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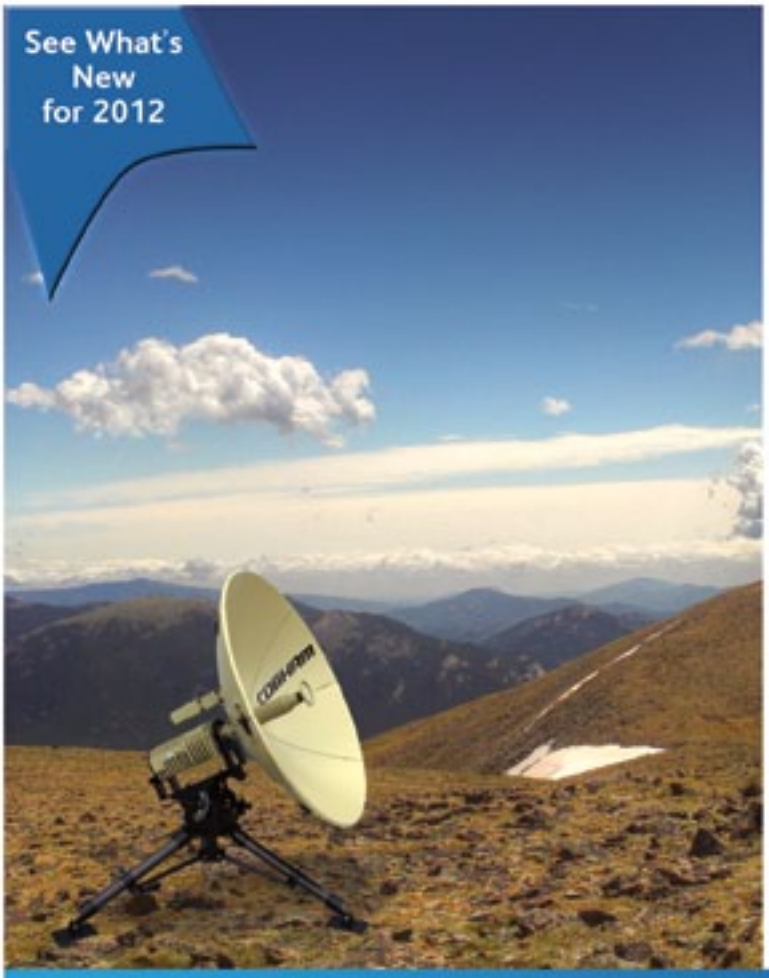
Published monthly by
SatNews Publishers
800 Siesta Way
Sonoma, CA 95476 USA
Phone: (707) 939-9306
Fax: (707) 838-9235



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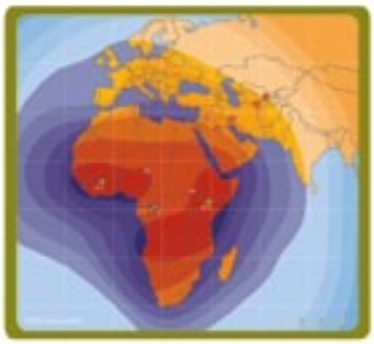

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An Exacting Moment

Surrey Satellite Technology Limited (SSTL) announced the successful launch of exactView-1 at UTC 06:41:39 on July 22, 2012, into a Sun-synchronous polar orbit of 800km.

The launch was accomplished via a Soyuz rocket from the Baikonur Cosmodrome in Kazakhstan.

The 100kg exactView-1 is expected to be the highest detection performance commercial Automatic Identification System (AIS) satellite ever built, and the fifth deployed satellite in exactEarth's advanced vessel monitoring satellite constellation, which will provide near real-time AIS data on the locations, speeds and routes of vessels throughout the world's oceans.

Designed and assembled at SSTL in Guildford, U.K., the spacecraft is based on the SSTL-100 platform. The satellite has been adapted for the exactEarth mission with an additional deployable solar panel providing extra power for the COM DEV AIS receiver payload.

SSTL acted as launch agent in collaboration with Commercial Space technologies (CST) in Russia. exactView-1 is the 37th SSTL satellite successfully launched, of which 23 were arranged by SSTL on behalf of its customers.

Following the successful launch, SSTL started the commissioning of critical communications, control and power subsystems from its groundstation at Guildford.

Surrey Satellite Technology Limited (SSTL) delivers operational space missions for a range of applications including Earth observation, science and communications. The Company designs, manufactures and operates high performance satellites and ground systems for a fraction of the price normally associated with space missions, with more than 400 staff working on turnkey satellite platforms, space-proven satellite subsystems and optical instruments.

Since 1981, SSTL has built and launched 37 satellites—as well as providing training and development programs, consultancy services, and mission studies for ESA, NASA, international governments and commercial customers, with its innovative approach that is changing the economics of space. SSTL is owned by Astrium, an EADS company.

COM DEV International Ltd. is a global provider of space hardware and services. With facilities in Canada, the United Kingdom and the United States, COM DEV manufactures advanced subsystems and microsatellites that are sold to major satellite prime contractors.

exactEarth, based in Cambridge, Ontario, is a data services company providing the most advanced information on global maritime traffic available today.

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The full integration of exactEarth-1, photo courtesy of SSTL

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GMES Gimme

MacDonald, Dettwiler and Associates Ltd. has signed a contract amendment for CA$11.9 million to increase its provision of RADARSAT-2 satellite imagery to Europe's Global Monitoring for Environment and Security (GMES) program.

The additional RADARSAT-2 imagery addresses the gap in data availability created by the recent loss of the European Space Agency's (ESA) ENVISAT satellite and fulfills ESA's maritime monitoring needs until the full operational capacity of the Sentinel-1A satellite is available, which is expected around mid-2014.

The RADARSAT-2 imagery will be used to provide mission critical information for sea ice monitoring of the Baltic Sea, Arctic Ocean, and Antarctic Ocean throughout the ice seasons, improving the safety of maritime navigation and supporting environmental monitoring as part of the GMES program.

GMES was established to provide users in Europe with access to accurate and timely information services to better manage the environment, understand and mitigate the effects of climate change and ensure civil security.

#

Artistic rendition of the RADARSAT-2 satellite

A Melding Of EO Resources

DigitalGlobe, Inc. and GeoEye, Inc. have announced that the boards of directors of both companies have unanimously approved a definitive merger agreement under which the companies will combine in a stock and cash transaction valued at approximately $900 million.

Under the terms of the agreement, GeoEye shareowners will have the right to select either 1.137 shares of DigitalGlobe common stock and $4.10 per share in cash, 100 percent of the consideration in cash ($20.27) or 100 percent of the consideration in stock (1.425 shares of DigitalGlobe common stock), for each share of GeoEye stock they own.

The amount of cash and stock subject to proration depends upon the elections of GeoEye shareholders, such that aggregate consideration mix reflects the ratio of 1.137 shares of DigitalGlobe common stock and $4.10 per share in cash. Based upon the closing prices of DigitalGlobe and GeoEye as of July 20, 2012, the transaction delivers a premium of 34 percent to GeoEye's July 20, 2012, closing price of $15.17 per share.

Upon completion of the transaction, DigitalGlobe shareowners are expected to own approximately 64 percent and GeoEye shareowners are expected to own approximately 36 percent of the combined company. The transaction structure will allow both DigitalGlobe and GeoEye shareowners to participate in the substantial value creation opportunity resulting from this combination.

The combined company will be named DigitalGlobe and continue to trade on the NYSE under the symbol DGI. It will have a 10-member board of directors, with six initial members from the current DigitalGlobe board and four initial members from the board of GeoEye.

Jeffrey R. Tarr, President and Chief Executive Officer of DigitalGlobe, will serve as President and Chief Executive Officer of the combined company, and General Howell M. Estes III, Chairman of the Board of DigitalGlobe, will serve as Chairman. It is anticipated that, after close, Matt O'Connell, Chief Executive Officer and President of GeoEye, will assist the management of the combined company in an advisory capacity.

The company will be headquartered in Colorado, have a large and important presence in Missouri and Virginia, and maintain offices in other locations around the globe.

The combined company will conservatively have a pro forma 2012 revenue base of more than $600 million, after adjusting for the currently proposed lower U.S. government fiscal year 2013 EnhancedView funding plan. As a result, the combined company would therefore have better revenue certainty, lower dependence on the U.S. government as a source of revenue, a higher percentage of commercial and international revenue, and be well positioned for future growth.

At close, the combined company is expected to have a constellation of five Earth Observation (EO) satellites and a broad suite of high-value geospatial production and analytic services.

The combined company will also have two state-of-the-art satellites under construction, WorldView-3 and GeoEye-2.

Over time, the combined company plans to maintain an optimized three-satellite constellation that will meet the needs of the U.S. government, international governments and commercial customers, while delivering better returns to shareowners.

Taken together with other operating efficiencies, the net present value of future savings is estimated to be more than $1.5 billion.

Concept illustration of the WorldView-3 satellite

By bringing the two companies together, this combination will enable the U.S. government to meet the requirements of the EnhancedView program at substantial savings to the U.S. taxpayer.

Concept illustration of the GeoEye-2 satellite

In addition to the compelling savings, the U.S. government and other customers will benefit from an optimized constellation and better integrated imagery collection, processing and analytics.

By bringing together the imagery collection, processing and analytic capabilities of both companies, it will be better able to serve a wide range of customer needs and compete in a high-growth and dynamic global market.

#

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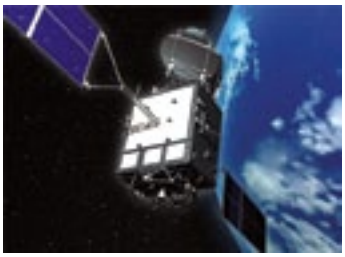
On August 2, Arianespace achieved an historic milestone: the 50th consecutive launch of an Ariane 5 over the past nine years with 100% mission success. The workhorse launcher delivered two telecommunications satellites, ***Intelsat 20*** and ***HYLAS 2***, into GTO. They are the 304 and 305 spacecraft orbited by the Ariane family since 1979.

arianespace.com

A W.I.N.D.y Day

EM Solutions has won a tender with Tokyo-based partner Jepico Corporation to provide its Ka-band Satellite on the Move (SOTM) platform to the Japanese Government's National Institute of Information and Communications Technology (NICT).

NICT is Japan's national research institute for information and communicationsEM Solutions' and Jepico



Corporation's award will result in the delivery of the SOTM system to work on the Japanese government's W.I.N.D.S. (KIZUNA) Ka-band research satellite.

KIZUNA has a mass of 2.7 tons, and its length with the Solar Array Paddles deployed is 21.5m. The satellite is scheduled to slot in at 143° East at an altitude of approximately 36,000km.

Dr. Rowman Gilmore CEO of the Company, said, "The Japanese Government understands that the recent earthquakes and tsunami will not be the last that Japan sees—the proposed WINDS OTM system will provide emergency high-speed broadband communications if the terrestrial network is not available."

#

Triple Prep For Trio

A Boeing Co. and Lockheed Martin Corp. joint venture has won a potential $412 million contract to help NASA launch three satellites, the agency announced Monday.

United Launch Services, a subsidiary of United Launch Alliance, will provide task-ordered launch services, process payloads and integrate launch vehicles. ULS will also provide provide ground support, tracking and data and telemetry services.

NASA plans to launch the Soil Moisture Active Passive, Orbiting Carbon Observatory-2 and Joint Polar Satellite System-1 spacecraft onboard Delta II rockets from Vandenberg Air Force Base, California. SMAP, OCO-2, and JPSS-1 are all slated to launch in October of 2014, July of 2014 and November of 2016, respectively, according to NASA.

SMAP will measure soil moisture with the goal of helping scientists understand the Earth's water, energy and carbon cycles to predict floods and monitor droughts.

OCO-2 is intended to study atmospheric carbon dioxide regulations and will provide an image of human and natural carbon dioxide sources and places where gas is pulled out of the atmosphere and stored, NASA said.

JPSS-1 will succeed the Suomi-National Polar Partnership spacecraft and will perform on orbit afternoon observations for weather forecasting, storm outlooks and global measurements of atmospheric and oceanic conditions.

NASA's Jet Propulsion Laboratory manages SMAP and OCO-2 and the National Oceanic and Atmospheric Administration oversees the JPSS-1 mission. NASA's launch services program, based at the Kennedy Space Center in Cape Canaveral, Florida, oversees vehicle program management for SMAP, OCO-2 and JPSS-1 launch services.

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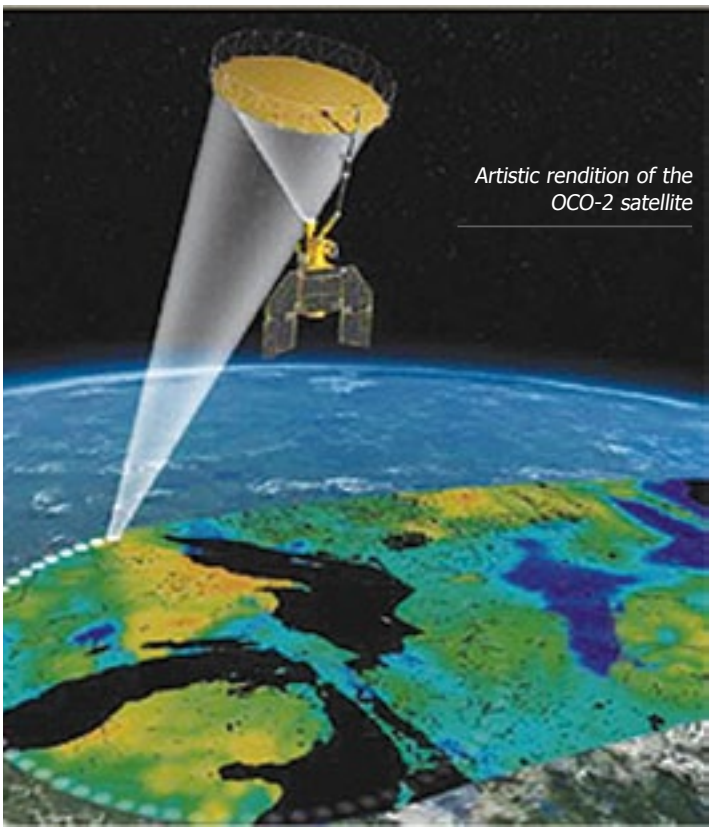
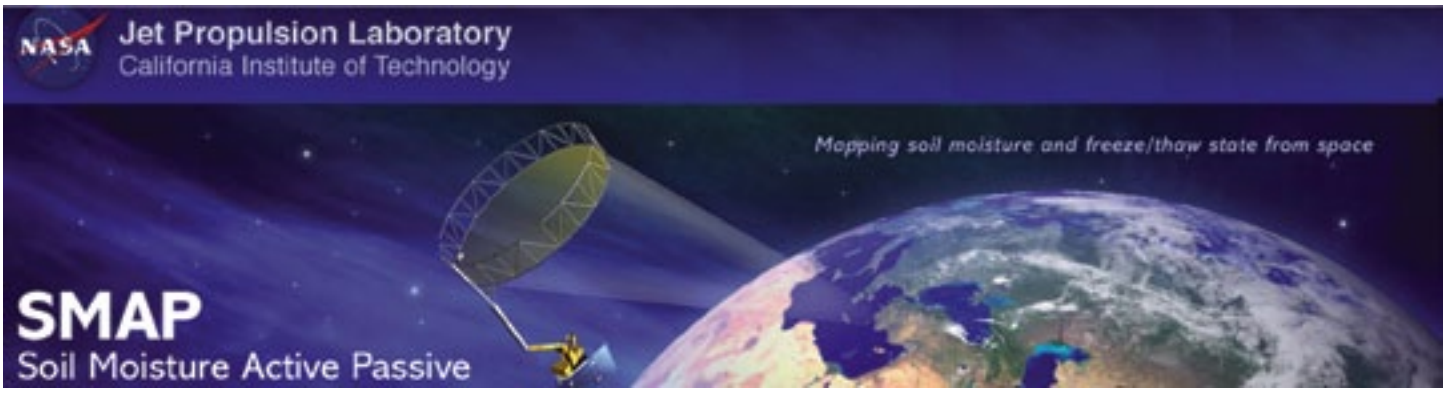


Artistic rendition of the OCO-2 satellite



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Success Hinges On Delivery

Honeybee Robotics Spacecraft Mechanisms Corporation has delivered a solar array deployment system to the National Space Organization (NSPO) in Taiwan for the agency's new FORMOSAT-5 imaging satellite.

The system of release and hinge mechanisms is a flight-tested design that will deploy dual solar arrays and lock them in a stiff configuration, minimizing structural flexibility to enable the satellite's primary mission of high-resolution Earth imaging.

Honeybee delivered two flight models and one qualification model, a total of six hinges and six release mechanisms.

The design is based on flight-tested hardware that successfully deployed solar arrays on USAF STPSat-1, launched in 2007, which had 8 Honeybee hinges deploy 4 panels with 100% success. FORMOSAT-5 is a 525kg imaging satellite that will occupy a sun-synchronous orbit at 720km.

Its primary payload includes two instruments: an optical Remote Sensing Instrument (RSI), which provides 2m-resolution panchromatic images and 4m-resolution multi-spectral images.

An Advanced Ionospheric Probe (AIP) will be the secondary payload. FORMOSAT-5 is currently scheduled to launch in 2014.

Concept illustration of STPSat-1

#

Tianlian I-03 Takes Off

China successfully launched the Tianlian I-03 satellite on J uly 25thy from the Xichang Satellite Launch Center in Sichuan province, completing the country's first data relay satellite network system.

The satellite was launched on a Long March-3C carrier rocket at 11:43 p.m. Beijing Time, according to sources with the center. Developed by the China Academy of Space Technology under the China Aerospace Science and Technology Corporation, the satellite will join its two predecessors to realize global network operation after in-orbit validation and system coordination procedures are carried out.

The first data relay satellite, the Tianlian I-01, was launched in April 2008, and the second was launched in July 2011.

This third satellite is expected to improve the network's coverage in providing measurement and control services for China's manned spacecraft as well as the planned construction of future space labs and space stations, according to the center.

The network will also offer data relay services for the country's medium- and low-Earth orbits as well as measurement and control support for spacecraft launches.

The two-satellite network had previously played a key role in assisting in two space docking missions—an automated one between the Tiangong-1 lab module and the Shenzhou-8 spacecraft in late 2011, and a manual docking between Tiangong-1 and Shenzhou-9 in June. Wednesday's launch marked the 166th mission of China's Long March series of rockets.

#

Jumping Aboard Jabiru-1

Astrium has won a contract to supply telecommunication products for NewSat's Jabiru-1 satellite, primed by Lockheed Martin based in Newtown, Pennsylvania.

This contract is a new milestone for Astrium in the U.S. market and the first contract from Lockheed Martin for this type of equipment.

In December of 2011, Astrium won a contract for delivery of a high precision Fiber Optic Gyro Unit (Astrix®) for the NASA/ NOAA Joint Polar Satellite System (JPSS) mission.

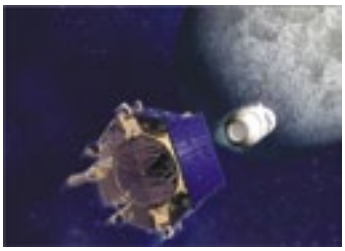
Astrium will supply Ku-band communications receivers and Ka-band beacons to Lockheed Martin.

Lockheed Martin has been selected by Australian based NewSat to manufacture the Jabiru-1 satellite scheduled to be launched in late 2014 aboard an Astrium-built Ariane-5.

The satellite, which has a minimum lifetime of 15 years, is expected to be positioned over the Indian Ocean to cover regions that include Afghanistan, Pakistan, Iraq, Saudi Arabia and Somalia.

The equipment to be supplied uses technologies developed for the Generic Flexible Payload (GFP) program, supported by the U.K. Space Agency (UKSA) and the European Space Agency (ESA).

The Ku-band communications receivers recover the very low power uplink signals from ground stations and provide frequency domain isolation between the uplink and downlink signals to avoid interference.



Order Up

Avanti Communications signed a Basic Ordering Agreement, BOA, with NATO's Communications and Information Agency (NCIA), formerly the NC3A Agency.

The agreement allows NATO Command agencies and NATO Member States to request pricing and place orders using pre-agreed terms and conditions and pricing tables.

NATO has recently acknowledged the importance of Ka-band in its future commercial satellite communications requirements. Ka-band provides extremely cost effective satellite bandwidth to support the higher data throughput requirements of operational and welfare applications for NATO and National deployments.

Avanti's areas of coverage include Europe, the Middle East, Eastern and Southern Africa.

Avanti's HYLAS-2

#

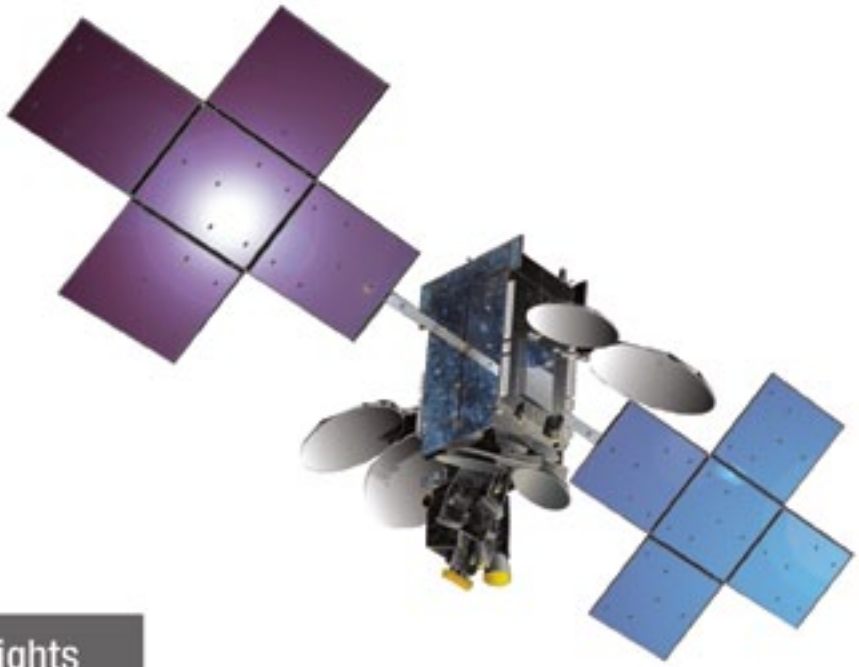
Educational Expansion

Gilat Satcom has donated a VSAT communication system to Paynesville Community School in Joe bar, Liberia.

The school educates 1,500 children. Using its well-equipped computer lab, the school provides modern education facilities. Gilat Satcom's donation of a VSAT system enables the school to hook-up to the Internet and opens an enormous wealth of education opportunities to the faculty and students.

ABS-2

Coming 2013



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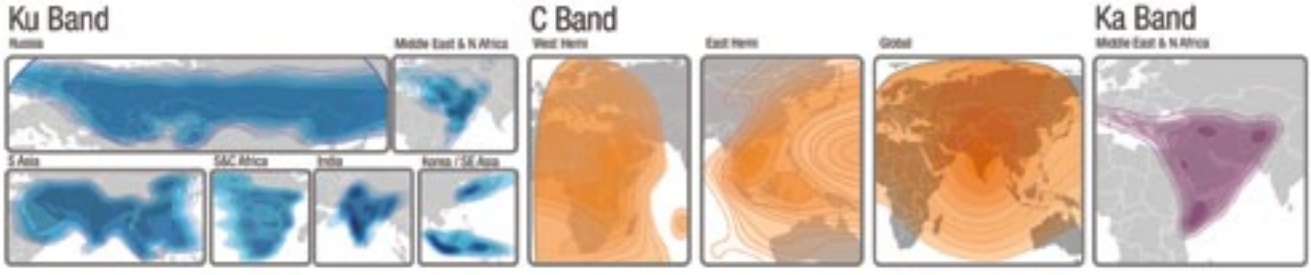


Ensuring A Rewarding Harvest

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.

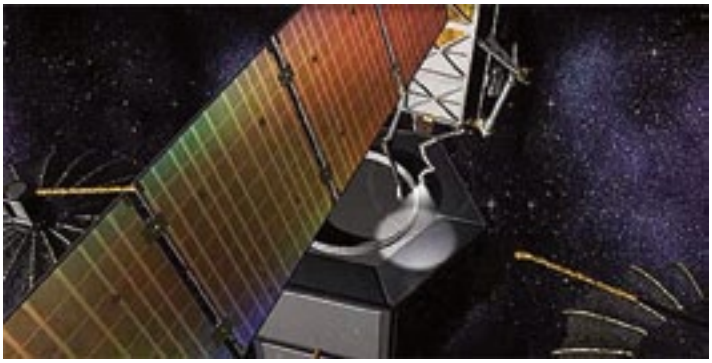
The planned repurposing of these satellite components such as antennas represents the potential to create new space resources at significantly less cost.

The bus is scheduled to be delivered by October 2014 to the NRL for Space Vehicle integration and test.

The Phoenix spacecraft grasps a retired satellite using ATK provided robotic tools.

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



The Phoenix spacecraft grasps a retired satellite using ATK provided robotic tools.

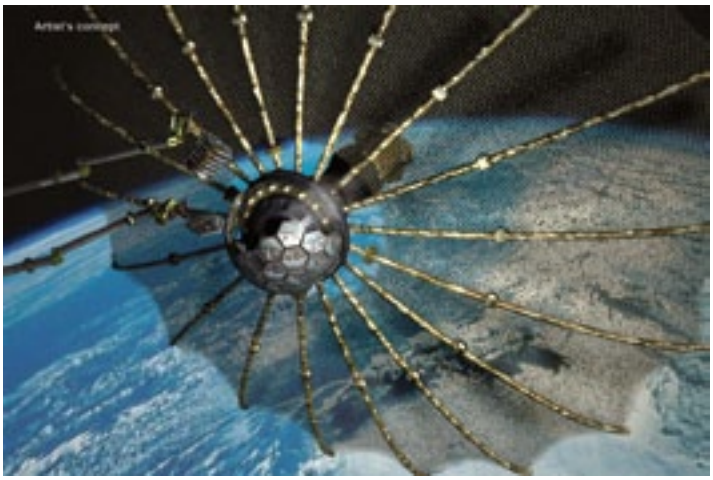
The DARPA Phoenix Program system integrator, the Naval Research Laboratory (NRL), has issued a solicitation announcing it intends to negotiate with ATK to modify an existing U.S.-built, U.S. government-owned, geostationary satellite bus for the Phoenix mission. NRL has identified ATK as the only responsive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

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 synergestic with



Phoenix image courtesy of DARPA

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 Space Systems Division Vice President and General Manager Tom Wilson said, "ATK is proving itself as a market leader in the satellite servicing business. 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 Space Systems Laboratory. We look forward to working with the DARPA and NRL to advance this state of the art technology in robotic servicing via the Phoenix program."

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. ATK is an aerospace, defense and commercial products company with operations in 21 states, Puerto Rico and internationally.

#

Artistic rendition of ViviSat

Advantech Wireless

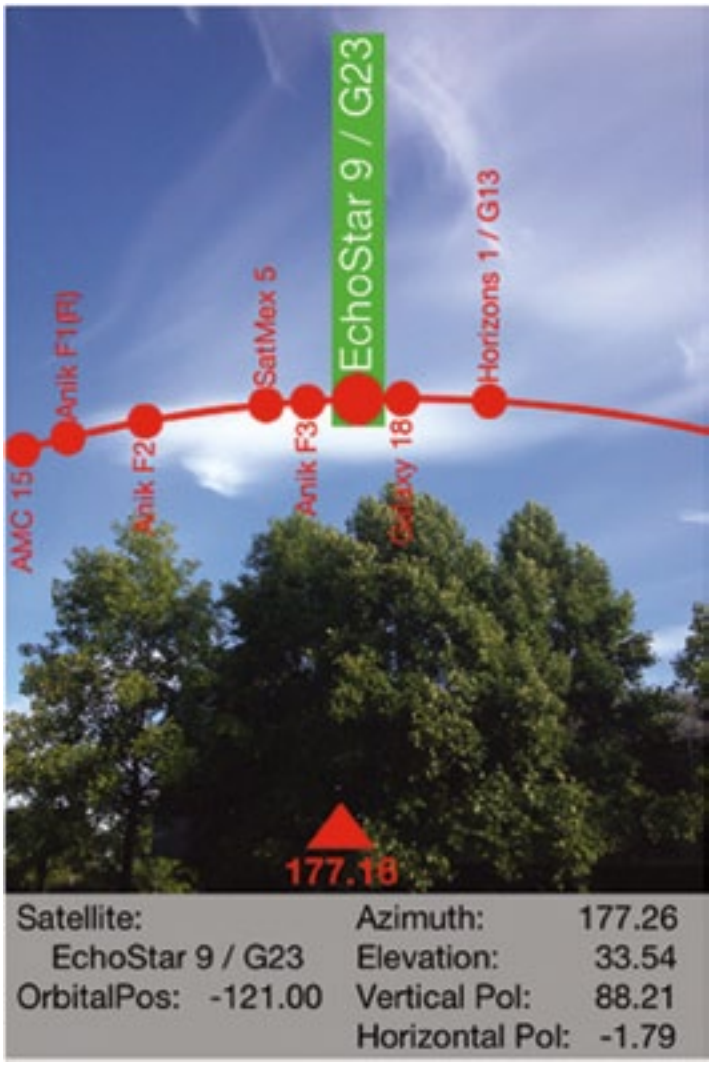
Advantech Wireless is a world leader in Satellite Communications and Terrestrial Communications, delivering equipment for hundreds of satellite and thousands of ground systems for over 20 years.

We solve real-world problems with solutions that provide: Always-on, broadband connectivity, cost-effective content distribution and sharing, rapid deployment, reliability and quality of service, single platform solution for all needs, flexibility and scalability.

Location, Location, Location

Norsat International Inc. has released their Satellite Locator application for iPhone on the App Store at no cost.

The application, available as a free download, enables users to locate geostationary satellites on a mobile phone from anywhere on the planet.



The app can be used to assess obstructions and assist in pointing satellite ground terminals, including Norsat's ultra-portable GLOBETrekker™ and Rover™ systems.

The customizable application uses the camera of the iPhone to overlay a spatially accurate arc of satellites on the mobile phone screen, and includes a complete almanac of satellite information. Users simply launch the application and point the mobile phone at the sky to view an easy to understand graphical display of all geostationary satellites in the direction the phone is pointed.

As the user sweeps their phone across the sky they can identify the elevation and direction of the satellite they wish to use, and use the almanac to find more information, including orbital position, azimuth, and polarity.

Any obstructions viewed between the iPhone and the satellite can be visually identified, allowing the user to change their position or move the obstruction, in order to achieve a satellite lock.

#

O&G + Maritime Capacities

SkyStream has selected capacity on two Eutelsat satellites for capacity requests by customers engaged in the marine and oil & gas sectors.

SkyStream has contracted for a total of 70MHz of bandwidth which will be progressively deployed on two Eutelsat satellites: EUTELSAT 3C and EUTELSAT 10A, whose footprint provides coverage across Europe and the Mediterranean Basin, the Middle East and Africa.

SkyStream will use the new capacity to offer GSM backhaul, Internet access and on-demand video services to its maritime and oil & gas customers. Using an Automatic Beam Switching feature, SkyStream will use EUTELSAT 3C to extend its current Middle East Ku-band coverage to the Mediterranean for the luxury yacht market and EUTELSAT 10A for servicing clients across the African continent and in Atlantic waters.

#

EUTELSAT 3C

Networking Nuances Included

Register for SATCON and complete this event experience with several special networking events!

The 2012 event (November 14-15) is slated to be the biggest and best ever.

The Hosted Payload Alliance will host its annual business meeting during SATCON, immediately following the Hosted Payload Alliance panel session. The meeting will continue the discussion of issues affecting hosted payloads. Benefits to be explored will include lower costs, shorter development cycle times, the opportunity to share orbital slot locations, and the ability to disaggregate assets for more resilient space architecture

SATCON
The Satellite Communications Conference & Expo

SSPI Future Leaders Dinner—Since 2006, this annual event, site of the Promise and Mentor Awards, has honored men and women under 35 with the talent and motivation to advance into leadership positions in the satellite industry, as well as one executive recognized for mentorship of the next generation. Separate registration is required

SATCON Networking Receptions—Keep the energy going from the first day and join us in the Exhibit Hall for drinks. Decompress after an event full of sessions and networking at the Closing Reception. All attendees and exhibitors are welcome to enjoy some refreshments as this year's event comes to a close.

#

More Than Competent Communications

The Hosted Payloads Alliance has appointed SES Government Solutions' Vice President of Marketing, Nicole Robinson, as the Chair of the Communications Committee.

As part of the industry consortium, the committee includes marketing and communications representatives from the following HPA member organizations: Arianespace, ATK, Boeing, EADS North America, Harris, Intelsat General, Iridium, Lockheed Martin, Northrop Grumman, Orbital, Raytheon and Space Systems Loral.

The HPA Communications Committee will continue the Alliance's initiatives to increase awareness of the benefits of hosting government payloads on commercial satellites.

The HPA serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities.

The Hosted Payload Alliance (HPA) is a satellite industry alliance formed to increase awareness of the benefits of hosted government payloads on commercial satellites.

The U.S. National Space Policy published in 2010 calls for an increasing role for commercial space to meet government requirements. It also explicitly directs the use of non-traditional options for the acquisition of space goods and services, and cites hosted payloads as one of these non-traditional options. The policy notes that public-private partnerships with the commercial space industry can offer timely, cost-effective options to fill government requirements.

The organizations' goals are to...

- *Serve as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities*
- *Build awareness of the benefits to be realized from hosted payloads on commercial satellites*
- *Provide a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads*
- *Act as a source of subject-matter expertise to educate stakeholders in industry and government*

Membership in HPA is open to satellite operators, satellite manufacturers, system integrators and other interested parties.

#

Alan Shepard Award

Educators who have demonstrated a commitment to inspiring students' interest in science, technology, engineering and math (STEM) may apply now to receive the 2013 Alan Shepard Technology in Education Award.

Given annually by the Astronauts Memorial Foundation (AMF), the National Aeronautics and Space Administration (NASA) and the Space Foundation, the award recognizes outstanding contributions to technology education by K-12 educators or district-level education personnel.

The Space Foundation will present the award, which is named after Mercury Astronaut Alan Shepard, on April 8, 2013, at the opening ceremony of the Space Foundation's 29th National Space Symposium at The Broadmoor Hotel in Colorado Springs, Colorado. Submissions for the 2013 award must be mailed and postmarked no later than January 14, 2013. The winner will be announced in early March 2013.

#

Resilience + Reliability Revealed

Inmarsat has introduced new promotional initiatives for its BGAN Link service tailored to meet the needs of customers in Sub-Saharan Africa and Latin America, such as organisations that require high monthly volumes of broadband data for sustained periods of operation in remote sites.

BGAN Link is targeted at construction, oil and gas, mining, humanitarian aid and banking and finance sectors across the globe

Inmarsat's new promotional initiatives for Sub-Saharan Africa and Latin America are aimed at meeting the need in these dynamic regions for a predictably-priced service customers will want over an extended usage period.

BGAN Link is available for a fixed monthly price in a choice of four data packages. Customers requiring total cost control can select an option that cumulatively monitors daily usage to ensure monthly allowance is not exceeded.

BGAN Link is delivered over Inmarsat's proven L-band network, guaranteeing that a connection can be maintained even during extreme weather conditions, making it ideally suited for typical office applications such as email, internet and intranet access, and VPN access to corporate networks from remote locations.

#

No Dogs Here With Best Of Breed

Kratos Defense & Security Solutions, Inc. has announced that its SAT Corporation subsidiary has significantly increased its Interference Detection and Geolocation (iDetGeo) service coverage by activating two additional operating sites in Maryland and Hawaii.

SAT Services are used by satellite providers, broadcasters, cable operators and other content distributors to find and mitigate signals that interfere with their communications services.

With the new, strategically-placed sites, SAT can provide signal monitoring, interference detection, characterization and geolocation service coverage on 1,127 beams from 269 commercial communications satellites—or close to 90 percent of the world's global Fixed Satellite Services (FSS) constellation.

Additionally, the new sites further SAT's "split site" geolocation capability, which allows for data acquisition at two geographically separated antenna sites.

Split site technology supports multi-beam geolocation and enables SAT to increase the number of instances where a geolocation result can be completed.

The new facilities join SAT's six operating sites based in the United States, the United Kingdom, Cypress, India, Singapore and South Korea, making it the only solutions provider offering a cost-effective managed solution for interference detection on a global basis.

The new sites add enhanced trans-Atlantic coverage between North America, South America, Europe and Africa, supporting virtually 100 percent of the commercial video content distributed within the United States.

The new operations are hosted at teleports operated by SES in Woodbine, Maryland, and Sunset Beach, Hawaii, as part of a previously announced partnership between the two companies. SAT's dual-antenna iDetGeo services are supported by SES's dual 7.3m antenna systems at Woodbine and dual 4.8m antennas at Sunset Beach.

The services employ SAT's industry-leading Monics(R) and satID(R) products for RF monitoring, detection, characterization and geolocation to provide customers with 24x7 C-band, X-band, and Ku-band interference mitigation capability.

#

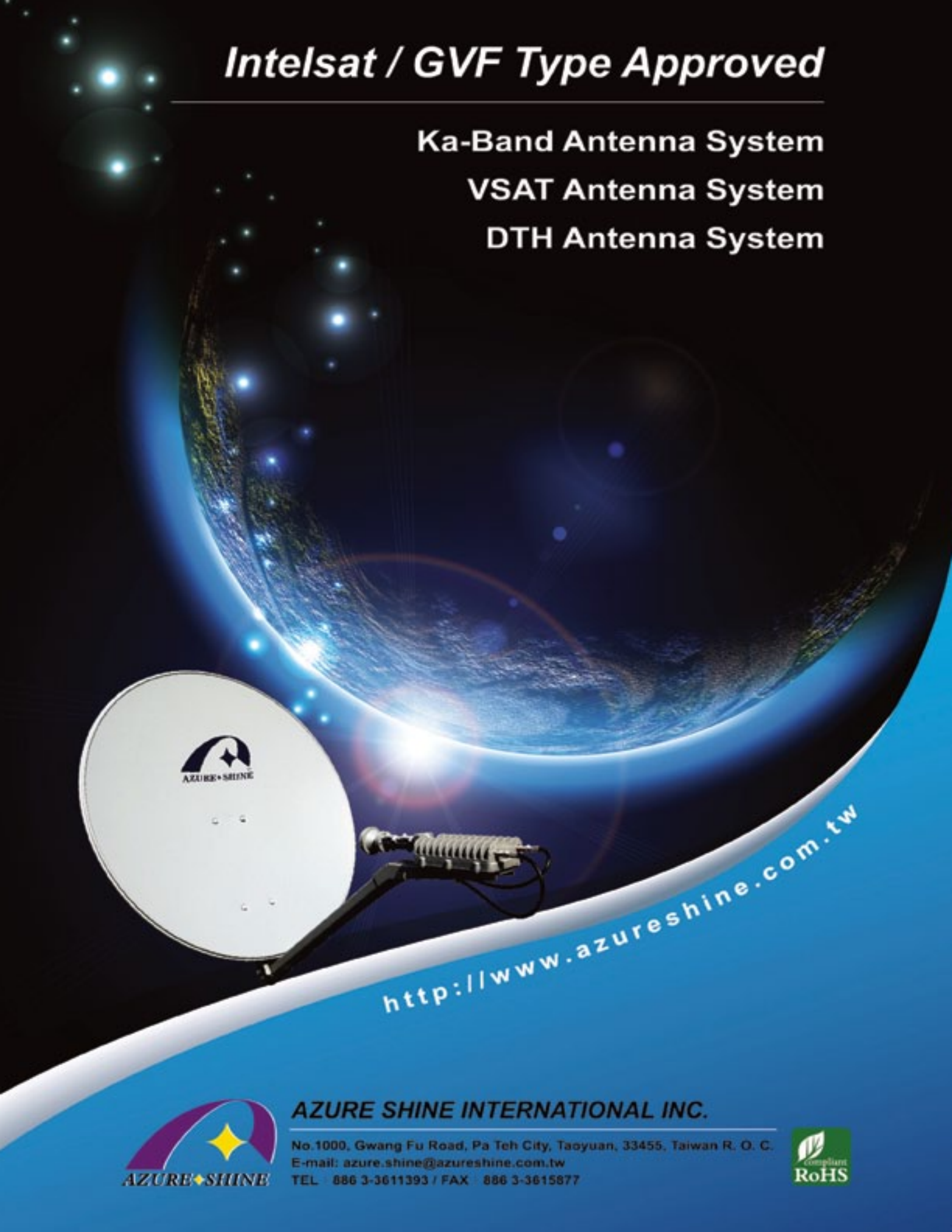
SES' Woodbine, Maryland, teleport

Intelsat / GVF Type Approved

Ka-Band Antenna System

VSAT Antenna System

DTH Antenna System



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MSG-3 Spins Out The Weather Report

It scans Earth's surface and atmosphere every 15 minutes in 12 different wavelengths, to track cloud development.

The Spinning Enhanced Visible and Infrared Imager (SEVIRI) instrument on MSG-3 captured its first image of the Earth. This demonstrates that Europe's latest geostationary weather satellite, launched on 5 July, is performing well and is on its way to taking over operational service after six months of commissioning.

The European Space Agency (ESA) was responsible for the initial operations after launch of MSG-3 and handed the satellite over to EUMETSAT on July 16th.

The first image is a joint achievement by ESA, EUMETSAT, and the European space industry. For its mandatory programs, EUMETSAT relies on ESA for the development of new satellites and the procurement of recurrent satellites like MSG-3.

MSG is a joint cooperative program undertaken by ESA and EUMETSAT. ESA is responsible for the development of satellites fulfilling user and system requirements defined by EUMETSAT and of the procurement of recurrent satellites on its behalf. ESA also performs the Launch and Early Orbit Phase operations required to place the spacecraft in geostationary orbit, before handing it over to EUMETSAT for exploitation.

EUMETSAT develops all ground systems required to deliver products and services to users and to respond to their evolving needs, procures launch services and operates the full system for the benefit of users.

MSG-3 is the third in a series of four satellites introduced in 2002. These spin-stabilized satellites carry the primary Spinning Enhanced Visible and Infrared Imager, or SEVIRI.

The prime contractor for the MSG satellites is Thales Alenia Space, with the SEVIRI instrument built by Astrium.

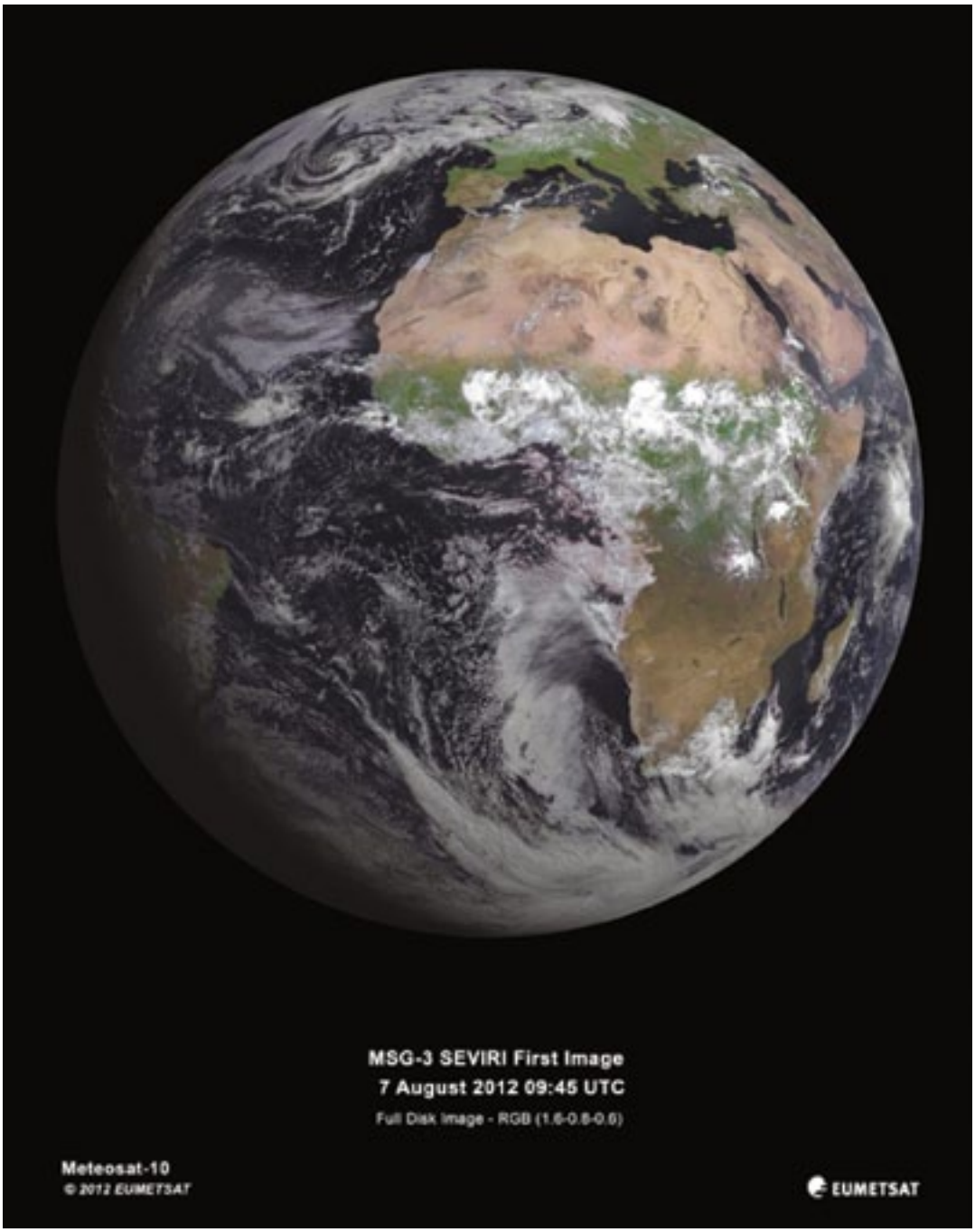
SEVIRI delivers enhanced weather coverage over Europe and Africa in order to improve very short range forecasts, in particular for rapidly developing thunder storms or fog. It scans Earth's surface and atmosphere every 15 minutes in 12 different wavelengths, to track cloud development.

SEVIRI can pick out features as small as a kilometer across in the visible bands, and three kilometres in the infrared. In addition to its weather-watching mission and collection of climate records, MSG-3 has two secondary payloads.

The Geostationary Earth Radiation Budget sensor measures both the amount of solar energy that is reflected back into space and the infrared energy radiated by the Earth system, to better understand climate processes. In addition, a Search & Rescue transponder will turn the satellite into a relay for distress signals from emergency beacons.

The MSG satellites were built in Cannes, France, by a European industrial team led by Thales Alenia Space, France. More than 50 subcontractors from 13 European countries are involved. The last of the series, MSG-4, is planned for launch in 2015.

#



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Our world. Your world.

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New Buses To Catch

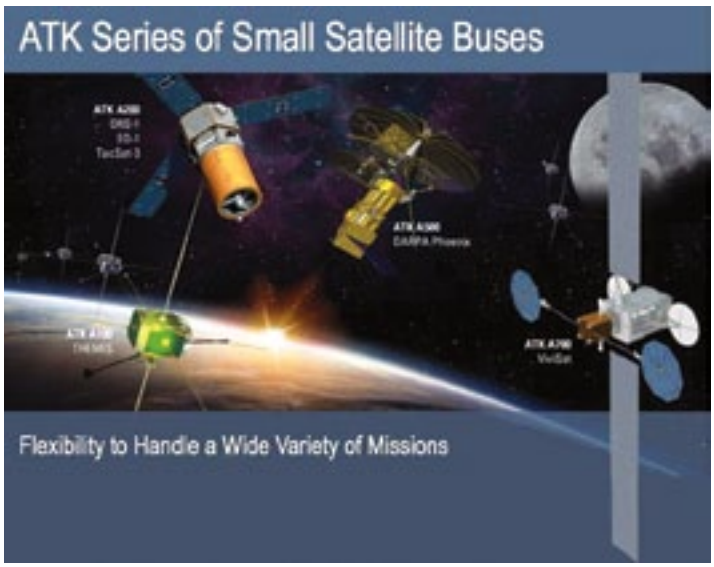
ATK has announced an expanded product line of small, agile satellite buses designed for a wide range of missions in civil, national security and commercial applications.

Designed to meet the growing demand for affordable small spacecraft with dependably fast delivery, ATK's family of agile buses are built for near-term and long-term markets.

ATK's demonstrated expertise in the small satellite industry with nearly three decades of experience in government and commercial space programs has resulted in a premier product line that has grown over the past few years to address the changing space market.

The Company's demonstrated capability to build small satellites quickly and effectively positions ATK as a leader in new space markets that include science and Earth observation small satellites and complex on-orbit satellite servicing missions.

"Our expanded family of space platforms will enable us to capitalize on the up-swing we expect to see in a number of our targeted market segments. Our diversified, balanced approach across multiple markets will take best advantage of the increase in microsat missions, continued demand for small, rapidly-developed spacecraft and the game-changing, on-orbit satellite servicing market," said Tom Wilson, Vice President and General Manager, ATK Space Systems Division.



"We intend to build on our 100-percent on-orbit mission success rate by aggressively opening markets for new capabilities across all space sectors –military, intelligence, civil, commercial and international."

The ATK A-series product line consists of four basic configurations, A100, A200, A500, and A700, with elevated platforms of A150, A250, and A550 for broader capability and flexibility for customers.

The products are designed for a range of mission requirements based on mission class, design life, propulsion, pointing accuracy, payload mass and launch compatibility. The ATK A series is also compatible with most launch vehicles.

#

Inmarsat In Mali Brings The Phones As Refugees Flee

Refugees fleeing conflict in Mali are using BGAN and IsatPhone Pro to keep in touch with loved ones.

The Inmarsat-sponsored emergency communications agency Télécoms Sans Frontières (TSF) has deployed its expertise to help thousands of Malians at two refugee camps in neighboring Burkina Faso.

"BGAN is being used to help the UNHCR carry out its assessment mission, but we are also providing humanitarian calls," explained TSF spokeswoman Laure Crampe.

"Over the coming days we aim to offer free calls to at least 100 families each day at the refugee camps located in Ferrerio and Djibo."

The UN estimates that around 250,000 Malians have crossed borders, seeking refuge in Mauritania, Burkina Faso, Niger and Algeria.

This migration follows the March coup by rebel factions who seized control of Mali's northern region. The conflict exacerbates a serious food crisis already affecting Mali and other countries since harvests failed last year in the Sahel region, which is inhabited by 18 million people from eight countries.

#

Minimize The Impact of Ka-Band Rain Fade with

Walton Rain Quake

Your Signal Without Walton Rain Quake

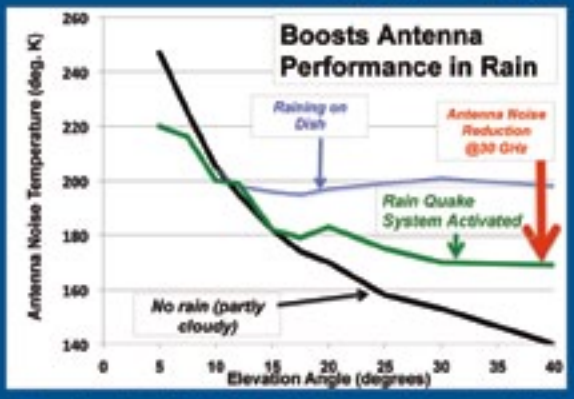
With Walton Rain Quake

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

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.

Rain Quake

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.



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.

- 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.
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MIT Developed "Microthrusters" Could Empower Small Sats

As small as a penny, these thrusters run on jets of ion beams.

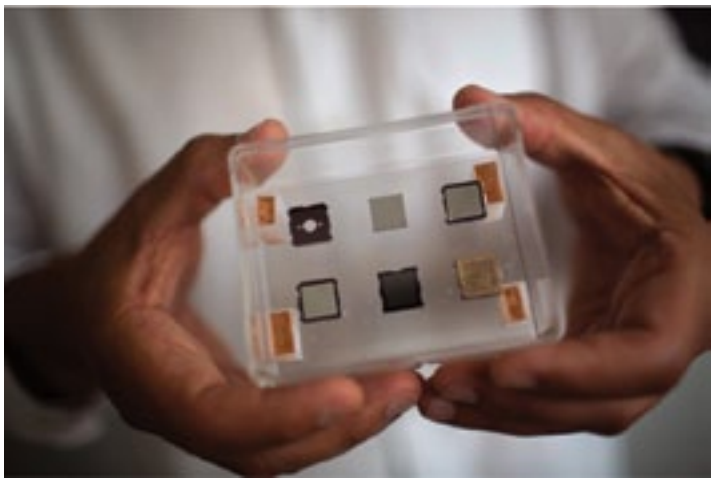
by Jennifer Chu, MIT News Office

A penny-sized rocket thruster may soon power the smallest satellites in space.

Paulo Lozano, associate professor of aeronautics and astronautics and associate director of the Space Propulsion Laboratory. Photo: M. Scott Brauer

The device, designed by Paulo Lozano, an associate professor of aeronautics and astronautics at MIT, bears little resemblance to today's bulky satellite engines, which are laden with valves, pipes and heavy propellant tanks. Instead, Lozano's design is a flat, compact square—much like a computer chip—covered with 500 microscopic tips that, when stimulated with voltage, emit tiny beams of ions. Together, the array of spiky tips creates a small puff of charged particles that can help propel a shoebox-sized satellite forward.

"They're so small that you can put several [thrusters] on a vehicle," Lozano says. He adds that a small satellite outfitted with several microthrusters could "not only move to change its orbit, but do other interesting things—like turn and roll."



Mini ion thrusters are manufactured using micro-manufacturing techniques. This image shows an example of the different parts comprising a thruster. The finalized device is at the bottom right, measuring 1 cm by 1 cm and 2 mm in thickness. Photo: M. Scott Brauer

Mini ion thrusters are manufactured using micro-manufacturing techniques. This image shows an example of the different parts comprising a thruster. The finalized device is at the bottom right, measuring 1 cm by 1 cm and 2 mm in thickness.

Lozano and his group in MIT's Space Propulsion Laboratory and Microsystems Technology Laboratory presented their new thruster array at the American Institute of Aeronautics and Astronautics' recent Joint Propulsion Conference.

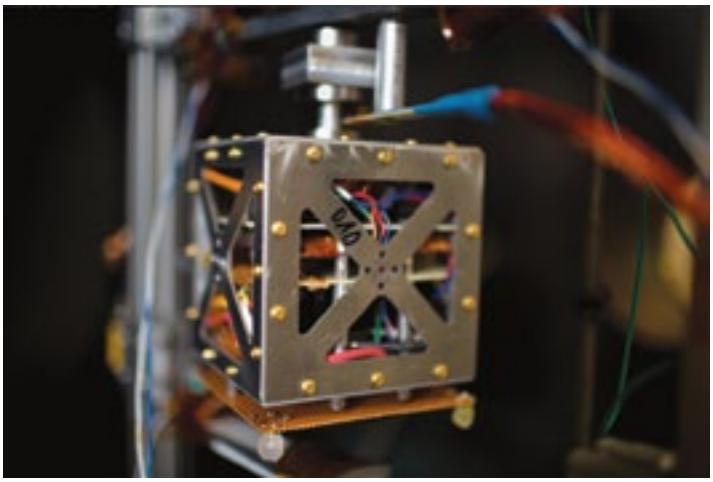
Today, more than two dozen small satellites, called CubeSats, orbit Earth. Each is slightly bigger than a Rubik's cube, and weighs less than three pounds. Their diminutive size classifies them as "nanosatellites," in contrast with traditional Earth-monitoring behemoths. These petite satellites are cheap to assemble, and can be launched into space relatively easily: Since they weigh very little, a rocket can carry several CubeSats as secondary payload without needing extra fuel.

But these small satellites lack propulsion systems, and once in space, are usually left to passively spin in orbits close to Earth. After a mission concludes, the satellites burn up in the lower atmosphere.

Lozano says if CubeSats were deployed at higher orbits, they would take much longer to degrade, potentially creating space clutter. As more CubeSats are launched farther from Earth in the future, the resulting debris could become a costly problem.

"These satellites could stay in space forever as trash," says Lozano, who is associate director of the Space Propulsion Laboratory. "This trash could collide with other satellites. … You could basically stop the Space Age with just a handful of collisions."

Engineering propulsion systems for small satellites could solve the problem of space junk: CubeSats could propel down to lower orbits to burn up, or even act as galactic garbage collectors, pulling retired satellites down to degrade in Earth's atmosphere.



A magnetically levitated small satellite inside a vacuum chamber simulates space-like conditions to test the performance of mini ion thrusters in the laboratory. Photo: M. Scott Brauer

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However, traditional propulsion systems have proved too bulky for nanosatellites, leaving little space on the vessels for electronics and communication equipment.

In contrast, Lozano's microthruster design adds little to a satellite's overall weight. The microchip is composed of several layers of porous metal, the top layer of which is textured with 500 evenly spaced metallic tips. The bottom of the chip contains a small reservoir of liquid — a "liquid plasma" of free-floating ions that is key to the operation of the device.

To explain how the thruster works, Lozano invokes the analogy of a tree: Water from the ground is pulled up a tree through a succession of smaller and smaller pores, first in the roots, then up the trunk, and finally through the leaves, where sunshine evaporates the water as gas. Lozano's microthruster works by a similar capillary action: Each layer of metal contains smaller and smaller pores, which passively suck the ionic liquid up through the chip, to the tops of the metallic tips.

The group engineered a gold-coated plate over the chip, then applied a voltage, generating an electric field between the plate and the thruster's tips. In response, beams of ions escaped the tips, creating a thrust. The researchers found that an array of 500 tips produces 50 micronewtons of force — an amount of thrust that, on Earth, could only support a small shred of paper. But in zero-gravity space, this tiny force would be enough to propel a two-pound satellite.

Lozano and co-author Dan Courtney also found that very small increases in voltage generated a big increase in force among the thruster's 500 tips, a promising result in terms of energy efficiency.

"It means you have a lot of control with your voltage," Lozano says. "You don't have to increase a lot of voltage to attain higher current. It's a very small, modest increase."

Timothy Graves, manager of electric propulsion and plasma science at Aerospace Corp. in El Segundo, Calif., says the microthruster design stands out among satellite propellant systems for its size and low power consumption.

"Normally, propulsion systems have significant infrastructure associated with propellant feed lines, valves [and] complex power conditioning systems," says Graves, who was not involved in the research. "Additionally, the postage-stamp size of this thruster makes it easy to implement in comparison to other, larger propulsion systems."

The researchers envision a small satellite with several microthrusters, possibly oriented in different directions. When the satellite needs to propel out of orbit, onboard solar panels would temporarily activate the thrusters. In the future, Lozano predicts, microthrusters may even be used to power much larger satellites: Flat panels lined with multiple thrusters could propel a satellite through space, switching directions much like a rudder, or the tail of a fish.

"Just like solar panels you can aim at the sun, you can point the thrusters in any direction you want, and then thrust," Lozano says. "That gives you a lot of flexibility. That's pretty cool."

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#

Successful Tracking Of Pseudo Ballistic Threat

The Space Tracking and Surveillance System (STSS) demonstration satellites participated in a test of the next generation of the Aegis Ballistic Missile Defense (BMD) weapon system, designated FTM-16 E2a, when a Standard Missile-3 Block 1B interceptor successfully engaged a short-range ballistic missile target May 10.

Northrop Grumman Corporation, as the prime contractor, and Raytheon Company, as the infrared sensor payload provider, built the two STSS demonstrator satellites and ground station for the U.S. Missile Defense Agency (MDA). Two STSS-specific goals for the Aegis BMD exercise were met:

- *The pair of satellites collected tracking data that were used by the Ballistic Missile Defense System (BMDS) in real time to form a stereo track*
- *Simulation of an Aegis Remote Engagement Authorized (REA) interceptor launch based on the STSS stereo track that was routed to the Aegis 3.6.1 simulation lab*

The exercise demonstrated fire control elements of Aegis BMD 4.0.1, the second generation of the Aegis weapon system. The Aegis launch-on-remote exercise also involved the upgraded SM-3 Block 1B that incorporates an improved seeker and signal processor, allowing longer range acquisition and increased threat discrimination.

The target was an Aegis Readiness Assessment Vehicle Type A, a threat-representative, unitary, short-range ballistic missile target. This test supported the initial phase of MDA's Phased Adaptive Approach for missile defense in Europe that features deployments of increasingly capable sea- and land-based missile interceptors and a range of sensors to address regional ballistic missile threats to Europe and to U.S. forces deployed there.

Using sensors capable of detecting visible and infrared light, STSS-D serves as the experimental space layer of the BMDS. The program's mission objective is to provide accurate tracks of midcourse re-entry vehicles to the shooter.

Giving Credit

Microsemi Corporation has extended its congratulations to NASA and the Jet Propulsion Lab (JPL) for the historic landing of the Mars Curiosity rover.

Several of Microsemi's space products were used in mission critical applications during the launch and flight to Mars, and continue to support the mission on the surface of Mars. These applications include: launch systems; avionics; telemetry; navigation, drive control, mission computers; cameras; and other instruments.

"Microsemi has had the privilege of providing high-reliability semiconductor solutions for groundbreaking U.S. space programs dating back to the launch of the first Atlas rocket more than 50 years ago," said James J. Peterson, president and CEO of Microsemi. "The landing of the Curiosity rover on Mars is yet another historical milestone in space exploration, and a credit to American ingenuity and innovation. We are proud that our technology played a role in this significant event, and we salute NASA, JPL and all of the individuals on the successful landing of the Mars Curiosity rover."

#

The Biggest, Highest + Gassiest Cluster

Stars forming in the cluster at the highest rate ever observed… the most powerful producer of X-rays… the rate of hot gas cooling in the central regions… the largest ever observed.

The first image below shows the newly discovered Phoenix Cluster, located about 5.7 billion light years from Earth. This composite includes an X-ray image from NASA's Chandra X-ray Observatory in purple, an optical image from the 4m Blanco telescope in red, green and blue, and an ultraviolet (UV) image from NASA's Galaxy Evolution Explorer (GALEX) in blue.

The Chandra data reveal hot gas in the cluster and the optical and UV images show galaxies in the cluster and in nearby parts of the sky.

Astronomers have found an extraordinary galaxy cluster, one of the largest objects in the universe, that is breaking several important cosmic records.

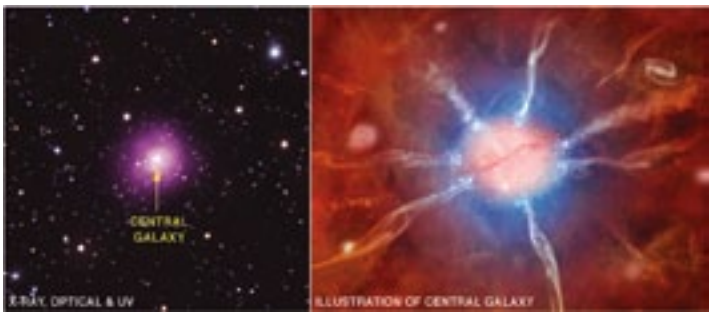
Observations of the Phoenix cluster with NASA's Chandra X-ray Observatory, the National Science Foundation's South Pole Telescope, and eight other world-class observatories may force astronomers to rethink how these colossal structures and the galaxies that inhabit them evolve.

Stars are forming in the Phoenix cluster at the highest rate ever observed for the middle of a galaxy cluster. The object also is the most powerful producer of X-rays of any known cluster and among the most massive. The data also suggest the rate of hot gas cooling in the central regions of the cluster is the largest ever observed.

The Phoenix cluster is located about 5.7 billion light years from Earth. It is named not only for the constellation in which it is located, but also for its remarkable properties.

"While galaxies at the center of most clusters may have been dormant for billions of years, the central galaxy in this cluster seems to have come back to life with a new burst of star formation," said Michael McDonald, a Hubble Fellow at the Massachusetts Institute of Technology and the lead author of a paper appearing in the Aug. 16 issue of the journal Nature. "The mythology of the Phoenix, a bird rising from the dead, is a great way to describe this revived object."

Like other galaxy clusters, Phoenix contains a vast reservoir of hot gas, which itself holds more normal matter—not dark matter—than all of the galaxies in the cluster combined. This reservoir can be detected only



The image on the left shows the newly discovered Phoenix Cluster, located about 5.7 billion light years from Earth. This composite includes an X-ray image from NASA's Chandra X-ray Observatory in purple, an optical image from the 4m Blanco telescope in red, green and blue, and an ultraviolet (UV) image from NASA's Galaxy Evolution Explorer (GALEX) in blue. The Chandra data show hot gas in the cluster and the optical and UV images show galaxies in the cluster and in nearby parts of the sky. Images are courtesy of NASA.

with X-ray telescopes such as Chandra. The prevailing wisdom once had been that this hot gas should cool over time and sink to the galaxy at the center of the cluster, forming huge numbers of stars. However, most galaxy clusters have formed very few stars during the last few billion years. Astronomers think the supermassive black hole in the central galaxy of a cluster pumps energy into the system, preventing cooling of gas from causing a burst of star formation.

The famous Perseus cluster is an example of a black hole bellowing out energy and preventing the gas from cooling to form stars at a high rate. Repeated outbursts in the form of powerful jets from the black hole in the center of Perseus created giant cavities and produced sound waves with an incredibly deep B-flat note 57 octaves below middle C, which, in turn, keeps the gas hot.

"We thought that these very deep sounds might be found in galaxy clusters everywhere," said co-author Ryan Foley, a Clay Fellow at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass. "The Phoenix cluster is showing us this is not the case—or at least there are times the music essentially stops. Jets from the giant black hole at the center of a cluster are apparently not powerful enough to prevent the cluster gas from cooling."

With its black hole not producing powerful enough jets, the center of the Phoenix cluster is buzzing with stars that are forming about 20 times faster than in the Perseus cluster. This rate is the highest seen in the center of a galaxy cluster but not the highest seen anywhere in the universe. However, other areas with the highest star formation rates, located outside clusters, have rates only about twice as high.

The frenetic pace of star birth and cooling of gas in the Phoenix cluster are causing the galaxy and the black hole to add mass very quickly—an important phase the researchers predict will be relatively short-lived.

"The galaxy and its black hole are undergoing unsustainable growth," said co-author Bradford Benson, of the University of Chicago. "This growth spurt can't last longer than about a hundred million years. Otherwise, the galaxy and black hole would become much bigger than their counterparts in the nearby universe."

NASA's Chandra X-ray Observatory was launched on July 23, 1999 from the Space Shuttle Columbia

Remarkably, the Phoenix cluster and its central galaxy and supermassive black hole are already among the most massive known objects of their type. Because of their tremendous size, galaxy clusters are crucial objects for studying cosmology and galaxy evolution, so finding one with such extreme properties like the Phoenix cluster is important.

"This spectacular star burst is a very significant discovery because it suggests we have to rethink how the massive galaxies in the centers of clusters grow," said Martin Rees of Cambridge University, a world-renowned expert on cosmology who was not involved with the study. "The cooling of hot gas might be a much more important source of stars than previously thought."

The Phoenix cluster originally was detected by the National Science Foundation's South Pole Telescope, and later was observed in optical light by the Gemini Observatory, the Blanco 4-meter telescope and Magellan telescope, all in Chile. The hot gas and its rate of cooling were estimated from Chandra data. To measure the star formation rate in the Phoenix cluster, several space-based telescopes were used, including NASA's Wide-field Infrared Survey Explorer and Galaxy Evolution Explorer and ESA's Herschel.

NASA's Marshall Space Flight Center in Huntsville, Alabama, manages the Chandra Program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Massachusetts.

#

Monitoring Move

Kratos Defense & Security Solutions, Inc. has announced that its SAT Corporation subsidiary has received a multi-million dollar order to supply its Monics® carrier monitoring system and related products to Space Systems/Loral (SS/L) in support of one of its customers that will provide broadband communications services in remote areas.

The name of the end-user customer was not disclosed. Monics is the industry-leading Radio Frequency (RF) monitoring system that provides automatic carrier monitoring as well as advanced interference detection and analysis capabilities.

To support multi-beam monitoring of SSL's customer's constellation of next-generation Ka-band satellites, Monics will be implemented on SAT's new SAT-DSP-6000 instrument.

The DSP-6000 uses advanced Digital Signal Processing (DSP) technology to produce 250MHz of instantaneous bandwidth and an extended L-band input frequency range of 900MHz to 2450MHz.

Among other advantages, this allows for much faster measurements of entire transponders and makes Monics the preferred choice for the industry's growing Ka band monitoring needs.

Monics' In-service In Orbit Test (IS-IOT) feature will be activated to ensure optimum performance of multi-beam satellites. IS-IOT uses advanced measurement techniques to characterize transponders in terms of gain, frequency response and phase and can do so even while the transponder is operating. transponder performance.

#

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Awareness Ambassadors

The SATCON 2012 Hosted Payloads Association event will feature discussions, solutions, networking and special events addressing the issues surrounding hosted payloads.

The U.S. presidential election will have just taken place. The U.S. Government is facing significant budget cuts. This panel, organized by the Hosted Payload Alliance, whose mission is to increase awareness and benefits of hosted payloads on commercial satellites, will discuss the outlook for hosted payloads and innovative space acquisition, against the backdrop of the elections, the budget environment, and recent efforts by the USAF Space and Missile Systems Center to include hosted payloads in future acquisition strategies.

The Hosted Payload Alliance (HPA) is an independent, not-for-profit satellite industry alliance formed to increase awareness and promote the benefits of hosted government payloads on commercial satellites. The HPA will host its annual business meeting on Thursday, November 15, 2012, during SATCON.

The meeting will continue the discussion of issues affecting hosted payloads. Benefits to be explored will include lower costs, shorter development cycle times, the opportunity to share orbital slot locations, and the ability to disaggregate assets for more resilient space architecture. For more information and to request an invitation to this special HPA meeting email Jodi Metzgar at jmetzgar@hostedpayloadalliance.org.

Take a semi-private, guided tour of the exhibit hall, led by an industry expert, and visit several stops focused on hosted payloads! No separate registration is required—tour attendance is included with your expo or conference pass! The tour will last approximately 45 minutes.

#

A Tactical Commitment

PacStar® has been awarded the TacSat Nano contract by 6th Contracting Squadron, MacDill AFB, Florida, for immediate delivery to the Joint Enabling Capabilities Command's (JECC) Joint Communications Support Element (JCSE).

The JCSE TacSat Nano is a lightweight, compact, and flexible package that provides multiband voice (high performance waveform, SINCGARS, VHF/UHF, etc), ViaSat messaging services, and Radio-over-IP (RoIP) in a single case, easy-to-use solution. JCSE selected the PacStar 3700 to meet this mission requirement, based on its high level of integration, small size, weight and power (SWaP), and ease of use.

The TacSat Nano provides three distinct use scenarios: a) SATCOM-based UHF radio using the AN/PRC-152 handsets with external amplifiers and antennas, b) RoIP and radio interoperability (providing IP access and interoperability for up to six RF networks), and c) an AN/PRC-152 "Grab and Go" tactical radio with quick release and mobile accessories, providing soldier handset service.

#

Going Wide With Modules + A Hefty Contract

The contract for Cobham will be, according to Boeing, for the "highest-capacity military communications system" and will provide broadband communications connectivity for the U.S. and allied warfighters around the world.

Defence Professionals reported that Cobham have been awarded a $65 million contract to supply electronic systems to Boeing's Wideband Global SATCOM satellite program.

Cobham Defence Electronics will supply 1000 modules for the phased array antennas on each satellite, with modules made up of a complex power amplifier, beamformer and receive amplifier modules, allowing the satellite to transmit and receive communications.

Jill Kale, vice president of Cobham Defence Electronics, announced Cobham is "pleased to support and enhance military satellite communications capability by providing the portfolio of RF modules that support additional bandwidth required by the military."

In addition, Cobham is also a major sponsor at the 14th annual MilSatCom conference and exhibition—Europe's event for military satellite communications professionals to discuss the contract and further developments taking place within the SATCOM arena.

Attendees will also be able to hear presentations from leading industry experts such as Eutelsat's new Chief Commercial Officer, Mr. Jean Francois Leprince-Ringuet, who will be analyzing the future role of SatComs in military satellite communications planning.

Expert speaker from the following organizations will be presenting at this event...

DISA
Canadian Forces
Italian Navy
The Netherlands MoD
DGA France
UK MoD
Colombian Police Force
NATO
USAF
MoD Japan
Danish Defence Acquisition and Logistics Organisation
Vietnam National Satellite Center (VNSC)
German MoD

Plus, there's an interactive workshop to be held on November 26th that's hosted by Cobham: What is the Future for Broadband Tactical Satellite Communications? Book today to secure your attendance!

#

RAI Amsterdam
Conference 6-11 September : Exhibition 7-11 September

2012

IBC2012 Mobile App

The IBC2012 Mobile App will provide you with everything you need to maximise your time at IBC. This fully enhanced catalogue in your pocket provides constant access to the IBC exhibitor list, conference programme, floor plan, travel and contacts information and a full overview of the feature areas within the exhibition.

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The Best of Both Worlds

by the European Association of Remote Sensing Companies (EARSC) Executive Secretary

The recent announcement that DigitalGlobe will combine with GeoEye brings together two of the world's largest commercial satellite imaging companies in a deal valued at $453 million.

The transaction was anticipated in light of dramatic cuts to the U.S. government's ten-year $7.3 billion Enhanced View Contract that each company had been awarded. The valuation is low in comparison to that prior promised revenue stream, however the final dollar figure from that contract is still pending and the combination of the companies will reduce reliance on that revenue stream.

Image captured by GeoEye's GeoEye-1 satellite.

This is a satellite image of the Olympic Village in London which was the home of athlete housing, Olympic Stadium, Water Polo Arena, World Square, Riverbank Arena, Basketball Arena, Velodrome, BMX track, Cooper Box and Eton Manor facilities. The village is accessed via four main gates that all lead to the main walkway, The London Way. Image courtesy of DigitalGlobe.

As the companies work through the steps of regulatory and shareholder approval on the deal, the task of combining and streamlining operations will begin. The anticipation is that the deal will be completed in the early first quarter of 2013. DigitalGlobe shareholders are expected to own about 64 percent of the combined company and GeoEye shareholders are expected to own approximately 34 percent. Through years of direct competition the two companies made investments to diversify their strengths and as a result the combined entity will build a better company from the parts.

The current satellite constellations of the two companies combines DigitalGlobe's QuickBird, WorldView-1 and WorldView-2 with GeoEye's Ikonos and GeoEye-1 satellites. The plan as presented is to move to a three-satellite constellation as the aging QuickBird and Ikonos reach the end of their lives. And there is also a commitment to complete the construction of the two satellites in development, with a new satellite to launch by 2014, and the other to launch by 2018.

It's widely speculated that DigitalGlobe won the bulk of EnhancedView funding based on the strength of their constellation and their ability to image the same spot of the world more rapidly. In addition to a larger constellation, DigitalGlobe has diversified sensor collection with their current 8-band capability with Worldview-2 and their planned SWIR sensor for Worldview-3.

These new sensing capabilities provide unique capabilities to sense and classify vegetation, land use and land cover that have advantages for agriculture, natural resources and extraction industries as well as military customers.

The companies share a common vision to move beyond collecting data into elevating insight, with a need to better understand our changing planet.

There are great opportunities in the combined image libraries that offer more than a decade of insight into global change. Both companies have been working to combine earth imagery with expertise, with DigitalGlobe's Analysis Center and GeoEye's analytical products and services.

GeoEye has been more successful in packaging imagery with expertise with such offerings as their Marine Services with fisheries information and vessel monitoring sold as a service.

They have also collected detailed 3D models of the world's airports for next-generation aeronautical navigation products for their client GE, and have teamed with GeoStellar to create a countrywide solar map that combines solar potential with utility rates to provide insights into the economics of renewable energy.

These combinations of addressing business problems with insights specific to changing conditions are also addressed by DigitalGlobe with their FirstLook and FirstWatch reports.

We can expect an ongoing enhancement of these types of services and rapid response analysis with the combined strengths of these companies.

DigitalGlobe has focused a great deal on the speed of imagery delivery, with investments in new ground stations in Antarctica and around the globe that are now delivering imagery within an hour of being captured. The speed of delivery makes a difference particularly with evolving events such as natural disasters.

The rapid delivery has been feeding news outlets with insights into global events, providing great marketing exposure for the kinds of insights that can be gleaned from satellite imagery, particularly in areas that are hard to reach for political or geographic reasons.

GeoEye has placed more of a focus on web services, delivering their imagery via Software as a Service (SaaS) with their EyeQ platform. The combination of speedy delivery with streamlined web-based services that mesh nicely with enterprise information systems is a compelling combination for advanced location intelligence. Analytics are increasingly seen as a business advantage, and with more globalized supply chains, this rapid insight into evolving events will drive demand and increase revenue.

The combined operations of the two companies, with reduced capital costs, promise to position the combined company to invest in the new areas of growth.

The company is poised to offer unique analytical and location intelligence services, particularly with new advancements with GIS and imagery analysis software that make deriving insight from imagery much more accessible to less technical users.

While it's hard to see the loss of a pioneering company and strong brand, the combined entity has a bright future in delivering new levels of insight into global change.

#

Coding Core

Creonic has released the world's first high-efficiency turbo decoder IP core for DVB-RCS2 for the fourth quarter of 2012.

After DVB-RCS, DVB-RCS2 is the second generation DVB standard for interactive satellite systems. The new standard delivers a drastically increased spectral efficiency and higher throughputs compared to its predecessor, clearly reducing costs of satellite modem operators.

These improvements are achieved by employment of a new 16-state double-binary turbo code that significantly outperforms its dated 8-state counterpart of DVB-RCS. DVB-RCS2 is the first standard to adopt these highest performance turbo codes, fulfilling the continuous demand for increased spectral efficiency. The outstanding error correction performance of the DVB-RCS2 turbo decoder makes it the ideal candidate for further applications where high spectral efficiency is key for lowering costs. #

Identifying Those Unknowns

Narda Safety Test Solutions has equipped the Interference and Direction Analyzer IDA-3106 with additional functions that allow even faster and more reliable localization of interference and unknown signal sources.

It is now possible to localize pulsed or sporadic signals using a horizontal scan for direction finding, a feature that is a world first in a hand-held device. The spectrogram display shows the variation of the spectrum with time. Deviations from a reference trace can be seen at a glance using the delta spectrum display.

The IDA-3106 now offers a special Max Hold algorithm for localizing unknown sources with a horizontal scan. This allows the instrument to also produce a polar diagram from pulsed and cyclic or sporadic signals and to determine the direction of signals that have hitherto been difficult to localize, such as radar installations or intermittently used walkie-talkies.

The IDA-3106 records up to 400 compressed individual spectra for the spectrogram display and shows the signal strength in color. This visualizes the variations in the spectrum with time, which can give information about the type of signal, so that industrial control equipment with cyclical signals, mobile communications services using frequency hopping, stationary transmitters, and sporadic emitters can all be distinguished from each other.

Protection of the public, frontiers and airspace as well as internal security is the job of public institutions, to which IDA-3106 can make a significant contribution.

A new feature is the ability to save spectra as reference traces and display the current spectrum as a difference or delta spectrum. In this way, deviations from the normal status, such as new sources in the communications band or an unusual state in an industrial plant, can be seen immediately. The instrument display is designed for outdoor use and can now be switched for optimum visibility in daylight, normal lighting, or darkness.

The Interference and Direction Analyzer IDA-3106 was developed for identifying and localizing electromagnetic signal sources. Its applications include the areas of communications and security. In communications, the task is to find and eliminate spurious interference from whatever source. For security, the device can be used to locate unknown sources and identify potential dangers. The IDA can automatically determine the direction of the source based on a horizontal scan, and display the bearing angle on a polar diagram. The IDA then automatically calculates and displays the position of the interfering source from several bearing results. Freely available electronic maps can be recorded optionally, so that the source can be precisely pinpointed on a street plan, just like a navigation system.

Determination of the position of an interference source is based on a GPS receiver in the measuring instrument and the electronic compass in the antenna handle for determining the direction, elevation, and polarization. Optimized antennas which can be inserted vertically or horizontally in the ergonomically formed handgrip are available for different frequency ranges.

As a hand held device for on-site use, the IDA-3106 basic unit weighs less than 3kg including battery. The antenna and handle draw their power supply from the basic unit and thus weigh less than 1kg. The rechargeable battery can be hot-swapped without interrupting operation.

#

Making Waves With Voice

MTN Satellite Communications (MTN) and Wireless Maritime Services (WMS) have now made available the Connect at Sea voice application, enabling passengers and crew to make cost-effective phone calls and send text messages from their personal Apple iOS or Android devices while at sea.

The unique features of Connect at Sea allow passengers and crew to make and receive calls from loved ones and friends or work from anywhere around the world. In addition, intra-ship calling enables passengers to connect with their friends and family onboard to make plans or keep track of one another. Crew can leverage this feature as well to call other vessels.

Communication at sea is a complex matter and MTN and WMS have jointly developed a unique solution that not only offers a clear connection, but a service that works with a vessel's Wi-Fi infrastructure and data/voice prioritization strategy for the maritime industry.

Unlike other voice applications, Connect at Sea is built for the maritime industry and delivers high voice quality while keeping bandwidth usage low. In addition, customers do not have to purchase an Internet plan to use the application and can download it from iTunes or the Android store.

In addition, the application adds to any crew welfare initiative by offering a cost-effective way for families to communicate with their loved ones who are at sea for months at a time.

The Connect at Sea voice application is a valuable addition to MTN and WMS' suite of products, which provides cruise passengers and customers with a complete communications package, including voice, Internet, television and content.

#

Rally For RF

RF-Design invites attendees of IBC2012 to visit their stand (Hall 1 / Stand F51, co-exhibiting with HilKOM Digital), where their following products and solutions will be showcased...

- *FiberLink—Stand-alone and modular RF-over-Fiber (RFoG) solutions*
- *RLA250—1:1 redundant RF Line-amplifier*
- *FlexLink-K3—New and innovative L-band Switch/Routing-Matrix series*
- *RLS25XX—1:8 or 1:16 RF splitters with 1:1 redundant amplifiers*
- *RLS2S-2XX—Dual 1:8 or 1:16 RF splitters with dual 1:1 redundant amplifiers*
- *SA3B—New Broadband Spectrum-Analyzer series*

#

It's A SIN Not To Use CID

The Satellite Interference Reduction Group (sIRG), has announced the launch of their Carrier Identification Ready Logo Initiative, which is being introduced in time for IBC2012.

Encoder and modulator manufacturers will be able to display the Carrier ID logo, both on Carrier ID capable products, and on marketing material.

"One of the biggest hurdles remaining with Carrier ID is the fact that many users don't realise the equipment they have in place is able to handle Carrier ID," said Martin Coleman, Executive Director, the Satellite Interference Reduction Group. "This simple initiative will give them much more visibility, as well as hopefully providing a useful marketing tool for those manufacturers on board with Carrier ID."

The Satellite Interference Reduction Group (sIRG) is an organization working to reduce satellite frequency interference. It comprises three main working groups, covering video, data, and VSAT.

Manufacturers helping with this initiative include Ericsson, Comtech EF Data, and Newtec. The Group's membership is comprised of members who have a stake in combating radio frequency interference.

"We are pleased with this move by IRG to recognize Carrier ID ready products," commented Lisa Hobbs, Head of Broadcast Compression Solutions, Ericsson. "As we introduce Carrier ID across our satellite modulator and encoder products, being able to display this logo will make it very clear to existing and potential customers that our equipment is ID ready."

CID
Carrier ID Ready

Back In The Saddle

NASA has awarded the CalTech in Pasadena a new five-year contract to manage the agency's Jet Propulsion Laboratory (JPL).

The contractor's primary mission is to support NASA's Science Mission Directorate (SMD) in carrying out specific objectives identified in the SMD Science Plan. The contract is for $8.5 billion. The contract extends the agreement beyond its current expiration date of September 30th. The new contract runs from October 1 through September 30, 2017.

JPL conducts research expanding human understanding of Earth, the sun, the solar system, stars, planetary systems, galaxies, and the formation and evolution of the universe. JPL also manages NASA's Mars Exploration Program, which currently operates two spacecraft orbiting the Red Planet and two rovers on its surface, including the recently landed Curiosity.

#

SpaceWire Support Enhancements

Ball Aerospace & Technologies Corp. will incorporate essential data communication enhancements for the Joint Polar Satellite System (JPSS-1), currently under development for an early 2017 launch.

JPSS is the Nation's next generation polar-orbiting operational environmental satellite system, procured by the National Oceanic and Atmospheric Administration (NOAA), through the National Aeronautics and Space Administration (NASA). JPSS will provide continuity of observations for accurate weather and storm forecasting, vertical profiles of temperature and moisture, global measurements of atmospheric and oceanic conditions, and ozone measurements.

Ball Aerospace built Suomi National Polar-orbiting Partnership—the first of the JPSS-class satellites—using the IEEE 1394 (FireWire) and MIL-STD 1553 data networks to support the five-instrument payload suite. For JPSS-1, Ball is converting the NPP spacecraft design from 1394 to a SpaceWire databus protocol for use by the Cross-track Infrared Sounder (CrIS) and the Visible/Infrared Imager Radiometer Suite (VIIRS) instruments. The high-speed (>200Mbp) on-board communications provided by SpaceWire mitigates 1394 obsolescence risks at the JPSS program level and can be incorporated without risking schedule. The SpaceWire databus is a point-to-point cable bus based on the IEEE 1355 standard and has successfully flown on other NASA and international space agency missions.

Ball Aerospace will also modify JPSS-1 to improve reliability and flexibility for operations by replacing the primary X-band Science Mission Data (SMD) downlink with a Ka-band telecom system transmitting to the ground communication system. A backup Ka-band SMD downlink system will be added, transmitting to NASA's Tracking and Data Relay Satellite System (TDRSS), which offers possible future cost avoidance and latency improvements.

Ball is under contract to NASA's Goddard Space Flight Center to design and build the JPSS-1 satellite bus, the Ozone Mapping and Profiler Suite (OMPS) instrument, integrate all instruments, and perform satellite-level testing and launch support. The JPSS-1 spacecraft is a member of the BCP family of spacecraft designed for cost-effective, remote sensing applications. The JPSS-1 spacecraft bus is the twelfth spacecraft built by Ball Aerospace on the BCP core architecture. In all, this architecture has more than 50 years of successful on-orbit operations.

The Joint Polar Satellite System (JPSS) provides global weather forecasts and long-term environmental monitoring critical to public safety, and economic and national security. JPSS will operationalize the advanced technologies currently being demonstrated on Suomi NPP, to provide enhanced Earth-observing information and environmental data. JPSS development is progressing smoothly, with an early 2017 launch anticipated for the first satellite in the JPSS series.

#

This Small Platform Captures An Olympic-Sized Picture

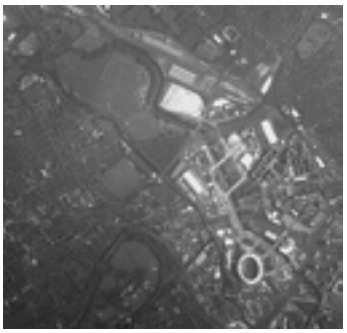
The London Olympics were watched by viewers from all over the world—and beyond.

Benefiting from a cloudless sky, this view of London's Olympic Park was captured by the smallest imager aboard ESA's smallest mission: The High Resolution Camera on the Proba-1 microsatellite.

The Olympic Park, dominated by the circular Olympic Stadium, is visible towards the base of this 5m-resolution image, with Victoria Park to its west and Hackney Marsh to the northwest.

This black and white digital camera incorporates a Cassegrain telescope miniaturized to fit aboard Proba-1. Orbiting Earth at 720km altitude, the entire satellite's volume is less than a cubic metre. HRC operates alongside Proba-1's larger CHRIS (Compact High Resolution Imaging Spectrometer) hyperspectral imager, which takes 15m-resolution scenes across a programmable selection of up to 62 spectral bands, from a variety of viewing angles. This HRC image was acquired on August 11, 2012.

#



Successful Deployments

The joint effort between Gilat Satellite Networks and Optus Satellite, first announced in May 2011, will include up to 48,000 SkyEdge II VSATs expected to be deployed over the next three years.

Gilat Satellite Networks Ltd. has successfully completed the deployment of the first 10,000 VSATs (Very Small Aperture Terminals) with Optus as part of NBN Co's Interim Satellite Service.

The joint effort between Optus and Gilat will include as many as 48,000 Gilat SkyEdge II VSATs expected to be deployed over the next three years.

Gilat is responsible for the VSAT CPE installation and maintenance and end-to-end management and maintenance of the NOC (Network Operating Center) and eleven hubs across three earth stations. Subject to final design and implementation of the network, the project represents a potential value of up to $120 million for Gilat.

Gilat's SkyEdge II advanced capabilities are leveraged in multi-beam environments and the satellite-based network uses IPSTAR's Ka-/Ku- multi-spotbeam capacity as well as Optus' Ku- capacity over Australia.

Provided will be broadband services to eligible Australian households, small businesses, indigenous communities, not-for-profit organizations, schools, health clinics and local council facilities such as public libraries around Australia where geographic location impedes the ability to provide either fiber or advanced wireless connectivity.

"Satellite-based connectivity is a critical element in NBN Co's commitment to offering broadband services across Australia.

"Gilat's expertise in delivering large scale projects has been key to helping Optus meet this important milestone of connecting more than 10,000 sites," said Paul Sheridan, Vice President, Optus Satellite.

"We are very pleased to have achieved this milestone ahead of time and see this as an important accomplishment for both Gilat and Optus. The rapid deployment is a testament to the teams' cooperation and dedication in supporting NBN Co's commitment to delivering high-speed broadband to Australians living in rural and remote locations", said Erez Antebi, CEO, Gilat Satellite Networks.

#

Certifiably Certifiable

KRYTAR, Inc. has announced its certification to AS9100 Revision C Quality Management System.

This latest certification is a high-quality standard designed to meet stringent, complex and unique demands of worldwide customers within the defense and commercial aerospace industries. KRYTAR's upgrade to the Revision C Certification from Revision B meets the industry's newest and highest standards of quality and places KRYTAR in an elite class of companies that are registered to this rigorous standard.

KRYTAR is one of the first component manufacturing companies in the RF and microwave industry to reach this high standard.

This internationally recognized certification confirms KRYTAR's position as an approved supplier to OEMs, improves customer satisfaction, enhances performance and cost savings, while at the same time positions the company with a distinct advantage in the marketplace for its products.

AS9100 Rev. C is the quality management standard specifically written for the aerospace industry based on ISO9001:2008 and it continues KRYTAR's commitment in design, production and on-time delivery of the highest quality products for all its customers with applications in aerospace, defense, testing, medical, or homeland security.

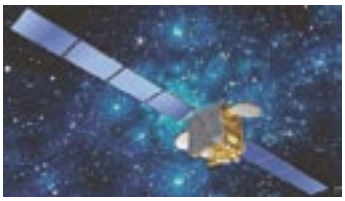
#

KRYTAR

U.K.'s 1st South Asian HDTV

Great news for fans of Hindi entertainment—Arqiva is to support South Asian broadcaster Star in their launch of the U.K.'s first South Asian HD channel.

The Star Plus HD Channel will be uplinked onto satellite capacity on Arqiva's dedicated HD platform on Eurobird 1. This will enable subscribers on BSkyB to enjoy Star Plus HD, the world's most watched Hindi entertainment channel.



Eurobird-1 satellite, artist's concept

John Bozza, Director of Sales at Arqiva, said, "Arqiva already provides satellite distribution services for four of Star's channels and we are delighted to be expanding our relationship by supporting their move into HD broadcasting. With our extensive expertise in launching TV channels and our dedicated HD platform we were able to facilitate the fast launch required by Star. We wish the channel every success."

Rajan Singh, Head of International Business at Star, added: "The pace of innovation at Star UK has been phenomenal and Arqiva has proved to be a great technical partner. Working with us closely to evolve our business

"Arqiva has delivered speedy and innovative solutions to support our growth. With the U.K. launch of Star Plus HD we are delighting viewers and advertisers alike with an unmatched and exciting viewing experience—and Arqiva was our first choice of technical partner for this new service."

#

Nice To Have A ClearView™

Cloud cover has always been a problem for companies that rely on satellite or aerial imagery in tropical locations such as Colombia, where the ground is obscured for up to 90 percent of the year.

With this in mind, Geoimage has created a low cloud Landsat image mosaic over Colombia to aid numerous industries with their mapping needs.

Created using multiple scenes from the Landsat satellites, the new ClearView™—Colombia product has taken the cloud element out of the imagery to reveal what lies below and allow consistent mapping at 1:50,000 scale across the entire country. Remotely-sensed satellite images of large areas provide a bird's eye view of the landscape, which supports a range of activities essential for industry operations.

Satellite imagery, digital surface models and supplementary spatial datasets can all assist the planning for and construction of vital infrastructure.

The team at Geoimage have extensive experience in providing core spatial datasets including satellite imagery for mapping land cover plus feature extraction of infrastructure and other terrestrial or marine based characteristics.Digital surface models are used to understand topographic variability, site suitability or routing of infrastructure and are especially vital in comprehending costs associated with slope, topographic variability or elevation. Geoimage also provides advice on when very high resoluton data is required and when alternatives can be deployed to save time, costs and processing requirements.

#

The Host With The Most

Harris Corporation will be the industry host for MILCOM 2012, the premier international conference and exposition for military communications.

The annual government/military/academia/industry forum will take place October 29-November 1 at the Gaylord Palms Convention Center in Orlando, Florida.

The theme for MILCOM 2012 is "Trusted Communications... Awareness to Action." The conference will feature more than 400 unclassified and classified technical presentations, tutorials, and panel discussions by leading experts in defense communications.

Topics will include the spectrum of command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) technologies and capabilities that address 21st Century communications challenges related to national defense, homeland security, disaster response and interoperability. Continuing education credits are available for all attendees.

Planned keynote speakers for the conference include U.S. Army Lieutenant General Susan Lawrence, U.S. Army chief information officer; Chris Inglis, deputy director of the National Security Agency; Jeb Bush, former governor of Florida; Mark Kelly, astronaut and retired U.S. Navy Captain; and Bill Brown, Harris Corporation's president and chief executive officer. The conference also will feature a small business workshop to encourage and facilitate collaboration with large aerospace and defense companies.

MILCOM is co-sponsored by the Armed Forces and Communications Electronics Association (AFCEA) International and the Institute of Electrical and Electronics Engineers (IEEE) Communications Society. The Johns Hopkins University Applied Physics Laboratory is the official academic advisor for this year's conference.

All proceeds from the conference will benefit AFCEA and IEEE educational programs, as well as "The Mission Continues", 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.

#

State-Of-The-Art Antennas Monitor The World's Longest Coastline

"With the second-largest landmass on Earth and the longest coastline in the world, Canada's sovereignty depends on the effective monitoring of our land and borders.

The Honorable Joe Oliver, Minister of Natural Resources, today announced funding of $38.9 million to equip Natural Resources Canada's (NRCan) satellite station facilities with state-of-the-art antennae. The Minister made this announcement during a speech at the Prince Albert Satellite Station facility.

"The Government of Canada is committed to supporting science and technology in order to build a competitive advantage for our nation," said Minister Oliver.

"With the second-largest landmass on Earth and the longest coastline in the world, Canada's sovereignty depends on the effective monitoring of our land and borders."

Canada uses leading-edge satellite technology to provide real-time scientific information on its landmass in order to address a wide array of topics that are important to Canadians—environmental monitoring, stewardship, resource exploration and development, emergency response, navigation, sovereignty and security.

This announcement provides funding for the installation of four antennae at Natural Resources Canada's satellite station facilities: two in Prince Albert, Saskatchewan, one in Gatineau, Quebec and one in Inuvik, Northwest Territories. These three satellite station facilities are strategically located across Canada to provide full coverage of Canada's landmass.

Inauguration of the DLR satellite dish on the Canadian satellite receiving station Inuvik in August 2010. © German Aerospace Center (DLR)

Funding also supports a data management system to house and safeguard satellite information. In addition, the announcement coincides with the 40th anniversary of the Prince Albert Satellite Station facility.

Space-borne observation is a powerful and cost-effective tool to help promote the safety and security of Canadians as well as monitor the environment. The landmass information it gathers provides knowledge that can be used to ensure the responsible development of Canada's natural resources.

Funding for the new Canadian satellite antennae and the overall revitalization of the Natural Resources Canada satellite station facilities is part of the Harper Government's commitment to support applied science within Canada's Economic Action Plan 2012. Natural Resources Canada is the federal centre of expertise for Earth observation data generated by satellites.

#

A Major Weather Role Now Under Contract

NASA has completed negotiations and finalized the contracts for the spacecraft and instruments that comprise the Joint Polar Satellite System-1 (JPSS-1) Satellite, NOAA's second next generation operational polar-orbiting satellite, planned to launch in 2017.

JPSS-1 will follow the Suomi National Polar-orbiting Partnership (Suomi NPP) satellite to maintain continuity of weather and environmental observations.

The final contract was signed on June 19, 2012, with Raytheon Space and Airborne Systems of El Segundo, California, for the Visible Infrared Imager Radiometer Suite (VIIRS) instrument.

The Advanced Technology Microwave Sounder (ATMS) contract was signed with Northrop Grumman Electronic Systems in April, 2012. NASA completed the JPSS-1 Spacecraft and the Ozone Mapping and Profiler Suite instrument contract with Ball Aerospace in 2011.

The contract to Raytheon Intelligence and Information Systems for the JPSS Ground System was also completed in 2011, as was the Crosstrack Infrared Sounder (CrIS) instrument contract with ITT Exelis.

These instruments form the backbone of space-based observations used for weather forecasting, and environmental and climate monitoring. The ATMS and CrIS instruments onboard JPSS-1 will be used as input for numerical weather prediction models, essential for weather forecasts beyond three days.

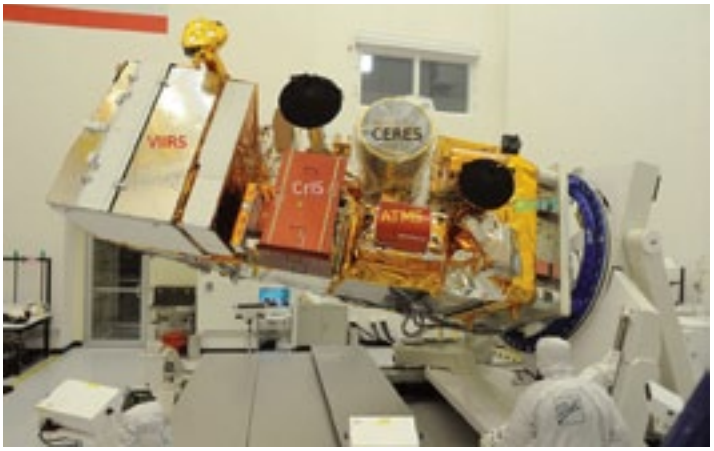
The JPSS-1 VIIRS instrument will provide imagery that is essential for monitoring severe weather in areas like Alaska and for detecting and tracking volcanic ash and wildfires. It will also gather data on a wide range of Earth's properties, including the atmosphere, clouds, radiation budget, clear-air land and water surfaces, and sea surface temperature.

The instrument contracts include work to build the instruments for the JPSS-1 mission while also providing support services for units previously launched on the Suomi NPP mission in October 2011. All the instruments on NPP have been activated and are operating nominally. For example, preliminary data is being released to aid forecasters and researchers, including images of fires in Southwest Wyoming and Southeast Idaho.

The JPSS program is the restructured civilian portion of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) program and this step represents the final action to transition the instrument contracts to NASA.

NOAA is responsible for the JPSS program with NASA's Goddard Space Flight Center in Greenbelt, Maryland, procuring and integrating the system elements.

#



Conversion Concerns Couched

T-VIPS will launch their new CP524 TS Adapter, which supports multi-stream (any input to any output), remultiplexing, and flexible format conversion at IBC2012 in Amsterdam.

The CP524 has been designed to meet the requirements of operators and service providers for flexible repacking, and delivery of content for multiple end points.

The CP524's filtering and remultiplexing features enable operators to save valuable bandwidth. Pre-production models have been successfully trialed at operators' sites and the product is now ready to ship. T-VIPS anticipates that the CP524 will be particularly popular with:

- *Satellite network operators for contribution to satellite uplink sites*
- *Broadcast service providers that offer television contribution and distribution services*
- *IP network operators offering managed video services*
- *Terrestrial network operators for the primary distribution of ATSC, DVB-T and DVB-T2 signals*

The variety of network infrastructures used in the broadcast industry today has led to increasing demand for network adaption and conversion between formats and interfaces. The CP524 solves these issues, for up to four transport streams, by offering powerful network adaption between ASI, IP, SONET/SDH and SMPTE 310.

In addition to providing conversion between interfaces, the CP524 provides powerful TS processing capabilities that are easy to use and configure. The CP524 is also equipped with reliability features such as hitless switching with diversity reception, service fallback and T-VIPS Embedded Redundancy Control (TERC) to ensure 100 percent uptime even in the case of severe packet or link loss.

T-VIPs' CP524

The CP524 is part of T-VIPS' cProcessor toolbox which makes TS processing simple and delivers flexible, cost-effective interfacing to broadcast and IP-based networks. The CP524 gives operators the capability to process, tailor and distribute signals according to their own needs.

#

Tracking Success

SatService Gesellschaft für Kommunikationssysteme will present its sat-nms ACU-RMU antenna tracking system for satellite ground station antenna at IBC2012 in Amsterdam.

Since 2004, SatService GmbH has integrated and delivered antenna tracking systems. These are integrated directly at the antenna with the Company's well know sat-nms ACU-ODU outdoor tracking cabinet. SatService now has an addition solution that is based on the highly sophisticated sat-nms ACU-ODM core module—the sat-nms ACU-RMU—fully integrated and the frequency inverters are inside

The same functionality is now delivered in a 19-inch 6RU equipment drawer which can be installed in an equipment room or in an antenna shelter. This has an advantage in harsh environmental conditions as all the electronics are protected by the equipment room itself.

Ultra-HDTV Is Coming... FAST

By Chris Forrester, Senior Contributing Editor

For a number of years, *SatMagazine.com* has highlighted the potential impact of 4000-line and 8000-line satellite TV transmissions, generally referred to as Ultra-HDTV (and 4K and 8K). This prescience has come into sharper focus these past few weeks given the statements from the likes of DirecTV and Europe's SES, and in particular comments recently made to analysts by SES' CEO *Romain Bausch*.

Bausch stated that he saw **SES** providing Ultra-HDTV (UHDTV) services to one or two of SES' key clients in "two to three years" from now. SES has major clients in its portfolio, not the least of which is **EchoStar**'s **DISH**, the U.K.'s **BSkyB** and France's **Canal Plus**. The industry is extremely aware of the UHDTV timetable, itself laid down by Japan's **NHK** as being no later than 2020 ("and probably sooner").

Indeed, *Bausch* is not alone in planning for an early UHDTV entry. The various standards bodies are all finalising their specifications. The ITU issued its specs set a few weeks ago.

SMPTE will publish its all-embracing set of *High Efficiency Video Codec* (**HEVC**) standards this summer and set them in stone in January 2013, thereby ensuring compatibility and inter-operability right down the transmission chain, and permitting equipment vendors to incorporate the new benchmarks in their own products.

These standards embrace both 4K (the 'lite' version) and 8K (the full version) variants. Which is not to say 4K is a wholly new development. Film-makers (or should that be video-makers) have been capturing high-quality 4K content for years. Most half-decent post-production houses have been using 4K for their own workflow practices for some time. Movies that have been digitally restored are usually re-mastered in 4K format.

As *Sarah Simon*, senior analyst at investment bank **Berenberg** reminds investors in a recent note:

"Although UHDTV content is currently limited, it is becoming increasingly prevalent in the cinema. Tinker Tailor Soldier Spy; Moneyball; Girl with the Dragon Tattoo; The Dark Knight Rises; Men in Black III; and The Amazing Spider-Man were all filmed with 4K cameras. We expect a steady increase in the volume of content filmed in 4K."

NHK's 85-inch Ultra-HDTV, photo courtesy of NHK

Simon adds that she believes that UHDTV could be the next battleground between cable and satellite. "DirecTV sees the ability to deliver UHDTV signals as a key competitive advantage of satellite over cable, an advantage which is likely to increase in value as television sets grow ever larger.

We note that where satellite was in the lead with High Definition—cable, IPTV and even OTT—broadcasting is now catching up as more content and channels are added in this format. PVRs have similarly been used to create a strong effect by the satellite broadcasters (which did not have the benefit of triple-play); but again, other distributors have introduced similar devices, and arguably the push towards on-demand will weaken the lure of the hard-drive anyway.

"Just as it was a pioneer in Europe of HD, BSkyB is likely, in our view, to be an early proponent of UHDTV," says the bank's report. "For as we have written previously, we believe that the competitive position between BSkyB and its peers has narrowed over the past couple of years."

Simon also accurately points out that BskyB's net subscriber growth has slowed—at least for its pay-TV products. In other words it needs a fresh 'killer app' to not only keep existing subs signed up, but to further strengthen its hand when compared to its DSL-based rivals. The same is true of Canal Plus and DirecTV/DISH Network in the USA.

"The idea of launching a new standard, which would once again put BSkyB out in front of its peers thus makes strategic sense, in our view, and is compatible with the previous strategy of the company. Indeed, if BSkyB were also to increase the number of HD exclusive channels, possibly by taking them out of the standard definition package, while also dropping the price of its HD tier (currently charged at 10.25 pounds/month), this could increase substantially the perception that HD represents value for money, prompting further penetration of the service. Subsequently, the company could introduce a new "super-premium" service in the form of Ultra HD, for which an additional fee would be charged," says *Simon*'s report.

As far as BSkyB's terrestrial rivals are concerned—and any similar services—*Berenberg* says cable and ISP-based service providers will have "considerable issues" coping with UHDTV.

Part of the problem is one of decoder boxes, which are MPEG-2 compliant, but not MPEG-4. "Ultra HD in MPEG-2 requires 80Mbps per channel, making this too bandwidth-hungry, in our view, to be commercial. Virgin Media would need to introduce a new generation of set-top boxes to handle UHDTV. BSkyB, on the other hand, could run at least a small scale UHDTV service using MPEG-4, as described below. Freeview, meanwhile, suffers from spectrum constraint anyway, and a large proportion of Freeview boxes are MPEG-2. Finally, BT Vision does use MPEG-4 boxes, but again, heavy bandwidth requirements, albeit less than MPEG-2, would mean that UHDTV would most likely be limited to households with fibre."

Sarah Simon's theory is that Step One, as far as BskyB is concerned, is to drop or reduce the extra fee levied by Sky on its existing HDTV services. This will encourage viewers to convert to HD and thus enable Sky to switch off its MPEG2 standard-definition broadcasts, and in so doing free up valued bandwidth of an UHDTV introduction. She estimates a cost of around 260m to 300m pounds in terms of new MPEG-4 boxes spread over a year or two. Some 4.2m homes currently take Sky's HDTV services, meaning there's 6m still to be converted.

The 4K Argument

CE Manufacturers

4K screens are already available for sale and, although expensive, the history is in its favour

In three years, the average price for an HD television has fallen from $4,000 to below $1,000

The average TV replacement cycle is 7.5 years, down 10 percent from just three years ago

4K HD looks set to be the enabler of high quality autostereoscopic (glasses-free) 3D

DTH Operators

Focus on premium quality: 4K HD will enable further differentiation

Content Providers

Digital Cinema, spreading fast around the globe, is already using 2K & 4K

An increasing number of movies are shot in 4K

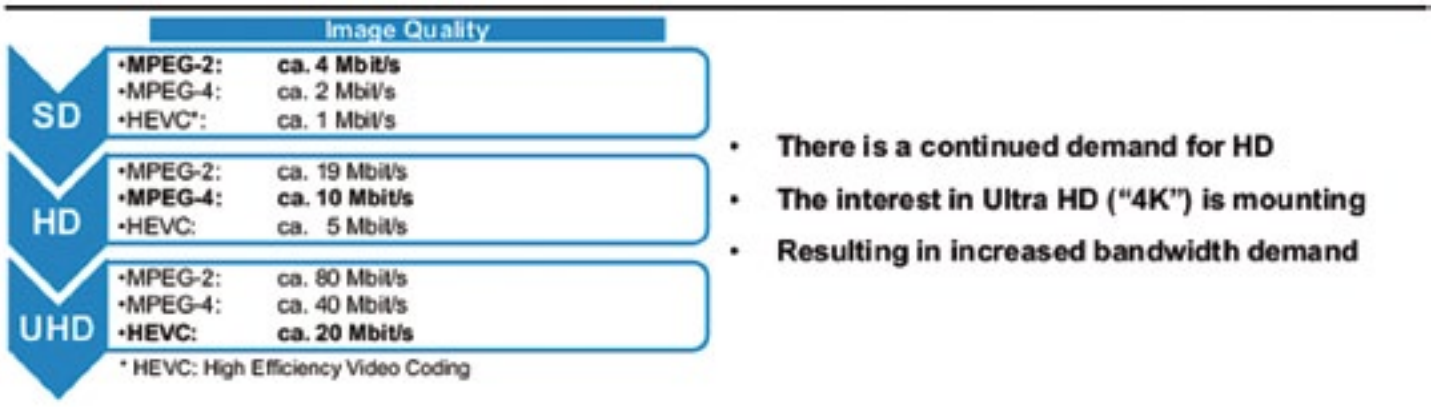
> *"Recently, both DirecTV and SES have talked about the launch of UHDTV, and we believe that it could commence in the middle of the decade in a limited fashion. Its introduction is likely to come first in mature, highly competitive pay-TV markets, e.g., the U.S. and the U.K. We expect other markets to follow with a few years' time lag."*
> *—Sarah Simon, Berenberg Bank*

She argues, "Once HD is in the majority of Sky customer homes, we believe BSkyB will plan to further differentiate between its service and that of the peers. The introduction of UHDTV is likely to be key to this strategy. If HD becomes "the new colour", then UHDTV will be "the new HD".

The phasing of the introduction of UHDTV could go as follows:

- **Switch-off MPEG-2 signals following the migration to MPEG-4**
- **Launch a limited UHDTV service on the capacity freed up by the aforementioned switch-off, charging an incremental premium for the service**
- **Gradually increase the number of UHDTV channels while dropping standard definition channels such that more and more of the user base would be pushed into the HD tier (already at a new reduced price, as noted above, of £5/month vs. today's £10.25/month, but, most likely, HD would become free at some stage, in our view)**
- **Drop standard definition entirely when HD becomes free, and apply the previously used SD-capacity to further boost the UHDTV offer, which at this point would be a fully fledged bouquet of fifty or more channels, as is the case for the HD tier today.**

"Depending on whether BSkyB chooses to launch a new HEVC set-top box, or maintain the MPEG-4 model," says the bank, "there could be either five or 10 UHDTV channels accommodated on the three transponders freed up by the previously described shift to MPEG-4.



SES: The Ultra HDTV Argument

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Ultra-HDTV Is Coming... FAST (continued)

"If the company introduced an HEVC set top box for UHDTV customers, then 10 channels could be available without recourse to additional capacity. However, if the company took a more cautious approach—testing the market appetite for UHDTV—only five would be accommodated. Arguably, such a small tier of channels might not generate sufficient interest, so either BskyB could take on additional satellite capacity and broadcast in MPEG-4, or it could make the switch to HEVC.

"At this stage, it is unclear. Either way, however, the financial implications of a small-scale launch of UHDTV would be reasonably minor in the context of BSkyB."

Speed, or timeliness to market for UHDTV, is a question that *Simon* examines closely. She recognises that UHDTV is being discussed by DirecTV, and this will almost certainly prompt a response from Charlie Ergen's Dish Network/EchoStar. France, Italy and Germany are also likely to be adopters of UHDTV, although at a slower pace than the U.K.

"We believe that UHDTV could be the next battleground between satellite and cable, and that it will be a key competitive issue in the latter half of the current decade."
—Sarah Simon, Berenberg Bank

About the author

Senior Contributing Editor Chris Forrester is a well-known broadcasting journalist and industry consultant. He reports on all aspects of broadcasting with special emphasis on content, the business of television and emerging applications. He founded Rapid TV News and has edited Interspace and its successor Inside Satellite TV since 1996. He also files for Advanced-Television.com.

"Good news for satellite"

"The arrival of a new standard that requires significantly more bandwidth than existing standards is obviously good news for the likes of SES, Eutelsat and (soon to IPO) Intelsat.

"Just as HDTV has provided these companies with substantial growth in capacity demand (three to four times standard definition), so UHDTV offers an even larger opportunity, with 8K currently requiring c.16x the bandwidth of HD if broadcast using the same compression standard.

"It should be noted, however, that the most likely situation as regards the introduction of UHDTV is that it will be 4K that is introduced first, and using the new HEVC compression standard.

"This means that a single UHDTV channel will require double the capacity of an existing HD channel in MPEG-4."
—Sarah Simon, Bernberg Bank

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What's Driving The European Satellite Market...

By Wei Li, Senior Consultant, Euroconsult

Europe is currently the largest geographic market for FSS satellite operator revenues, representing close to 30 percent of global satellite capacity leasing income.

In 2011 the satellite market continued to post considerable earnings over the previous year, with growth reported for most applications in Europe. Structural growth trends in communications traffic and digital broadcasting continue to generate higher capacity usage, as satellites remain a critical component of the communications infrastructure in complement to ground networks. In addition, continuous innovation in the satellite sector, ranging from the use of new frequencies and signal transmission techniques to the development of more efficient terminals, should result in the development of services with an increase in added value (by increasing the quality of service, and or, by reducing the cost per Mbps), consequently maintaining the attractiveness of satellite usage.

The Largest Contributor To Market Growth

Video distribution, meaning the broadcast of TV channels either direct-to-home, or to the head-ends of terrestrial networks for delivery to final users, represented close to 60 percent of Europe's total transponder demand in 2011. The growth of transponder demand for video distribution stood at 4 percent last year, a growth rate slightly lower than 2010 figures. The capacity increases for satellite pay-TV platforms were relatively limited, while usage was supported by higher demand for free-to-air satellite TV broadcasting and by distribution of channels to terrestrial networks.

Following a trial period, HD broadcasting in Western Europe has entered a business growth cycle. Although it may not represent a strong direct relay of growth in terms of revenues, HD is part of a development strategy of platforms that battle for content and offerings instead of relying on subscription growth. Until 2009, most platforms operating in Western Europe had been relatively cautious in launching HD channels, with the notable exception of Sky Digital. Following a consolidation and restructuring phase in the Western European satellite pay-TV market, historic players have reached a critical size of millions of subscribers and secured large revenues, facilitating the investment in new-generation services, including HD offerings. Other players have been slow to roll out HD services and offer fewer channels.

In central Europe, the development of TV networks, including IPTV, cable, and satellite, resulted in the multiplication of HD initiatives. Several countries in Central Europe require several satellite TV platforms, and HD serves as a differentiator. In 2007, Albania and Poland were the first countries in the region to launch HDTV services. In the last three years, a large number of platforms launched HDTV services. Consequently, HDTV services are now available in more than 10 countries, including Bulgaria, the Czech Republic, Hungary, and Slovakia.

In terms of branding, Central Europe is one of the first regions, alongside Russia and Central Asia, where an "HD-branded" satellite TV platform was launched by Hello HD in Hungary. Poland is by far the leading market in the region as the three leading pay-TV platforms in terms of HD channels offered are Polish (N, Cyfra+, and Cyfrowy Polsat). Cyfra+, with 36 channels, has the largest offering.

Overall in Europe, the 100 HD channels milestone was reached in 2008, the 300 HD channels milestone in 2010, and a total of 589 HD channels were broadcast in Europe as of year-end 2011. In the next five years, Euroconsult anticipates that the average growth in capacity demand for video distribution should stand around 3 percent in Europe—a mature satellite market. Overall, the number of channels delivered by satellite is expected to increase from around 5,900 in 2011 to nearly 7,900 in 2021. By 2021, approximately 40 percent of those channels could be broadcast in high-definition. We have a conservative view on the adoption of 3DTV for TV broadcasting while the introduction of UHD is foreseen towards the end of the forecast period.

For satellite operators, both owning and developing premium orbital positions for TV broadcasting will remain key priorities, as those positions represent key assets. Competition between operators should be strong in regions where new platforms continue to be introduced.

Challenges For The FSS Market In Europe

Mainly driven by the TV broadcasting service, Euroconsult expects a 2 percent CAGR for regular FSS capacity demand in the next decade in Europe. A number of challenges for the FSS industry should be considered in the coming years:

The general impact of the economic crisis on the telecom and media sectors. Although significant economic growth continues to be reported in emerging regions, a slowdown has recently been observed in a number of countries. This could limit or delay investments in telecom and media services (or favor consolidation), and limit growth in satellite usage.

The increasing reach of terrestrial networks, including fiber backbone networks in developing markets, and the rollout of an increasing volume of online services is likely to have an impact on satellite demand. Strong relays of growth remain difficult to find in the most mature satellite markets especially in Western Europe.

The introduction of new satellite systems will certainly result in potentially higher competitive pressure among operators.

This should combine with a larger spread of HTS (High Throughput Satellite) capacity, which refers to new generation

payloads associated with a terrestrial coverage composed of a multiplicity of small beams and includes the ability to reuse part of the frequencies in different spot beams, resulting in a larger volume of capacity sellable to customers. The alignment of demand with the increase in supply, at least in the initial take-up phase of HTS, is still to be demonstrated resulting in a significant level of uncertainty. The impact of HTS capacity on regular capacity leases is also a factor of uncertainty for at least the next five years.

HTS To Drive Telecom Services In The Future

Although the demand of regular satellite capacity for telecom service has stagnated in Europe, the introduction of new generation HTS systems (Ka-Sat, Avanti, O3b, etc.) is expected to bring new dynamics to the market, despite the fact that use of HTS capacity remains nascent in the European satellite market. Overall capacity usage is estimated to stand at an equivalent of approximately 1 Gbps in 2011.

Despite uncertainties, the addition of large HTS supply in the coming years, by multiple operators, should increase customer awareness and support a progressive usage of HTS capacity. The ultimate interest for customers is the access to higher data rates at a lower cost per Mbps when compared to regular systems. It's important to highlight that demand forecasts between HTS and regular are not "interchangeable"; certain customers and applications should continue the privilege to use regular capacity due to their coverage and frequency needs.

On the opposite side, HTS capacity should allow the signing of large capacity contracts that are usually not allowed due to the size of a regular payload. Those large capacity contracts would not occur without the availability of HTS capacity. We anticipate that HTS capacity usage could increase to about 130 Gbps by 2021, driven by telecom applications.are now available in more than 10 countries, including Bulgaria, the Czech Republic, Hungary, and Slovakia.

About the author

Wei Li is senior consultant at Euroconsult and editor of Maritime *Telecom Solutions by Satellite—Global Market Analysis & Forecasts, Aeronautical Telecom Solutions by Satellite*; *Global Market Analysis & Forecasts, Mobile Satellite Communications Markets Survey—Prospects to 2020*, and *Company Profiles—Analysis of FSS Operator*, and is a main contributor to *Satellite Communications & Broadcasting Markets Survey – Forecasts to 2021*. Euroconsult is a consulting firm specializing in satellite applications, communications, and digital broadcasting, providing strategic consulting and analysis, comprehensive research reports and forecasts. Mr Li can be reached at *li@euroconsult-ec.com*.

Executive Spotlight—Jacob Keret, Sr. V.P. Spacecom

Jacob Keret brings to his position more than 20 years of global business and management experience in the aerospace and telecommunications arena. Jacob served for six years as vice president of marketing and sales at Starling Advanced Communications, an innovator in satellite communication systems. Prior to that, Jacob co-founded Spacecom Satellite Communication Services, a service provider for AMOS satellites.

SatMagazine (SM)
Good day, Mr. Keret. Would you inform our readers of your background?

Jacob Keret
I am the Senior Vice President for Sales in Europe and North America for Spacecom, the operator of the AMOS satellite fleet. My career in the satellite and aerospace business spans just over 20 years.

I began my career with Israel Aerospace Industries and in 1996 moved to Spacecom, where I was responsible for marketing and sales in the Central and Eastern Europe (CEE) region. I was with the company for about a decade before I moved to another satellite venture. I rejoined Spacecom in 2011 and am very excited by the company's forward-thinking progress.

As a multi-regional satellite operator, we are in an excellent position to grow and serve our clients with highly reliable, excellent quality services.

SM
As a co-founder of Spacecom Satellite Communication Services, how did you manage to build your Israeli firm when competing against both U.S. and European industry heavyweights?

Jacob Keret
Spacecom's guiding philosophy is to do all that it takes to address our customers' needs. We are committed to being full partners with our clients. As a newcomer to Europe in the early 1990s, our team developed an innovative business operation ethic that allowed us to be very flexible yet professional in our service offerings. We're able to move quickly and act smartly. Our engineers, technicians, sales people and problem solvers know what to do and work quickly to answer our clients' needs. Many customers have renewed their business commitments with us, signifying this model's success. We do not compete with our customers, nor do we operate our own teleports. Rather, we focus on our core competencies and enable our partners to provide full solutions, including both satellite and ground services.

SM
What do you see in the future for Israeli satellite and space endeavors? What are your hopes and plans for the next year or so?

Jacob Keret
The future looks bright for our local industry, as well as for Spacecom. Israel's satellite industry has years of successful research, development and implementation. Besides hosting a full cadre of scientists and technicians, and an impressive array of ground stations, the country has a burgeoning satellite services industry. In the coming years, I expect to see the industry continue to grow and maintain its international stature. Remember, not many countries can claim "space expertise." Israel is one of a handful of countries that builds and launches vehicles into space.

SM
What does the future satellite launch schedule look like for AMOS by Spacecom?

Jacob Keret
The AMOS constellation currently consists of the AMOS-2 and AMOS-3, which serve Europe, the Middle East and the U.S. East Coast from the 4 degreees West orbital position, as well as the AMOS-5 at 17 degrees East, which serves Africa with connections to Europe and the Middle East.

We are moving forward in expanding our AMOS brand with new satellites that will offer fresh services. We are currently planning to launch AMOS-4 in 2013 to the 65 degrees West prime

orbital position. AMOS-4 will service more than 80 percent of Russia's population and the entire Indian Subcontinent in Asia.

We are scheduling the launch of AMOS-6 in 2015 to the 4 derees Westorbital position. AMOS-6 will provide more services to Europe and the Middle East, and expand our services to Africa. This satellite will be substantially larger than AMOS-2 and AMOS-3 combined, and will include an expanded footprint over Western Europe and new Ka-spot beam technology for broadband services in Africa and the CEE region.

In addition to building new satellites, our strategy includes looking at other opportunities for cooperation in new and existing markets. We are always excited by the future and our development. This includes seeking and securing new orbital locations that fit with our business strategy as a multi-regional satellite operator providing high quality, reliable satellite services to growing markets.

SM

Spacecom recently entered the African market with their AMOS-5 satellite. How is the market performing for AMOS-5 and which services offered by your Company are experiencing the most demand? Why do you believe this is occurring?

Jacob Keret

AMOS-5 began commercial operations on January 25, 2012. At launch, we had pre-sold more than 50 percent of the satellite's capacity to a variety of telecom providers, government agencies, broadcasters, teleport service providers and other communications entities. Since then, we have experienced further growth and are continuing to close more deals. This will continue into the future AMOS-5's pan-African C-band beam and three Ku-bands cover the continent and provide connectivity to Europe and the Middle East. The satellite reaches all regions in Sub-Saharan Africa from East to West and North to South. The C-band completely blankets all of Africa with its powerful transponders, enabling connectivity to Europe and the Middle East, while our Ku-bands target the various regions of French-speaking Africa, Southern Africa and Central Africa.

AMOS-5 is one of the first satellites designed specifically to serve Africa. Its high elevation angle offers an excellent reception for satellite dishes, which is especially relevant in urban areas where structures can cause interference with satellite signals. It's hotspots are strategically placed to ensure the widest coverage and allow one hop from one place to another in Africa, parts of Europe and the Middle East. Thus, our appeal to communications providers is excellent because we provide three major benefits: a high-power satellite with wide coverage designed specifically for Africa.

We are currently pursuing deals not only for broadband needs but also for broadcast, data and other applications. Our client base is diverse, including both international and local African telecom providers, government agencies, broadcasters, non-governmental organizations (NGOs), teleport service providers, cellular operators and other communications entities. AMOS-5 enables them to offer a wide range of satellite services, including direct-to-home (DTH) broadcasting; very small aperture terminal (VSAT) communications; broadband Internet; telephony services; data trunking; cellular backhaul; and video distribution.

SM

Spacecom remains quite strong within its "traditional" markets—what new markets are you hoping to enter over the coming years?

Jacob Keret

AMOS has traditionally focused on emerging markets. We like emerging markets. This has become our expertise. As we look around the globe, we view many of these markets as worthy of our efforts including Africa, the Commonwealth of Independent States (CIS), Eastern Europe and Central and South Asia. We will continue pursuing them. Our strategy targeting these growth areas continues to pay dividends. Our teams create a business model based on bringing added value and top of the line practices into these emerging markets. Based on our teams' experience, we are optimistic that Spacecom will be able to execute our plans in being a multi-regional satellite service provider.

As mentioned earlier, next year we plan on launching AMOS-4 to the 65 degrees West prime orbital position. This position over Asia will enable us to serve over 80 percent of Russia's population and the Indian Subcontinent with Ku-band and Ka-band frequency capabilities. We are excited about the possibilities this opens for us in these regions. Our research posits that there is a growing need for capacity there, particularly for broadband Internet and traditional broadcast and data services.

SM

How has Spacecom dealt with the impacts of the international financial crisis, and how has such impacted satellite services? How is your firm managing the global monetary turmoil? Can you share with us your firm's recent financials?

Jacob Keret

As we all can see, there is no escaping the fallout from the ongoing international financial turmoil. As a business, we do not operate in a vacuum. We are facing the same myriad challenges as everyone in the business. We are fortunate that our management, with vast experience in the satellite industry, has made and implemented a variety of plans and programs to deal with issues resulting from economic unrest.

Despite global financial uncertainty, I would say that Spacecom has done well. We are careful with our resources, including finances, materials, contracts and relationships, and are proud that our most important resource – our employees are ready for every contingency. Obviously, the markets in which we operate are not immune to fluctuations, but we are happy with our positions. In 2011, we added an additional DTH platform to the three existing ones anchored at our 4 degrees West orbital position. We look forward to a long future with them. We are also happy with our business program in Africa and the fact that we are able to sell more and more capacity on AMOS-5.

In 2011, we reached $83 million in revenues, compared with $77 million in 2010. With the launch of AMOS-5 in December 2011 and the start of its commercial operations in late January of 2012, we are looking forward to further growth this year.

SM

How is Spacecom finding and locating suitably trained professionals to fill your crucial engineering and technical positions? Is your Company facing a similar dilemma to U.S. firms in that candidates for hire simply don't have the math and science training necessary to "do the job"?

Jacob Keret

Over the past few years, Spacecom has entered a new period of growth. We are not only selling services but also dealing with the development and construction of more than one satellite concurrently. This means that we've needed to develop new, rapidly expandable engineering and technical capabilities. Within a short period we found, trained and put to work an entire new engineering unit. The company almost doubled in size with this and new technical units. In addition, we relocated some of our staff to be "on-site" for the construction of AMOS-5.

I am happy to say that we did this efficiently and with fewer issues than those you mentioned. Israel has a highly trained group of university graduates from top technical schools and a good number of immigrant scientists and technicians who understand rocket science. We also are able to find recent graduates of Israel

Defense Force (IDF) units who join our technology group. In short, our ability to recruit and maintain an effective technology and engineering group has not been a challenge.

SM
How can our industry and how does Spacecom, both support STEM training for students and entice new professionals into the various fields of endeavor?

Jacob Keret
I agree that one of the most important parts of our industry is its capability to entice savvy, technologically oriented young women and men. In Israel, we have programs for bright high school graduates to learn new technologies and put these talents to use in various branches of the IDF. Following their service, these young people often join the technology sector. They are the brains of our future. Starting programs like this in other countries would be a blessing for the industry. If the military takes part in the program to help with funding and placement, this can also be an excellent partnership for the private sector.

SM
What are your thoughts about hosted payloads? Has Spacecom entered into any discussions for such?

Jacob Keret
In recent years, governments and satellite operators have entered into detailed discussions regarding hosted payloads. In some cases, there have been implementations. The economic advantages of such endeavors have to be valid for both parties involved, and the technological and engineering challenges need to be met satisfactorily by both sides. We've had some discussions in that respect, and we are always on the lookout for new opportunities that will enable us to grow our business. However, it is still premature to elaborate further.

SM
Lastly, given your 20+ years of professional work within our industry, when you look back upon your career, what projects bring you the most satisfaction for a job well done?

Jacob Keret
The real success and satisfaction in this job is when I see that a satellite is up in orbit and working. It makes me feel good when I see that everything is working properly and that the services we've promised are coming into fruition. After 20 years in the industry, I have seen much. I expect that 20 years in the future, I will see more.

Spacecom is now a multi-regional satellite operator, and this is a tremendous testament to our efforts. I am proud to be a founding member of the group that brought the company to its current position.

Advantech Wireless—David Gelerman, Founder + CEO

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

David Gelerman
Over the last few years, we have increased our focus in the Broadcast segment. Our DVB standard [compliant] products have brought us project wins in both News Gathering and digital television distribution (*e.g.,* U.K., France and U.K. Armed Forces). We have also experienced good business in the Defence segment for our RF, Antenna Control and VSAT product lines.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

David Gelerman
We still see the infrastructure projects in Communications and Entertainment as being particularly good. These remain key investment areas for national governments and we have great solutions and great success in being selected as the technology providers.

SM
How is your Company coping with the euro fluctuations?

David Gelerman
Fortunately, we have very low exposure to the Euro and so this has not presented a direct problem.

SM
How will the European markets impact global, as well as your Company's business opportunities?

David Gelerman
In spite of economic uncertainty related to some European countries, we have not experienced a slowdown in our business in Europe.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

David Gelerman
Some of our customers have been specifically delaying their projects while they observe the current financial fluctuations. In response, we are promoting our range of low start-up cost systems, which can then be upgraded almost instantly (by software keys) as market situations change.

We have also introduced new technologies, such as the use of GaN in our RF products, which help to reduce the *Total Costs of Ownership* (**TCO**) and improve reliability (both important factors in a cautious market).

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

David Gelerman
We have just released the full line of GaN SSPA/BUCs in C-, X- and Ku-Band and our new Discovery family of scalable VSAT HUBs. This platform is a new development in our DVB-RCS/S2 platform that simultaneously encompasses TDMA-DAMA and SCPC-DAMA access schemes.

About the author
David Gelerman founded Advantech Wireless in 1988, serving initially as President and, since March 2006, as Chief Executive Officer. Prior to founding the Company, Mr. Gelerman held various positions at Nortel Networks, including Manager of the Transmission Networks Division, where he managed and supervised teams which developed several key Point-to-Point (P2P) radio systems. Mr. Gelerman holds a Master's of Science degree in Electrical Engineering (MSEE), specializing in Wireless Communications and Broadcasting from the Moscow Institute of Telecommunications.

Late Breaking Advantech Wireless news...
Advantech Wireless has renewed its commitment to providing world-class, carrier-grade, standards-based communications products by joining the Metro Ethernet Forum (MEF). The MEF, as the defining body for Carrier Ethernet is a global industry alliance comprising more than 195 organizations including telecommunications service providers, cable MSOs, network equipment/software manufacturers, semiconductors vendors and testing organizations. The MEF develops technical specifications and implementation agreements to promote interoperability and deployment of Carrier Ethernet worldwide.

Every product Advantech Wireless manufactures with an Ethernet interface will be tested against MEF's rigorous international standards. These products include Solid State Power Amplifiers and BUCs, our newest GaN Technology-based HPAs that can easily replace older TWTA based devices, our new Discovery Series VSAT Hubs and Terminals, Point to Point Microwave Radios, Routers, KR Series Military products and more.

Bridge Technologies—Simen K. Frostad, Chairman

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Simen K. Frostad
Since the introduction of IP-based packet switched media services into the industry, no media business has been unaffected by this new technology and the consequences have been profound. There is now far more complexity in the media transport and production chain, and the mix of technologies used demands a complete monitoring and analysis system capable of giving the overview needed to understand media health in real-time. The legacy monitoring tools from the broadcast world, and those developed specifically for IP, do not provide this overview capability: they can only see their part of the hybrid. Bridge Technologies focuses on developing technology that media businesses need to monitor from end-to-end, through every stage of the chain.

Our systems and products cover all the different aspects of media transportation and production; from satellite delivery systems with both transponder content validation and RF parameter checking, to 10GigaBit OTT services validation in core and edge CDN delivery networks. We produce systems that give OTT operators an unprecedented ability to monitor the operating conditions and service quality experienced on individual viewer devices (smartphones, tablets, and so on).

We believe every operator needs a diverse, but coherent, toolset today to manage this complexity effectively, and to provide high service standards with even more diverse media. And by every operator, we mean both the traditional broadcast providers, and the telcos, and those who have more recently become media and data providers, such as utility companies.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Simen K. Frostad
We see the majority of IP and cable media providers using satellite as the main feed into their own production head-end. Satellite is ideal for distribution and contribution needs and we will see a significant growth in the IP packet distribution and contribution use of satellites. There's a lot of actual and potential growth in the traditional media market (delivery to fixed screens at domestic and business premises) and in more recently developing mobile markets (such as maritime entertainment and internet access), as there is also in industrial applications such as SCADA.

SM
How is your Company coping with the euro fluctuations?

Simen K. Frostad
We can turn that around and momentarily remember how business was done before the Euro and the horrible fluctuations between the different currencies in the Eurozone.... That made intra-European business very difficult and unpredictable, so by comparison today's challenges are much easier to handle. Fluctuations are not ideal for long-term business, but they have been acceptable over the last year or so.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Simen K. Frostad
Both in Europe and globally, the advent of IP based media, and more recently OTT services, means there is massive change in the media industry and huge demand for the technology to implement it. Our business outlook is vibrant and we see no immediate threat to growth other than some delays in larger projects caused by the general climate of financial uncertainty.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Simen K. Frostad
Apart from a generally unhelpful attitude sometimes conveyed by the financial industry to business in the wake of the banking crisis, we believe the European marketplace to be sound and solid. The challenge for any company is to keep on developing new products that meet real market needs, and our track record of success to date shows that we've been able to do this well. In fact, when macro-market conditions are difficult, it does act as a spur to innovation and those companies that can react to these conditions best, and provide products that customers can build business with while reducing costs—those are the companies that do well.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Simen K. Frostad
In the last 12 months we've come to the market with some important new technology firsts, and our innovation continues this year. We have great news for the upcoming IBC2012 show and I can guarantee everyone visiting our stand (1.A30) will not be disappointed.

About the author
Simen K. Frostad is Chairman and a co-founder of Bridge Technologies. With 22 years of industry experience, Simen founded Bridge Technologies in 2004, after creating the world's first IP/MPLS contribution network for Scandinavian sports coverage. Simen had previously built the first multi-camera hard disk recording system for episodic drama production in 1998, and the first nonlinear sports editing facility during the 1994 Winter Olympics.

Late Breaking Bridge Technologies news...
Bridge Technologies has appointed Video Progetti srl as its distributor and business partner for Italy. Video Progetti will offer the complete range of Bridge Technologies digital media monitoring systems to its customers in television, digital cinema and telecommunications, with support and consultation services.

Video Progetti has more than twenty years' experience in the field, supplying and integrating solutions for clients ranging from large broadcasters to smaller service providers. Bridge Technologies systems offer true end-to-end monitoring and analysis capability from satellite to set top box and viewing device, giving the operator total control over delivery chain performance and the customer's quality of experience.

Cavendish Trust Isle of Man—Tina Rawlinson, Director

SatMagazine (SM)
Would you please explain to our readers what your Company's presence is within the European satellite communications and ancillary market arenas?

Tina Rawlinson
Cavendish Trust is a provider of corporate services to companies that are joining the increasing number of international space related entities, which are establishing a base in the Isle of Man. Being headquartered in the Isle of Man, which is recognised as one of the world's best regulated offshore jurisdictions for international business and finance, we are ideally placed both geographically and in terms of specific industry experience to advise and support a wide range of satellite and space related companies with a European focus.

SM
What sort of experience does your Company possess within this region of the world?

Tina Rawlinson
The senior members of the Cavendish team each have in excess of 20 years experience in the provision of internationally focused corporate services. As part of this service provision, we have a strong commitment to the space and satellite arena. Indeed, two of our senior staff are graduates of the ISU.

SM
Are you focused on any particular segments, due to their growth potential? (i.e., launch, manufacturing, teleport, security, milsatcom, imagery, satellite broadcast, and others)

Tina Rawlinson
To date, Cavendish has been focussed on the satellite market as a consequence of the huge growth in the Isle of Man satellite industry in recent years. (See 'Onward Onward Onward' article in the Insight section of the *July/Aug issue of SatMagazine*). As noted in that article, what is particularly exciting today, is that the island's space industry is now expanding into other ancillary markets which Cavendish is also well placed to support.

SM
What market segments in Europe do you believe are the most promising for your Company?

Tina Rawlinson
We are well placed to provide support to all internationally focussed businesses with the space related arena being only one of the many industries which can possibly benefit from an Isle of Man presence.

SM
What have been among your most successful projects for this market and why?

Tina Rawlinson
The breadth of Cavendish Trust's experience provides for a remit that is broad and far reaching. At any given time, we are engaged in a range of industry related projects but, by its nature, much of the work we undertake is on a confidential basis.

SM
What makes the European market segments so unique?

Tina Rawlinson
Europe is steadily carving out a position as a world leader at the cutting-edge of space exploration and research, although the EU's space ambitions tend to be overshadowed given other issues which presently tend to dominate the EU agenda. In our view, there is a definite reason for optimism in respect of the European space and satellite sector.

As examples, in June, the European Space Agency (ESA) announced its commitment to a new space mission to explore dark matter deep inside the cosmos, using the Euclid telescope. Also the ESA's fourth ever long-term mission to the International Space Station (ISS) has just been completed which has included painstaking experiments to contribute to our understanding of a range of cutting edge scientific areas, from solar research to fluid physics. Another space exploration milestone was passed in May when the ESA announced it would undertake a new mission to further explore the moons surrounding planet Jupiter.

Europe has also been participating in some highly lucrative projects in various space-related industries such as the burgeoning rocket launcher industry. Take Vega, which was launched in February from French Guiana. Because it can carry more than one satellite at the same time, experts anticipate Vega's demand will be huge. And let's not forget Ariane V and Soyuz, both valuable parts of the European launcher family. The combined capabilities of these three launchers mean that Europe can now cover all the main launcher needs that the industry throws up, from relatively limited scientific missions to larger, more ambitious projects. That's a unique position in itself.

Europe is also arguably the most important space cooperation partner of the US. For example, the ESA's contribution to the ISS is crucial for the Americans, as it not only provided the Columbus research module, but also the Automated Transfer Vehicle (ATV) used to transport cargo to the station. This support is crucial given the end of the U.S. Shuttle programme.

Europe also has great potential to intensify cooperation with other leaders in the field. For example, working with Russia in the area of GPS and carrying out a mission to explore potential biological activity on the planet Mars, through the Exo Mars project. So the future looks extremely positive for the European space industry.

SM
The challenges are numerous for entry into, and for business sustainment within, this area of the world. What do you see as among the most formidable challenges to surmount?

Tina Rawlinson
As an Isle of Man based company, we are often faced with the stigma attached to the word 'offshore'. A rather more accurate description of the Isle of Man would be 'a tax neutral international business platform.' Fortunately more and more international governments and companies are realising that this is in fact the case.

Despite the outdated 'offshore' stigma, the Island has become something of a magnet for the space and satellite industry, evidenced by the fact that four of the top ten satellite operators are now based here. We certainly now have a critical mass of highly successful businesses here which has underpinned the sector, again as covered by the '*Onward Onward Onward*' article (Insight section July/Aug issue of *SatMagazine*).

Nevertheless, there is still a lack of knowledge about the enormous advantages and benefits that the Isle of Man has to offer satellite related businesses. That is why, as a service provider, we feel it is important to take the positive messages about the Island out into the market place, including Europe. In this respect, Cavendish is fully behind the efforts being made by the Isle of Man Government to promote the Island's good reputation. The Government is totally supportive of the space and satellite industry and even has its own dedicated space department.

We are also fortunate to have a world class organisation as part of the Isle of Man space team, ManSat, which handles all orbital filings on behalf of Isle of Man based companies with the International Telecommunications Union (ITU) in Geneva.

SM
Given the state of the global economy, how do you rate the European market as far as its viability for income generation and growth over the next year or two?

Tina Rawlinson
We believe there are good prospects for growth as recent reports confirm the space industry continues to buck the recessionary trend. Further, the recent shift away from space business being a Government driven industry to a commercial industry can only mean a move towards a new and vibrant sector with huge growth potential.

Despite the on-going euro pressures and the fact that Europe is struggling with economic downturn, the overall outlook for the bloc's space industry is a welcome and refreshing contrast. Though Europe will have to tackle some massive challenges, and progress will not come cheaply, we believe that Europe's future in space is in good shape.

SM
Where do you believe the opportunities for growth exist?

Tina Rawlinson
Without doubt, in telecommunications. This will keep demand high in satellite related arenas which in turn will also benefit ancillary businesses.

SM
How is the euro crisis affecting your Company and how are you dealing with these financially tough times?

Tina Rawlinson
While the Isle of Man is an international business centre, we are outside the Eurozone and our currency is sterling, so we are insulated somewhat from the problems associated with the euro. Until now, the European market has not traditionally been a major source of business for the provision of international corporate services. However, given the on-going euro crisis, we believe there has never been a better time for European based space and satellite companies to consider the benefits of safe haven jurisdictions such as the Isle of Man.

SM
What applications are driving the demand for satellite-delivered communications in the European region?

Tina Rawlinson
Reports indicate that the ongoing demand for improvements in mobile and associated security applications continue to drive all satellite and ancillary services.

SM
What do you see as the major focuses for driving existing and new business in this arena?

Tina Rawlinson
Competition in the telecommunications arena is massive and will continue to be massive for the foreseeable future. The continuing quest for technological advancement and to find the next 'big thing' is a powerful force. This is driving the industry forward.

SM
How do you believe the European satellite market will impact global, as well as your Company's business opportunities?

Tina Rawlinson
Given the hugely significant role that satellites now play in the earth's infrastructure, no section of the planet, Europe, Asia, or the Americas can afford not to grasp the importance of the wider satellite market. As previously mentioned, the European market is becoming increasingly influential. At the same time, the Isle of Man is enjoying a burgeoning reputation in the global space and satellite industry, so there is every likelihood that this will lead to further business opportunities within Europe and elsewhere.

About the author
Tina is a shareholder and director of Cavendish Trust with responsibility for a portfolio of international clients as well as joint responsibility for most of Cavendish Trust's internal functions. as well as an emphasis on business development, marketing and personnel. Tina has 20 years of experience within the international corporate and trust service arena.

The Colem Group + Crystal Solutions—Martin Coleman + Roger Franklin

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Martin Coleman + Roger Franklin
Colem has supplied monitor and control systems since 1997. Our initial focus in Europe was the United Kingdom (U.K.) and Scandinavian markets. From this it led to many projects, many worldwide. In particular, Colem worked with several major broadcasters and news agencies bringing new Network Management System (NMS) technologies to these demanding users. The next step for Colem was the specialization of the embedded NMS for pan European SNG and Flyaway operations. Our technologies now include the management of wireless camera systems in Belgium, Denmark, Italy and the U.K.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Martin Coleman + Roger Franklin
Video distributors (TV Networks, DTH, Cable Head-ends, Network Originators, and so on) continue to hold a lot of potential for Colem. Every year the number of video channels increases, and the number of distribution methods continue to increase as well. This is driven by the decreasing cost of adding additional channels and distribution methods while the consumer demand increases. The ability to create and distribute channels targeting niche markets is becoming more and more economically feasible. The economics requires video distributors to provide more services while maintaining existing staffing levels. This scenario demands automation systems to monitor and ensure reliable distribution of content. A prime example is the need for automatic uplink site diversity of Ka-band DTH video that can be interrupted by heavy rain, which Europe has experienced a lot this year.

SM
How is your Company coping with the euro fluctuations?

Martin Coleman + Roger Franklin
Being a U.K.-based company has required Colem to assume a bit more risk with regard to Euro fluctuations when dealing with companies in the Euro zone. When possible, quotes are issued in GB Pounds Sterling; otherwise, the number of days which a quote is valid has to be shortened. This also gives Colem a reason to encourage our customer to get projects completed as quickly as possible.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Martin Coleman + Roger Franklin
Much of the global growth in the satellite industry is in the regions of Africa, The Middle East and India. Europe is well positioned to serve those markets, so Colem targets the systems integrators and major service providers that are based in Europe. This growth has been good for both the European market of equipment and service providers as well as Colem.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Martin Coleman + Roger Franklin
Apart from the fluctuations in the Euro, the biggest challenge is helping European systems integrators communicate the nuances of ad-driven video channels that are prevalent in the North American market. Once the nuances are understood, control systems, like the ones Colem provides, can increase the flexibility, efficiency, and reliability of those ad-driven video channels. To assist Colem, we are partnering with Crystal Solutions from the USA which is the dominate control system provider to the major North American TV networks. Crystal has developed very interesting applications germane to live sports and news broadcasters, as well as advertising revenue protection solutions that complement Colem's strength in the SNG uplink and scheduling sector.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Martin Coleman + Roger Franklin
Automated site diversity switching is a key technology that the Ka-band marketing is requiring; Colem and Crystal have proven solutions that are available for immediate delivery. Another key component is a new technology that links the control system with scheduling systems and will greatly increase efficiency while maintaining costs.

Colem intends to migrate that new technology to our Auto-Deploy systems, thereby ensuring that SNG (Satellite News Gathering) operations become more effective, simple to use, and interference free.

Finally, additional automated monitoring systems that include transport stream analysis and spectrum monitoring and recording are product offerings that help our customers become aware of potential problems and RF interference so they can minimize, or eliminate, down time.

CPI International, Inc.—Andy Tafler, Vice President

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Andy Tafler
CPI has been active in the European market since the 1970s, with established sales offices in many countries and a company-owned service center in the Netherlands since 1988. Since high power uplink amplifiers are typically installed into larger systems, we've often focused more on Earth station integrators than the operators themselves. However, since Europe has a significant number of uplink operators who build and maintain their own facilities—Inmarsat, Intelsat, Arqiva, SES, Telespazio, the BBC, BSkyB, and Eutelsat to name a few—we have developed good relationships directly with many end-users as well.

In the old days, the better part of the market was centered around broadcasting and telephony. Usage of satellites for the latter application has largely subsided over time, but it has been more than replaced with strong opportunities in high throughput broadband, military, and mobile applications. Now, with the integration of the broad line of Codan Satcom solid state products into the CPI fold after our recent acquisition, we will be able to address an even larger part of the European market including the growing maritime, energy and mobile terminal markets.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Andy Tafler
One of the largest growth areas for us is in terminals for high throughput broadband systems. Growth in European broadband subscriptions is due to grow substantially in the next 10 years and satellite operators are gearing up for that with more and more Ka-band transponders, which are well-suited for that use. There is also increased demand for high definition television, driven by live sporting events, on-demand viewing, and the efforts of satellite carriers to keep up with cable in their channel offerings. This also affects Ku- and DBS-band. With the Codan Satcom acquisition we will now more fully participate in the expected growth in European maritime and mobile markets for both commercial and government applications.

SM
How is your Company coping with the euro fluctuations?

Andy Tafler
Since we manufacture in North America, we obviously benefit from a strong euro. Most of our larger competitors are North American so they tend to be affected in the same way. However, our business is world-wide, so we are used to currency fluctuations and address this challenge by ensuring our products are industry-best in cost and by continuing to offer value to our customers in performance.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Andy Tafler
Europe and North America are often the "early adopter" markets for new applications that drive satellite demand. These include high definition television, higher and higher speed broadband IP, etc. So, in a sense, a portion of the growth in world markets is dependent on application success in European and U.S. markets. As the world's largest HPA supplier, we naturally benefit from this growth.

SM
What obstacles do you see facing your Company in the European market looking forward? How do you plan on overcoming such challenges?

Andy Tafler
CPI is a highly respected supplier of HPAs, in Europe as well as the rest of the world. We don't expect that we will face any obstacles particular to Europe. Although we manufacture in the United States and Canada, this has never impeded our European business.

Our customers tend to buy the best value products wherever they are made. At present, Europe has a number of economic challenges that could affect everyone, and we certainly wouldn't be immune from those if they started to affect the growth of overall satellite requirements in the short and medium term.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Andy Tafler
CPI is excited about its acquisition of Codan Satcom and Locus Microwave, which has greatly enhanced our solid state product line, and which will contribute greatly to our solid state product development capabilities. Solid state technology is on the verge of making some impressive breakthroughs, and in the Fall we'll be showing some of them at the IBC meetings in Amsterdam.

On the traveling wave tube side, we are continuing to push the envelope with respect to higher power, wider bandwidth, higher linearity and smaller size and weight at Ka-band and other frequencies as well as leading the way in power efficiency in all frequencies and power levels.

About the author
Andrew E. Tafler became a Vice President of CPI in December 2005. Prior to this Mr. Tafler was Division President of the Satcom Division in May 2004, and previously his title was Vice President of Operations for the Satcom Division from 2000 to 2004.

ESOA — Eric Béranger, Chairman

SatMagazine (SM)
Please tell our readers about European Satellite Operators Association's (ESOA) focus, and history, within the various European market segments

Eric Béranger
ESOA represents the interests of Europe's satellite operators vis-à-vis Brussels and other regulators. Since its creation in 2002 ESOA has grown to be the only satellite association worldwide that brings together all European satellite operators represented by their CEOs on its board.

At its inception, ESOA worked on Europe's early attempts to organise space policy at European Union level, well before the EU had any official competency in space matters. Its focus evolved following policy developments to work on the switch from analog to digital transmission, knowing that the satellite sector has lead transmission in the newest formats, from standard digital to high definition to ultra high definition and 3D transmission; the earliest attempts to bridge the digital divide with Commissioner Liikanen at the turn of the century; and the review of the Electronic Communications Framework.

Today ESOA's focus is on ensuring a level playing field for satellites in an era when policymakers are pushing for subsidies and investments into terrestrial infrastructure to bring ultra-fast broadband to all citizens and on ensuring that satellite has ongoing access to the spectrum it needs now and in the future to continue to provide its essential services the world over.

SM
What European SATCOM sectors do you believe offer the most potential for your association's companies' growth and why?

Eric Béranger
Different service sectors provide different members growth opportunities. More generally however it is worth noting that as satellite operators tend to provide essential communications infrastructure and 'everyday' services that are not cyclical or dependent on the economic climate but that are often based on long-term contracts, we are able to maintain growth at times when other sectors might struggle. This explains the constant growth rates that many operators have shown over the last few years. Those service sectors include broadcasting, where satellite continues to be the most efficient means of transporting video content to masses—an important aspect considering that linear and live TV viewing, in increasingly better definition, is expected to continue growing.

At present, for instance, HD services are a key growth driver in this segment, and this may also be the case for Ultra-HD viewing. Also government services including secure and emergency services remain an area of ever increasing growth, noting the uncertainty and increasing number of vulnerabilities the world is exposed to. It's worth also noting that mobile services—for both maritime and air—are becoming increasingly sophisticated and, hence, represent a growth sector for mobile operators in particular and finally perhaps broadband via satellite is worth mentioning as a market with enormous potential given that Europe still faces a digital divide problem of some 10 million households.

In addition, because of the ability of satellite services to provide connectivity over broad geographic areas, our sector also allows European companies to seek growth in the global markets—from providing broadband infrastructure for private data networks in emerging markets to distributing media content to new audiences in remote regions.

SM
How are the European satellite and related companies coping with euro fluctuations?

Eric Béranger
Different companies have different approaches on which ESOA will not comment.

SM
What obstacles do you see facing the various companies that are member of your association? How do they plan on overcoming such challenges?

Eric Béranger
Satellite operators are central to many broadcast, telecoms, Internet and data networks, but we are a relatively small industry within this overall TMT sector, still holding a key role. Collectively through ESOA we are working to foster a better understanding and visibility of our role so as to ensure ongoing and unfettered access to essential frequency spectrum. One initiative that ESOA is taking to achieve this is to organise a showcase of critical satellite applications to Brussels policymakers which will take place on September 27th 2012.

SM
What new technologies/products will European companies be working on and/or releasing over the next few months?

Eric Béranger
ESOA members are innovative companies who will continue to develop attractive products and services that maintain the relevance of satellites in the overall communications mix. Satellite continues to play an important role, specifically in the field of broadcast distribution of new bandwidth heavy TV applications, which in the not too distant future will include technologies such as Ultra HD (also known as super Hi vision).

Just to show the scale of the market that satellites serve for DTH, NSR estimates that out of a total 1.1 billion TV homes worldwide, up to 20 percent receive channels on a pay-TV or FTA basis.

Delivering Quality of Service for client broadcasters is a key concern for all ESOA members, particularly as the number of users accessing satellites continues to grow. This issue has driven the initiative to introduce Carrier ID, a stamp on DVB uplink signals that will enable satellite operators to more efficiently identify transmissions to their satellites and thereby accelerate coordination with Earth station operators in the event of signal interference. Quality assurance of DVB satellite transmissions is engaging the satellite community at large, including satellite operators, encoder and modulator manufacturers, broadcasters and uplink providers.

The effort is also supported by three international associations: the World Broadcasting Unions-International Satellite Operations Group (WBU-ISOG), the GVF (Global VSAT Forum) and sIRG (satellite Interference Reduction Group). In advance of the London Olympic Games, ESOA members that include Eutelsat, Intelsat and SES have completed the process of adapting their earth station information tables to include Carrier ID information so they can read, extract and interpret data.

This is the first phase of a long-term collaborative undertaking to implement Carrier ID in order to further raise the bar of quality to our broadcast customers. Satellite services are set to play a major role in enabling broadband services to commercial and private airlines and vessels. Soon passengers will be connected on the seas and in the air through high performance satellite capacity.

New satellite designs will allow for higher throughput and better economics, resulting in a healthy satellite sector that will continue to be relevant to global communications infrastructure for decades to come.

About the author

Eric Béranger, CEO of Astrium Services, is the Chairman of the European Satellite Operators Association (ESOA) board. ESOA represents some of the largest satellite operators in the world. All European satellite operators are full members of ESOA: Astrium Services, Avanti Communications, Eurasiasat, Eutelsat, HellasSat, Hispasat, Inmarsat, Intelsat, SES, Telenor and Telespazio.

What Is The ESOA?

The European Satellite Operators' Association (ESOA) was formed in March 2002 to represent the interests of the industry with key European organisations, including the European Commission, Parliament, Council and the European Space Agency as well as other international organisations. ESOA's goals include ensuring that satellites benefit from the appropriate political, industrial and regulatory environment to fulfill their vital role in the delivery of communications. ESOA is governed by a Board of Directors, made up of the CEO's of its 10 Member Companies.

ESOA is often consulted as reference point for the industry by policy makers, national and international regulators, other industrial groups, associations and academics for information concerning facts and views of the industry or with requests to cooperate on specific issues. It often participates in conferences representing the space or satellite operator's industry.

As the provision of satellite communications through ESOA members in fact implies global coverage, ESOA also has co-operations with other organisations on issues that affect members' business outside Europe.

ESOA Activities

Through ESOA, European satellite operators aim to reassert the pervasive nature of satellite-delivered services and the potential they offer in allowing democratic and economical broadband access to telecommunications services. Even though satellites are part of our everyday lives with almost 60 percent of European households today receiving television directly or indirectly via satellite, satellites often still only assume an ancillary role in the minds of regulators and policy makers. It is in this context that ESOA recently met with Commissioners Reding and Verheugen of the European Commission.

Through minimal infrastructure providing ubiquitous coverage, satellites allow communications across national boundaries, without discriminating on the base of economic differences between nations or lacking infrastructure. The only requirement is the goodwill of policy-makers to recognise their benefits and facilitate friendly political, regulatory and industrial environments in their territories, so that satellite communications can be implemented there for the good of their citizens.

Europe Media Port—Dimitrios Papaharalabos, Marketing

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Dimitrios Papaharalabos
EMP (Europe Media Port) is a global service provider that distributes the highest quality of video, Internet and data connectivity solutions for the media, ISPs, as well as governmental markets, all via the Nemea teleport that is located in Greece. From our strategic position, EMP offers high quality access to all satellites in the 45 degrees West to 90 degrees East range, blanketing Europe, the Middle East, Africa, the Americas and Asia. EMP is a leading global service provider in the new and fast growing Ka-band satellite high-speed data market.

EMP was the first announced provider of Gateway Teleport services for O3b's global network. O3b, a subsidiary of SES, Google, and other investors, is building a satellite-based, fiber-quality Internet backbone for telecommunications and Internet service providers that will link its reliable Gigabit IP network connectivity and bandwidth services to clients located in Asia, Africa, Europe, and the Middle East.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Dimitrios Papaharalabos
The most exciting developments at EMP are the recent movements in Ka-band hi-speed data communications market and its vast growth potential in the years to come. We are currently working alongside O3b on providing these solutions throughout Europe and into Africa. This is potentially a huge market and we are prepared to take the lead with many of our clients. We also provide iDirect VNO services for large enterprises and satellite operators.

SM
How is your Company coping with the euro fluctuations?

Dimitrios Papaharalabos
As we are registered in Cyprus, we operate within the eurozone. Management has put into place a full range of risk management practices to deal with monetary and payment issues, especially when some revenue base is calculated in U.S. dollars, depending on customer location. Though the euro's fluctuations are making business more challenging, we are able to continue our growth and are quite proud of our abilities. The situation is a challenge but we are well prepared for these eventualities by taking a conservative approach in dealing with economic turmoil, its attendant issues, and its risks.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Dimitrios Papaharalabos
EMP's business is based in Europe and, because we connect the continent to the rest of the world, what happens here is always a part of our business plan. For instance, we are pressing forward with plans to support and spearhead Ka-band technology to address the broadband Internet market. We see EMP taking an important role in enabling this new, ground-breaking solution to provide fast Internet connectivity to billions of citizens, businesses and organizations in previously poorly connected regions around the world.

In another instance, we are linking reliable Gigabit IP network connectivity through our fiber network that reaches Africa, Europe, the Middle East and all around Asia. European communications firms are basing their connections and redundancy features on our capabilities and we will continue with our expertise into the future for our clients.

SM
What obstacles face your Company in the European market? How do you plan on overcoming such challenges?

Dimitrios Papaharalabos
The European theater presents almost identical challenges to those that exist around the world. Certainly, the economic turmoil tormenting the continent is different, and though it does affect the remainder of the globe, Europe is similar to other markets. There is competition from local players, disruptive technologies, a shaky monetary landscape, and government regulations that seem to change frequently. We are also looking into developing new connections and creating partnerships to generate new business.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Dimitrios Papaharalabos
Over the next year, EMP will be examining how to expand our Ka-band service offerings. We are looking at promising prospects because this market is moving towards greater acceptance in the consumer market and we can enable improved pricing for service providers.

In addition, EMP will be continuously working towards providing a full scope of services improving international satellite operators' capabilities to reach European, African and Middle Eastern markets.

About the author
Dimitrios has more than 14 years of SATCOM experience and has developed business relationships with multinational companies, international clients, military and corporate organizations throughout Europe, the Middle East, South Africa, and North America. He currently heads up the marketing and sales division for EMP, a leading, Cyprus-based satellite service provider.

Gilat Satellite Networks—David Leichner, V.P. Marketing

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

David Leichner
Gilat Satellite Networks Ltd. is a leading provider of products and services for satellite-based broadband communications. Gilat develops and markets a wide range of high-performance satellite ground segment equipment and VSATs, with an increasing focus on the consumer and Ka-band market. In addition, Gilat enables mobile SOTM (Satellite-on-the-Move) solutions providing low-profile antennas, next generation solid-state power amplifiers and modems. Gilat also provides managed network and satellite-based services for rural telephony and Internet access via its subsidiaries in the United States, Peru and Colombia.

With more than 25 years of experience, and over a million products shipped to more than 85 countries, Gilat has provided enterprises, service providers and operators with efficient and reliable satellite-based connectivity solutions, including cellular backhaul, banking, retail, e-government and rural communication networks. Gilat also enables leading defense, public security and news organizations to implement advanced, on-the-move tactical communications on board their land, air and sea fleets using Gilat's high-performance SOTM solutions.

In Europe, Gilat is, to a large extent, focused on the Ka-band market. We work with some of Europe's leading satellite operators and service providers that are working to bring broadband Internet to the consumer. Our integrated defense and homeland security division is also bringing a broad range of solutions to agencies and defense organizations worldwide.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why? What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

David Leichner
We are closely following and working in the Ka-band Internet broadband field which holds tremendous opportunity as satellite operators generate Ka- capacity to enable broadband Internet for consumers and small offices. Gilat has developed an award-winning home modem for this market and we are working with the SES Broadband service throughout Europe. We also have partnerships with Hispasat and Rostelcom to provide broadband Internet services in Iberia and North Africa as well as in Russia.

Gilat is also targeting the oil & gas sectors. We continue to expand our Wavestream portfolio of Ku-, Ka-, X- and C-band compact, highly efficient, and field-proven Solid State Power Amplifiers (SSPAs) and Block Upconverters (BUCs). These products are integrated into a variety of antenna systems targeting fixed, mobile land and maritime, flyaway and embedded airborne applications. Wavestream products are also focused on areas where we see significant growth in the coming years. Growth opportunities for Ka-band are also becoming more evident in commercial markets, particularly for broadcast and maritime applications. Wavestream products can already be found in VSAT systems used in the cruise ship industry. Also announced is the AeroStream™ family of transceivers to address military and commercial airborne connectivity requirements. We will introduce several new Ka-band products this year suited to military and commercial customers. Our patented Spatial advantEdge™ technology provides the ability to reach higher output powers without complex or costly combining, keeping size, weight and component costs down. It also results in reduced power loads and significantly reduced thermal loads, again minimizing size, weight and energy costs. Going forward, our technology approach provides us with a flexible platform to apply to any device technology.

SM
How is your Company coping with the euro fluctuations?

David Leichner
Gilat's management carefully monitors the Euro fluctuations and the financial turmoil that the continent is currently undergoing. As much of our production is based outside of Europe, we are not suffering much from changes in the rates vis-à-vis the rest of world.

SM
How will the European markets impact global, as well as your Company's business opportunities?

David Leichner
Europe is only one part of our business and our models for moving forward are less dependent upon various fluctuations in Europe. A number of our global contracts do originate on the continent, thus we are conscious of operating within macro-economic constraints or working together with clients in understanding the impact of the Euro's fluctuations and the entire business environment.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

David Leichner
The biggest challenge to the business world in Europe is the current financial turmoil that seems to bring new revelations every week. We are investing in our European sales teams and developing further business opportunities outside of our traditional communication commercial markets.

About the author
Mr. Leichner has more than 20 years of marketing and management experience. He is responsible for corporate marketing and business development at Gilat and its subsidiaries. Prior to joining Gilat, Mr. Leichner served as the V.P. of Sales and Business Development at Dynasec; as CEO of SafePeak Technologies; as CMO at BluePhoenix Solutions; as V.P. of Marketing at Unipier Mobile; and as VP of Worldwide Marketing at Magic Software Enterprises. Mr. Leichner has been a member of the global board of the Israeli Mobile and Communication Association since 2005.

GMV—Jorge Potti, G.M. Aerospace Division

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Jorge Potti
GMV has been operating in the European space market since its foundation back in 1984. During our early days, we focused on mission analysis, flight dynamics and satellite control systems. Today, GMV is a high technology multinational conglomerate that operates in a variety of market sectors such as space, aeronautics, defense and security, transportation and IT. Our total revenue is $140 million and we currently employ about 1,000 people worldwide. In the European space market, we address a wide portfolio of products and solutions, including space segment subsystems and technologies, global navigation satellite systems, flight dynamics and operations, satellite control centers and payload data processing and applications. We are active in institutional and commercial space, providing upstream systems for all types of missions, including launchers, transportation, science and robotic exploration, Earth observation, navigation, telecommunications and technology demonstration missions. We are particularly active in Earth observation applications and navigation applications.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Jorge Potti
The most potential for GMV growth are ground control systems. Since 2000, the company has invested heavily in the development and commercialization of cutting-edge ground control system products. GMV covers all ground control needs, including ground stations and payload management, planning,and booking. Since 2010, GMV has been the world's top independent supplier of ground control systems for commercial satellite operators. More than 45 percent of all commercial telecommunication satellites launched in 2010 and 2011 used GMV technology to support operations. We provide our systems and technology to 151 commercial telecommunications satellites and 23 commercial satellite operators worldwide. Our portfolio of active customers includes Eutelsat, Hellasat, Hisdesat, Hispasat, SES, Telenor and Turksat.

SM
How is your Company coping with euro fluctuations?

Jorge Potti
GMV is a multinational firm trading in Germany, India, Malaysia, Poland, Portugal, Romania, Spain and the U.S. Our multinational presence allows us to provide close service and support to our customers as well as to balance, to a certain extent, our development efforts and our supplier's network. Therefore, Euro fluctuations are not a significant issue for GMV, provided they are kept within reasonable boundaries.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Jorge Potti
Europe is the second largest space market with considerable government space budgets of around $12 billion (including the European Union, the European Space Agency and the national European government space budgets). Space is a global market that is clearly influenced by Europe. For GMV, it is a most important market and its evolution will certainly have an impact on us.

SM
What obstacles do you see facing your Company? How do you plan on overcoming such challenges?

Jorge Potti
Our main concern presently is the instability and uncertainty of public space budgets. We are optimistic that the public authorities of our main institutional space markets, the U.S. and Europe, will give due consideration to the highly strategic nature of space. GMV's strategy calls for increased geographical diversification as well as further development of commercial space, including space applications.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months?

Jorge Potti
In the space segment, Autonomous Guidance, Navigation and Control (GNC) technologies and subsystems for launchers, formation-flying, rendezvous, asteroid and planetary landing are a focus, as well as planetary scenarios and applications such as orbital servicing and debris removal. In navigation, we continue to develop our 'magic' suite of products, including our precise point positioning solutions, operational Satellite-Based Augmentation System (SBAS) testbed and performance monitoring and analysis systems. We are also finalizing a new indoor navigation system for smartphones. In ground control systems, our traditional product lines of flight dynamics (focus suite), satellite control centers (hifly/archiva) and mission planning and scheduling (flexplan) have gone through major new releases with significant improvements.

We also have recently released a new ground station monitoring and control product called magNet. For telecommunications payload management, planning and booking, we are improving and extending our 'smart' product line. In payload data processing, we continue to incorporate the latest technologies like cloud computing and automation techniques into our consolidated data processing solutions. GMV continues to have a passion for challenges that create an opportunity for innovation.

About the author
Potti is responsible for all GMV Aerospace operations worldwide and manages a large multinational team of more than 500 professionals. Potti, has more than 25 years of experience in the space business and has been working for GMV in a variety of positions. Potti has successfully led GMV to a cumulative growth of close to 50 percent in Space and made it the world's number one ground systems supplier. Under Jorge's leadership, GMV has achieved level 5 of the CMMI® (Capability Maturity Model Integration)

iDirect—Dean Griffler, Senior V.P. Global Sales

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Dean Griffler
iDirect's business model is based on providing technology exclusively for our partners' satellite networks. We are 100 percent focused on developing the ground infrastructure technology—the iDirect Intelligent Platform—that allows our partners to build the most optimized satellite networks; differentiate their services; seize new revenue opportunities; maintain margins and lower TCO; and expand their businesses.

Europe is a mature market for VSAT and iDirect has been working with partners in this region for more than 10 years to provide satellite services for a variety of different end markets, such as oil and gas, government and defense, and more. Many of our European service provider partners maintain a strong focus in Africa and the Middle East, where they offer a range of IP communications services to enterprises and government users. Others, particularly in Northern Europe, focus more on the maritime market. Our role in the European market is to grow the market for satellite communications and that's why we focus on developing innovative new technologies to address emerging market challenges.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Dean Griffler
There are several areas where we're seeing opportunity for growth in Europe, such as the military and government market where we have already had strong success in the United States and in Europe. Another area of growth is the maritime market, particularly as more high-throughput satellites (HTS) become operational. iDirect has always been the market leader in the maritime segment and will continue to be a leader through multiple HTS partnerships, including its role as the ground infrastructure technology partner for Inmarsat's Global Xpress service. We anticipate a growing demand for our technology in parts of Eastern Europe and Russia where terrestrial technology is insufficient to address communications requirements. The recent release of our new class of low-cost X1 routers will play a big role here, as we see strong growth opportunities in the cellular backhaul, oil and gas, and utility markets. For the cell backhaul market, the rugged X1 Outdoor remote can be paired with small cell technology to provide a cost-effective way for mobile operators to expand their networks in rural and remote areas.

SM
How is your Company coping with euro fluctuations?

Dean Griffler
Obviously, the macro-economic impact of the global recession can't be ignored. Some companies that were considering satellite are delaying their decision—we believe iDirect is in a strong position to continue growing. While the recession may be causing organizations to rethink their spending, it's unlikely that any company that requires worldwide access to communications will avoid investing in satellite technology completely. The launch of HTS will also likely help, as it will lead to a significant increase in the amount of available satellite capacity and will change the economics of the satellite industry to be more attractive to new users.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Dean Griffler
iDirect functions as one company in a larger portfolio and, while Europe is an important region for iDirect, business opportunities are considered from a global perspective.

SM
What obstacles do you see facing your Company? How do you plan on overcoming such challenges?

Dean Griffler
Some of the macro-economic issues discussed earlier present a general concern, but we are very optimistic about our growth. We are aligned with the direction of the industry and have invested in the infrastructure to support the push into HTS technology and remain focused on increasing adoption of VSAT in general.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months?

Dean Griffler
We just the latest upgrade to SatManage 5.2, which brings deeper levels of integration, scale, and power to the software, giving our partners an important tool to improve network performance and streamline operations. SatManage 5.2 is also now STIG-compliant, which is an important Department of Defense security requirement. Earlier this year we introduced the Evolution X1 satellite router as well as the iDX 3.1 operating software. This release was designed to give our partners a lower-cost solution to support large-scale networks and focus on SCADA applications, while leveraging their existing iDirect infrastructure.

The benefit of the iDirect Intelligent Platform is that it gives our partners a complete IP-based satellite communications system that is engineered to deliver quality broadband connectivity wherever and whenever it's needed. Moving forward, we plan to release updates to our core hardware and operating software that improves efficiency, provides even greater flexibility for our partners, and maximizes the benefits of HTS technology.

About the author
Dean Griffler is the Senior Vice President for Global Sales at iDirect.

Intelsat S.A.—Jean-Philippe Gillet, Regional V.P. Europe

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Jean-Philippe Gillet
Intelsat was created in 1964 to serve the requirement for international voice transmission. During that time, we established a strong relationship with all of the major European telecom operators—we are pleased to still count many of them as our customers today. We provide much more than voice connectivity these days, with our focus on meeting the growing demand in satellite communications from all of our media, network and government customers. This covers a wide range of applications, including DTH platforms in Eastern Europe, cellular backhaul, VSAT, maritime and aero applications.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Jean-Philippe Gillet
In the media business, the number of new DTH entrants in Eastern Europe and Russia offers a good opportunity for satellite operators. The growth of alternative distribution platforms, including DTT, IPTV and mobility, also provides opportunities.

In Western Europe, the increase in HD distribution and content delivery from Western Europe to other parts of the world provide the best opportunities for the satellite sector. On the network side, cell backhaul continues to be a steady business, and the growth in demand for mobile communications remains strong.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Jean-Philippe Gillet
European cable systems and DTH platforms attract content from around the world, and the globalization of European content drives business worldwide. We are able to support this two-way globalization with our satellite and terrestrial infrastructure. Take, for example, our Galaxy 19 multicultural programming platform. As Europeans migrate to other locations around the world, this drives the need for ethnic DTH programming. Our Galaxy 19 satellite, working with the IntelsatONE fiber infrastructure, delivers content from around the world to the United States, allowing consumers to enjoy content in their native language.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Jean-Philippe Gillet
The continually shifting DTH landscape creates challenges for satellite operators in Europe. We will closely monitor the DTH eco-system and be prepared to offer flexible solutions. We need to also keep strengthening our relationships with key providers in this region. There is also the potential for a surge of capacity that could result in over-supply in Europe, so we will watch this closely.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Jean-Philippe Gillet
Intelsat announced in June the Intelsat EpicNG platform, a high performance satellite platform based on an open architecture, designed to deliver carrier-grade, dedicated high throughput capacity to meet the growing bandwidth needs of our customers in all regions. It will combine our spectral rights with the technical advantages of spot beam technology and provide high performance capacity to our customers with an architecture that gives them a greater level of control and freedom of choice over hardware and service attributes, allowing more opportunity to develop new service offerings and grow their businesses.

Initially comprised of Intelsat 29e and Intelsat 33e, Intelsat EpicNG will use multiple frequency bands, wide beams, spot beams and frequency reuse technology. The Intelsat EpicNG satellites will provide four to five times more capacity than our traditional satellites. The expected throughput of the satellites will vary according to the application served and satellite, but is anticipated to be in the range of 25-60Gbps. Intelsat EpicNG will be complemented by Intelsat's existing satellite fleet and IntelsatONE terrestrial network. The two satellites, which are expected to launch in 2015 and 2016 respectively, will serve all of the world's populated continents.

The EpicNG satellites will bring increased capacity designed to support maritime, aero, enterprise network, cell backhaul, military and DTH applications.

About the author
Mr. Jean-Philippe Gillet is responsible for leading Intelsat's sales effort in Europe and the Middle East. Prior to joining Intelsat in 2003, Mr. Gillet served for five years as Vice President, International Sales for Globecast North America (France Telecom Group). In that role, he was responsible for the strategy, development and sale of Broadcast Video Services to all international customers. Prior to that position, he served three years as Globecast's Director of Sales for Europe, the Middle East and North America. Prior to his time with Globecast, Mr. Gillet served as Sales and Marketing Manager for France Telecom from 1990-1995. In that role, he was responsible for the sale of Broadcast Video Services in Europe and Video Services in Asia.

Kratos IS Europe—Bruno Dupas, President

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Bruno Dupas
Kratos has been a leader in ground systems products and solutions in the EMEA region and around the world for more than a decade. Most people in the European industry will know us through our Integral Systems Europe (Kratos ISE) business unit that I direct, as well as through several of our Kratos product subsidiaries, such as Kratos Integral Systems International (Kratos ISI), the developers of Epoch IPS, the industry's foremost satellite fleet management system; SAT Corporation, specialists in RF interference detection, monitoring and geo-location; and RT Logic, the leader in highly-engineered ground segment components.

Kratos ISE is based in Toulouse, France, and we have offices in the U.K. We have many customers in the region, including enterprises and government agencies based in Norway, Belgium, Italy, Spain, U.K. and Sweden, to name just a few. Kratos ISE is the only European based company specializing in satellite ground system solutions and products, including solutions for enterprise network operations. We supply a combination of Kratos commercial off-the-shelf (COTS) products, as well as products from other independent vendors, custom development, and systems integration services. Our customers include satellite operators, the Armed Forces, service providers, spectrum regulators and government agencies across the continent.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Bruno Dupas
Tight economic conditions such as those facing Europe today actually bring opportunities to a company like ours as many of our products are designed to help customers reduce operating costs, increase performance, or recapture lost revenue. For example, our Epoch IPS fleet control system allows operators to hold down costs as they add satellites and capabilities to their fleets. Today, we are taking Epoch a step further by putting significant new development behind our Webic thin client solution, which enables aggregation of additional management and operational data to provide full situational awareness, a more economical toolset and "anywhere access" from multiple data sources across the entire system, all of which helps our customers reign in expenses and increase productivity.

The Defense sector is one area in particular where we see opportunity. Governments are turning toward COTS products to expand capabilities and reduce expenses. When it comes to the ground segment, our products are the technology and market leaders. More than 75 percent of the world's commercial satellite owners rely on Kratos products to ensure safe and efficient satellite operation.

SM
How is your Company coping with the euro fluctuations?

Bruno Dupas
Our European operations have always done business both in euros and U.S. dollars which helps to even out global currency fluctuations. Our established banking relationships also help us there. The trend now seems to be for the Euro and dollar to "get closer," which makes the manpower component for our solutions more competitive in the Euro zone.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Bruno Dupas
It is important for us to stay close to the industry-leading organizations in Europe—the large satellite operators and government agencies, for example—and to listen to the challenges they face and new solutions they propose. We pride ourselves on our responsiveness to customers needs, and that will be even more important for supporting our business in Europe during this cycle. We also rely upon our strong engineering capabilities to drive innovation and improvement in our portfolio of products. For example, our sister company, RT Logic, recently released a new 250 MHz Broadband RF Channel Simulator which offers the highest bandwidth on the market today so engineers can work through scenarios involving the latest technologies and applications that require high capacity throughputs.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Bruno Dupas
In the commercial and government sectors there is intense competition to capture key opportunities—increasing price pressures are a challenge. We are constantly seeking ways to maximize value. Kratos is a company with approximately US$1 billion in revenues, which helps considerably in achieving scale benefits.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Bruno Dupas
We release numerous new or enhanced products every year. In Europe, we are excited about the NeuralStar family of network communications management solutions. NeuralStar is actually an established solution in the U.S. With the most recent release, we will be representing it in Europe and other parts of the world, as well. NeuralStar is a "manager-of-managers" that provides network operators with a 360-degree view of their entire communications infrastructure, including satellite, IT, network, security and other components.

Another technology in which we are investing is cybersecurity. Satellite providers have been somewhat insulated in the past and have tended to focus more on RF technology, rather than IP— that is changing rapidly across the industry. In fact, it has already changed in most commercial markets. We are also working to integrate our products and provide consistent, user-friendly interfaces so that operators can make better and quicker decisions, thereby improving the network availability, performance and productivity.

About the author
Bruno Dupas is President of Kratos Integral Systems Europe based in Toulouse, France.

KVH Industries—Martin A. Kits van Heyningen, CEO

SM
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Martin A. Kits van Heyningen
KVH provides satellite communications, Internet access, and satellite TV services to customers on the move, primarily in the maritime market. Our company has been active in Europe through the support of national distributors since 1985, and we opened an office in Denmark to support the EMEA markets in 1998. That office is now our European headquarters, KVH Industries A/S. We target a diverse cross section of the European maritime market, including the yachting, commercial shipping, commercial fishing, government, and oil and gas segments.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Martin A. Kits van Heyningen
Growth in Europe will come mainly from the important commercial shipping segment of the maritime market. Broadband services like KVH's mini-VSAT Broadband(sm) offer reliable connectivity offshore, which can be used to drive profitability through initiatives to reduce vessel operating costs, automate administrative tasks, improve route planning for better fuel efficiency, remotely monitor and assist in repairing equipment, and improve crew morale.

SM
How is your Company coping with euro fluctuations?

Martin A. Kits van Heyningen
For the most part, we deal in U.S. dollars—KVH products and services are sold in U.S. currency and most of our costs are in U.S. currency, as well. We do have a few European operations where we have costs that are not in U.S. dollars, but even in those isolated situations, costs are in local currency as opposed to the Euro.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Martin A. Kits van Heyningen
With more than half of all commercial shipping companies headquartered in Europe, this market is vital to the global maritime market. Many of KVH's large fleet customers, including V.Ships and Vroon, are based in European countries.

KVH's mini-VSAT Broadband network is the world's leading maritime VSAT network (source: Euroconsult "Maritime Telecommunications by Satellite" report), working exclusively with our TracPhone® V-series satellite communications antenna systems. This means that our business opportunities for these products and services are impacted heavily by major maritime market segments like those throughout Europe.

SM
What obstacles do you see facing your Company? How do you plan on overcoming such challenges?

Martin A. Kits van Heyningen
KVH is growing quickly, and our mini-VSAT Broadband service has become the most widely used global maritime VSAT service on Earth. Meeting this rapidly increasing demand with a very high quality of service is a significant challenge. By adding satellite capacity that is readily available from commercial satellite providers like Intelsat and upgrading our network infrastructure with transmission prioritization equipment, we have assured that present and future customers will continue to receive the outstanding service that mariners have come to expect from KVH.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months?

Martin A. Kits van Heyningen
KVH will go beyond delivering affordable, premium quality service to onboard terminals using very small antennas to delivering fully integrated network management, our next-generation TracPhone V7IP and TracPhone V11 antennas, which will be launched at the SMM show in Hamburg, Germany, will deliver fully integrated network management capabilities, along with a host of other attractive features that commercial operators can use to reduce costs and increase efficiency across their fleets.

SM
What changes have you seen in the European SATCOM market over the past 10 years?

Martin A. Kits van Heyningen
Ten years ago, vessels traveling offshore had limited choices for global satellite communications service and were forced to pay very high rates to Inmarsat, which had a monopoly on the market at that time. Inmarsat's airtime rates for its Fleet service (new to the market at the time) were $30 per megabyte, creating an economic barrier that made it unprofitable for shipping companies to harness the efficiencies of the Internet for their vessels around the globe. In desperation, vessel owners tried to use VSAT services designed for land applications on offshore platforms, adapting large and expensive antennas for maritime use. While cumbersome, this did provide reliable service at a small fraction of the price of Inmarsat service.

Five years ago, KVH introduced the mini-VSAT Broadband service, which uses advanced spread spectrum technology from our technology partner, ViaSat, to deliver fast, affordable VSAT service to antennas as small and affordable as Inmarsat equipment. Since its inception, mini-VSAT Broadband has grown to be the world's leading maritime VSAT service and we've expanded our line of TracPhone V-series antennas, designed specifically for maritime use, to meet the needs of any mariner, anywhere in the world, at a price that fits their budget.

About the author
Martin A. Kits van Heyningen, one of KVH's founders, has served as president and a director since 1982, as chief executive officer since 1990, and as Chairman of the Board since July 2007. From 1980 to 1982, Mr. Kits van Heyningen was employed by the New England Consulting Group, a marketing consulting firm, as a marketing consultant. Mr. Kits van Heyningen received a B.A. cum laude from Yale University and has been issued several patents.

MITEQ, Inc. — Howard Hausman, President + CEO

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Howard Hausman
MITEQ develops and manufactures a broad range of microwave equipment for satellite Earth stations. We supply almost every microwave component from the output of the modem to the input of the antenna. In addition to our state-of-the-art upconverters and downconverters in every standard and many non-standard frequencies we supply beacon receivers, uplink power controllers, low-noise amplifiers, solid state and TWT based high power amplifiers, and test translators as standard equipment.

MITEQ also develops and supplies the industry with a broad range of non-standard microwave equipment to help our customers offer systems out of the ordinary and cutting edge. Our equipment is available with coaxial, waveguide, and fiber optic interfaces to optimize the connectivity and overall performance. Europe is MITEQ's largest export market and our European customers are critical to expanding our product line through their requirements for new and innovative technologies.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Howard Hausman
The demand for wireless ubiquitous Internet connectivity is increasing with no near term limit. To satisfy this demand the satellite industry has turned to using the Ka-band allocated frequency range which has much higher capacity than the previously used spectrum at lower frequencies.

Every satellite provider has assets in Ka-band or is thinking about having assets in Ka-band, to keep up with, or go ahead of, their competition. MITEQ's vast engineering resources designs microwave components that give the customer the ability to optimize their Ka-band spectrum and deliver the most efficient quantity and the highest quality of data.

SM
How is your Company coping with the euro fluctuations?

Howard Hausman
The fluctuations of the euro in the downward direction have put pricing pressures on our products, but MITEQ technology and quality continue to be valued highly and have, therefore, mitigated most of these effects. We thoroughly understand that our customers have to evaluate all aspects when they acquire equipment so we continue to upgrade our technology adding value that weighs their decision in our favor.

So far, MITEQ is fairing well during these turbulent times because we focus on our customer's needs, which help make our customer's projects successful. MITEQ maintains cautious optimism that we will continue to grow in the satellite communications sector.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Howard Hausman
The European community is MITEQ's largest market outside the United States and is, therefore, critical to our growth. The need for communications is increasing in Europe as well as the rest of the world. European satellite companies are major players in providing the world's connectivity and we are happy to be partners in providing that service. We believe Europe's communications infrastructure will continue to grow and we are prepared to make sure that we have products available that will help that growth.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Howard Hausman
Foreign markets are filled with obstacles such as ITAR regulations, local competition, fluctuation of currency, local economic conditions, and so on. We have been successfully dealing with issues for many years but none as difficult as the present. All U.S. companies need government understanding and support to increase international trade.

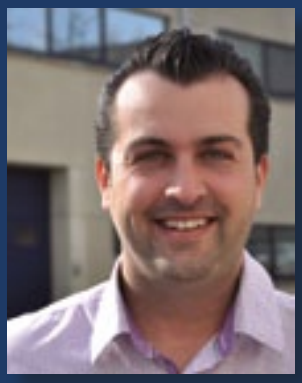
MITEQ overcomes these challenges now as we have done in the past, by delivering better products that are cost effective. Technology is the key to growth, we always look to improve our products and provide our customers with greater overall value.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Howard Hausman
MITEQ is increasing our breadth of products in Ka-band. We are making them more agile and therefore easier to adapt to changing customer requirements, improving the frequency response characteristics resulting in lower Bit Error Rates (increasing throughput), and increasing the available power allowing for higher data rate carriers. We are also increasing our capabilities in Q- and V-band in preparation for the next generation of satellite communication systems.

About the author
Howard Hausman directs the four divisions of the corporation, Microwave Electronics Components and Systems, Microwave Amplifiers, Satellite Communication Systems, and Microwave High Power Amplifiers. Reporting to Mr. Hausman are corporate finances, corporate services, quality assurance, operations and marketing.

Newtec—Thomas Van den Driessche, Director



SM
Please tell our readers about your Company's business focus, and history within the various European market segments.

Thomas Van den Driessche
Newtec was founded 27 years ago in the heart of Europe by two engineers whose vision has produced a satcom company with more than 300 employees in five continents. Today, our team of specialists continue to set the standards by designing, developing and manufacturing the most efficient, most scalable and most economical technology in the industry. As a result, over two billion people watch TV thanks to Newtec equipment.

Newtec provides its customers with products and technologies for satellite applications such as; DTH satellite broadcast; video contribution and DSNG; IP trunking and backbone; satellite broadband access; SME & Enterprise VSAT systems; government application and more. Broadcasters, service providers, satellite operators and governmental organisations worldwide rely on the performance of our equipment such as Gateway Hubs and modems, modulators, frequency converters and network optimization software. With its strong relationship with the European Space Agency (ESA), Newtec remains in the forefront of technological development.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Thomas Van den Driessche
We continue to work closely with the broadcast industry in providing DTH, news and sport contribution and satellite distribution networks for DTT towers. The market penetration in the DTH segment is high, in part due to our strong OEM relationship with the major system houses that provide satellite based head-end solutions based on our modulation equipment. Closing the "digital divide" is still going on and Newtec's Sat3Play® satellite broadband access solution is playing a key role in that ambition supporting growth for Newtec.

SM
What have been among your most successful projects for this market and why? What makes the European market segments so unique?

Thomas Van den Driessch
One particularly successful project has been providing the equipment for SES and the largest satellite broadband access network on the continent, SES Broadband. In France (and many other European countries) Newtec assisted the broadcast network operator TDF with the satellite implementation of the DTT network, which continues to remain a satisfying activity.

SM
The challenges are numerous for entry into, and for business sustainment within, this area of the world. What do you see as among the most formidable challenges to surmount?

Thomas Van den Driessche
In Europe, quality and sustainability are key. If we take an example from the DTH marketplace, we continue to come up with new functionality improving the application. Europe remains a multi-cultural and multil-lingual place where country presence and good customer support is highly appreciated.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Thomas Van den Driessche
I see Europe playing two mayor roles in the global market place: One role is Europe as the gateway to Africa and other emerging regions; and the second role is as an evangelist for innovation and design, spreading technology around the globe.

SM
How is your Company coping with the euro fluctuations?

Thomas Van den Driessche
As Newtec is very active in both the euro and dollar zones fluctuations in the currency do not necessarily affect the overall result. Obviously, the exchange rate is being closely monitored in order to provide the most competitive product offering.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Thomas Van den Driessche
Newtec is announcing a brand new portfolio of modems (Newtec MDM2200, MDM3100 and MDM6000) that match the different speed and application requirements in the satellite industry. At IBC2012, Newtec will also launch a new high-speed modem, the Newtec MDM6000 Satellite Modem, which adds Wideband (for use on 72MHz transponders), new modulation and Forward Error Correction (FEC) codes up to 64 APSK, and combines the latest Newtec technologies (Clean Channel Technology™ (CCT), FlexACM®, Equalink®). By increasing the amount of data that can be transferred per transponder, the MDM6000 modem effectively increases business opportunities for service providers.

On the system gateway side a new release of the now commonly deployed Sat3Play Hub provides SME and Enterprise functionality and is gaining interest very fast in the B2B VSAT market in addition to its consumer broadband install base.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Thomas Van den Driessche
As the focus on satellite communication is shifting from one market to the other, the sweetspots for Newtec shift as well. What we are good at today we may need to change tomorrow. Such keeps us innovating and close to the market.

Newtec
SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

NovelSat —David Furstenberg, Co-Chairman of the Board

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

David Furstenberg
Ever since the foundation of NovelSat, we have always focused on maximising satellite bandwidth within the broadcast, telecommunication and military sectors. We are dedicated to pushing the boundaries on satellite modulation, helping companies deliver the best services to their client base as well as offering them a better ROI. Our NS3 technology, which essentially replaces DVB-S2 as the industry standard, lowers satellite bandwidth usage by 20 percent, enabling 30 percent more throughput without the need for data compression.

NovelSat has provided clients with multiple hardware solutions to ensure they can future-proof their services. Our customer base includes EBU, IntelSat, Avanti Communications, RRSat, iDirect and PSSI. Our ground-breaking technology has been recognised by winning several awards such as WTA's "Technology of the year 2012" and CSI award for "Best Satellite Contribution/Distribution/Transmission solution" in 2011.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

David Furstenberg
Broadcasting is one of the key sectors to benefit from NovelSat's technology. The lack of bandwidth is limiting providers as to the amount of content they can distribute. At a cost of around $5,000 a month for just 1MHz, purchasing additional bandwidth is just not a feasible option. With NovelSat, providers can squeeze more out of the bandwidth they have and use the additional bandwidth we provide to distribute more channels, and this contributes directly to their profitability.

In addition to the benefits outlined above, DSNGs are able to get additional functionality such as the use of multiple cameras over the same bandwidth, the use of smaller satellite dishes and HPA, as well as reduction in manpower.

Novelsat's technology also helps VOIP providers and ISPs to transmit more data reliably and provide connectivity to wider areas. We enable a cost-effective and reliable solution that ensures connectivity to remote or geographically challenging areas (where fiber cables are not a feasible option). Our technology is even making the use of satellites a viable option for disaster recovery.

SM
How is your Company coping with euro fluctuations?

David Furstenberg
The lack of stability of the euro represents a challenge for everyone. For us, an obvious solution would be to base our prices on the US dollar because our payrolls and production expenses are already in USD. Although we have no such plans for the time being, we may be forced to reconsider our position in the future.

SM
How will the European markets impact global, as well as your Company's business opportunities?

David Furstenberg
Europe, like every other continent, is hungry for bandwidth. Since our technology provides a viable, cost effective solution to the critical problem of lack of bandwidth, we don't anticipate an impact on our business opportunities.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

David Furstenberg
The initial obstacles of becoming the solution of choice and being recognised as the only "forwards-compatible" technology are behind us. The current economic challenges in many European countries can reduce or even stop any Capex investment. However, savvy CEOs and CFOs actually view the current climate as the best time to invest in solutions that optimize satellite bandwidth, either by decreasing the bandwidth required for the same amount of data transmitted or by using the same bandwidth to carry more information. A truly compelling ROI would make this an opportunity not to be missed.

We anticipate that the majority of our orders will come from the drive to improve efficiency. A recessionary economy is typically good for companies that deliver cost-saving solutions that can accelerate net profits. We believe that if you stand by your customers during troubled times, they will become trusted partners, especially once the economic climate changes. And it will change!

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

David Furstenberg
At IBC, we will be introducing our NS-3000 Modem. It enables a 20 to 50 percent savings in bandwidth that essentially translates into millions of dollars in bandwidth savings and return on investment in a matter of weeks or months rather than years. We also believe 2013 will be an exciting time for NovelSat as we have a surprise or two coming up, which we will announce at a later date.

About the author
David is Co-Chairman of the Board for NovelSat. He has served as CEO at various telecom companies, as well as the VP of Sales Global at Audiocodes and the VP of Global Strategic Relationships at Comverse. David has launched several start-up firms in home networking, automated PC fixing, and image processing, and he is personally committed to the success of the Company's NS3™ product family. These products include the world's highest quality Modulators, Demodulators, Modems, and ASIC. NS3™ is capable of boosting capacity by up to 78 percent in a wide range of satellite applications including Video broadcasting, Data, cellular backhaul, VSAT, Government, and ASIC. NS3™ removes the tuner limitation on support of 72MHz wide transponders while providing the highest data rate in the industry.

Northern Sky Research—Christopher Baugh, President

SatMagazine (SM)
What European SATCOM sectors do you believe offer the most potential for commercial growth and why?

Christopher Baugh
Growth is expected from a number of areas:

- **Continued video demand** is expected through expansion of current platforms as well as new ones, mainly in Eastern Europe and Russia. Service typically includes FTA/DTH or an IPTV connectivity that is complemented by DTH due to lack of terrestrial coverage. HD continues to be a strong driver for new capacity demand. Many media deals in 2011 were specifically for capacity for HD programming, often with pan-European coverage requests. New FTA/DTH platforms include Starmax HD (Spain, FTA), Xtra (Ukraine, DTH), Max TV (Croatia, DTH) and Scene (Russia FTA). Expanded platforms include T-Home (Hungary DTH), Digi TV (Eastern Europe) and Total TV (Balkan).
- **Data, enterprise networks**, remain a comparably small segment over the European region (mainly some maritime in the North Sea and Mediterranean and oil and gas in the North Sea). The exception is Russia/Kazakhstan, where demand is robust via telecom expansion, oil and gas and government networks.
- **Oil and gas** mostly for offshore platforms, **cruise ships** in the Mediterranean and **aeronautical** SATCOM connectivity. These markets are driven by higher bandwidth demand from crew and passengers who increasingly bring their personal devices onboard and expect broadband connectivity.

SM
How are companies coping with euro fluctuations?

Christopher Baugh
Most media companies in Europe are European with the euro as their operating currency. Capacity pricing is often quoted in euros. There are few foreign operators (satellite, telecom or broadcasters) who are collecting their revenues within the Euro zone. Economically speaking, the crisis has brought a weaker Euro which generally increases the competitiveness for any European product outside the Euro zone.

SM
How will the European markets impact global business opportunities?

Christopher Baugh
In the context of SATCOM services, the impact is not likely to be very strong, compared with the impact the financial crisis had on the industry in 2008 and 2009. On one hand, European players will be more eager to expand in emerging markets, as this is where the best growth opportunities are. On the other hand, this might be hampered by the slowing European home market, where revenue collection and demand might be slowing as well as access to borrowing, which is expensive.

Over the short term, as vendors diversify to, or tap emerging markets, competition should intensify in key countries likely leading to intense price competition and narrower margins. A European satellite operator with capacity over Asia may have to come closer to the lower price offerings of regional operators and/or increase SLAs to gain customers. European markets, or specifically European companies will, therefore, further boost the competitive dynamics of countries that are, or will, be positioned to be the globe's engine of growth, enlarging business opportunities in those key markets. Over the mid-term, as European companies boost profits and contribute to Europe's recovery, global business opportunities should expand.

SM
What obstacles do you see facing companies in the European market? How should they plan to overcome such challenges?

Christopher Baugh
The European media market has already been moving towards saturation before this second crisis. During the 2008-2009 crisis, people did not stop watching TV; it might, however, be very costly to compete in today's economical environment. In the past year, we've seen many ambitious projects looking for satellite capacity, while their budgets were still to be financed. Finding financing is one of the largest obstacles among media companies. A solution might be looking for alternative financing or partnering with someone who has deep pockets—or simply to look outside the euro zone.

For the satellite operators, the best approach is to work together with their customers and consider more contract flexibility, such as payment terms. Some operators have given capacity for free for a limited amount of time, or offered "pay-as-you-go" terms. Overall, pricing has typically come down in the last year.

Another opportunity is to somehow convince the German audience to start to consider payTV. If this mindset changed, there is huge potential among the amount of TV viewers as well as the purchasing power. The German economy has been very robust (what crisis?), and German consumers have money to spend. Another order winner is high power coverage over multiple regions, as some broadcasters want to reach a wider audience (including the Middle East and Moscow) while avoiding multiple capacity leases.

For the mobility segment, the biggest obstacle is the proliferation of 3G and 4G networks with wider coverage that will encroach on underserved areas and off coastal zones. To overcome this challenge, it may be required for satellite companies to team up with wireless network providers to offer least-cost routing to their customers.

SM
What new technologies/products do you see companies working on and/or releasing over the next few months that will drive additional business for Europe's firms?

Christopher Baugh
The main satellite technologies that will drive additional business for Europe's firms are in high-throughput satellites (HTS), with Ka-SAT from Eutelsat being the first entrant in the run up to more wide scale deployment of HTS capacity in Europe and surrounding regions.

About the author
Mr. Baugh serves as the President and Founder of Northern Sky Research (NSR), which he created in 2000 to provide independent, actionable market research and consulting services to the satellite industry. Mr. Baugh directs all NSR multi-client research reports and single-client consulting projects, and manages a global team of analysts that stand at the forefront of satellite industry expertise.

ORBIT Communication Systems—Ofer Greenberger, C.E.O.

SM
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Ofer Greenberger
ORBIT Communication Systems, Ltd., a subsidiary of Orbit Technologies Ltd. (TASE: ORBI) was founded in 1950 as an Israeli cooperative association. In 1988, it became a public company traded on the Tel-Aviv Stock Exchange. Orbit is a leading provider of mission-critical communication systems and related services for both commercial and defense/government customers, addressing the application needs of satellite communications, Earth observation, and C4ISR. ORBIT has 60+ years of experience and more than 3,000 maritime systems deployed and operating worldwide.

A good portion of Orbit's growth is fueled by the demanding operational requirements of commercial and naval vessels and their adoption of always-on broadband communication systems. In addition, existing and emerging global security threats are driving increased worldwide demand in the defense/homeland security market for remote sensing, intelligence, surveillance and reconnaissance solutions using intelligence assets, such as imaging satellites and unmanned aerial vehicles (UAVs).

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Ofer Greenberger
Orbit serves two main markets...

Commercial Market: Demand for mobile satellite communications has grown significantly, driven by two primary trends. First, the vast array of rich content and applications available over satellite networks (*e.g.*, Internet access, enterprise resource planning connectivity, private networks, public clouds and television broadcasts) is creating demand for always-on connectivity. Second, end-user devices have evolved from voice-centric, or simple location tracking communication tools, into data-intensive productivity and entertainment tools. The current penetration of satellite systems into the maritime broadband market is low, accounting for about 10 percent of the market based on industry sources and is expected to increase at a rapid rate over the next five years.

Defense Market: Existing and emerging global security threats are driving increased worldwide investment in C4ISR functions, which, in turn, transmit increased amounts of mission-critical data over satellite and other communications systems. Without the use of C4ISR equipment, even the most powerful military force will be tactically disadvantaged. As a result, the market for C4ISR systems is expected to be strong.

SM
How is your Company coping with euro fluctuations?

Ofer Greenberger
Orbit is a global player with customers in North America, Asia and Europe. Given our global sales orientation, we are less affected by euro fluctuations than companies selling only in Europe. In addition, Orbit's supply chain is geographically diversified, which also serves to mitigate the effects of currency fluctuations in Europe.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Ofer Greenberger
A growing number of vessels, especially in Europe, are shifting from legacy narrowband satellite communications to broadband satellite communications, effectively addressing the limitations of the incumbent narrowband solutions. Orbit is well positioned to cope with this dramatic change, and our Maritime SatCom systems are widely deployed in the European market as well as in the global market. Orbit operates an extensive and diverse channel partner network in Europe that serves the local European market as well as the global market, due to the nature of the maritime business.

SM
What obstacles do you see facing your Company? How do you plan on overcoming such challenges?

Ofer Greenberger
The key business challenge in the Maritime SATCOM market is to find the "killer" application that will drive widespread adoption of broadband communication. Today, broadband is still considered by many as "cost critical." The challenge is to identify the data-hungry applications that perform mission-critical functions and reduce costs. Such applications could increase operational effectiveness or enhance efficiency via intelligent analytics.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months?

Ofer Greenberger
ORBIT recently launched the OrBand™ system in mid-2011, a compact C-band maritime VSAT system built specifically to overcome the limitations of traditional C-band systems. OrBand is differentiated from competing solutions by its extraordinarily small footprint, outstanding RF performance, strict regulatory adherence and support of multiple optional RF feeds—it is backed by EutelSat's standard-M characterization and ANATEL's homologation certificates.

The OrSat™300 is ORBIT's latest innovation and is tailored to meet the high-speed, two-way broadband communications needs of the maritime market. The 1.15m (45") system is built to support a wide range of configurations with different RF packages (Ku- or Ka- or X-) and BUC power levels, and complies with the most stringent environmental standards.

About the author
Ofer Greenberger joined Orbit in April 2012, bringing with him over 20 years of international business management experience within the hi-tech industry. Prior to joining Orbit, Mr. Greenberger served as President of KLA-Tencor (Israel) with business responsibility for more than $300M. He was responsible for Lithography Control within KLA-Tencor and for the KLA-Tencor organization in Israel. Mr. Greenberger joined KLA-Tencor in 2003 as division vice president. In 2005, Mr. Greenberger, while with the Israeli division, received the KLA-Tencor global award for strategic thinking and execution.

RUAG Space—Dr. Peter Guggenbach, C.E.O.

SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Dr. Peter Guggenbach
RUAG Space is Europe's leading supplier of space products. Our company has been a major industrial partner in European space programs from the outset, i.e. for more than 40 years. We have supplied the payload fairings and control computers for all Ariane rockets. Almost all ESA satellite missions have carried RUAG technology on board: for example structures, mechanisms, computers, or scientific instruments. For commercial telecommunications missions, we supply a range of technology, including receivers, converters and antennas.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Dr. Peter Guggenbach
We see long-term growth potential in all sectors of commercial telecommunications. Demand for telecommunications satellites may experience a temporary dip, but in the long run there is an ongoing need to send ever greater volumes of data via satellite—and that means growth. I think we are well positioned to benefit from this growth.

SM
How is your Company coping with the euro fluctuations?

Dr. Peter Guggenbach
Five of our seven locations are outside the euro zone. This means that a large part of our wages and invoices is paid in Swiss francs or Swedish kronor. However, many of our customers are based in the euro zone and contracts are often denominated in euros. This is a challenge for us, and we have made great efforts over the past few years to further increase our efficiency in order to compensate for the negative effects of the weak euro.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Dr. Peter Guggenbach
Europe is our home market. We lay the foundations here for our market success further afield. Above all, it is European Space Agency (ESA) programs that enable RUAG Space to acquire the technologies and the know-how to go on to enjoy success on the commercial market.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Dr. Peter Guggenbach
I don't see obstacles as such, but of course there are challenges. We've already spoken about the euro exchange rate, and the financial difficulties being faced across Europe are another challenge. Then there is growing competition—both within Europe and from new players in the market, from Asia for example. Yet a changing market environment always represents an opportunity, too—for those who take the lead instead of chasing after trends.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Dr. Peter Guggenbach
Aerospace is a business with long timescales, where people tend to think in years rather than months. We are working systematically to refine and improve our existing product portfolio so we can better meet customer requirements. And naturally we also have various innovations in the pipeline, involving, for example, the receivers for satellite-based positioning in orbit, or in the field of optical communication.

About the author
Peter Guggenbach is CEO of RUAG Space, which has an annual turnover of around 300 million Swiss francs and 1,150 employees. He is president of the Swiss Space Industries Group (SSIG) and a member of the board of Aerosuisse, umbrella organisation of Swiss aviation and space related companies. Before Guggenbach joined RUAG in 2009, he held a variety of management positions at ABB, most recently as head of the local Automation Products division at ABB Switzerland. Peter Guggenbach studied electrical engineering at the Swiss Federal Institute of Technology in Zurich (ETHZ), then worked for many years at ETHZ as a researcher and mentor, and in 1997 was awarded a doctorate in power electronics. Guggenbach was employed by Mitsubishi Electric Corporation in Japan as project manager for an international fusion project and completed his executive MBA in 2003 at the International Management Development School IMD in Lausanne. For 25 years he was a helicopter pilot in the Swiss air force.

SatLink Communications—David Hochner, C.E.O.

SM
Please tell our readers about your Company's business focus, and history, within the various European market segments.

David Hochner
When SatLink Communications was founded in 1988, the company focused on Occasional Use sports and news delivery, connecting Europe and Asia. Today, Satlink is a global provider of content delivery, as well as occasional use Sports and news delivery, which is still at the forefront of our business.

Occasional Use Satellite Delivery for sports is one of our specialities and we have been responsible for transmitting a wide range of events from Europe such as the UEFA games and the Athens Olympics Games in 2004. We are delighted to say we are doing the same for the London 2012 Olympics too, reaching vast audiences in Asia and Africa. In addition to this, SatLink serves leading Europe-based satellite owners such as SES with different engineering services, as TT&C and satellite drifting.

In 2007, SatLink purchased its first transponder on the Hotbird satellite. We began distributing services for American premium broadcasters, such as Viacom, to Europe and other continents.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

David Hochner
SatLink Communications sees the European market as being one of the most substantial in terms of satellite distribution and broadcast services. The use of satellites in the continent's DTH market is continuously growing, with leading platforms such as Sky Italy and Canal + expanding their outreach and offering additional HD channels from European and international broadcasters.

Leading on from this, I am positive the satellite industry will soon witness a new innovation that will combine OTT with satellite solutions in the future. This innovation will allow broadcasters and content owners to distribute high quality video feeds across the globe, and may also address bandwidth capacity issues that the industry, as a whole, is experiencing in Europe and other parts of the world.

SM
How is your Company coping with euro fluctuations?

David Hochner
We see this as an opportunity for mergers and acquisitions.

SM
How will the European markets impact global, as well as your Company's business opportunities?

David Hochner
SatLink is currently renovating its recently purchased HD Playout Centre to cater for our broadcast customers Playout, OTT, Digital Archive and content management needs. We are providing end-to-end solutions to broadcasters including, production, payout and global satellite, fibre and internet distribution. We are perfectly equipped and situated to support channel localisation, adjusting our client's feeds to the different global markets and distributing their signal all under one roof, helping them to maximize their incomes for their businesses.

SatLink, as well as other satellite and media operators, is looking closely into the OTT trends and is implementing the required technologies into its new HD Playout Centre.

SatLink is also building DVB-S2 platforms on AsiaSat5 and T12, as well as establishing a presence on AMOS 5, to distribute European channels to the emerging markets of Asia, Latin America and Africa respectively.

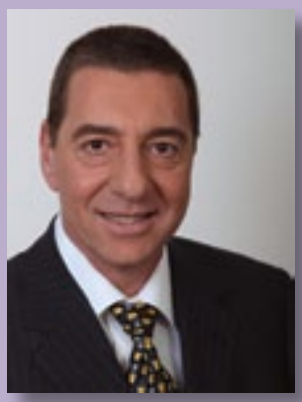
SM
How will the European markets impact global, as well as your Company's business opportunities?

David Hochner
SatLink is seeing consistent growth in the HD channel market, especially broadcasters wanting to distribute both to and from Europe to the world. We are also seeing this market producing interesting OTT platforms on the rise, offering linear and non-linear content in an attempt to expand their reach beyond Europe. Of course, European sports and news delivery is also on the rise, with a greater demand for HD as well as 3D content.

We also see Europe as a fantastic market for opportunities for global broadcasters, as well as proving less obstacles—other markets see limited growth because of broadcasting regulations and restrictions. However, a main obstacle for all broadcasters in Europe is the lack of bandwidth capacity, which is being address by companies across the globe as NovelSat's NS3 which we have their equipment in our teleport in use.

About the author
David Hochner has been the CEO of SatLink Communications since 1995, joining the company from Scientific Atlanta after running its Israeli branch. David joined in 1989, assisting with the implementation of Israel's cable infrastructure. At SatLink, David lead many large scale projects including teleport build up in Cyprus, a new Satellite DTH company in Japan including rights management, and acted as an advisory for the Philippines Cable Company in Manila for ABS-CBN. David is an amateur photographer and an experienced skipper.

Spacecom—Jacob Keret, Sr. V.P. Sales Europe, NA & ME



SatMagazine (SM)
Please tell our readers about your Company's business focus, and history, within the various European market segments.

Jacob Keret
Spacecom is the multi-regional satellite operator of the AMOS satellite fleet currently consisting of the AMOS-2 and AMOS-3 satellites co-located at the 4 degrees West orbital location and the AMOS-5 located at 17 degrees East. Together, these satellites offer a wide range of communication and broadcast services throughout Europe, the Middle East, the U.S. East Coast and Africa via direct-to-home (DTH) and direct broadcast satellite (DBS) operators, Internet service providers (ISPs), telecom operators, network integrators and government agencies. Among Spacecom's major European customers are DTH platforms like Xtra-TV in the Ukraine, T-Home SatTV in Hungary, Magio TV in Slovakia and Yes in Israel. AMOS works with leaders such as HBO for its European cable distribution, Ukraine's Inter Media Group and MTV channels, among others.

Spacecom plans to launch the AMOS-4 in 2013 with coverage over Russia and South Asia, and AMOS-6 in 2015 with coverage over Europe and the Middle East. These two satellites will further enhance the AMOS brand throughout Europe and the company's position as a multi-regional satellite operator.

SM
What European SATCOM sectors do you believe offer the most potential for Company growth and why?

Jacob Keret
As an industry leader in high quality broadcasting and communications services, Spacecom is focused on DTH platforms, TV broadcasters and programmers, corporate and government organizations, ISPs, network integrators, VSAT service providers and telephony operators. We believe that growth in these sectors remains strong from both a geographic and a services point of view. The AMOS constellation located over Europe provides us with an advantage in these markets and enables us to provide excellent, strong broadcast neighborhoods. We intend to continue pursuing broadcast and emerging broadband opportunities in the region and see the Ukraine and the Balkan region as a strong growth markets.

This summer, we announced our partner for construction of the AMOS-6 satellite also to be co-located at the 4 degrees West orbital position. AMOS-6 will be larger than AMOS-2 and AMOS-3 combined and will include Ka-band spot beams as well as Ku-band. It will also provide services to Western Europe in addition to Central and East Europe. Scheduled to be launched in 2015, the satellite will replace AMOS-2 when it ends its service. Another look at Europe from the 65 degrees East orbital position will bring the AMOS brand to areas in Russia and the CIS. The AMOS-4 is scheduled for launch in the second quarter of 2013 to bring Ka- and Ku-band beams to Russia, as well as the Middle East and the Indian Subcontinent.

SM
How is your Company coping with the euro fluctuations?

Jacob Keret
Since our start in 1996, Spacecom has focused on the formerly emerging markets in East and Central Europe. Over the years, our business has been predicated upon seeking and penetrating emerging markets. Our team and partners comprehend the importance of risk management policies, in initial contract negotiations stage as well as during the service providing stage. Therefore, euro fluctuations, though they are affecting our business, and are a challenge, aren't threatening us and don't slow us down.

SM
How will the European markets impact global, as well as your Company's business opportunities?

Jacob Keret
Europe is one of our major markets. AMOS supplies three growing DTH operators with satellite services—Xtra-TV in the Ukraine, T-Home SatTV in Hungary and Magio TV in Slovakia. Spacecom and Magyar Telekom, the owners of T-Home SatTV and Magio TV, have just signed a follow-on, multi-million dollar long-term deal to provide more bandwidth to its platforms. These DTH operators anchor our business in Europe and we are very happy with the long term deals we hold with them.

SM
What obstacles do you see facing your Company in the European market? How do you plan on overcoming such challenges?

Jacob Keret
Europe is like any other market. There are myriad competitors, a changing digital landscape, robust new technologies and tricky economic challenges. Spacecom plans on reaching our business goals by doing what we have always done. First, we conduct in-depth research into our targeted markets. Next, we identify potential well-connected partners in the market and create a relationship with that group. We greet, meet and pursue business opportunities to create a win-win situation for all involved parties. Finally, we introduce the AMOS brand into the market and generate business by providing high quality and flexible solutions that meet and exceed the market's needs. As Europe is facing financial and economic turmoil, Spacecom is prepared with risk management tools.

SM
What new technologies/products will your Company be working on and/or releasing over the next few months that will drive additional business in Europe?

Jacob Keret
One of the most important new technologies to grace the satellite industry is the Ka-band spot beam. We intend to use this new technology to bring broadband Internet to the consumer market. The upcoming AMOS-6 allows us to approach markets in Western, Eastern and Central Europe as well as Africa. We are very excited by the opportunities that are being raised from Ka-band services.

About the author
Jacob Keret brings to his position more than 20 years of global business and management experience in the aerospace and telecommunications arena. Jacob served for six years as vice president of marketing and sales at Starling Advanced Communications, an innovator in satellite communication systems. Prior to that, Jacob co-founded Spacecom Satellite Communication Services, a service provider for AMOS satellites.

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Counterfeiting: The Risk To Satellites

By Rory King, Director, Supply Chain Management, IHS, Inc.

In space, no one can hear you scream. However, if a satellite fails in space due to the inclusion of faulty counterfeit parts, everyone on Earth will hear the screaming as recriminations fly to and fro about the loss of a multimillion-dollar project.

With some spacecraft failures having already been attributed to counterfeit parts, and with reports of phony components soaring amid tighter government regulation, it's critical that aerospace firms arm themselves with the essential tools and information needed to mitigate counterfeit risk—well before the satellite leaves the launch pad.

Counterfeit Reports Skyrocket

Reports of counterfeit parts have soared dramatically during the last two years, presenting huge challenges for electronics manufacturing in general, and for the military and aerospace industries in particular, according to information and analysis provider IHS (NYSE: IHS). Supply chain participants in 2011 reported 1,363 separate verified counterfeit-part incidents worldwide, a fourfold increase from 324 in 2009, as presented in Figure 1. In all, more than 12 million components have been reported in counterfeit incidents since 2007, equating to more than one part being involved in worldwide counterfeit incidents every 15 seconds.

U.S.' Anti-Counterfeit Initiative

Adding to the urgency of the problem for the defense and aerospace industry, President Obama on December 31, 2011, signed the fiscal year 2012 U.S. National Defense Authorization Act (NDAA), which adds regulations for counterfeit-part detection and avoidance. The new NDAA places the onus for detecting and avoiding counterfeit parts—and for fixing and paying the costs for counterfeit-related problems—squarely on the shoulders of contractors.

The NDAA also requires that qualification procedures and processes be established to use trusted suppliers and procure electronics from authorized suppliers. While driven by the United States, its regulatory requirements are shaking up international organizations as counterfeit detection and avoidance requirements are flowed down through all tiers of global supply chains.

Rocket To Russia

Counterfeit parts were named as one of many possible causes of the failure of Russia's Phobos-Grunt Mars mission in January. Vladimir Popovkin, director of the Russian space agency Roscosmos, said the failure could be traced back to counterfeit parts, which malfunctioned due to exposure to cosmic rays.

A commission investigating the accident concluded that the Phobos-Grunt mission failure was the culmination of multiple factors, including poor quality control and lack of testing. Multiple factors, including poor quality control and lack of testing also contributed to the mission failure, according to a commission investigating the accident.

Counterfeit Costs

NASA has also laid the blame for cost overruns and project delays on counterfeits.

The Russia incident is not without precedent. In 2009, for instance, Christopher Scolese—then, the acting administrator of the agency—told the House Science and Technology subcommittee that counterfeit parts had contributed to problems with schedules and budgets, according to a report on the Aero News Network.

"We find out late they are counterfeit parts," Scolese had said. "We find out about it while sitting atop a rocket or, worse, find out about it in space."

Scolese noted that NASA personnel working on the Kepler space telescope project had detected a counterfeit part in the system—the removal and replacement of the fake part then contributed to the project's delays and cost overruns. The Kepler project at the time had exceeded its budget by 20 percent, raising total costs to $595 million.

Scolese went on to note that NASA's counterfeit problem, ongoing for a long period of time, was actually worsening.

Fighting Back

In response to the significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain, NASA became heavily involved in the formation of the SAE International G-19 Committee in September 2007 to develop standardized requirements, practices and methods related to counterfeit-parts risk mitigation. The committee subsequently released the SAE International AS5553 standard, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition, and NASA was the first government agency to formally adopt the standard.

NASA has since put in place many processes and procedures aimed at counterfeit detection and avoidance. In April 2012, NASA's Dryden Flight Research Center shared strategies with global business leaders attending an executive conference co-hosted by IHS and ERAI Inc. There, the space agency shared a strict approach to counterfeit parts. This includes methods to assess suppliers' capabilities and expose their deficiencies.

NASA also shared its approach to new U.S. NDAA regulations, noting how it was the first federal agency to formally promulgate a counterfeit-part mitigation strategy. The agency also outlined its development of a comprehensive database of counterfeit parts, including ERAI counterfeit incident reports. Indeed, the industry's team efforts from IHS, ERAI, G-19, NASA and other leaders are making a positive impact on controlling–and in some cases, choking off—any counterfeit parts from entering their supply chains.

The Obsolescence Conundrum

A particular problem for firms in the military/aerospace industry is obsolete parts, which represent a breeding ground for counterfeits. A total of 57 percent of counterfeit-part reports from 2001 through 2012 have involved obsolete or end-of-life (EOL) components, as presented in Figure 2. Another 37 percent involved active parts. In all, these counterfeit incidents represent many millions of parts in circulation in the supply chain.

As military/aerospace projects, such as rockets and satellites, have extended life cycles, they are particularly vulnerable to the hazards of obsolete parts. For instance, the Department of Defense (DoD) recently extended the life of the B-52 bomber by 15 years, even though it is set to end service in 2040—nearly 90 years after the bomber's first flight in 1952.

Such changes can have the effect of creating a sudden shortage of critical parts for replacements and maintenance. Such forces buyers to quickly find new sources of supply or alternative parts. Meanwhile, changes in the supply base—such as the enactment of a regulation such as the European Restriction of Hazardous Substances Directive (RoHS)—can result in diminishing manufacturing sources and material shortages (DMSMS).

While counterfeits and obsolete parts are a supply chain reality that must be dealt with by older systems, even new systems can be subject to the obsolete-part problem. In one dramatic example, more than 70 percent of the components used in a surface ship sonar system were obsolete—even before the first system was installed.

Oversight Of The Obsolescence Onslaught

With obsolete parts inevitable and so heavily linked to counterfeits, it's critical for electronics buyers to plan for this eventuality. Electronics buyers need to know as quickly as possible which parts are out of date, which parts are being phased out, and when parts have become EOL in order to mitigate costly obsolescence issues. It's critical that firms are aware of alternative parts they can use as replacements, and which safer suppliers they can utilize to access those components.

However, obsolescence management solves only part of the counterfeit equation. To explicitly and directly address the problem of counterfeit parts, organizations must understand which fake components are actually in circulation and being reported, whether they are obsolete or active. Furthermore, constant vigilance in supply planning for parts is necessary not only to stay ahead of component price and supply chain health issues but also to ensure continuity of supply from safer, approved and trustworthy part sources.

Combating The Counterfeit Crisis

IHS provides content, software and expert analysis about worldwide electronics for component selection, sourcing, and logistics as well as integrated obsolescence management, BOM management, environmental compliance, and counterfeit risk mitigation. IHS is a leader in providing verified counterfeit-incident report information, of which more than 90 percent is availed only though the exclusive IHS and ERAI partnership.

About the author

Rory King is the director of supply chain product marketing at IHS. For media inquiries on this article, please contact Jonathan Cassell, senior manager, editorial, at *jonathan.cassell@ihs.com*. For non-media inquiries, please contact *analystinquiry@isuppli.com*.

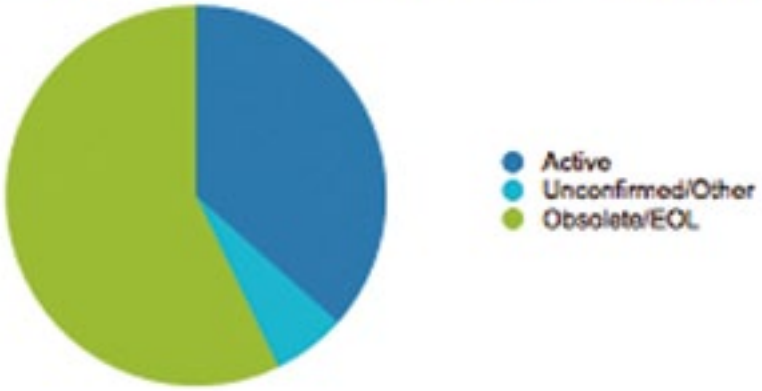
To learn more about this topic, go to this IHS URL...
http://www.ihs.com/info/sc/a/combating-counterfeits/index.aspx
"Combating Counterfeits in the Supply Chain."

IHS Figure: Part Status for Counterfeit Part Incidents From 2001 Through 2011 (Number of Part Incidents by Life

Product Life Cycle Status	Number of Counterfeit Incidents (2001 to Present)	Percentage of Counterfeit Incidents (2001 to Present)
Active	1769	36.6%
Unconfirmed/Other	304	6.3%
Obsolete/EOL	2763	57.1%
Total	4836	100.0%

Source: IHS June 2012

Status for Counterfeit Part Incidents From 2001 Through 2011 (Number of Part Incidents by Life Cycle



Source: IHS, June 2012

Flags Unfurled, The Battle Rages On

By Alan Gottlieb, Managing Director, Gottlieb International Group, Inc., Sr. Contributing Editor

Unveiled by Inmarsat and promoted as the ultimate weapon in the battle to win the maritime customer, the Inmarsat *Global Xpress*™ service has since faltered. Two years after the service was introduced, its star has faded as questions regarding the suitability of the *GX* Ka-band service in tropical rain has come to light. The potentially limited capacity of its Ka-, Spot Beam-only infrastructure has also been revealed. To date, only one significant sales of *Xpress Link*, the guaranteed upgrade path to Global Xpress, has been announced, a 46-vessel deal with Malaysian shipping company MISC Berhad.

Meanwhile, Intelsat, KVH Industries, O3b and others have introduced highly competitive and potentially lower cost services than Global Xpress, all designed to break broadband customer ties with the decaying Inmarsat monopoly. Make no mistake—the Giant is foundering and under siege by powerful new forces. Here's a look at the new Inmarsat-free broadband combatants and their potentially game-changing impact upon Inmarsat and the Maritime and Aviation Communications' Markets.

An Epic View...

Intelsat *EpicNG*, the recently announced enhancement high-performance satellite platform that compliments Intelsat's Ku-***Global Mobility Network***, is the realization of Intelsat's vision for a mobility service that can efficiently serve the needs of maritime and aviation. In less than two weeks after its formal introduction, Intelsat has landed major contracts with **Panasonic Avionics**, **Harris/CapRock** and **MTN Satellite Communications**.

Unlike Global Xpress' Spot Beam-only service, Intelsat EpicNG, in combination with the Intelsat Global Mobility Network, provides a unique combination of Wide and Spot Beams. What this means is that Intelsat can deliver high capacity over the heavily traveled great circle routes where Spot Beams are more efficient, and high-capacity to sparsely traveled routes with bandwidth efficient Wide Beams.

When launched, the Intelsat EpicNG Service for Panasonic Avionics will feature 200Mbps per Spot Beam and up to 80Mbps to a single aircraft for Internet applications as well as TV, via Wide Beam Ku-.

Since Inmarsat relies only on Spot Beams, to duplicate TV channels in every Spot Beam drains significant capacity away from high demand data services. .That, plus availability of higher capacity in its Spot Beams, is why Intelsat, not Inmarsat, was selected to provide Panasonic Avionics with 1Gbps capacity to the 1,500 aircraft the Company serves.

Further exacerbating this Global Xpress shortcoming is Iridium's ***Aireon*** initiative which, when put into service in 2018, will provide a continuous flow of GPS position data to air traffic controllers, thereby allowing controllers to significantly reduce the distance between planes and increase traffic density in the Trans Atlantic, Trans Pacific and other high-density routes. The net result is a significantly higher demand for bandwidth in a given area, a requirement that Intelsat is best able to satisfy with their high-capacity Spot Beams.

In addition to a combination of Wide and Spot Beams, the Intelsat EpicNG Satellites have a diversified payload of C-, Ku- and Ka-bands, an advantage that provides diversification of offerings and reduction of economic risks. The ability to offer services for a multitude of fixed and mobile applications using various frequency bands results in more resilience with lower risk vs. a single-frequency offering.

Thus, while Inmarsat must get 50 percent of its revenue from maritime Ka-band, the Intelsat satellites can offer services to a variety of markets thereby lowering dependence on a single market to achieve high utilization rates at lower cost per/Bit.

When complete in 2016 or so, Intelsat EpicNG will provide maritime customers with a uniquely versatile network that can be customized to each individual user's needs. Meanwhile, the first major component of the service—the Ku- Global Mobility Network—will be completed in Q1 2013.

Tracking TracPhone

One of the most interesting entrants so far into the Inmarsat-free broadband market is the **KVH *TracPhone V11*** and the ***mini-VSAT Broadband*** C-/Ku-band service from **KVH Industries** of Middletown, Rhode Island. Using a single 1.0m antenna, the service provides global coverage through a combination of global C- and Ku-band services.

Running on a *Spread Spectrum* platform from **ViaSat**, this service offers a fully integrated VSAT platform that uses a single, below-decks modem. With it,

Flags Unfurled, The Battle Rages On (continued)

IT managers don't have to contend with different networks, different latencies, protocols, or IP settings.

Given its significantly larger antenna size vs. the ***TracPhone V7***, performance should be significantly better, making the TP-V11 a potentially formidable competitor at the high-end of the market. Of course, as the service is dependent on a single antenna, KVH will offer **Iridium**'s ***OpenPort*** as a backup, should the dual use C-/Ku- antenna need to be serviced remotely, or if the antenna becomes blocked.

The new mini-VSAT Broadband C-/Ku-band service is scheduled to be commercially available in September.

O3b Observations

It's no secret that Internet access on cruise vessels is in need of an upgrade. Unlike the unlimited, fixed-cost, high-speed broadband access that cruisers have at home, Internet access on cruise vessels has, to date, been an outrageously expensive and low quality service. Typically, logging on to the Internet on these vessels costs between $.50 and $1.00 per/minute and speeds are comparable in most cases to dial-up.

Due to the high cost and poor performance of these services, passengers have limited their Internet use to the on board Internet Cafés, typically sending low cost emails with small attachments and launching short sessions on the web to check stocks and download personal email.

However, the recent popularity of smart phones, the advent of the **Apple *iPad*** and the popularity of **Facebook** have created an insatiable Internet-hungry environment. Due to the sheer size of cruise vessels, a market has emerged for the provision of higher quality, lower cost services.

Serving such a market demands a very high capacity satellite infrastructure—a niche that **O3b** is attempting to fill with its new MEO constellation. Capable of delivering 350Mbps to the ship using Ka-band, O3b's new service offers capacities in a single 700-mile diameter Spot Beam far in excess of competitive geosynchronous services, albeit with greater antenna cost and much greater technical complexity. While yet to be proven, 03b has secured a milestone contract with **Royal Caribbean International** to install the service aboard the largest cruise ship in the world, the *Oasis of the Seas*.

Consisting of three 2.2m antennas, two for primary use, and one for backup, the satellite will actually track the movements of the Oasis of the Seas and provide 350Mbps to the vessel. Such will allow passengers to enjoy speeds competitive with the terrestrial based services they receive at home. The service will employ ViaSat's ***MEOLink*** high-speed modems and stabilized tracking antennas developed especially for this application.

In addition to the cruise ship application, 03b is also looking at the oil patch market using smaller, 1.2m antennas. The Company is also aggressively seeking additional high demand, bandwidth intensive niche markets in addition to its original primary focus on trunking applications.

Bringing In The Backup

As a result of Inmarsat's decision to significantly hike the price of ***FleetBroadband*** as a backup option for Ku- VSAT, Iridium is experiencing a surge in demand for its ***Pilot*** as a substitute solution. As competing major vendors struggle to find alternatives to the use of Fleet Broadband as backup, Iridium's L-band, or the KVH mini-VSAT Broadband services, are currently the only solutions available. The next phase of services not requiring an Inmarsat service will likely feature C- and Ku-band antennas, some sub-1m that employ Spread Spectrum. Such systems are currently in development.

Maritime Broadband, Inc.

One notable entrant from **Maritime Broadband, Inc**., suitable for larger vessels, is the 2.4m C-band, dome-less ***C-Bird***™ antenna, soon to be available in a dual Ku-/C- configuration, and currently available with Global C-band services.

To date, the C-band C-Bird™ has confounded skeptics of its dome-less design. The current C-Bird™ unit has been deployed on the vessel *Hellespont Progress* and served without incident for five years.

Apart from the drastically lower cost of this antenna, around 80 percent less than a traditional C-band unit, the unit features a modular construction that facilitates installation without the use of a crane, an advantage that cuts installation times to a minimum and lowers installation cost.

The new C-/Ku-band version, available in Q3 2013, will address the regulatory restrictions faced by C-band users and automatically select C-band Circular A, Circular B- and Ku- configurations based on least cost, or link quality, criteria.

Given the current antenna's record of dependable service, the new antenna is worthy of consideration as an innovative alternative to Inmarsat, especially on large vessels capable of accommodating a 2.4m unit. For smaller vessels, expect low-cost, Spread Spectrum 1m C-band backup antennas to come to market in the near future.

The Market Evolves—Predictions:

The entrance of viable alternatives to Inmarsat's broadband services is now a reality, and clear market trends can now be defined. Here is what to expect going forward:

- The Intelsat Global Mobility Network with the Intelsat EpicNG satellites will be adopted and sold aggressively by Inmarsat's major distribution partners who, due to Inmarsat's controversial "go direct" pricing strategy, have become broadband VSAT competitors.
- Intelsat's EpicNG services and other services that combine C- as a Backup with Ku-Wide and Spot Beam technology will emerge as the systems of choice due to their higher efficiencies and their likely lower cost per/bit.
- I believe the KVH TracPhone V11, assuming no technical glitches and attractive pricing, will gain significant market share in the high-end, reliability intensive market.
- Iridium and Pilot will become the backup L-band solution of choice for distributors who favor FSS VSAT over Inmarsat Global Xpress™.
- While Inmarsat will continue to dominate the shrinking L-band market, I expect the Global Xpress service will fail to achieve significant penetration in the maritime and the trans-oceanic, Tier 1 commercial aircraft markets.

While it is still too early to sound the death knell for Inmarsat's maritime and aviation efforts, it is clear that without major changes in its technology and strategy, well-financed competitors can effectively breach the walls surrounding the Inmarsat citadel and bunker, and if successful, can severely restrict Inmarsat's participation in broadband mobility markets.

About the author

Mr. Gottlieb is Managing Director of Gottlieb International Group Inc. Established in 2001, his firm is a recognized global authority on the use of VSAT in Maritime and Oil & Gas VSAT markets. Gottlieb International Group provides Product Development, Marketing Research, and Sales Training to VSAT Service Vendors, Equipment Manufacturers, Satellite Operators, and M & A support to Private Equity firms. To date, he has an unmatched record for accurately predicting Maritime Satellite trends and events.

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Putting Their Best Features Forward...

By David Reynolds, Event Director, SATCON

For the eleventh consecutive year the satellite industry will be converging on New York City for the SATCON exhibition and conference November 14 and 15 at the Jacob Javits Convention Center.

SATCON has expanded its audience each year since its inception in 2002 and is considered a "must attend" industry showcase, conference and networking event. This year SATCON combined with Content & Communications World (CCW) will again feature a world-class program with over 150 speakers, 50 sessions (22 of which are satellite focused) and over 250 exhibitors displaying the latest satellite, communications and content delivery technologies. Over 5,500 people are expected to attend both events again this year.

The SATCON conference program will cover the most important topics related to satellite-enabled communications used by government and military, broadcast, media and entertainment, telecommunications, mobile satellite and enterprise firms. The 2012 SATCON conference program was created with input from thought leaders at DISA, the DoD, Office of the Secretary of Defense, USSTRATCOM/J6, US Army, US Air Force, ABC, CBS, CNN, Fox, NBC, ARTEL, Hughes, Inmarsat, Intelsat, SES, Euroconsult, the Hosted Payload Alliance (HPA), the MSUA, the SIA, SSPI, the WTA, Global VSAT Forum and others.

Expert speakers, including a balanced mix of end-users and satellite industry executives, will provide SATCON attendees with strategies for utilizing satellite, fiber, broadband, wireless and hybrid network technologies in their organization's communications infrastructure.

New + Notable Events @ SATCON

According to **SATCON** Event Director, *David Reynolds*, some of the many notable features of this year's SATCON event include:

Lt. Gen. *Ellen M. Pawlikowski*, Commander, **Space and Missile Systems Center**, **Air Force Space Command**, **Los Angeles Air Force Base,** will be giving the opening military keynote address, which is open to all attendees. She is responsible for more than 5,000 employees nation-wide and an annual budget of $10 billion. As the *Air Force Program Executive Officer for Space*, General *Pawlikowski* manages the research, design, development, acquisition, and sustainment of satellites and the associated command and control systems. Her extensive portfolio includes military satellite communication, missile warning, navigation and timing, space-based weather, space launch and test ranges, certification for launch, space superiority, responsive space and other emerging evolutionary space programs.

For the second year, the **Hosted Payload Alliance**, HPA, will host its annual business meeting during SATCON, immediately following the Hosted Payload Alliance panel session. The meeting will continue the discussion of issues affecting hosted payloads. Benefits to be explored will include lower costs, shorter development cycle times, the opportunity to share orbital slot locations, and the ability to disaggregate assets for more resilient space architecture.

In the addition to the end of day receptions on the show floor, SATCON will feature a new networking opportunity for the ***Vision Awards*** presentation and reception.

Also new this year will be daily booth tours organized with technology themes and stops at key exhibitor booths. Separate booth tours will be provided for government and military attendees and for broadcast, media and entertainment executives.

During the evening of the day before SATCON, attendees can network at the **SSPI Future Leaders** dinner. Since 2006, this annual event, site of the *Promise and Mentor Awards*, has honored men and women under 35 with the talent and motivation to advance into leadership positions in the satellite industry, as well as one executive recognized for mentorship of the next generation. Separate registration is required to attend the booth tours, the Vision Awards reception, the HPA meeting and the SSPI Promise and Mentor Awards dinner.

Top Speakers and Conference Sessions

"We have some really great panel sessions this year that will provide attendees with valuable insights on next generation satellites and services, government and military market challenges, opportunities for government and commercial partnerships, international markets, satellite broadcasting, mobile satellite communications and the commercial sector" said *Reynolds*.

Expert speakers, including a balanced mix of end-users and satellite industry executives, will provide SATCON attendees with strategies for managing their communications infrastructure including video, data, voice and Internet using satellite, fiber, mobile and wireless technologies.

The 2012 SATCON topics include:

- **SATCON MILITARY KEYNOTE:** ***Lieutenant General Ellen M. Pawlikowski***
- **SATCON MILITARY:** ***Building an Enterprise Architecture***
- **SATCON MILITARY:** ***Satellite Strategy and Procurement in a Changing Geo-Political Environment***
- **SATCON MILITARY:** ***A New Political and Economic Environment for Hosted Payloads?***
- **SATCON MILITARY:** ***COMSATCOM Information Assurance/Cyber Protection***
- **SATCON MILITARY:** ***Meeting the Need for Comms-on-the-Move in an Era of Budget Constraints***
- **SATCON MILITARY:** ***Where does Ka-band fit into the MILSATCOM future?***
- **SATCON GOVERNMENT:** ***Why Satellite? Meeting the Communication Needs of State & Municipal Agencies***
- **SATCON GOVERNMENT:** ***Disaster Response: The Role of Satellite Communications***
- **SATCON MEDIA:** ***Combating Satellite Interference—Latest & Greatest***
- **SATCON MEDIA:** ***It's LIVE LIVE LIVE!***

- **SATCON MEDIA:** ***The role of Satellite Communications in a Multi-Screen World***
- **SATCON MEDIA** ***IP in the Sky—Media Service for the Next Generation***
- **SATCON INDUSTRY:** ***Fundamentals of Satellite Communications, Part 1 and Part 2***
- **SATCON INDUSTRY:** ***Emerging Markets: Can Satellites Bridge the Digital Divide?***
- **SATCON INDUSTRY:** ***Satellite Broadband: The Moment of Truth***
- **SATCON INDUSTRY:** ***Optimizing Satellite Mobility Solutions in New Frequency Bands***
- **SATCON INDUSTRY:** ***How Are Next-Gen Satellites Meeting Customer Needs?***

"You can really cover a lot of ground in just two days at SATCON, in terms of meeting many of the most influential people in the satellite industry in an intimate business environment. Nowadays it is important for attendees to be as productive as possible whenever they travel, and we want to help attendees maximize their time spent at SATCON. New York City is premier destination, which helps us to attract a great quality audience. We are the only show that provides free conference passes to end-users and greatly reduced conference passes to industry and vendors for as little as $175 (early bird pricing) for a full conference pass. We want to serve the industry by making attendance more affordable for our attendees. This is the best way for us to help industry-leading exhibitors, industry partners, speakers and end-users gather at the event and discuss business expansion in the most important global markets for satellite-enabled communications." *Reynolds* said.

The Basics

Attendee registration at SATCON is online at ***www.satconexpo.com***. *SatMagazine* readers, apply for your **complimentary pass using VIP Code CCG33**.

You may also contact the organizers of SATCON at ***info@jdevents.com*** with any questions.

About the author

David Reynolds is the Event Director, SATCON. He joined JD Events in 2007 and has spent 16 years in the trade show and conference industry as a sales and show management executive working for large and small show organizers. He was previously a Group Vice President at Comtek International, an international trade show organizer, managing shows ranging from broadcasting to consumer electronics.

Betting On The Future Of Ka-Band

By Tony Radford, V.P. Sales and Marketing, Teledyne Microwave Solutions

You don't have to be a "fly on the wall" to pick up on the industry buzz over Ka-band. The mere mention of "Ka" at any fraternal satcom gathering is certain to spark a spirited debate riddled with viability pros and cons.

Nonetheless, industry leaders, marketing gurus, soothsayers—right down to the fortune-tellers on the Vegas Strip—are aligned in their predictions that Ka-band will reign-supreme over all others in the years to come. I've even heard it prophesied that Ka-band would ultimately *REPLACE* all others and become the only satellite band in existence. Well, that might be a bit of a stretch, as many technologies thought to be extinct, such as analog modulators, 70MHz transceivers and Sequential FEC, are still in operation today, despite having been replaced eons ago by vastly-superior technology.

Still, the number of Ka-band satellites being launched is clearly on the rise—and with each launch comes the promise of greater sophistication, laser-sharp contours, and the contribution of another Gig or two of capacity. The good news is that these orbiting techno-marvels are essentially useless without uplinks and downlinks—and as every uplink requires a high-power amplifier and every downlink, an LNA or LNB, engineering and production teams around the globe are scrambling to feed the market's burgeoning appetite with their latest innovations.

However, along with its operational benefits comes a host of challenges for those who choose to include Ka-band products in their repertoire.

First, test equipment that will operate at more than 30GHz is extremely expensive when compared to the instruments needed for the lower bands.

Secondly, the output devices currently available don't generate a lot of power individually. You have to combine quite a few to support anything beyond thin-route performance.

Finally, the less-than-stellar linearity of these devices will require some form of pre-distortion to obtain respectable linear power. Despite the challenges posed, a number of well-known brands (and a few that aren't) have elected to address the Ka-band market head-on. One of those brands is Teledyne Microwave Solutions (TMS).

With more than 1,000 employees and nine manufacturing facilities in the U.S. and abroad, Teledyne Microwave Solutions is focused on a variety of markets that includes Microwave Communications, Signal Processing, Test Instrumentation and military applications that include Electronic Warfare, Counter-IED, Threat-Detection and RADAR.

Teledyne Microwave Solutions is comprised of seven, previously-separate, Teledyne operations that have been combined into a single, symbiotic resource that includes a plethora of Ka-band design and production capabilities. Three of the members in particular, Teledyne Paradise Datacom—a market leader in the design and manufacture of solid state power amplifiers for the satcom market, Teledyne Microwave—a major provider of RF designs for land, air and space-based applications and Teledyne MEC —one of the world's largest producers of traveling wave tubes (TWTs), have pooled their resources to produce an assortment of new products for the Ka-band amplifier market.

"Very few companies in the industry possess Teledyne Microwave Solution's wide range of capabilities when it comes to Ka-band," said *Russell Shaller*, Vice President and General Manager of the group. "Be it thin film, chip and wire, soft-board, GaAs, GaN or TWT, we have the tools and talent necessary to provide products that are optimized for price and performance."

For the low end of the power spectrum, TMS has developed a line of BUCs and LNBs that are intended for applications that carry serious weight limitations. The terms "size and weight" take on a whole new meaning when the target-weight of the complete terminal is less than 10 pounds. In some cases, the price that an integrator can charge for a terminal is inversely proportional to its weight.

Though originally designed to interface directly with a flat plate antenna, its two pound gross weight allows it to be mounted directly to an antenna feed-port. Variants include fixed frequencies for commercial and military band-segments, as well as externally switchable versions that cover both military and commercial frequencies. What's particularly nice about this product, besides the small size and weight, is that it comes complete with a thermal management system.

BUC LNB photo

As it was originally designed for airborne applications, it's hermetically sealed for ultra-reliability. This product is ideal for the micro-flyaways and military backpack terminals where all of the attributes come to bear—features, reliability and weight.

Having more than a quarter-century of SATCOM SSPA design experience, TMS also offers a line of "mid-power" Ka-band amplifiers packaged for antenna-pedestal and hub mounting. Some have been ARSTRAT certified into various military-terminal designs. The 40 watt Compact Outdoor amplifier has been widely distributed on a key government program where it is supplied with three other units (quad-band), all with the same form-factor.

Ranging from under 10- to 40-pounds, and delivering 10, 20 and 40 watts, respectively, these amplifiers are available with internal BUCs, fiber optic IFL, and IP M&C interface. All of these products are available with a number of different redundancy and phase-combined architectures —factory pre-assembled and ready for installation.

"We've put a lot of effort into some proprietary circuitry to compensate for the soft compression-characteristics of the Ka-band output devices currently available," said *Steve Turner,* Vice President of Engineering at Teledyne Paradise Datacom. "When you add the fact that we're able to ship our X- and Ka-band products without the need for a State Department export license, that's quite a valuable proposition.

Teledyne's Ka-band vBUC

Betting On The Future Of Ka-Band (continued)

Later in the year, we'll be raising the bar on Ka-band amplifiers with a launch that should get everyone's attention."

Though the day will come that solid state Ka-band technology will reach much further into the output-power-curve, for now, operators will be counting on traveling wave tube amplifiers (TWTAs) to do the heavy lifting. This is perhaps where TMS presents its greatest value proposition. As a whole, the TMS group maintains all of the tools and skills needed to produce a high-power Ka-band TWTA, including all of its major parts—even the tube itself. By using its internal resources, Teledyne has control of the elements that drive quality, cost and availability.

Mr. *Shaller* added, "The market is ready for a supplier to the Ka-band TWTA market that has complete control over the power supply, TWT, and supporting electronics to ensure a reliable, fully specification-compliant product. As the world's largest volume producer of Ka-band TWTs, we expect this product will soon become the industry standard. Orders have been received and deliveries scheduled for our 500 watt, Ka-band TWTAs based on the new Teledyne MEC-5530 TWT. Some will be delivered as pre-integrated, 1:2 redundant subsystems using switching systems and logic perfected by our Paradise Datacom facility."

From five to 500 watts, for applications on land, sea, air and space, Teledyne Microwave Solutions has perhaps the most complete line of Ka-band amplifier products to exist under a single logo. Visit the *Teledyne Microwave Solutions website* for detailed specifications, features and application notes for these products and the entire line of amplifiers for all bands and power levels.

About the author

Tony Radford has lived the past 30 years of his life in Atlanta, Georgia—much of it spent traveling the world while serving the satellite communications industry in a variety of roles. His current position is that of VP Sales and Marketing for Teledyne Microwave Solutions. Previous tenures include Paradise Datacom, VertexRSI, Telecom International, STM Wireless and Scientific Atlanta. In 2009, he began writing a series of op-ed articles for SatMagazine. His first book entitled 'Satcom Guide for the Technically Challenged' has been distributed world-wide and is used by industry leaders as a satcom primer for new employees. His second book, 'Fork in the Road', is a satirical memoir that chronicles his occupational adventures to many destinations far off the beaten path and ripe with events that are guaranteed to entertain.

Teledyne's 40W Compact Outdoor Amplifier

The Company's 500W Ka-Band TWTA

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