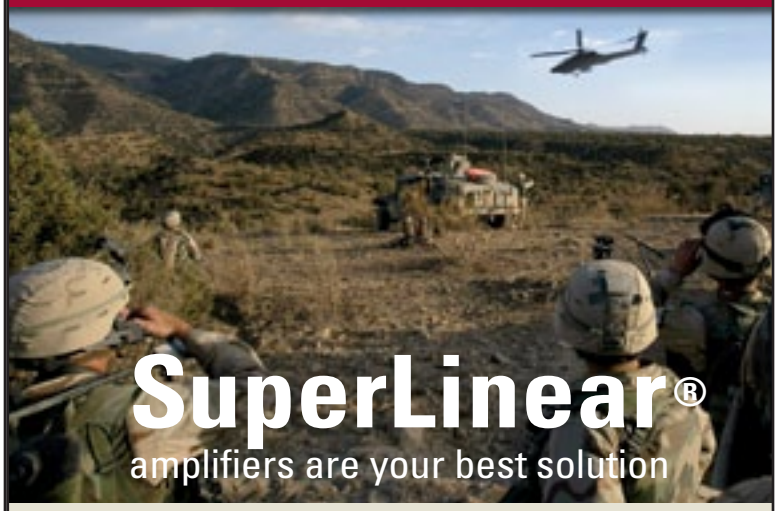

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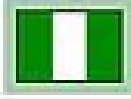
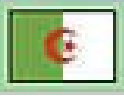
					

The Satellites (Operational)

Country Operator	Designation	Type	Imager	Launch
Nigeria NASRDA	Nigeriasat-NX	SSTL-100i	22m MS	2011
Nigeria NASRDA	Nigeriasat-2	SSTL-300	2.5m Pan 5m MS 32m MS	2011
UK DMCii	UK-DMC2	SSTL-100i	22m MS	2008
Spain Deimos	Deimos-1	SSTL-100i	22m MS	2008
China BLMIT	Beijing-1	SSTL-150i	32m MS 4m Pan	2005

The Satellites (Retired)

Country Operator	Designation	Type	Imager	Launch
UK SSTL	UK-DMC	SSTL-100i	32m MS	2003
Nigeria NASRDA	Nigeriasat-1	SSTL-100i	32m MS	2003
Turkey BILTEN	Bilsat-1	SSTL-150i	26m MS 12m Pan	2003
Algeria ASAL	Alsat-1	SSTL-100i	32m MS	2002

and Spain (Deimos) that each own an independent satellite, but pool their resources for disaster and commercial imaging.

The SSTL subsidiary DMC International Imaging Ltd. (DMCii) was established in 2004 to coordinate constellation imaging for humanitarian and commercial needs in partnership with the constellation members.

DMCii works with the world's Space Agencies and the United Nations (UN) under the International Charter for Space and Major Disasters to provide multi-spectral optical imagery during natural disasters and has assisted relief efforts for disasters such as Hurricane Katrina in 2005, the Wenchuan earthquake in 2008 and the Japanese Tsunami of 2011: it has responded to more than 170 Charter requests for disaster imagery. The cost effective DMC small satellites and shared infrastructure provided a springboard for countries such as Algeria and Nigeria to establish their national space programmes and harness Earth observation to map and monitor resources and their environment. By working together the constellation provides the ability to image any point in the world on a daily basis, which has proved equally valuable for disaster relief, agriculture and precision farming, or detecting illegal logging in the Amazon rainforest.

#

PIRACY PUT DOWN

Beam Communications Pty Ltd, a wholly-owned subsidiary of World Reach Limited, has announced that the satellite piracy solutions for secure communication on board a vessel has been shown at the SMM show in Hamburg.

The systems operate with the Inmarsat or Iridium satellite networks.

Of growing concerns across the globe are the deadly attacks on commercial and leisure vessels. Beam specialized anti-piracy communication solutions developed for the marine market is certainly addressing this problem.

Beam Covert piracy solution provides a dedicated solution for the citadel or safe room.

The system ensures that, in the event of a piracy attack, the captain and crew have access to communications, tracking and alert functionality from the system and that an alert can be raised with the authority.

Due to the specifically designed Beam covert antenna the system is less susceptible to be taken out prior to the attack.

#

STAMP OF APPROVAL

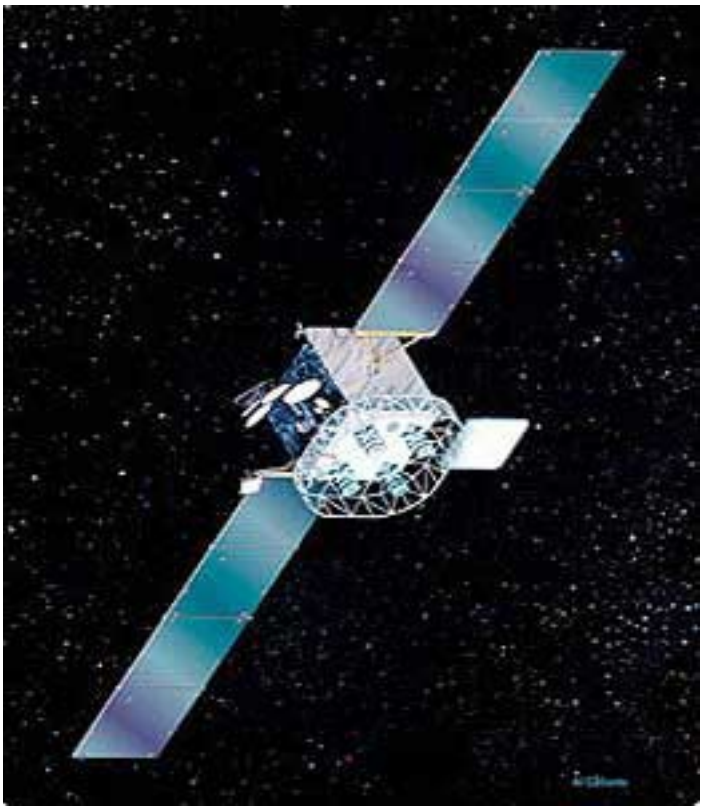
Boeing Commercial Satellite Services has been approved as a service provider for the Future COMSATCOM Services Acquisition program.

With this approval by the Defense Information Systems Agency (DISA) and General Services Administration (GSA), Boeing is authorized to provide U.S. government customers satellite communications services through a variety of fixed and mobile transponded and subscription services.

Military-unique services such as UHF and Yahsat's military Ka-band, commercial services in the Ku- and Ka-bands, and Inmarsat L-band and Thuraya L-band are examples of service offerings Boeing may provide through subscription agreements.

"This program gives Boeing another way to provide customers with exceptional satellite communication services using a variety of frequencies, including Inmarsat-5 Ka-band services," said Craig Cooning, CEO of Boeing Satellite Systems International. "Boeing continues to support the government's increasing need for satellite communications bandwidth."

Customers can procure these services under Boeing's GSA Schedule 70 contract.



Boeing UHF Follow-On Services

#

COMMS FOR JAVELIN THRUST

Marines with 9th Communication Battalion set up supporting communications and data transmission services for 1st Marine Expeditionary Brigade during Javelin Thrust 2012/ Large Scale Exercise-1 at the Marine Corps Air Ground Combat Center in Twentynine Palms, California.

The Marines set up the brigade's communications network and support the operation. The exercise serves a part of a three exercise continuum aimed to validate the readiness of 1st MEB as a global crisis response force.

The battalion embarked from Camp Pendleton with command and control center tents, gear and equipment and more than 46 tactical vehicles designed to operate a command and control center.

Javelin Thrust differs than typical training exercises aboard Marine Corps Base Camp Pendleton, California, where 9th Comm. Bn. is based, by supporting more than 400 Marines and sailors of the 1st MEB command element.

Over the past 10 years, the battalion has typically deployed to environments where communications networks were already in place, such as Iraq and Afghanistan. Javelin Thrust provided the battalion to establish its command and support system from the ground up.

"This is a culminating event," said Maj. Fernando Jimenez, the 9th Comm. Bn, Javelin Thrust detachment, officer in charge. "This is what it's going to take to support a MEB should it be called upon. Our ability to command and control is being validated, and we are succeeding."

The battalion provided Marines with various occupational specialties to equip 1st MEB with the assets and knowledge they'll need to maintain communication during the exercise.

Communication between the brigade's command operations center and the ground units is a critical function to conduct a large-scale exercise. Maintaining a communication system is vital to keep operations fluid.

Lance Cpl. Bryan Meyer, a radio technician, and Lance Cpl. Alexander Gonzalez, a video repairman, from 9th Communication Battalion, adjust a satellite dish during Large Scale Exercise-1, Javelin Thrust 2012, July 6, 2012.

"I'm here supporting the technicians we have from the other satellite systems for communication," said Lance Cpl. Michael P. Raymond, a multi-channel communications equipment technician with 9th Comm. Bn. "We're the ones that make sure communication goes through smoothly and any data or commands that are given are sent through."

Sgt. Arthur I. Baronov, a technical controller, is responsible for installing, maintaining, operating and troubleshooting tactical communication networks for the Marine Corps and coalition forces in a deployed environment. Technical controllers typically work with the majority of the communication equipment as subject matter experts for the other 9th Comm. Bn. Marines.

"We act as the central hub for coordinating the troubleshooting and establishment of a fully functional communications network using tactical gear," Baronov said. "The biggest part of our role is to monitor our network and make sure we have reliable communication."

The battalion also provides communication from the sky via satellite.

The Marines training on the ground communicate with other units through field radios. They rely on the radio operators to monitor and maintain connectivity with the command element. Sgt. Patricia L. Reynolds, a field radio operator with 9th Comm. Bn., said her Marines had communication support ready for the Marines training in a matter of days upon arrival.

Every phone call, email, field radio command and satellite transmission goes through 9th Comm. Bn.'s equipment. The exercise hinges on the battalion's ability to do their job and maintain the momentum.

"It's all about communications to effectively command and control," Jimenez said. "We're doing our part. The Marines have done a fantastic and phenomenal job. From the day they hit the ground running, they've not stopped. We're professional, flexible and reliable."

With the communication structure set up and running efficiently, 1st MEB is one step closer to proving its worth as a crisis response force with the ability to provide communication support for any operation.

Story by Cpl. Joshua Young,
1st Marine Expeditionary Brigade

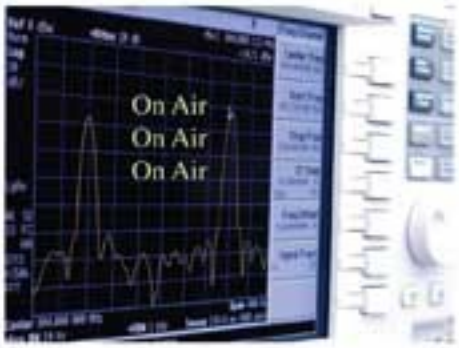
#

Minimize The Impact of Ka-Band Rain Fade with

Walton Rain Quake

Your Signal Without Walton Rain Quake

With Walton Rain Quake



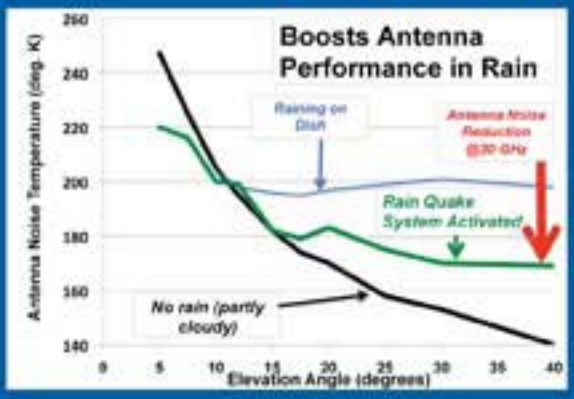
Rain Fade is a serious challenge with the new Ka-Band systems.

Rain Quake

Signal attenuation at Ka-Band during heavy rainfall can be up to four or five times that of C/Ku-Band. Antenna wetting alone can add 2.7 to 3.9 dB of link losses at Ka-Band.

Walton Rain Quake systems reduce rain fade on your Ka-Band antennas, and protect your antenna G/T performance. During heavy rain conditions, Walton Rain Quake systems can reduce data loss — by over 20X compared to Ka-Band antennas without protection.

- Prevents water from sheeting on your antenna surface - and causing Ka or Ku-band rain fade — from VSATs to large antennas.
- Covers your antenna — keeping rain off with GORTEX® material that's virtually invisible to RF.
- Rain Quake is also the Ice Quake De-Icing System for year-round protection in areas with snow and ice.



Tests show that the Rain Quake System helps to minimize bit error rates and antenna noise temperature increases, as well as increase your link margins during a rain storm.

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SEVEN REQUIREMENTS MET—MAJOR CERTIFICATION RECEIVED

Harris Corporation has received Joint Tactical Radio System (JTRS) Certification for its Falcon III® AN/PRC-117G multiband manpack radio operating SRW v1.01.1.

As a JTRS-certified product, the AN/PRC-117G is considered compliant with the standards set forth by the JPEO JTRS and proven to be compatible with the Department of Defense network objectives.

JTRS Certification is part of an emerging process designed to enable competition while facilitating the development of tactical networks that are low-risk, secure and interoperable. To become JTRS certified, a tactical device must fulfill seven separate requirements, including testing or certifications for waveform conformance and Joint Interoperability Test Center interoperability, National Security Agency information security, programmable cryptography, National Telecommunications and Information Administration spectrum compliance and Software Communications Architecture compliance. The JPEO JTRS process is designed as an interoperability and security risk reduction effort to characterize JTRS waveforms operating on a specific Software Defined Radio (SDR).

"JTRS certification is a major milestone for Harris, JTRS and the DoD. It establishes the AN/PRC-117G as a certified product that meets JTRS and DoD standards in the growing market for wideband tactical radio systems," said George Helm, president, Department of Defense business, Harris RF Communications. "The JTRS certification process enables DoD customers to select, from a number of suppliers, the radio that is best suited for their specific mission. The certification requirements established will ensure that standards of interoperability, security and software reuse are maintained across the industry. Further, the process will help to open up competition to drive down costs, accelerate new products to market and foster innovation to better address the needs of the warfighter. We are very pleased that the AN/PRC-117G is the first Non-Developmental Item (NDI), and the first Harris product, to receive JTRS Certification, positioning it well to continue delivering on the DoD vision for a networked battlefield."

Brig. General Michael Williamson, JPEO JTRS, said, "The process to characterize our [JTRS] waveforms operating on Program of Record and NDI SDRs is a critical step for the Department of Defense to ensure an acceptable level of risk for interoperability, security and open standards. Harris is the first to achieve this designation with the SRW waveform. It will certainly enhance a services' ability to compete their SDR requirements and select a product that has been proven to meet an acceptable level of risk for interoperability and security—while maintaining non-proprietary open standards."

The Falcon III AN/PRC-117G is the world's most widely fielded tactical wideband networking radio. It provides enhanced situational awareness of the battlefield by connecting warfighters to the tactical Internet. Through its wideband architecture, the AN/PRC-117G enables applications such as streaming video, simultaneous voice and data feeds, collaborative chat, and connectivity to secure networks. Harris has shipped more than 22,000 AN/PRC-117G radios to all branches of the U.S. military as well as over a dozen allies including Canada, France, the United Kingdom, Germany, Italy, Australia, Poland and several other countries in NATO. The radio is combat-proven and exhaustively tested in field exercises, laboratory environments and has been employed as a secure wideband tactical networking radio in Operation Enduring Freedom since 2009.

#

Advantech Wireless

Ultimate Mobility

from a world leader
in satellite communications

Advantech Wireless accredited products and advanced technologies have provided leading-edge innovations for over 20 years. We provide diverse and extensive technologies and products for video and data transmission and proven flexibility for specialized solutions.

Advantech Wireless' S5920M Ruggedized VSAT Terminal is a complete DVB-RCS modem that can be used in very harsh environments as in military and desert operations. The AMT 73L was the World's first deployed modem with certified compliance to the MIL-STD-188-165A standard, designed to fulfill two way satellite communication requirements in Defence Satellite Communications Systems (DSCS).

The Raptor series of transportable hubs are turn-key systems which can be deployed in less than 1 hour, to enable a wide range of public and/or private network topologies with satellite interactive terminals. The RAR9160 Ruggedized Router is designed to provide best in class performance for critical applications under harsh environments. Advantech Wireless' new line of ruggedized products, the KR Series, are perfect for government and military application.

Solid State Pulse Amplifier

AMT 73L Modem DISA CERTIFIED

Ruggedized Router RAR9160

S5920M Ruggedized DVB-RCS VSAT Terminal

Raptor - DVB-RCS Compact Transportable Hub

KR Series - MCU-2000 Mobile Mesh Networking System

KR Series - 3G Router

KR Series - WBR-2000 Mobile Wireless WAN or LAN

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9TH EDITION TO DEBUT

Debuting this month (September 2012) is NSR's Government and Military Satellite Communications (GMSC) report.

The report continues its assessment of the equipment, services, transponder and HTS capacity needs as well as program funding for satellite communications and should be of intense interest by those involved in mil/gov SATCOM. Offered is a global view on market trends and drivers, as well as discrete regional forecasts to help strategic decision-making in this ever-changing budgetary environment. The report answers the critical questions facing the mil/gov SATCOM market:

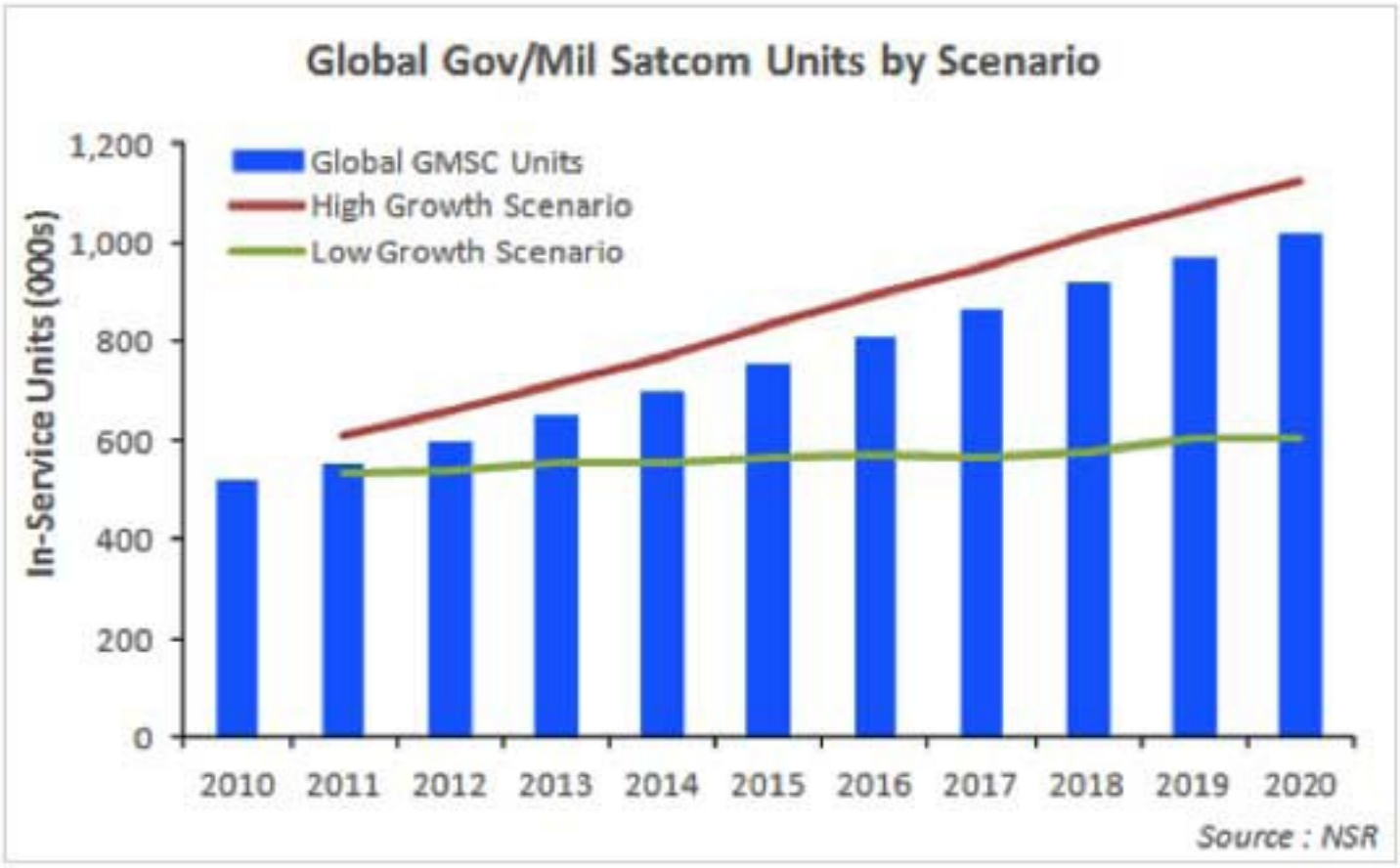
- *What is the demand for commercial satellite communications in government and military markets?*
- *What applications are driving equipment and capacity demand?*
- *How much will government and military customers spend on satellite communications?*
- *How does NSR see the GMSC market developing over the next 10 years in each region and for each application?*

Included in the report are the following core elements:

- *Scenario-based demand forecast for in-service units and services revenues for 10 years*
- *Transponder and HTS capacity demand forecast across all frequencies*
- *Market segmentation of specific applications by region and frequency band*
- *Bulk leasing demand assessment*
- *Proprietary satellite capacity analysis*
- *Operator and service provider market shares*
- *Programs overview and analysis as well as spending trends*

As more than half a million in-service satellite units have been fielded for government and military customers, planners worldwide are intensely scrutinizing where these will go and which programs will get funded as tax dollars are coming under intense public pressure to be spent wisely. In this context, the satellite communications industry is asking the question: What to expect next? The move away from Iraq and Afghanistan toward Asia by the U.S. Government, the largest customer of SATCOM services, is influencing a large portion of the demand. But will it continue as it seeks more means to operate an increasingly mobile force? The report examines these important shifts but also addresses the various satellite solutions that governments are evaluating over the next decade across all regions.

#



AN EPIC SELECTION

Intelsat S.A. has selected a Boeing 702MP platform for it Intelsat 29e satellite, the first within the recently announced Intelsat EpicNG high-performance system.

Artistic rendition of the Intelsat 29e satellite, courtesy of Boeing

caters to this environment. Its architecture combines multi-band frequency reuse with the benefits of backward and forward compatibility, resulting in a high-performance solution not previously available in the commercial satellite sector."

Scheduled for launch in 2015, Intelsat 29e will offer high-performance communications coverage spanning North and South America, the Gulf of Mexico, the Caribbean Sea, and the North Atlantic aeronautical route connecting North America and Europe. Intelsat EpicNG is designed to address wireless and fixed telecommunications, enterprise, mobility, video and government applications that require broadband infrastructure.

Intelsat SVP and chief technical officer Thierry Guillemin said, "With higher throughput, strong economics and a degree of control that meets our customers' business requirements, Intelsat EpicNG

A complementary high-throughput overlay to the Intelsat fleet, the Intelsat EpicNG platform will use multiple frequency bands, wide beams and spot beams with a high degree of flexibility and connectivity.

With Intelsat 29e, the first Intelsat Epic NG satellite, Intelsat completes its four-satellite order with Boeing. The first satellite in the order, Intelsat 22, is nearing six months of flawless operations in geostationary orbit.

#

CAPTURE, LATCH, SERVICE + RELEASE

Astrium is preparing a new technology mission for the maintenance and disposal of satellites.

The DLR Space Administration announced that Astrium Friedrichshafen will be the prime contractor for the definition phase of the DEOS (German orbital servicing mission) project. The order is worth a total of around 13 million euros. The definition phase is the last, decisive step before construction begins on the space vehicles themselves.

The DEOS project will for the first time demonstrate technologies for the controlled in-orbit disposal of a defective satellite. In addition, DEOS will practice how to complete maintenance tasks—refueling in particular—that extend the service life of satellites. DEOS consists of two satellites, a 'client' and a 'servicer'. The client acts as the satellite requiring maintenance or disposal. The servicer carries out the necessary work on the client. The two satellites will be launched together and brought into orbit at a height of 550 kilometres. According to current planning, DEOS will be ready for launch in 2018.

Testing of disposal and maintenance on a client satellite specially launched for this purpose, as opposed to tests on old existing satellites, means that a wide variety of defects can be simulated. This enables DEOS to demonstrate a complete range of relevant tasks, right up to capturing a satellite that is spinning out of control. Experiments will be performed in an increasing order of difficulty.

The maintenance or disposal of a satellite requires mastering a large number of individual tasks: the servicer has to approach the client without a tracking signal or similar help from the client. The servicer has to remain at a distance of around one metre from the client for an extended period (>1 orbit) while adjusting its position to avoid collision with the client. Throughout the orbit, the approach navigation and attitude control must function reliably even when the satellite is in the full glare of the sun or in eclipse. Before maintenance work can begin, the servicer must establish a firm grip on the client satellite. It must be capable of establishing electrical connections with the client and connecting

Astrium wins DEOS contract to demo in-orbit servicing, image courtesy of Astrium

a vacuum-tight fuel valve. In order to perform such a wide range of tasks, DEOS will be equipped with a robot arm that can move through seven degrees of freedom.

To a large extent, DEOS is reliant on technologies that have not yet been tested for space operations. In the definition phase, therefore, initial prototypes of the key technologies will be developed, so that subsequent realisation of the project can progress swiftly. This development work will be carried out by Astrium itself and by specialist companies and research institutions subcontracted by Astrium. The Company is carrying out the project at Friedrichshafen and Bremen with a joint team from both locations. It is also being supported by a consortium of subcontractors from the German space industry and space research institutions.

The DEOS project will be carried out by DLR Space Administration with funding from the German Federal Ministry of Economics and Technology (BMWi). Sustainable space operations has been a stated objective of the German government's space strategy since autumn 2010. This made in-orbit maintenance on 'uncooperative' satellites—and even disposing of them when necessary—a topic of major interest at the National Conference on Space Robotics 2012, which was held in Berlin in March 2012 by the DLR with the support of the BMWi.

DEOS allows Germany to continue its long and successful tradition of providing innovative robotics technology for use in space. And DEOS represents the final technological step in developing robotics that can be used in the disposal of dangerous space debris and the cost-effective extension of the service lives of satellites that are already in orbit.

#

VIBRANT RESPONSE

Sgt. Brian Craven and Sgt. Rachel Reeves, Multichannel Transmission System Operators for Bravo Company of the 146th Expeditionary Signal Battalion, conduct system checks on a Satellite Transportable Terminal during the Vibrant Response 13 exercise held at both Camp Atterbury Joint Maneuver Training Center and the Muscatatuck Urban Training Complex.

Soldiers of the 146th ESB are responsible for providing communication capabilities between military and civilian agencies responding to a simulated terrorist attack during the Vibrant Response exercise. #

MAKING THE GRADE WITH CS2

Intelsat General Corp. has been selected as a prime contractor under the U.S. government's new Custom SATCOM Solutions contract, a program that will provide satellite communications to military and other users.

The program is the final segment of the new Future Commercial Satellite Communications (FCSA) procurement process, managed jointly by the Defense Information Systems Agency and the General Services Administration.

FCSA was a new way for the government to procure SATCOM services leading to improved capabilities while saving tax dollars. Intelsat General's Skot Butler with more detail re FCSA:

- *Under CS2, prime contractors will provide end-to-end solutions to government users. These solutions will include satellite capacity, terminals, other user equipment, teleports, terrestrial networks, integration and engineering services, installation, operations and maintenance.*

- *FCSA is another example of the growing willingness of the part of government to look at new ways to procure SATCOM services. It's a new business model that helps deliver technically superior and cost-effective SATCOM services in a more competitive manner for the government user.*

JUNKYARD DOGS OR OUTHOUSE RATS?

OpEd by Elliot Holokauahi Pulham, CEO, Space Foundation

I fear the Republic no longer functions, but we *must* keep our faith.

I generally try to be as upbeat and positive as possible. I'm no Pollyanna, but I subscribe to Thomas Jefferson's theory that more gets accomplished through generosity than meanness.

Yet, our Republic has arrived at a point where it is difficult to find anything generous to say about Congress or the White House, who have abrogated all responsibility to govern in favor of pursuing a course of economic chaos and mutually assured political destruction. What I can't figure out is: are these people just meaner than junkyard dogs, or are they crazier than outhouse rats?

Here are some of the navigational waypoints on the egregiously irresponsible course that Congress and the White House, Democrats and Republicans, collectively, have set the country on:

Sequestration

In order to force themselves to compromise and act collaboratively in the interests of the nation, our elected officials planted a bomb in the federal budget. "Fix the deficit and fix the budget," they said to themselves, "or we'll blow ourselves to kingdom come!" Well, Congress doesn't respond well to threats, even from itself, and of course no agreement was reached and, as per usual, nothing was done. However, the bomb—$500 billion in mindless budget cuts - is still ticking. If it goes off when the timer runs down to zero on January 2, it could plunge the nation into the worst economic collapse it has ever seen.

The unemployment rate will climb above 9 percent, pushing the economy toward recession and reducing projected growth in 2013 by two-thirds. An already weak economy will be undercut as the paychecks of thousands of workers across the economy will be affected from teachers, nurses, construction workers to key federal employees such as border patrol and FBI agents, food inspectors and others. - Dr. Stephen S. Fuller, Dwight Schar Faculty Chair and university professor and director for regional analysis at George Mason University

The automatic spending cuts mandated in the Budget Control Act of 2011 . . . in just the first year of implementation will reduce the nation's GDP by $215 billion; decrease personal earnings of the workforce by $109.4 billion and cost the U.S. economy 2.14 million jobs. -- Aerospace Industries Association study

These cuts will not just impact a few large companies. These cuts will flow down the supply chain and through the broader economy. They will impact companies, like mine and threaten the jobs of thousands of skilled workers. In fact, a report released last month by the National Association of Manufacturers concludes that by 2014, the cuts in defense spending enacted last year combined with the cuts set for Jan. 1, 2013, will result in the loss of more than one million jobs, increasing the unemployment rate by almost 1 percent. - Della Williams, president and chief executive officer, Williams-Pyro

The very prospect of sequestration is already having a chilling effect on the industry. We're not going to hire. We're not going to make speculative investments. We're not going to lean forward. We're not going to invest in incremental training because the uncertainty associated with $53 billion more of reductions in our first fiscal quarter next year is a huge disruption to our businesses.—Robert Stevens, chairman and chief executive officer, Lockheed Martin

The media is just beginning to catch on to what is happening here. Sadly, we probably won't see any real urgency on the part of Congress or the White House until the first week in October. At that time, the federal Worker Adjustment and Retraining Notification Act (WARN) will be triggered and hundreds of thousands - perhaps millions - of workers across the country will begin getting pink slips from companies that do business with the federal government. Not only is this grotesquely irresponsible government, but, triggering mass layoff notices one month before the general election has to go down as one of the most politically stupid moves of all time.

Which returns us to my original question: ***Are these people just meaner than junkyard dogs or are they crazier than outhouse rats?***

Debt Ceiling Vote

Intertwined with sequestration is the issue of dealing with the U.S. federal debt ceiling. Should we raise it? Lower it? Leave it alone? While we can argue about whether the debt ceiling is where it should be, the fact is that it is there. Statutorily, you cannot exceed it, yet we'll almost certainly need to if we are to deal with the federal budget responsibly. But by how much? And for how long? As economist *Edgar R. Fiedler* said, "Ask five economists and you'll get five different answers—six if one went to Harvard."

One actually sympathizes with members of Congress on this point. After all, for the past two decades we've heard nothing but how bad it is for the U.S. dollar to lag behind the Euro, yet, now that the currencies are nearing parity, we're being told how bad that is! Well, which is it? I can't believe I'm quoting Rupert Murdoch, but there's something to his observation that "we all know economists were created to make weather forecasters look good."

The problem is that Congress sometimes relies upon experts to advise them. In this case, the experts are economists and, as George Bernard Shaw said, "If all the economists were laid end to end, they'd never reach a conclusion."

Still, Congress does need to act. But it is showing no signs of doing so.

Continuing Resolution/FY13

All this inaction is almost certain to result in government operating under yet another continuing resolution in FY13. What this means is that only the Department of Defense is likely to have a congressionally authorized budget. So, at the end of the day, government continues on, with no changes, guidance or direction from Congress. Urgently needed program changes cannot be made. Wise and prudent budget reallocations cannot happen. Proper prioritization of services and programs cannot take place, neither within agencies nor among them. Rather, Congress institutionalizes the status quo, which has brought us to the brink of economic disaster.

JUNKYARD DOGS OR OUTHOUSE RATS? (CONTINUED)

Medicare

Given that some 50 million Americans are on Medicare, you might expect that every federal politician up for re-election in 2012 would be taking great care not to disenfranchise these voters. Not so. Also expiring at the end of 2012 are the federal Medicare authorization regulations, which set the rates and limits that medical professionals can bill to Medicare. The "poison pill" that we'll swallow when Congress allows this to happen is an automatic 30 percent cut to what Medicare allows physicians to charge for patient services. What this means is that either (A) physicians across the country will be going out of business or (B) tens of millions of Americans will find that their doctors will no longer be able to provide them with health care.

FICA tax cut, Unemployment Insurance

The Medicare provisions were part of a package of legislation passed in February that extended for workers a 2 percent tax break in their paycheck—which doesn't sound like much, but actually benefits some 160 million working Americans, with the average worker receiving a $1,000 tax break over the course of the year. That same legislation funded unemployment insurance for federal workers. The legislation is set to expire at the end of the year, taking some $160 billion out of the economy and completely bankrupting the federal unemployment insurance system.

Farm Bill

The so-called "farm bill," the primary agricultural and food policy tool of the federal government, is also set to expire. At about $300 billion, one would think that this should command some attention in budget deliberations—but apparently I expect too much.

Meanwhile, according to a just-released study, poverty in the United States is set to hit a 50-year high. Not since the government began tracking poverty in the U.S. in the late 1950s has the poverty rate, and the absolute number of impoverished, been so high.

Peering Into The Abyss

If we were living under a multi-party, Parliamentary form of government, any ***ONE*** of these problems would be sufficient to topple the government.

And they should be sufficient to topple the government. Elected officials who allow partisan politics to take the country to the brink of such an abyss have no business remaining in office.

The implications for the space industry, space community and, indeed, the Space Foundation are clear. Loss of jobs, loss of programs, loss of scientists and engineers. The inability to sustain one of America's most important industries, and the decimation of the industry which, alone, provides the single largest contribution to the U.S. balance of trade. Loss of future technologies and industries, loss of America's ability to equip itself for defense, degradation of our ability to protect the homeland, loss of our capability to explore. Economic disaster that further decimates our already severely crippled education systems.

Loss of hope.

Loss of U.S. leadership in the world.

To paraphrase the worst copywriter of all time, *George Lucas*, I fear the Republic no longer functions. But we must keep our faith in democracy.

I am optimistic that there are still good men and women in the world and even a few good men and women in Congress. What is necessary is that these good men and women not sit idly by and let bad things happen.

The View from Here is that, while not all of our elected officials are mean or crazy—our prevailing politics are certainly both. Leaders from both houses of Congress and both political parties need to set aside their political differences—***right no***w—and come together to govern.

Editor's Note

This OpEd was originally published in Space Watch and is presented courtesy of the **Space Foundation**.

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SATCOM TO THE RESUCE FOR CRITICAL COMMUNICATIONS

By Karl Fuchs, V.P. of Technology, iDirect Government Technologies (iGT)

Communications infrastructure outages can occur for any number of reasons, from natural, weather-related disasters to man-made causes such as human error, jammed/full networks and vandalism/terrorism.

To provide first responders, law enforcement and non-government organizations with the capabilities needed to sustain critical communications, satellite technology is the solution. Satellite communications networks are quickly deployable and provide the backbone for the rescue and support initiatives during times of crisis. Additionally, they are easy to use and can be quickly scaled to meet the demands of any emergency situation.

The reasons satellite solves communications challenges include its inherent benefits: The technology offers reliability, anytime and anywhere communications, security and interoperability with an "always-on" network. This makes satellite attractive to use for emergency communications because satellite serves as a redundant communications channel when terrestrial communications networks have outages or are damaged and are not fully functional.

Losing access to crucial information for even short periods of time can do irreparable damage and impact emergency reaction capabilities, not to mention the damage to reputations of first responders and agencies involved. A unified command vehicle system, powered by iDirect Government Technologies (iGT) SATCOM technology, can benefit organizations of all sizes.

The vision for the unified command system includes projecting the technical and logistics footprint of any organization to any point in the continental United States using virtually any band satellite. Leveraging commercially available technologies and standards where possible, satellite provides incident command and communications coordination (including radio interoperability/cross-banding) for major events and critical incidents.

A properly equipped unified command vehicle is able to provide instant situational awareness while on the move, eliminating the setup and alignment procedures for reach-back satellite communications. The system is easy to use, also eliminating the requirement for expert technicians on site for setup and operation.

With an iGT equipped unified command vehicle, IP satellite communications network can operate completely independently of a failed terrestrial infrastructure, it can integrate seamlessly into any landline network, and it can operate both integrated with a landline network and independently. The unified system meets the most demanding mobility and security requirements for public safety and national security users, enabling real-time secure and reliable voice, video and data transmission while in transit.

Public safety users and first responders can take advantage of satellite's constant connectivity in transit to communicate and prepare for the situation at hand. This is important because the

When the action hits, iGT SATCOM keeps you connected on the ground, at sea and in the air.

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coordination of multiple public safety agencies using voice, video and data communications may mean the difference between life and death. The satellite-based emergency management solution supports public safety emergency communications with communications services that are fast and easy to deploy on short notice—a critical need in a crisis or emergency.

The system provides for a centralized management with high reliability, unlike terrestrial communications systems that can experience widespread outages for various reasons such as weather/storms and other environmental factors or malicious activity. The satellite-based system provides complete data path diversity, which is a must when responding to critical situations.

Satellite creates a reliable communications network even in the most devastated areas. In the case of a unified command vehicle, satellite technology is used to coordinate response efforts and dispatch for police, fire and emergency medical service and other agencies. The mobile command center can back up all of a city's or organization's emergency dispatch call volume from any location. Additionally, it can serve as a temporary base of operation.

A unified command vehicle can be equipped to receive live video feeds from helicopters and from cameras that are situated throughout the event area. Such bird's eye views can help emergency response teams to see the big picture as well as where extra help is needed.

A SATCOM-powered unified command vehicle also helps law enforcement personnel, emergency managers, first responders and others tasked with protecting lives and property to access critical information quickly, reliably and seamlessly anywhere and anytime, including on the move. SATCOM supports "always on" broadband services and effectively operates public safety communications systems to manage emergencies. It can be used to coordinate major events, both emergency and non-emergency events.

Via a unified command vehicle agencies can share real-time data for situational awareness such as camera feeds, medical support, route information, and more. The command vehicle can be designed to comply with local, state and federal emergency communications guidelines and maintain interoperability.

Benefits of a Unified Command System

The advantages of a unified command system for agencies are numerous, and include:

1. Rapid and pervasive reach: Integrates with landline systems to provide effective voice, video, data and Internet communications.

2. Situational awareness: Able to provide instant situational awareness while on the move with live video

Interior view of a Unified Command Vehicle (USV), courtesy of iGT

feeds. Video provides a more accurate assessment of an emergency at hand.

3. Local dispatching: Enables dispatching of police and fire from the unified command vehicle.

4. Disaster communications: During a disaster, a city's entire 9-1-1 call volume can be supported from any location. Additionally, an organization's entire call volume can be supported from any location.

5. Command and communications coordination: Provides incident command and communications coordination (including radio interoperability/cross-banding) for major events and critical incidents.

6. IP network extension: Satellite-based unified command system extends global IP networks when terrestrial networks are not available.

7. Reliability and quality: Satellite IP platform ensures multiple users can share network without sacrificing quality due to more data transfers.

8. Quick installation: By leveraging commercially available technologies and standards, setup is fast and easy.

Any major organization must prepare for and be ready to respond to the unexpected. A threat to an organization's infrastructure and occupants could come from anywhere. Because the stakes are high to protect citizens and facilities, organizations must evaluate innovative technologies such as SATCOM that can help them to respond to pending dangers. A unified command system using satellite to support redundant, back-up communications is paramount to connecting emergency responders and other agencies to put first responders and organizations in control during emergencies.

About the author

Karl Fuchs serves as Vice President of Technology for iDirect Government Technologies (iGT) and is also a Contributing Editor to *MilsatMagazine*.

You may contact Karl at ***kfuchs@idirectgt.com***

COMMAND CENTER: GORDON MCMILLAN, DIRECTOR, EMEA GOVERNMENT, INMARSAT

Gordon has responsibility for the strategic positioning and development of Inmarsat's future Ka-band business in the Government and Military sectors in the U.K., Europe, Middle East, Africa and Asia Pacific.

During a successful early career in the U.K. Royal Air Force as a Communications Electronics Engineering Officer, Gordon had responsibility for the management and development of military voice and data communications from HF through to SHF, including a two year tour as the Commanding Officer of the NATO SATCOM Ground Terminal and Network Control Centre in the U.K. Gordon then spent three years in the field of telecoms regulatory affairs, representing the interests of U.K. telecom companies in Europe with European Commission and CEPT working groups.

In 1995, Gordon moved to Serco, the global support services company, in which he held a number of senior Government-focused business development and operations appointments over an eight year period. These positions included two years as Operations Director for Serco Aerospace and four years in the Middle East as Director of Business Development. In 2004 Gordon transferred to a venture capital company that he set up and ran a technology start-up business, before moving to Inmarsat at the end of 2006. Here he was responsible for the business development of Inmarsat's L-band services in the Government and Military sectors until mid 2011, when took up his current appointment with the GX program.

MilsatMagazine (MSM)
Mr. McMillan, could you tell our readers about your present role with Inmarsat?

Gordon McMillan
I am responsible for the strategic positioning and development of Inmarsat's future Ka-Band business in the Government and Military sectors in the U.K., Europe, Middle East, Africa and Asia-Pacific.

MSM
Given your military and civilian career backgrounds, how has the former assisted with the latter?

Gordon McMillan
During my relatively short eight-year military service as a communications specialist, I was exposed to a huge variety of operational scenarios for Air Force, Navy and Army communications and information systems' requirements, including international coalition operations with NATO, and defence intelligence.

This experience enabled me to fully appreciate the critical role that communications plays in the success of any military operation. This insight, when combined with a number of years' experience of running civilian support operations for military customers in the U.K., Europe and Middle East, positioned me very well for my roles at Inmarsat.

MSM
Why did you decide to join Inmarsat?

Gordon McMillan
Inmarsat fulfills a critical role in supporting government, military, peace-keeping, disaster-relief and aid operations on a global scale. The company has invested significantly over the last 15 to 20 years to ensure that it has the most up-to-date and sophisticated technology in space and on the ground to support its customers. This strategy continues with the development and launch of Global Xpress, positioning Inmarsat as a clear leader in the field of mobile satellite communication services. With a strong financial position, a world-class team, and a forward-looking can-do culture, Inmarsat represented a great opportunity.

MSM
Given that the Asia-Pacific (APAC) region represents huge market potential for the Company, would you please explain to our readers what Inmarsat's presence is within this area? How does Global Xpress fit into your company's overall planning for this segment?

Gordon McMillan
The APAC region is hugely important for Inmarsat and the company has had a presence in the region for many years. We work through local distributors and directly with some of our key customers across governments in Asia to provide

Artistic rendition of an Inmarsat 5 Global Xpress satellite, based on Boeing's 702HP bus.

essential communications services for both military and civil government use.

Militaries in the region are looking to upgrade their systems, develop their roles in region and internationally, and therefore require interoperability as they move to take on these more demanding roles.

Inmarsat has established a large office based in Singapore to service the Asia Pacific region and its key role is to help develop the business and support our local partners: and, in turn, enable them to provide support to those customers we serve already, introduce new services and applications and help to migrate clients to newer service offerings as older services decline and close down.

In terms of positioning, Global Xpress will be a significant differentiator for the company in the APAC region from 2014 onwards, bringing additional coverage, significantly greater bandwidth and flexibility, and also enhanced resilience with the integrated combination of Ka-band and L-band services. All of these features will add value to our offering to commercial maritime, land enterprise and energy, and government/military customers in the APAC region, all of whom are familiar with Inmarsat's current reliable, high-quality and flexible mobile satellite services.

MSM
What market segments do you believe are the most promising for your Company?

Gordon McMillan
In GX, we see tremendous potential in the maritime and, in particular, the military market segments, among others. The global military communications market is estimated to be worth $9 billion by 2018. Increasing adoption of commercial satellite communication systems by government and military users, coupled with exponential demand for greater bandwidth, presents excellent opportunities for commercial satellite providers.

The impact of this is that in the future, fewer dedicated military satellite communications systems will be launched, and military forces will need to augment military systems with greater use of commercial satellite communications networks. As military budgets come under increasing pressure, the commercial satellite industry fulfills an increasingly greater proportion of the communications needs of government and military customers.

MSM
What do you see as among the most formidable business challenges for Inmarsat to surmount?

A key strategy of Inmarsat when dealing with the challenges of expanding into new territories is to work closely with local partners who understand the culture, approach and expectations of local customers, along with the regulatory framework of the country. Inmarsat is excited at the prospect of growing its business in all market regions, as the many opportunities make it well worth overcoming the challenges.

MSM
Where do you see the opportunities for growth?

Gordon McMillan
We believe that machine-to-machine (M2M) communications is poised for a huge growth in demand. Experts predict that the number of M2M connections is projected to grow by over a billion in less than a decade. China is expected to account for 40 percent of M2M connections in the utilities sector, and overall, the M2M sector presents significant opportunities in this region for us.

MSM
Given ongoing as well as new concentrations into the APAC region, how do you believe the APAC satellite market will impact global, as well as your own company's, business opportunities?

Gordon McMillan
It has been said by many commentators that this is the Asian century. Satellite communications is a global business, and the growth in economic strength of many countries within the APAC region presents a great opportunity for Inmarsat to work closely with local partners to grow their businesses alongside ours, supporting the mission-critical requirements of our customers.

For further information regarding Inmarsat's Global Xpress offering, access the Company's dedicated website

Gordon McMillan

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October 29-November 1, 2012
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TRUSTED COMMUNICATIONS—A PRIORITY FOR THE MILITARY

By Wesley B. Covell, Vice President anb General Manager, Growth Markets, Harris Government Communication Systems

Trusted communications and information sharing play a critical role in the operations and effectiveness of the U.S. Military. This year, the Military Communications Conference (MILCOM) will focus on this important issue as MILCOM 2012 celebrates more than 30 years of gathering the best of military, industry and academia.

The conference and exposition, October 29-November 1 at the Gaylord Palms Convention Center in Orlando, will feature six tracks of technical expertise and a line-up of top military, government, and industry speakers for the estimated 4,500 communicators from over 25 countries who are expected to attend the conference.

MILCOM's theme—***Trusted Communications...Awareness to Action***...highlights the critical role communications play in providing actionable situational awareness to the warfighter. Decision makers rely on accurate, timely information to execute their missions, and the challenges are enormous: maintaining assured connectivity in harsh and rugged environments, frequently without the benefit of a fixed infrastructure; managing the flood of data from a multitude of sensors and sources and transforming that data into actionable intelligence; and maintaining security and trust in the face of sophisticated and pervasive threats.

To address these challenges, the MILCOM Executive Committee has developed a comprehensive program with a mix of relevant speakers, panels and tutorials to create a collaborative environment that will extend well beyond the walls of the Gaylord Palms Convention Center.

Leading the conversation will be several top U.S. military and government leaders with world-class experience in the network realm. Among those confirmed to speak at MILCOM 2012 are:

- *Lt. Gen. Susan Lawrence, U.S. Army Chief Information Officer/G-6*
- *Mr. Chris Inglis, Deputy Director, National Security Agency*
- *Capt. Mark Kelly, U.S. Navy (Ret.), Commander of Space Shuttle Endeavour's Final Mission*
- *Former Florida Governor Jeb Bush*
- *Bill Brown, President and CEO, Harris Corporation.*

In addition to keynote addresses, government and industry leaders will share their perspectives during daily plenary panel discussions focusing on land forces communications, commercial satellite services, DISA and enterprise services, cyber operations, and protected SATCOM communications.

The cornerstone of MILCOM 2012 is the strong technical program, and the planning committee has created a broad array of topics in response to feedback from the military, industry and academia. More than 400 papers will be presented in the unclassified and classified technical program based on six technical tracks:

Attendees can see, touch and try out products and solutions from 250 exhibitor booths in the MILCOM exhibition.

- **Waveforms and Signals Processing**
- **Network Protocols and Performance**
- **Cyber Security and Trusted Computing**
- **System Perspectives**
- **Services and Applications**
- **Selected Topics in Communications**

Rounding out the technical program are technical panels and tutorials for both unclassified and classified program participants. Technical panel topics include: working with non-traditional partners, cyber mission assurance, tactical edge networks, cognitive technology in radios, networks and sensors, the DirecNet Task Force**,** science and technology efforts to improve DoD spectrum effectiveness, coalition interoperability test and evaluation, tactical data link, mobile applications, combating satellite interference, policy based management, and network analysis for secure/assured communications. Continuing education credits for technical sessions will be available.

The conference will also feature a Small Business Workshop which offers an opportunity to participate in real-time interaction with Harris Corporation and other prime contractors. In addition, conference attendees will be able to visit 250 exhibitor booths throughout the three-day conference, as many of the world's leading providers of information, communications and defense technologies will be on hand. Exhibitors include Fortune 500 companies, small businesses and government organizations.

Just as important as the network is networking, and MILCOM 2012—with its Orlando location—lends itself to several opportunities for attendee mingling. Tuesday evening, October 30, will feature an all-attendee event with three distinctive onsite venues. The annual Chairman's Banquet returns on Wednesday, October 31, where distinguished military representatives will join the much anticipated celebration that recognizes this year's award recipients for lifetime technical achievement and best unclassified and classified papers. A Halloween-themed dessert reception will follow. All conference sessions, meals and special events will be held onsite at the Gaylord Palms.

MILCOM is co-sponsored by the Armed Forces Communications and Electronics Association (AFCEA) International and the Institute of Electrical and Electronics Engineers (IEEE) Communications Society. Harris Corporation is serving as the conference's 2012 corporate host.

All proceeds from the conference will benefit AFCEA and IEEE educational programs, as well as The Mission Continue**s**, a nonprofit organization that reaches out to post-9/11 veterans, empowering them to transform their lives by serving others and directly impacting their communities.

Full conference details and registration are available at ***www.milcom.org***.

About the author

Wesley Covell is the executive chairman of MILCOM 2012 as well as the vice president and general manager of Growth Programs, Harris Government Communications Systems

COMMAND CENTER: CHARLES H. CYNAMON, SENIOR DIRECTOR, DEFENSE & INTELLIGENCE SYSTEMS, HUGHES NETWORK SYSTEMS

Chuck Cynamon is responsible for strategic initiatives to apply the company's broad range of SATCOM technologies and services to the worldwide defense marketplace and intelligence community. This includes fixed Ku-, Ka- and X-band VSAT systems and mobilesat products and systems. Applications cover satellite communications-on-the-move for ground-based and airborne platforms along with numerous classified development programs. Chuck has more than 20 years of experience in military space systems as a program manager for large, complex space programs and as a space systems operator.

Colonel Cynamon, (USAF, Retired), previously served in the United States Air Force for 24 years. In his final Air Force assignment, Chuck was the Chief, MILSATCOM Advanced Concepts Division at Los Angeles Air Force Base, California. He was responsible for the advanced technology insertion for the Advanced EHF and Wideband Global SATCOM systems, as well as planning the Department of Defense's (DoD) next generation satellite communications architecture and devising new innovative acquisition strategies based on commercial practices.

Commissioned through the Reserve Officer Training Corps in 1987, Chuck held squadron, major command, and HQ USAF levels of assignments in a variety of mission areas, such as airborne warning and control, ground-based missile warning, active and passive space surveillance, and satellite communications. As a program manager, he served as Deputy Program Director for the Space and Nuclear Network Group at Hanscom AFB, MA. Chuck was the Program Manager for Airborne SATCOM Terminals, a multi-billion family of programs providing future assured SATCOM to the warfighter.

MilsatMagazine (MSM)
Col. Cynamon (Ret.), please tell us about your prior experience and how you came to select Hughes Defense and Intelligence Systems to further your career?

Chuck Cynamon
For the majority of my 24 year U.S. Air Force career, I was a part of the DoD's space community. Over that period, I held assignments in both space operations and systems acquisitions. As a space operator and a junior officer, I was a satellite controller for Defense Satellite Communications System (DSCS) Phase III satellites at Schriever Air Force Base. Later in my career, I was the operations officer for the PAVE PAWS radar site at Cape Cod Air Force Station, as well as the Commander of the Air Force Satellite Control Network node at New Boston Air Force Station. As an acquisition officer, my experience included program management assignments in the E-3 Airborne Warning and Control System Program Office, the Optical Surveillance Program Office, the Air Force MILSATCOM Terminals Program Office and MILSATCOM Systems Program Office.

My final Air Force assignment at the MILSATCOM Program Office was perhaps the most rewarding of all the positions I held. Arriving just as the Transformational Satellite Communications System (TSAT) program was cancelled, I was named the Commander of the Advanced Concepts Group (ACG). The ACG was given the mission for defining the next generation MILSATCOM architecture (the what) while simultaneously developing innovative acquisition options for reducing cost and accelerating the delivery of capability (the how).

In the course of executing the ACG mission, I became convinced the commercial space industry possessed capabilities, products and services that the DoD needed to include in the future systems architecture. Furthermore, the commercial space industry's focus on time to market with very high quality is an acquisition model worthy of emulation to meet much of DoD's wideband and tactical protected SATCOM needs.

It was my interest in how DoD can incorporate commercial acquisition processes that fostered my interest in companies such as Hughes. Recently purchased by the commercial SATCOM giant, EchoStar, Hughes is renowned for valuing the entrepreneurial spirit that can bring new, innovative approaches to solve DoD's biggest challenge: providing wideband and protected SATCOM for highly mobile users in a future contested operating environment.

I'm extremely pleased to join the Defense and Intelligence Systems Division (DISD) at Hughes and I look forward to working with partners within the rest of the space industry to bring next generation SATCOM capabilities to the DoD, the intelligence community (IC) and international partners.

MSM
In your previous position, you helped plan the future growth of the Wideband Global SATCOM (WGS) Program. Could you tell us why WGS is important and what programs changes could make WGS even more operationally useful to the warfighter?

Chuck Cynamon

With the cancellation of the TSAT program, my former office was tasked to develop plans to evolve the capabilities of the Advanced Extremely High Frequency (AEHF) Satellite System and the Wideband Global SATCOM (WGS) System. DoD demands for SATCOM will far exceed the capabilities of both programs even when these systems are fully fielded.

In the case of WGS, we worked very closely with Boeing to develop production modifications that could provide greater flexibility of the payload and more capacity. WGS will become the workhorse capability for DoD for high data rate, high throughput SATCOM such as its predecessor system, the Defense Satellite Communications System (DSCS).

Over the past decade, the DoD has fielded ISR and tactical mobile capabilities that require enormous capacity and coverage in very remote areas where infrastructure is scarce and commercial SATCOM is not always immediately available. While WGS offers significantly more capability than DSCS, user demand continues to grow faster than the supply. Possible modifications to the WGS's space and ground segment could significantly increase satellite capacity and make more efficient use of the available bandwidth.

For example, DoD should leverage commercially available network management techniques that implement dynamic bandwidth management allowing optimized bandwidth use to support real-time warfighter needs. However, the most pressing need is for a standards-based approach to building and fielding bandwidth-efficient terminals purposely designed for highly mobile, wideband users such as the ISR community. During my time in the Air Force Terminals Program Office, we evaluated numerous waveforms for their abilities to support such a demanding user base as mobile ISR platforms.

Ultimately, the Digital Video Broadcast—Satellite, Second Generation (or DVB-S2) was targeted as the next generation waveform for airborne terminals supporting the USAF's ISR platforms. With this standards-based waveform coupled with commercial dynamic bandwidth management capabilities, the DoD could realize drastic reductions to its reliance on spot market leasing for commercial SATCOM.

I'm fortunate to be part of the Hughes team, a pioneer in the DVB-S2 waveform standard and a global leader in the fielding and operating of highly efficient fixed and mobile network capabilities. Commercial SATCOM industry is well positioned to partner with DoD to drive economization into existing and future SATCOM systems.

MSM

What major trends do you predict will affect the military satellite market in the next 12-18 months?

Chuck Cynamon

The current fiscal realities have driven the DoD to consider new approaches to procuring next generation space capabilities with a strong focus on affordability. The MILSATCOM community has already embarked on a new acquisition strategy for meeting the growing need for protected tactical SATCOM. A series of early development and demonstration studies are planned to design for affordability and reduce risk.

In another indicator of an affordability focused trend, the Space and Missile Systems Center in Los Angeles has established a Hosted Payload Office as a critical commitment to procuring smaller, simpler payloads and hosting them on commercial satellites. I would expect that these trends will form the foundation for next generation architectures throughout the entire military space enterprise for communications, navigation, overhead persistent infra-red, and space situational awareness systems.

MILSATCOM Systems Wing (MCSW) Terminals, photo courtesy of USAF

Artistic rendition of a WGS satellite

MSM

As the U.S. military is drawing down troops in current conflict zones, do you think SATCOM assets for the military will continue to grow?

Chuck Cynamon

The DoD continues to grow its ISR capabilities to ensure global strategic and tactical situational awareness. Ground and Airborne ISR systems inherently rely on line-of-sight and beyond line-of-sight capabilities for platform command and control, for timely exfiltration of data, and for dissemination of ISR products to information consumers. SATCOM is a critical capability enabling the ISR mission.

As we draw down troops in current conflict zones, our need to sustain situational awareness in these areas of operation may not decrease. Furthermore, even if the high demand for ISR capabilities and assets in the current conflict zones does decrease, other under-served geographical hot spots will likely benefit from the draw down.

In fact, this greater geographic dispersal of ISR capabilities may present a greater challenge to ensure connectivity, resulting in the need to sustain current levels of SATCOM support, if not requiring growth in SATCOM assets.

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MT2300L-250/150	120	645	215	
MT3600-175	85	620	150	23.4/47
MT3600L-250/175	120	750	215	
MT3600-250	120	805	215	
MT3300L-340/250	160	1000	280	29.5/65
MT3300L-500/250	215	1100	415	
MT3300L-500/350	235	1100	415	
MT3300-500	235	1100	415	
Ku-Band 12.75 – 14.5 GHz				
MT2300-200	100	830	175	15.0/33
MT3400-400	200	1265	360	29.5/65
MT4400-750	375	2035	665	38.0/84
MT4400L-1250/800	500	2610	1070	
X-Band 7.9 – 8.4 GHz				
MT2500-200	100	850	175	15.0/33
MT3400-400	200	1265	360	29.5/65
MT4400-750	375	2035	665	38.0/84
MT4400L-850/500	425	2085	760	
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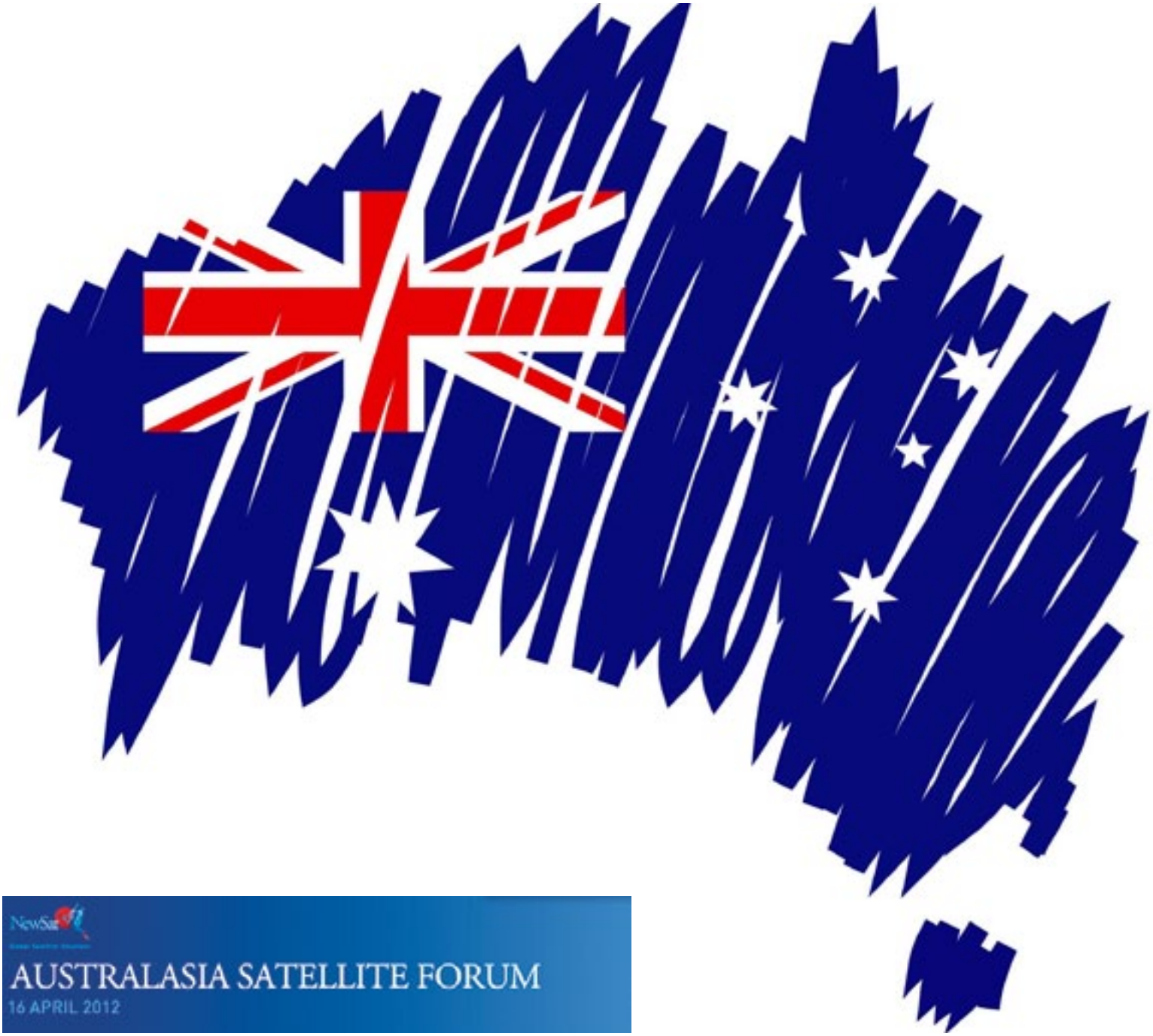
EVENT: PROMOTING AUSTRALASIA'S SATELLITE CAPABILITIES

Satellite communications is a growing global market due to an ever increasing demand for bandwidth to support fast, high quality communications across a wide variety of industries and geographical regions. According to recent figures released by the *Satellite Industry Association* (SIA), world satellite industry revenue was US$168.1 billion in 2010 and the market has experienced an average annual growth of 11.2 percent over the last five years.

The annual Australasia Satellite Forum occurred in Sydney earlier this year and provided a unique opportunity for open debate and discussion of the satellite industry in the Asia-Pacific region. The one-day forum hosted a mix of Australian Parliamentary representatives and industry experts from around the world to hear presentations from some of the key players involved, and to participate in panel and roundtable discussions. The event focused attention on the versatility of satellites in providing fast, efficient, reliable and cost-effective communications to urban, regional and remote areas across the government, enterprise and consumer markets.



Among the political policy makers, industry experts and market leaders in attendance were Shadow Regional Communications Minister, *Luke Hartsuyker*; **NewSat** Founder and CEO, *Adrian Ballintine*; NewSat CTO, *David Ball*; Chairman and CEO, *Jean-Yves Le Gall*; **SES** Vice President Asia Pacific *Glen Tindall*; **Intelsat** Senior Sales Director *Robert Suber;* and **Optus** Director *Paul Sheridan*. Topics covered included; regional and remote communications; the **Australian National Broadband Network** (**NBN**); satellite demand and supply; launching satellites; and first responder communications in disaster zones.

Shadow Regional Communications Minister, Luke Hartsuyker, gave the initial address. He discussed the desperate need for wireless communications and high-speed broadband within regional and remote Australia, and provided insights into the applications of satellite communications in isolated locations. Mr. Hartsuyker stressed that "Australia—all of Australia—must have modern high-speed broadband, there is no doubt about that. The question is how best to deliver that?" calling into question the effectiveness and efficiency of the current Federal Government's approach to the NBN.

With a portfolio covering not only broadband but also a wide range of communications issues, including television and the mobile phone network, Mr. *Hartsuyker* believes that the satellite sector has a role to play in each of these areas:

Regarding television, "As Australia turns off its analog television and switches to digital, satellite will be delivering metropolitan quality television to Australians living in the most remote areas. For many people in regional Australia this will be the first time they will have access to direct, free-to-air television services and local news," he explained.

In relation to mobile communications, Mr. *Hartsuyker* enumerated statistical evidence which revealed that 70 percent of Australia's landmass currently has no form of conventional mobile phone coverage at all, putting into focus the fact that the satellite industry has developed innovative solutions to ensure that mobile communications are available across 100 percent of Australia's land mass and out to sea.

He then reiterated that satellite communications will provide an opportunity to improve the quality of life in regional areas, with better healthcare, with better opportunities and with the provision of entertainment in isolated locations.

Mr. *Hartsuyker* went on to explain how the future of almost every sector of the Australian economy, especially the booming mining and resources sector, will depend on "high-speed, reliable communications providing easy access to new markets, at home and abroad." He emphasised that "such communications will always, also, provide new opportunities for new industries to move to regional areas: call centres, data processors, designers, software engineers," harnessing the potential for regional Australia to increase its contribution to the economy.

In addition to the provision of fast and reliable communications to regional and remote Australia, the role and capabilities of satellite-enabled first responder communications in disaster zones were also discussed during the forum.

As part of a panel discussion moderated by NewSat CTO, *David Ball*, representatives from **ASC**, **Thales Australia**, **ND SatCom**, **Comtech EFData** and **The Global VSAT Forum** (**GVF**) spoke of the advantages, versatility and efficiency of using satellites for disaster recovery communications.

Over the last few years we have witnessed a number of natural disasters around the world in which many lives were lost and where terrestrial infrastructure has been totally wiped out by floods, tsunamis, bushfires and earthquakes. In his introduction to first responder communications in disaster zones, Mr. *David Ball* stressed that the challenge in many disaster emergency situations is "how to get communications restored and how to rebuild that infrastructure." Mr. *Ball* believes there is an urgent need at the time of the disaster to get situational awareness built and to get critical command-and-control established, underlining that "satellite is very well placed to assist with this."

"In the event of a disaster, satellites are able to provide communication solutions for quick and effective recovery," said Mr. *Ball*. NewSat provides satellite communication solutions to overcome challenges that may arise in the event of a disaster, to ensure recovery efforts are not inhibited and help environments to be restored as soon as possible. Its VSAT services can be deployed anywhere and is an ideal standalone disaster recovery tool. During the 2009 Victorian bushfires, NewSat assisted in the bushfire recovery of one of the hardest hit communities—Kinglake, as well as Buxton.

According to Mr. *Ball*, another challenge when dealing with disaster recovery is that no one thinks about such until the disaster has occurred. This proves to be problematic, as obtaining and moving the adequate equipment into the field as well as training people once a disaster has already happened is extremely difficult. "All these issues in terms of preparedness give us something to talk through", added Mr. Ball.

The forum also provided an opportunity for *Jean-Yves Le Gall*, Chairman and CEO of Arianespace, to discuss future satellite launches for Australia. According to Mr. Le Gall, space is a real success and is already a reality in Australia. "There are many new operators in Australia and now there are many projects here. This is excellent news because Australia is a kind of space veteran in the Pacific Rim area and what's going on here is very interesting." With many successful satellite launches for Australia already under its belt, the Arianespace chief spoke of three recently-signed new launch contracts, one being the upcoming launch of ***Jabiru-1*** in 2014, NewSat's Ka-band satellite.

Speaking specifically about NewSat, Mr. *Le Gall* emphasized, "NewSat is a new satellite operator and it is very important when you launch a first satellite that this satellite will be launched successfully, so Arianespace is proud to have been selected to launch Jabiru-1. After Jabiru-1, I'm sure that many others will follow as well."

The **Australasia Satellite Forum** also provided opportunities for satellite experts to discuss the media side of the business, the supply and demand of satellite services, as well as the relationship of both cooperation and competition among satellite operators. The forum showcased an excellent line-up of Australian and Asian companies which are bringing solutions, innovation and resources to the global satellite communications industry.

Military Intelligence Demands More Mobile + Flexible SCIF

By Robert Turner, Vice President of Business Development and Contract Compliance, MTN Government Services

For too many years, there has not been a major push toward improving the mobility and flexibility of the Sensitive Compartmented Information Facility (SCIF). This runs contrary to other segments of the construction industry, within which you can quickly expand and/or relocate and/or reconfigure modular units as needed. If we can quickly expand and even relocate offices, public-school classrooms, medical facilities and restaurants, then why can't we do the same with SCIF?

Previously, if a government agency operating a SCIF concluded that the structure is no longer large enough to accommodate increasing demands and personnel, that agency traditionally couldn't easily and rapidly expand it.

Fortunately, these limitations are now being addressed.

First, a thumbnail summary of what a SCIF is: It's an enclosed structure within a building that's used to process *Sensitive Compartmented Information* (**SCI**). Access is limited, and all activity and conversations inside relating to this classified information is restricted from any public disclosure. Government organizations use SCIFs to protect such information and communications—including satellite communications—for Department of Defense (**DoD**) bases, **Department of Homeland Security** locations and even within the U.S. Capitol itself when members of Congress meet for top-level, secret briefings.

SCIFs typically require significant demolition and bottom-up re-construction of areas requiring this level of security accreditation. Additional security features must be integrated into the construction including specialty materials and extensive security hardening of the perimeter. As for size, they can be as small as a walk-in closet, or constitute an entire facility comprised of hundreds of thousands of square feet. Regardless, SCIFs securely allow the U.S. Intelligence Community, DoD and defense contractors to support the most critical warfare and Intelligence missions.

For SCIFs, speed and flexibility of deployment have emerged as top priorities. Defense contractors use SCIFs to meet the security requirements of federal and DoD customers. However, as companies evolve, they often outgrow their leased spaces.

Currently, SCIF modifications into leased facilities are borne entirely by the federal contractor. Vacating traditional SCIF space translates to sunk costs of hundreds of thousands of dollars or more. One of the prime advantages offered by a more readily expandable and/or relocatable SCIF solution is the ability to retain capital investment through multiple moves, while re-configuring or re-sizing the SCIF to each unique environment.

Within the next several years, industry will transition to permanent-panel solutions that can get installed, broken down, relocated, and re-installed within a few days. This isn't part of some wish list—it's happening right now. Agencies and contractors no longer have to go through endless procurement/permit-approval steps to expand a SCIF or move it from one office/building to another. Pre-approved panel parts will sit in a *secure storage area* (**SSA**) warehouse and are instantly available for set-up and deployment.

Even better, these mobile constructions will readily adapt to each agency's specific requirements for a more customized fit. This circumvents what has proven to be an often dragged-out, painful process due to the many distinct directives of multiple government offices.

Anyone in the industry is familiar with that drill: After you thought you satisfied every single standard, an accreditor would come back and say you overlooked an agency-specific detail, and add, "Work on it and we will come back in 30 to 60 days."

That's a lot of downtime. The re-deployable version of the SCIF will adjust nimbly to the unique "must haves" of each customer.

This is going to improve the way we serve our Intelligence and warfighting operations, thereby becoming the era of asymmetrical combat. These SCIFs will enhance communications with commanders in the field who can pack up and relocate as the mission dictates. Intelligence, after all, ages by the hour, if not by the minute.

Today, when discussing projects with customers who are working out of traditional SCIFs about what's happening in this space, their eyes grow wide with the possibilities.

Within today's fast-paced contracting environment, there is a solution that can offer them a turn-key SCIF—faster than conventional construction, more dynamic, and scalable than a traditional drywall installation—and even allowing for the opportunity to lease or rent a solution.

The greatest benefit is that, no matter how quickly your company outgrows its SCIF space, you can pack it all up and take it wherever you're going.

About the author

Robert Turner is Vice President of Business Development and Contract Compliance at MTN Government Services.

The Redeployable Secure Operations Center (RSOC)

MTN Government Services' RSOC represents this next generation of SCIF deployment. It can be flat packed, palletized and drop-shipped into any environment and assembled within days with just a couple installers. It can be broken down, shipped and rebuilt/redeployed multiple times with no degradation – resulting in indefinite, residual ROI.

It can be shipped bandwidth-ready – able to connect and integrate into a secure network of VSAT satellites with more than 36 active beams, ten teleport gateways and 14 points of presence strategically located throughout the world.

Specific features include:

- Security standards. RSOC has been designed based upon Intelligence Community Directive (ICD) 705, the highest possible security standard used by the U.S. government. Services include accreditation assistance, security documentation construction, site surveys, and system integration into existing facilities and solutions

- Construction/sound proofing. RSOC's modular panels are four inches thick, and welded with inner and outer electro-galvanized steel with high-density insulation to establish state-of-art sound proofing. In addition, there are unique sound masking device technologies and RF Shielding capabilities. Power, data and voice connections pass securely through a common point of entry and power connectivity is available for CONUS, OCONUS and MIL-Spec connections

- Other features. LED lighting, power and HVAC, LKM7000 lockset with CD X09 and UL 2050-compliant alarm system

THE HPA CORNER

THE U.S. SPACE POLICY'S IMPACT ON HOSTED PAYLOAD ENTERPRISE

A Hosted Payload Alliance Policy Paper

Given the preponderant use of non-U.S.-manufactured launch vehicles by the commercial satellite industry, the *Hosted Payload Alliance* (HPA) recommends adjusting the foreign launch exemption process to facilitate routine and early consideration of solutions featuring U.S. Government payloads hosted on commercial satellites likely to be launched overseas.

The HPA is a trade association composed of 14 member companies who are leaders in the space industry.[1] Members include owner operators of satellite telecommunication companies, launch service providers, and manufacturers of spacecraft, rockets, payloads, and ground processing, command and control systems.

HPA members believe the commercial space industry[2] can be leveraged by the U.S. Government to achieve its goals of; resilience, affordability, risk reduction and increased flexibility, capability, and capacity for national security, space exploration, and science missions. Hosting U.S. Government payloads and capabilities on commercial satellites are ways the commercial space industry can help the government achieve those goals. Therefore, the membership of the HPA favors marketplace conditions, system architectures, and government policies that permit industry and government to routinely consider commercially hosted options that meet U.S. Government requirements.

Background: Access to Space by the Commercial Satellite Industry

Over the past decade, commercial companies have primarily relied on affordable and reliable access to space from non-U.S. launch providers. For the dozen years from 2000 through 2011, more than 80 percent of all commercial LEO satellites have been launched overseas.[3] Over the same period, more than 90 percent of all commercial GEO satellites were launched by foreign rockets, notwithstanding that U.S. spacecraft manufacturers built two-thirds of these GEO satellites.[4]

Issue: Exemptions for U.S. Government Hosted Payloads

As the commercial space industry relies more on non-U.S.-manufactured launch vehicles, it is highly likely during the next few years that commercially hosted U.S. Government payloads will be launched overseas, thereby generating a number of exemption requests for foreign launches.

There are other considerations unique to the commercial satellite industry. After a commercial spacecraft bus has been identified as an attractive host for a U.S. Government payload, the final determination of the launch service provider may not be known when the commercial contract to build that spacecraft is signed. Furthermore, if a delay develops in spacecraft manufacturing, or there is a lengthy booster anomaly investigation, then change to the launch service provider could occur late in the spacecraft manufacturing flow, perhaps after the government payload has been integrated to its host spacecraft.

The 2004 U.S. Space Transportation Policy states:

United States Government payloads shall be launched on space launch vehicles manufactured in the United States, unless exempted by the Director of the Office of Science and Technology Policy, in consultation with the Assistant to the President for National Security Affairs... The proposed use of a non-U.S.-manufactured launch vehicle will be subject to interagency coordination as early in the program as possible, and prior to the sponsoring department's or agency's request for authority to negotiate and conclude an agreement.[5]

Under routine circumstances, the U.S. Government would seek commercially hosted solutions through a competitive procurement process preceded by deliberately defined requirements, concept studies, and analyses of alternatives. For hosted payloads to be considered during these early phases of program initiation, the process associated with requesting and receiving an exemption for foreign launch should be clarified and routinized. This process is to permit approval of hosting U.S. Government payloads on foreign launch vehicles during early program formulation. If this is done, the U.S. Government may expect to attract commercial investment and enhanced interest for hosting U.S. Government payloads on commercial spacecraft.

Recommendations

As the U.S. Government undertakes a revision to the 2004 U.S. Space Transportation Policy, the HPA recommends three changes:

1. Develop a Transparent and Time Limited Exemption Process. The policy should call for the development of a known process for departments, agencies, and industry to seek an exemption to the existing foreign launch

restrictions. This process should state the participants, responsibilities of the companies participants, and categories of information requested for interagency review when seeking an exemption. The process should also provide a deadline for the U.S. Government to grant or deny exemptions. Furthermore, the fact of such a process, its functions, and timelines should be made available to the public.

2. Allow for Exemptions with Conditions. OSTP and NSC should have the authority to grant exemptions for possible foreign launch vehicles with conditions as early in the acquisition planning process as possible, even before the ultimate launch service provider is known.

3. Seek Earliest Possible Exemption. U.S. departments and agencies should have the option of seeking an exemption for a foreign launch as early in the acquisition planning as possible, ideally during the Material Solution Analysis (MSA) Phase prior to Milestone A.[6]

Benefits of Implementing Recommendations

- Incorporating the recommended changes to the U.S. Space Transportation Policy will encourage satellite and payload manufacturers, mission systems providers, and telecommunication companies to routinely offer commercially hosted solutions for U.S. Government customers. The resulting capabilities and business approaches have the potential to enhance the U.S. space sector competitiveness while increasing: resilience, affordability, risk reduction, flexibility, and capacity for a host of national security, space exploration, and science missions.

- A vibrant, commercially hosted payload enterprise will enhance the value and attractiveness of U.S. manufactured satellites and payloads to both domestic and foreign commercial satellite customers; and thereby increase the sale and export of U.S. manufactured goods and services.

- Even an early, conditional exemption will allow planners, architects, and acquisition officials to consider commercially hosted payload solutions as a viable alternative during analyses of alternatives.

- U.S. Government departments and agencies will be free to routinely consider commercial hosting options for a wider range of government capabilities. They will do so without the perceived risk that these "inventive, nontraditional arrangements for acquiring commercial space goods and services," specifically encouraged by the 2010 National Space Policy, could later be ruled as inconsistent with the U.S. Space Transportation Policy.

References

1 Hosted Payload Alliance member companies are: Arianespace; ATK Space Systems; Boeing; EADS North America; Harris; Intelsat General; Iridium; Lockheed Martin; Northrop Grumman; Orbital Sciences; Raytheon; SES Government Solutions; Space Systems/Loral; Thales Alenia Space North America.

2 The term "commercial" is defined on page 10 of the National Space Policy of the United States of America, published on 28 June 2010: "The term "commercial," for the purposes of this policy, refers to space goods, services, or activities provided by private sector enterprises that bear a reasonable portion of the investment risk and responsibility for the activity, operate in accordance with typical market-based incentives for controlling cost and optimizing return on investment, and have the legal capacity to offer these goods or services to existing or potential nongovernmental customers."

3 Relying on sources available from the FAA Office of Commercial Space Transportation, for the dozen years from 2000 through 2011, a total of 134 commercial LEO satellites were launched worldwide: 108 were launched overseas; 26 were launched in the U.S. No nanosatellites or CubeSats were included in the 134 commercial LEO satellites considered in this analysis.

4 Including the years 2000 through 2011, a total of 211 commercial GEO satellites were launched by foreign and domestic rockets. One hundred ninety-one were launched overseas, largely on the Proton, Ariane, and Sea Launch rockets. Twenty were launched in the U.S. including one on the Delta 4 and the rest on the Atlas 2, 3, and 5. The last use of the Delta 2 for commercial GEO transportation occurred in 1998 with the launch of the Boeing-built Bonum 1 spacecraft. U.S. spacecraft manufacturing.

5 U.S. Space Transporatation Policy Fact Sheet, 6 Jan 2005, page 7.

6 DoD Instruction 5000.02 "Operations of the Defense Acquisition System", 8 Dec 08

An artist's rendering of a Boeing satellite with a hosted payload. The hosted payload is the four-pronged square facing toward Earth. Image is courtesy of Boeing.

THE KELLEY PAGES: MARK CURRAN OF L3-COMMUNICATIONS

Contributing Editor Mike Kelley spoke with Lt. Gen. (ret.) Mark Curran, Vice President of Army Programs and Huntsville Operations for L-3 Communications. L-3 supports a variety of businesses, but is primarily a supplier of electronic and communications products to the DoD. In July, L-3 finalized the spinoff of Engility, a new company that comprises much of L-3's former government services business. In Huntsville, L-3 supports a wide variety of federal programs and agencies, including the Space and Missile Defense Command. and MDA.

Mike Kelley

What prompted L-3 to open a Huntsville office?

Mark Curran

We saw Huntsville as one of the key areas in the United States to establish an office. Ten of our business units have a presence here, and over 30 of our business units do business in this area, either as a product supplier or providing capabilities to organizations like Missile Defense Agency, PEO Aviation or PEO Missiles and Space.

We started the office in 2007. It's a small office from a corporate standpoint, but we feel it has been effective with coordination with our customers, and it also helps our business units understand what business opportunities are available with the commands located here in Huntsville. It's interesting to me that the growth has not turned out where you think it might be, not on the missile side, but on the aviation services side.

Mark Curren of L-3 Communications

Mike Kelley

Can you comment for us on the immediate, and long-term goals, for this office?

Mark Curran

With our services focused on the Missile Defense Agency and Space and Missile Defense Command, we are now focused more on the product side. Most of that product we're supplying as a first- or second-tier supplier to other large prime defense companies.

Our first, and immediate, goal is to represent L-3 here in Huntsville as number one, a strong member of the community. Number two, we want to act as a facilitator of opportunities for our business units, and to help with relations with our government and defense industry partners.

Longer term, we want to sustain the business we have and grow the business here, especially in the aircraft maintenance and aircraft manufacturing area, the services side of aviation, where we have a lot of strength.

We hold three large contracts that anchor the aviation maintenance side of our business. L-3 Aviation Fleet Support is the eleventh largest employer in Alabama with regard to the kind of maintenance work we are doing on about 650 aircraft at Ft. Rucker. We are the incumbent on the Fort Rucker Aviation Maintenance Contract which is being recompeted. It's a very big contract which we hope to win again.

We also have the Contractor Logistics Support contract through the Program Office Fixed Wing for all the Army's C-12 and UC-35 aircraft. We maintain both the ISR C-12 platform and the utility C-12 and UC-35 platforms. We actually have a PMO shop here in Huntsville that manages that program, and they're located in this building.

Our third contract is the maintenance contract that runs through AMCOM. It's the regional aviation support maintenance contract, and it has employees at Ft. Stewart, Ft. Bragg, and Ft. Campbell who are doing reset of rotorcraft as they are coming out of theater, before they are re-deployed.

Mike Kelley

What led to the decision to create and spin off Engility?

Mark Curran

We decided to take a good portion of our government services business and spin it off into a new publicly-traded company called Engility. We think it's a very positive thing for both L-3 and Engility because, as a new corporation, Engility will be unburdened by the larger infrastructure that a product and services-oriented corporation has. That lower overhead will allow it to compete more effectively in a services environment. Finally, it helps both corporations with OCI (organizational conflict of interest) issues.

Mike Kelley

Much of the Huntsville office supports the Space and Missile Defense Command. What can you tell us about that?

Mark Curran

Through our Global Security and Engineering Solutions divisions, we are supporting them in two primary areas. They work for both the Technology Center and the Future Warfighting Center at SMDC.

For the Tech Center, they provide a product called Vista and some software engineering and technical analysis and development. For the Future Warfighting Center they provide a product called the *Joint Enabled Messaging System* (**JEMS**). They provide modeling and simulation support, and exercise support command and control.

The JEMS software allows rapid, seamless data, format, and protocol translation between SMDC, U.S. Army, Joint, and other assets and our coalition and multi-national partners. JEMS provides the critical linkage between systems without requiring modification to the systems in question or lengthy software development, and the system serves as the enabling technology in truly realizing immediate sensor-to-shooter linkages.

Our *Vertical/horizontal Integration of Space technologies and Applications* (**VISTA**) product is a software capability providing integration of relevant operational information for decisive Brigade and below operations, what we term "*Space to Foxhole*". VISTA, leveraging the aforementioned JEMS software, provides the right information, in the right format, at the right time, to be displayed on the appropriate Mission Command system. VISTA software supports both current and future *Army Battle Command Systems* (**ABCS**). It operates across Strategic, Theater, and Warfighter networks, supporting Joint, Interagency, Intergovernmental, and Multinational Mission Command on current computer and

communications systems. The focuses of the VISTA capability is on seamless distribution of relevant information from Space and Missile Defense and multiple sensor assets to individual Soldiers/ Warfighters at the tactical edge.

Now, when you talk about what's inside the missiles being built by the Primes, we provide some electronics and avionics pieces. That also applies to ***Patriot*** and ***THAAD*** missiles for MDA.

Mike Kelley

L-3 provides support to the Missile Defense Agency. What can you tell us about those activities?

Mark Curran

Well, I'm limited due to security reasons on the information I can give you, but I can say that for MDA, we furnish a host of services through our *Global Security and Engineering Solutions*, or **CS&ES**, and some products. The services to MDA are similar to what we do for SMDC: financial management, administrative support, systems engineering, infrastructure and environment test, security and intelligence operations.

A lot of that is products. On the electronic products side, we are premier suppliers to multiple prime contractors who build air defense missiles and interceptors for MDA, things such as encoders, encryptors, transmitters, flight termination receivers, electronic safe and arm systems, and transponders. On the testing and range support side we provide translated GPS range systems, airborne flight test data collection using our ***HALO-I*** and ***HALO II*** airborne platforms, and targets provided by **L-3 Coleman Aerospace**.

Coleman is also very heavy into *Flight Test Integrated* (**FTI -01**), which is a very large test MDA is getting ready to run where they'll have multiple targets and multiple kill systems, all going on simultaneously.

Mike Kelley

L-3 was instrumental in development of the AVCATT training system. What can you tell us about your support to that program?

Mark Curran

We have the presence of L-3 Link simulations here, and they are the prime on AVCATT. They provide continuing support to AVCATT around the world. They are charged under that program to do a number of things. They physically do them either where the AVCATTS are or in their labs in Arlington, Texas or Orlando, Florida. They also work with the Software Engineering Lab here as a partner.

As a prime of AVCATT, we are heavily involved with supporting the AVCATT post-deployment software by keeping the software refreshed, by keeping the platforms up to date and integrated as platforms change. AVCATT is an aviation combined arms trainer with reconfigurable cockpits, so the cockpit can be an Apache helicopter one day, and the next day it can be a ***CH-47*** cockpit or a ***Kiowa Warrior***. And as those versions of those aircraft change, you have to update the software. You could also have two cockpits configured as Kiowa Warriors and two as Apaches, or you could have a formation of Apaches flying. It's quite a capability.

Mike Kelley

What major activities or new developments are planned for the rest of 2012?

Mark Curran

We are looking forward to being successful on the aviation maintenance related contracts as they get recompeted. Then we're looking forward to relocating this office to another location in **Cummings Research Park** towards the end of the year. Finally, of course, we want to continue to support both our government and our commercial customers.

THE KELLEY PAGES: THE SMD CONFERENCE

Nearly two hundred exhibitors and thousands of attendees, including SatNews contributing editor, *Mike Kelley,* converged at the **Von Braun Center** in Huntsville, Alabama, from August 13 – 16, for the **15th annual Space and Missile Defense Conference**, where they shared information relating how space-based assets can respond to a host of national and non-national threats.

However, the conference was overshadowed by the continuing news of defense budget cuts and rising concerns over what sequestration might do to the nation's military preparedness—such produced a somewhat subdued atmosphere.

Though the number of paid registrants was up, as was the number of exhibitors, some conference veterans said the exhibit hall seemed less crowded than in previous years and that companies were not bringing in as many people to man their booths.

Kicking off the conference on Tuesday, *Frank Kendall*, Undersecretary of Defense for Acquisition, Technology, and Logistics, tried to set an optimistic tone about the future of America's defense structure, while giving a sobering assessment of the effects of sequestration. He said missile defense remains a Defense priority, but warned that sequestration would mean significant cuts to many defense programs. He cautioned that time is rapidly running out for Congress to create a fix.

Frank Kendall, Undersecretary of Defense for Acquisition, Technology and Logistics

Kendall said there would be "no flexibility" if sequestration takes effect. "We will have to take 10 percent out of each program," he said. "The clock is still ticking, and here we are," he said, as congressional wrangling and election year party politics could thwart efforts to reach a budget compromise that could avert the threatened $54 billion cut to the Department of Defense's FY 2013 budget.

Noting the flatlining of recent defense budgets, *Kendall* said the Pentagon is being forced to change the way it deals with threats to American security. "The threats we face are not going away, but the way we fight them will change," he said, as the military makes tough decisions on program priorities and funding. However, he pledged that the U.S. will not end up with what he termed a "hollow force," referring to the period of defense cuts after Vietnam that reduced America's ability to respond to security threats.

Lt. Gen. *Edward Anderson* moderated a panel discussion on *Next Generation Missile Defense* and said Operation Enduring Freedom and Operation Iraqi Freedom have led to a shift in space priorities that is more in support of theater operations. Anderson said the Army has become the largest user of space-based capabilities, but all services are now increasingly dependent on the use of space.

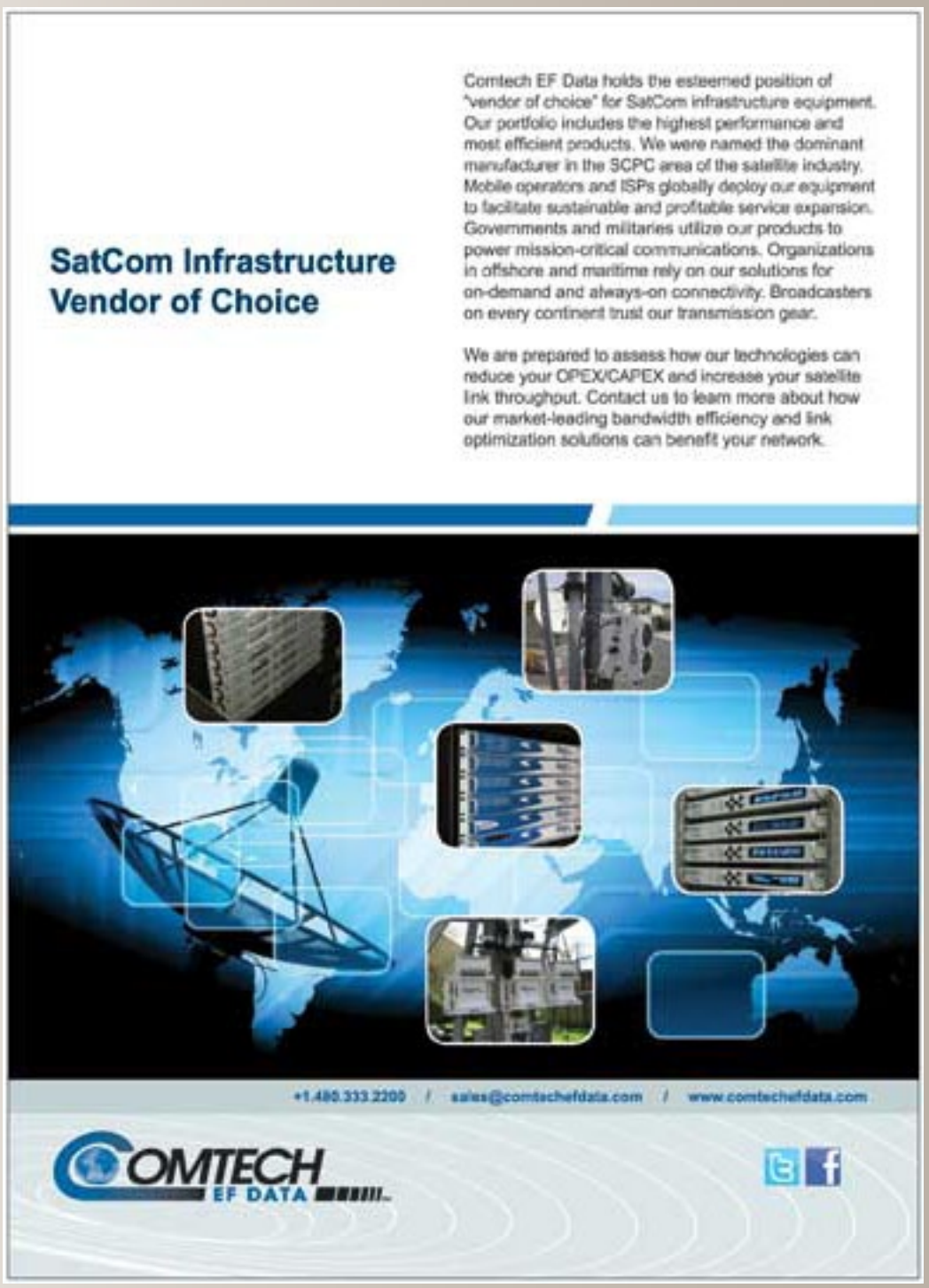
Brig. Gen. Ole Knudsen

Representative Michael Turner

Those assets include satellite communications, Blue Force tracking, Global Positioning satellites, and space-based *intelligence, surveillance and reconnaissance* (**ISR**). The military has seen increased use of satellites to monitor terrain, he said. "We have to identify operational risk, to see what's over that next hill," he said. OIF and OEF, he said, have kept soldiers' needs in the forefront of Army thinking. He spelled out a strong case for continued support of these assets despite budget pressures. "We cannot go back to the pre-OIF/OEF mindset when missile defense and strategic considerations were all-important."

PEO Missiles and Space director Brig. Gen. *Ole Knudsen* said the agency is focused on advancing a number of space programs, including adding GEO satellites to the Army ***JTAGS*** program and moving ahead on the ***Kestrel Eye*** and ***SNaP*** satellite initiatives. He said the Army would probably keep the ***Patriot*** missile program going for up to 25 more years. "It's the real B-52 of the Army," he said.

On Wednesday, Rep. *Michael Turner*, R-Ohio, echoed *Kendall*'s alarm over the effects of sequestration. "Missile threats to the United States are growing," he said. The chairman of the **House Armed Services Subcommittee on Strategic Forces** deplored what he said are continuous proposed cuts to the GMD (ground-based midcourse defense) missile program, and noted that Iran and North Korea are developing nuclear weapons and the longer-range missiles to deliver them.



Dr. Uzi Rubin

However, he lauded the technological and intellectual assets on display at the conference and said the U.S. must remain the world leader in those areas. "You are all helping us achieve the impossible every day," he said.

Wednesday's luncheon speaker, former Israeli Minister of Missile Defense Dr. *Uzi Rubin*, said Israel's ***Iron Dome*** defense shield has been highly effective during its first year of operation, with kill rates as high as 80 percent against the short-range rockets randomly fired from Gaza by Hamas and other terrorist groups. Dramatic nighttime videos clearly showed numerous kills as Israeli Tamir rockets repeatedly tracked and destroyed incoming rockets during their midcourse flight trajectories. He said Iron Dome's effectiveness has blunted criticism of the program's cost. The Israeli government gave the thumbs-up on the program if 2006 following several years of increasing Hamas and Hezbollah rocket attacks.

The system is designed to distinguish between truly harmful and relatively harmless rockets. In the past year, said *Rubin*, only one rocket-caused death has been reported despite 500 or more rockets that have landed in Israel. He said Iron Dome's success has started a fierce competition among the mayors of several Israeli towns for deployment of Iron Dome batteries. "It has been a big morale boost to Israeli citizens." Rubin said he has noted a growing respect from Iran for Israel's missile defense system, saying Iranian defense officials now speak of developing missiles "that can defeat Iron Dome."

"*How Commercial Providers can Support Military Space,*" the focus of Wednesday's Space Panel, featured a range of speakers from industry and government. Dynetics Executive Vice President *David King*, who moderated the panel, saw an increasing role for commercial companies in space policy and operations which until recently were dominated by government strategic considerations.

David King, Dynetics' Executive Vice President

He listed several reasons why the pace of commercialization should continue. "Sometimes industry can do some things better," *King* said, adding that industry can often respond faster to opportunities than can the government. He did note that industry's need for profits coupled with high development and the operating costs of space programs will limit the number of participants. "It takes billions, or at least hundreds of millions, to get into this business," he said.

Brig. Gen. Timothy Coffin

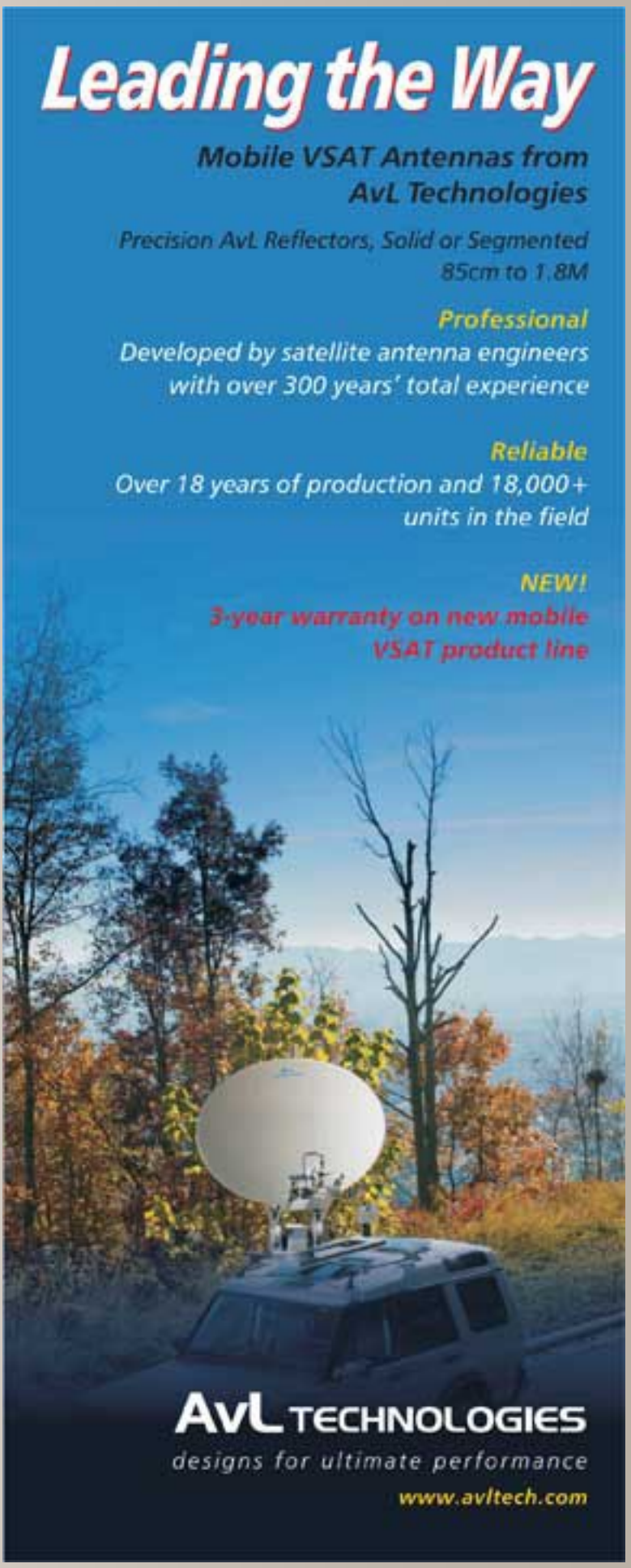
Brig. Gen. *Tim Coffin*, **SMDC/ARSTRAT** Deputy Commander for Operations, stressed the intelligence, movement, and communications advantages space gives to the warfighter. "If you want the home field advantage, if you want to be sure you never walk into a fair fight, you need to have space." He said his office is working on an updated "white paper" on how the Army can better use space. "Space has transformed the way we do warfare," he said.

The final day of the conference saw a presentation by Lt. Gen. *Richard Formica*, commander of the Army Space and Missile Command/Army Forces Strategic Command, followed by a cyber-security panel discussion.

A series of classified sessions at the Missile and Space Intelligence Center at Redstone Arsenal closed out the conference.

About the author

Mike Kelley is a Contributing Editor to MilsatMagazine. He is a freelance writer based in the technology-rich Huntsville, Alabama, environs and he writes about all things spatial. He may be reached at mekelley30@bellsouth.net



RECON ON THE GO...

Article reprinted courtesy of the Harris Corporation

The disconcerting spread of asymmetrical warfare represented by insurgents, terrorists, and drug cartels has forced military forces to change the way they operate—especially when tasked with reconnaissance.

Unlike members of a standing force, unconventional threats rarely wear uniforms or travel in military vehicles. They strike quickly, then blend into the general population, and limit actions that provide a clue to their intent.

As a result, it's no longer enough to monitor an area of interest for suspicious-looking activity, because events that seem harmless can be anything but. A commercial vehicle, for example, must be presumed dangerous—until the occupants and nature of its cargo can be confirmed.

The old method of performing reconnaissance is no longer sufficient.

This reality calls for robust and more highly integrated communications and surveillance systems. Military forces must be able to locate and identify threats from longer distances and with greater accuracy, and to sound the alarm for warfighters across the wider battlefield network.

"In the past, recon teams verbally reported their observations of enemy forces or positions," said *Paul Zweers*, director of international operations, **Harris RF Communications**. "But quite often the report was delayed until the team returned to base. Today's systems have to deliver information much more quickly, and in different formats, to keep pace with the tactics of the enemy."

The Harris Tactical Reconnaissance Vehicle

In response to these challenges, **Harris Corporation** has developed the new ***Tactical Reconnaissance Vehicle*** (**TRV**), an integrated system of tactical communications and ISR technologies. The TRV is part of an expanding family of easily deployable packaged system solutions from Harris designed to address challenging and rapidly changing mission requirements.

The Harris TRV system delivers capabilities for real-time reconnaissance, intelligence dissemination, target acquisition, and video management and storage. The goal is to provide customers with a cost-effective, configurable, and scalable solution that can be used across the breadth of reconnaissance scenarios. These range from nearly static, periodic deployments from permanent bases to fast-moving pursuits to find and acquire highly mobile threats.

"Our military customers today have an urgent need for affordable and reliable systems that deliver a range of functions and seamless network connectivity," *Zweers* said. "In designing the Tactical Recon Vehicle, our goal was to deliver integrated capabilities for locating and evaluating an enemy's intentions and collecting and disseminating critical information while minimizing confrontation and casualties. This enhanced knowledge will enable forces to proactively shape the battle space to their advantage."

"In the past, recon teams verbally reported their observations of enemy forces or positions... Today's systems have to deliver information much more quickly, and in different formats, to keep pace with the tactics of the enemy."

Paul Zweers, director of international operations, Harris RF Communications

RSTA, ISR, Border Monitoring, + More

The Tactical Reconnaissance Vehicle uses the strength of ***Falcon III***® communications products integrated with partner video technology. The vehicle can be deployed as a standalone *reconnaissance, surveillance, and target acquisition* (**RSTA**) asset or serve as a command and control node for a range of ISR capabilities.

In RSTA applications, the reconnaissance vehicle can act as a forward scout deployed to detect targets and transmit video of the potential threat back to a command post or intelligence center. The video can be reviewed in real time, and this information can be combined with other available intelligence to determine whether the target is indeed a threat.

Another potential application: a border monitoring requirement. Unattended ground sensors that cross-cue roving patrols or aircraft might be a good solution for daylight crossings. At night, however, targets are not easily tracked.

In these night-time scenarios, the reconnaissance vehicle is deployed in an over-watch position with its long-range IR camera and unattended ground sensor radios. When the sensors transmit potential trouble reports, the camera is automatically panned to the location, and the operator acquires and tracks the targets. Video is transmitted to Sector HQ, and patrols are directed to intercept the intruders.

Flexible, Expandable Networking Capability

The Tactical Reconnaissance Vehicle provides the capabilities of a mobile long- or short-range scout. It captures day and night video of potential threats while underway or at the halt.

The system also supports command and control operations through voice channels operating over secure wideband radios. The Harris reconnaissance capability is installed and delivered in Force Protection's ***Cheetah*** armored vehicle, or can be integrated into other customer-supplied military or civilian vehicles.

Multiple reconnaissance vehicles can constitute an intelligence unit (*e.g.*, Intel Company) that is assigned or attached to a battalion or brigade, depending on the mission

and organization. Alternatively, individual vehicles can support a maneuver company or battalion's reconnaissance capability.

The wideband nature of radios and the long-range video capabilities provide the underlying technology that enables Harris to provide an off-the-shelf reconnaissance vehicle system.

The RF-7800M Multiband Networking Radio is the standard radio used in the reconnaissance vehicle and enables the high-speed flow of real-time battlefield situational awareness across a secure, mobile, ad hoc tactical wireless network. This enhanced flow of operational information and intelligence data from the field, over extreme distances or rugged terrain, facilitates faster, more informed decisions.

Reconnaissance vehicles can be networked together via the RF-7800M, sharing information and video data, and can relay the data back to the *Tactical Operations Center* (**TOC**) when in range of any member of the network. This networking capability is made possible by the use of the Harris Adaptive Networking Wideband Waveform (ANW2) and the seamless integration of the RF-7800M radio and the optional RF-7800B BGAN satellite communications terminal.

When the RF-7800M network can no longer reach the TOC directly, the system will automatically relay that data through the RF-7800B BGAN terminal to the TOC. This integration provides reach-back capability on a global scale, connecting operators at the tactical edge with commanders at the highest levels. This allows for faster and more informed decision-making, improved mission efficiency, and troop safety.

"As an example scenario, consider a three-vehicle recon team deployed in and around a valley," *Zweers* said. "One vehicle is on a ridge, one is monitoring approaches to a village, and the third is positioned along a flank. They're all connected by Harris multiband networking radios and relaying videos back to commanders. The TOC now has a real-time view of all the activity occurring across its front. This type of connectivity is a key aspect of all of our packaged systems."

COMMAND CENTER: ED HANLON, LT. GEN. (USAF, RETIRED) + RAYTHEON

Lieutenant General Ed Hanlon is a retired United States Marine Corps general officer. His 38 years of service included a broad range of command, operational, staff and joint assignments throughout the United States, Europe and Asia. Hanlon was the Commanding General of the Marine Corps Combat Development Command and Deputy Commandant for Combat Development.

In addition to his operational Marine Corps assignments, where he commanded at the battery, company, battalion and regimental level, Hanlon also commanded the Marine Corps' premier west coast training facility at Camp Pendleton, California. Hanlon later served as the U.S. Military Representative to the NATO Military Committee. In this post, he represented the Chairman of the Joint Chiefs of Staff and was responsible for U.S. policy within the Military Committee.

Following his Marine Corps career, Hanlon served as the Regional Executive for Europe, Sub-Saharan Africa, and Israel for Raytheon International, Inc., from 2007 until his retirement in August 2012.

MilsatMagazine (MSM)

You recently authored a couple of pieces about the USMC needing a command and control (C2) system update. Why is this issue important to you?

Ed Hanlon

In recent years, the Marine Corps has applied the principle of maneuver warfare to expeditionary operations. Concept documents describe the need to quickly comprehend and effectively "maneuver" across the complex dimensions of the modern battlespace—a battlespace coupling expeditionary and sea-based operations with an expectation of harsh, austere environments.

Consequently, Marine Corps C2 systems must function across these same environments while consistently supporting collaborative planning during deployment and employment of the force. This requires leanness, agility and rugged capability.

The current Marine Air Command and Control System (MACCS) traces back to the post-Vietnam era and is a collection of Marine aviation command and control agencies built with single functions in mind. The planned Common Aviation Command and Control System, simply known as CAC2S, will provide a standardized expeditionary package with common hardware and software for all. It will integrate information from these agencies, presenting coherent, integrated information to Battlefield Commanders thereby providing decision-making superiority.

Scalable, flexible and modular, that's the vision for CACS2, with an open architecture design that is deployable within 24 hours of receiving a movement order, all via humvee.

Yuma, Arizona, was where Phase 1 testing in mountainous terrain was conducted for CAC2S.

For example, today operators sitting in front of two, three or even four displays mean that the operator is the integration system—he picks a piece of information from this display, another from a second, yet another from a third and then figures out what it all means. CAC2S will provide a single, common operating picture to the commander.

MSM

Why shouldn't the current systems be extended or modified to meet the needs of the USMC?

Ed Hanlon

Systems—plural—is the key word. There are numerous bits and pieces of systems that deliver disparate data in a variety of formats and interfaces. Deciphering and reconfiguring data into usable information takes time and resources—both of which are in short supply. The Marines have a well-deserved reputation for doing a lot with little, and in today's environment, no service has extra resources—personnel or budget—to spend time working disparate systems to end up with subpar data analysis and integration.

Additionally, the Marines are an expeditionary force. This means that they are the first to the battlefield in the majority of conflicts. Time is an element which cannot be wasted. A system that can provide the needed data quickly, efficiently and comprehensively is paramount. Key decisions are made based upon the initial understanding of the battlefield. Commanders need the best information to make the best decisions. To limit the scope of conflicts, reduce casualties and avoid lengthy engagements, our warfighters must have the right tools to achieve these goals.

Call it integration or data fusion—whatever the chosen moniker, the point is the same. Create an accurate, real-time picture of the battlefield using data from a variety of sensors to allow commanders to make decisions that get the U.S. closer to the end goal.

Let me be clear, I'm not advocating that the Marines invest in a glitzy, innovative solution with bells and whistles galore. I believe

The USMC's AH-1Z Viper attack helicopter

what is needed is investment in an affordable, proven command and control system technology that will provide commanders with a complete picture of any warfighting situations.

MSM

Is this the correct time for the USMC to pursue such a program?

Ed Hanlon

The Marines need CAC2S now. The future relevance of the Marine Air Ground Task Force is very much dependent on the commander's ability to integrate their new G/ATOR radar sensor, as well as the capabilities of new aircraft such as the MV-22 Osprey tilt-rotor, AH-1Z Viper attack helicopter, and the fifth generation F-35.

Extracting maximum value from the Marines' investment in these aircraft requires a smart command and control system. The most difficult technical challenge for CAC2S is data fusion —the ability to integrate thousands of tracks from numerous, disparate sources into a single-fused, overarching battlefield display. However, a rigorous prototype "fly-off" conducted last year should help identify the leading defense contractor in the data integration field.

The Marines now have the opportunity to take existing C2 technology to amplify the capabilities of their physical and data systems to provide the commanders with truly actionable information. A low-risk, technologically advanced solution is available. The Marines have spent time analyzing what they need. Now it is time to identify and move forward with a solution to meet those needs.

MSM

What are the top things the USMC needs to keep in mind when pursuing such a project to ensure they achieve their capability goals?

Ed Hanlon

As the Marines make a decision for the Common Aviation Command and Control System, I believe they need to match requirements to system capabilities to ensure the chosen system is transportable, scalable and modular.

From my perspective, it is those last two that are unique and essential to the system. The Marines are an expeditionary force—that is their charter and that is what they are best at. They need equipment and systems that are easily transportable, scalable and modular.

They move fast and they need a system that moves fast without any degradation. The system must be modular, almost plug-and-play in nature, so that certain physical elements can be stable, but mobile, while other elements are more tactical, and move with human personnel.

Along this same line, the system should be scalable. If an element is not needed for an engagement leave it behind. Marine operations can range from a full scale offensive operation to a small, nimble security task force. The system needs to work well for these scenarios and everything in between.

MSM

Assuming the USMC moves forward with CAC2S, what is your vision for the program?

Ed Hanlon

My vision does not involve the program per se, but the results. In this case, I don't mean specific data results or data output of any kind. What I mean is the result of providing our warfighter with the best and most comprehensive information that will allow him or her to move in quickly, do the job for which they have been trained, and to extricate themselves safely and efficiently once their mission is complete.

Non-conflict system performance metrics are essential to ensure system readiness and our overall technical superiority, but we must not take our eyes off the true and ultimate measurement: the success and safety of the men and women in uniform.

I don't care what you call the systems, or what bells, whistles and gizmos may hang off of them. In the case of a command-and -control system, my vision is that every warfighter, when engaged in a conflict, has confidence that their commanders understand the situation, the enemy and the battlefield.

As the Marines weigh the choice of CAC2S system, I hope this is the performance metric they keep in mind. Which system will provide the needed information in the difficult expeditionary environment? Which system will provide data that enables better and quicker strategic and tactical decisions? And, finally, which system would I want to have with me if I was on the front line of a hostile engagement?

EVENT: ISR DECISION MAKERS WILL BE PRESENT WITH SOLUTIONS

Lower budgets resulting in smaller troops has lead to joint C4ISR being the most crucial asset in global MoDs reserve.

NATO's ideal is to establish open standards of data collaboration where all agencies information can be combined in one database to be accessed from all NATO nations.

Sounds simple...

Yet with mounting efforts to make this ideal a reality—the biggest hurdle appears to be getting agencies to move away from a system of complete secrecy. During a recent interview at the Future ISR conference, Lt. Gen. (ret) *Johan Kihl* said, "We are not used to sharing information. On the agencies we are used to building walls and not sharing information."

An apt description to describe the different countries' policies as well as for the agencies all operating within that country.

Peter Grogan, Head of **C4ISR UK Ministry of Defence - British Defence Staff Washington**, said recently, "Few nations will have enough sovereign collect assets; hence the need to 'share' but those who have invested in their own collect platforms will understandably want those on task supporting their own troops, not someone else's!"

With this as a basis, it seems coordinating training of multiple forces on one system may be the only way that MoDs may be able to agree to trust.

Grogan added, "Not convinced that we need any separate networks for anything. One homogenous network with multiple and dynamic routing to take advantage of transiting platforms such as UAVs, fast air and land based will be as good as it gets. The challenge is to be able to minimize, prioritise and manage the data."

Grogan's comments lead to another crucial challenge that the Future ISR communities are working to overcome—how to disseminate the huge quantity of data that is received.

Different ideas suggested stem from creating a standard for all data collection methods which can be uplinked onto one network. When in that network the idea is to have a unique and agreed methodology for data tagging to be stored in a common coalition area.

However this approach requires a huge platform with an even larger bandwidth, potentially supported by one unique satellite, to ensure that all the data would be stored securely.

Simon Rees, **A6-Air, Communications and Information Systems** at Royal Air Force said, "However, a larger problem seems to be bandwidth, the J6 arena is one that people will always moan about but there is no point having Tera/Petabytes of intelligence stored if an asset cannot call upon it. The future of ISR has to be OTH Bandwidth, almost certainly through satellite means. Even if this involved multiple connections combined to give the required effect.

"Having a system built on Meta-data is a must in terms of having intelligence catalogued and searchable by an asset."

While it is widely understood what the issues are, providing workable solutions and finding the right providers is what will truly make the network the most powerful tool. At the joint C4ISR conference—***Future ISR***—**NATO** will be delivering their requirements on information protection, platform and system interoperability, architecture and networks, analysis and exploitation tools, policy and governance and dissemination methods.

Given the central importance of ISR capability to future operational effectiveness, the goal for government attendees at ***Future ISR 2012*** is to identify new ways to achieve interoperability through improved industry partnerships.

Find out more about the Future ISR conference by selecting the graphic below.