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Worldwide Satellite Communication Solutions!



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- TWT Amplifiers

TABLE OF CONTENTS

Vol. 3 No. 7, November 2005

Click on the title to go directly to the story

COVER STORY

FEATURE

CASE STUDY

REGIONAL UPDATES



20 / Emergency Preparedness—If Not Now, Then When?

By Bruce Elbert

The natural disasters brought upon by Hurricanes in the Southern United States demonstrated once again the importance of satellite communications in emergency situations.



23 / Eutelsat's Next Move – and Satellite's Long-term Prospects

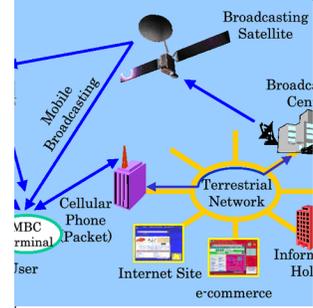
By Chris Forrester

There's rarely a dull moment in the satellite business, but currently one of the topics occupying the minds of European industry observers is the question over what Eutelsat will do with its fresh pile of cash.



27 / Voom HD News Accelerates HD Editing Process

Voom HD News accelerates the HD editing process with a shared digital storage solution.



33 / Satellite Digital Multimedia Broadcasting Services Introduced in Asia

By Bernardo Schneiderman

A new multimedia mobile service is sweeping Asia.

REGULAR DEPARTMENTS

- 3 / Note from the Editor
- 4 / Calendar of Events
- 5 / Featured Event:
PTC2006
- 6 / Industry News
- 11 / Executives Moves
- 17 / New Products and Services
- 30 / Vital Statistics *presented by Futron Corporation*

- 31 / Market Intelligence:
Satellite Communication End-Users to Reveal All: Redefining West Africa's Product and Service Demands?
- 36 / Stock Monitor/
Advertiser's Index

NOTE FROM THE EDITOR

Asia Goes Broadband



In this issue we focus on the role of satellite communications in times of emergency and natural disasters, which has been demonstrated once again in the aftermath of the devastating Hurricanes Katrina and Rita that recently struck the Southeastern part of the United States. Bruce Elbert in the cover story explores this important aspect of the industry, but instead of belaboring the obvious, he provides a prescription that emphasizes preparation and disaster anticipation as opposed to acting after the fact.

Apart from the recent natural disasters, much has been happening in our industry, not the least of which was the recent purchase of PanAmSat by erstwhile rival Intelsat. Somewhat lost in all this is the newly revitalized Asian market. Bernardo Schneidermann writes in this issue on the newly launched digital multimedia mobile broadcasting service in Japan.

The Thai broadband satellite, iPSTAR, which finally launched last August after long delays, just went into service last month. iPSTAR is the largest satellite ever built to-date and has a bandwidth capacity of 45 Gbps, more than the 1-3 Gbps conventional capacity of satellites. The satellite has a footprint covering 14 countries including India, China, Southeast Asia, Korea, Japan, Australia and New Zealand. iPSTAR is offering broadband satellite service for about \$25.00 a month and hopes to get 300,000 subscribers by the end of next year. The system has the capacity to support over 4 million subscribers.

Much is expected from iPSTAR as it is being used as barometer of broadband's potential in the Asian market--arguably the largest market in the world. The satellite also has the potential to bring broadband services to large parts of rural Asia previously unserved by other media. The question, however, is can the operation be profitable? Shin Satellite, the operators of iPSTAR have been known to engaged in creative pricing of it services in their other satellites. Even at \$25.00 a month, the price of broadband service might still be beyond the reach of users in most parts of Asia where the annual income is as low as \$100.00.

One thing for certain, if the iPSTAR service becomes successful--it will spark growth in Asia that will lead to other competing services entering the picture. That's what makes the Asian market exciting and worth watching.

Virgil Labrador

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CALENDAR OF EVENTS 2005

NOVEMBER

Oct. 31 -Nov. 1, Marriot Grand Hotel, Moscow, Russia
**2nd Russia and CIS Broadband Summit and MITEL
 2005 Exhibition**

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<http://www.ite-exhibitions.com>



November 1-4, Houston, Texas
Offshore Communications 2005

Inger Peterson
 Tel: 772-221-7720 ext. 112 / Fax: 772-221-7715
 Email: ipeterson@offshoresource.com
 Website: www.offshorecoms.com

November 2-4, Beijing New Century Hotel
 Beijing, China
China Satellite 2005

Richard Theodor (Wozniak) Kusiolek
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 Website: www.transglobalnet.com/

November 7-9, London, UK
Global MilSatCom 2005

Tel: +44 (0) 20 7827 6000 / Fax: +44 (0) 20 7827 6001
 Email: client_services@smi-online.co.uk
 Website: www.globalmilsatcom.com

November 8-10, Hilton Rome Airport
SATELLITE EMEA 2005

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 Tel: +1-301-345-1797 / Fax: +1-301-340-7136
 E-mail: proux@accessintel.com
 Website: www.satelliteemea.com

November 8-11, Melia Hotel Hanoi, Hanoi, Vietnam
The 2nd Asian Space Conference

David Soo
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 Website: <http://www.ias.nl/space>

November 16-19, Moscow, Russia

NATEXPO-2005

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 Website: www.natexpo.tv



November 23-25, Meridien Hotel, Abuja, Nigeria

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 Website: <http://www.gvf.org>

November 24-27, World Trade Center, Istanbul, Turkey
Broadcast, Cable & Satellite Eurasia 2005

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DECEMBER

December 1-2, Sheraton Gateway Hotel, Los Angeles, CA
Conference and Spotbeam Awards Dinner

Mr. Elizabeth Burkhead
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 Website: www.californiaspaceauthority.org

December 5-7, Sofitel Wentworth , Sydney, Australia
Satcom Australia 2005

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 E-mail: peta.lemon@terrapinn.com
 Web: terrapinn.com/2005/satcom_au2006

January 15-18, Honolulu, Hawaii USA

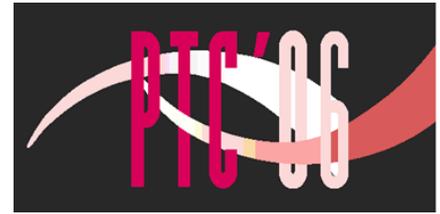
PTC'06

Shift Happens: Transition to IP
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 E-mail: ptc06@ptc.org
 Website: <http://www.ptc06.org>

FEATURED EVENTS

PTC'06 Features Strong Satellite Flavor

by Timothy Logue



PTC '06

January 15-18, 2006
Hilton Hawaiian Village
Honolulu, Hawaii, USA

The 28th Annual Pacific Telecommunications Conference and Exhibition, which will be held at the Hilton Hawaiian Village Beach Resort and Spa in Honolulu, 15-18 January 2006 will have much to attract the satellite industry this time around. With strong support from some of the leading organizations in the field – the Asia-Pacific Satellite Communications Council, the Satellite Industry Association (SIA), the Global VSAT Forum (GVF), the World Teleport Association (WTA), Society of Satellite Professionals (SSPI) and ISCe Conference and Expo/Hannover Fairs, the PTC will again feature a strong satellite flavor.



The conference itself will begin with a pre-opening workshop focusing on communications for disaster warning, management and recovery. Organized in cooperation with the Global VSAT Forum, satellite industry participants will play in lead role, as they have in disasters since the Mexico City earthquake in the mid-80s. More recently, satellite services providers have played a key role in disasters ranging from the attacks on September 11, 2001 to the more recent Indian Ocean Tsunami and U.S. hurricane disasters. The workshop will discuss the latest thinking and “lessons learned” in the fast-changing world of communications for disaster management.

With that strong start, the focus will shift to a full day (plus more) of satellite sessions on January 17 that leads off with the Satellite CEO Super Session organized by the SIA and Hannover Fairs. Key CEOs participating include Mark Albrecht, of International Launch Services; Ali Atia, Orbital Sciences Corporation; Patrick Brant, Loral Skynet; Mark Dankberg, ViaSat; Ed Horowitz, SES Americom; Peter Jackson, Asia Satellite Telecommunications; and Dumrong Kasemet, Shin Satellite. SIA Executive Director David Cavossa and David Bross of Hannover Fairs will chair the stellar panel.

The SIA and Hannover will follow-up with a sponsored luncheon

focusing on military satellite communications services. That will kick off a strong afternoon for “satellite day” at the PTC. One panel session will discuss IP Satellite Services, including examinations of last mile solutions using IP satellite technologies, high speed IP-based satellite services and how IP services are changing satellite services. The final session of the “satellite track” for the day will feature a panel session organized by the APSCC, which will examine current developments in the satellite industry in the region. The last year has seen many interesting developments, including the introduction of satellite-delivered digital multimedia broadcasting in Korea and Japan. The industry also continues to evolve towards delivery of HDTV services via satellite and to adapt to the strong demand for broadband internet services. The APSCC panel will examine how the Asian and global satellite operators are adapting to the reawakening of the satellite market in the region and the introduction of these new services.

The WTA will make its strong contribution on January 18 with a panel focusing on lessons learned from winners of its annual “Teleport Awards for Excellence” regarding how to integrate satellite services into regional networks.

More information about PTC'06, including the many other sessions focusing on IP issues, VoIP, submarine networks, mobile services and other topics can be found at www.ptc06.org.



Timothy Logue is a Senior Director for Business Development with Orbital Sciences Corporation's Orbital Communications International business, where he specializes in business development for the communications satellite manufacturing business in the North American region. Mr. Logue

joined Orbital in early 2005 after 20 years as a consultant with the satellite communications practice groups of two law firms. Logue is very active in organizations related to the industry, including the Society of Satellite Professionals, the Arthur C. Clarke Foundation, and the Pacific Telecommunications Council. He holds an undergraduate degree in journalism and earned a masters degree in international communications with a focus on policy.

INDUSTRY NEWS

Ariane 5 Successfully Launches PanAmSat's Galaxy 15 and Syracuse 3A Satellites



Ariane 5 lifts off from the ELA-3 launch zone with its Syracuse 3A and Galaxy 15 satellite payloads.

KOUROU, French Guiana — Arianespace successfully orbited on October 20 evening a dual payload consisting of a military communications satellite and a multi-mission civilian relay platform.

The Ariane 5 Generic launcher lifted off from Europe's Spaceport in French Guiana at the 7:32 p.m. opening of its launch window (local time in French Guiana), and flew the planned trajectory to deploy Syracuse 3A and Galaxy 15 in geostationary transfer orbit.

Le Gall noted that Syracuse 3A is the latest military satellite orbited by Arianespace, which guarantees sovereignty for European and international space programs. He added this important reality should be remembered by program decision-makers when selecting launch services for new sovereign systems in the telecommunications, Earth observation and other sectors.

Ariane 5 released Syracuse 3A at approximately 29 min. into the mission, followed by the Galaxy 15 spacecraft's deployment some 10 minutes later. Syracuse 3A rode in the upper position on Ariane 5's SYLDA 5 deployment system, while Galaxy 15 was installed below it.

Syracuse 3A is the initial satellite in France's new third-generation Syracuse III system for secure military communications. With a mass at liftoff of 3,725 kg., the satellite carries a 15-channel payload operating in nine SHF (super high frequency) channels and six EHF (extremely high frequency) channels.

Built by France's Alcatel Alenia Space using the company's Spacebus 4000 B3 satellite platform, Syracuse 3A has a design lifetime of 12 years, and the platform will operate from an orbital position of 47 deg. East. The Syracuse 3A spacecraft was

ordered through the French DGA military procurement agency. The 20th satellite orbited Ariane for PanAmSat

PanAmSat's Galaxy 15 satellite was built by Orbital Sciences Corporation, and will be placed in an orbital position of 133 deg. West. Providing coverage over the 50 United States, the satellite's C-band payload will distribute entertainment and information to cable television systems, TV broadcast affiliates, direct-to-home TV operators, Internet service providers, telecommunications companies and corporations.

Alcatel Alenia Space to Supply Payload for Amos-3 Satellite

PARIS, — Alcatel Alenia Space has signed a contract with Israel Aircraft Industries (IAI) to supply Amos-3 communications satellite's payload. IAI is building the satellite for Israeli operator, Space-Communication Ltd (Spacecom).

Alcatel Alenia said Amos-3 is slated for launch at the end of 2007, allowing Spacecom Ltd. to replace the Amos-1 geostationary communications satellite launched in 1996 and which mission will end in 2008. AMOS-3 will also expand the operator's range of Ku-band services and initiate Ka-band service to provide high-quality communications and broadcasting transmission services covering the Middle East, Europe, Africa, and parts of the Americas.

Amos-3 is the first major contract announced by the newly formed company Alcatel Alenia Space.

According to Alcatel Alenia, the contract covers the delivery to IAI of a communication payload with Ku and Ka-band transponders (including a four-antenna system) as well as a Telecommand and Ranging system by beginning of 2007. The payload will be assemble in Alcatel Alenia Space plant in Toulouse with part of its equipments provided by its site in Rome.

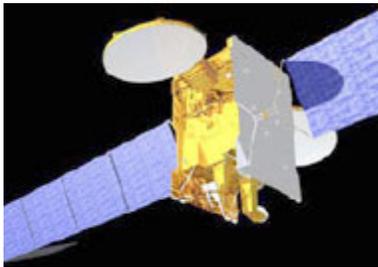
Telesat's Anik F1R Satellite Begins Commercial Service

OTTAWA, ON — Telesat has launched commercial services on its Anik F1R satellite, providing broadcasting and telecommunications capacity for Canadians, including direct-to-home satellite television.

Satellite manufacturer EADS Astrium said Telesat's Anik F1R satellite has successfully completed in-orbit tests and has been

INDUSTRY NEWS

placed at the 107.3°W orbital slot, from where commercial service has commenced. The satellite was formally handed over to Telesat on October 1, 2005.



Anik F1R carries a 24 C-band and 32 Ku-band transponders. Anik F1R has a design life of 15 years.

The EADS Astrium team in Toulouse took control and began operating the Anik F1R satellite following its launch on 9 September 2005 from the Baikonur Cosmodrome in the Republic of Kazakhstan. The satellite arrived in geostationary orbit on 14 September and, after full deployment of its antenna reflectors and 36m wingspan

solar array, began in-orbit platform tests, swiftly followed by thorough payload tests at the 118.7°W location in geostationary orbit. The satellite was then moved to the 107.3°W orbital location. Upon arrival at this operational station, Telesat officially took possession of its new satellite and commenced transferring North American traffic to it. All spacecraft functions are performing fully as expected, EADS said.

Telesat's Anik F1R also carries a navigation payload that enhances the global positioning system used in aviation across Canada and the United States — making North American air navigation safer and more reliable than ever before.

Telesat's major customers, including CTV, CHUM Television and CBC, will use Anik F1R to deliver high-quality, reliable broadcasting services from coast to coast. The satellite will also play a key role in Star Choice's national direct-to-home satellite television service.

Americom Government Services Wins NOAA Maritime Satellite Contract

PRINCETON, N.J. — The National Oceanic and Atmospheric Administration (NOAA) has awarded Americom Government Services, Inc. (AGS), a wholly-owned subsidiary of SES Americom, Inc., a contract for ship-board terminals and satellite service.

AGS said Maritime Telecommunications Networks (MTN) will act as AGS's subcontractor for the award.

David Helfgott, president and CEO of AGS, said he is pleased that NOAA will now join the company's list of federal customers. "Our people are satellite experts who know what the federal customer needs, so we consistently deliver the best technology and the best customer service," he said.

"We have no doubt that working together with AGS we will deliver the highest quality satcom services to NOAA's maritime fleet," said David Kagan, president and CEO of MTN.

DataPath Nabs \$96-M Army Contract

DULUTH, Ga. — The U.S. Army Communications-Electronics Command in Fort Monmouth, N.J. has awarded DataPath, Inc. a \$96 million firm-fixed-price sole source contract for the delivery of a total of 157 trailer-based satellite terminals to support the Army's Joint Network Node (JNN) initiative.

In addition, DataPath said, will provide engineering design and certification services to customize the earth terminals to meet the Army's unique mission requirements. The contract also includes associated technical support, soldier training and spares.

Deployed extensively in Iraq, the JNN initiative is a network-centric communications architecture, which provides reliable and portable communications to the U.S. Army Third Infantry Division, 101st Airborne Division, Fourth Infantry Division and 10th Mountain Division. This \$96 million award expands the existing JNN implementations with deployments to the First Cavalry Division, the 25th Infantry Division, the 82nd Airborne Division and multiple Army National Guard units.

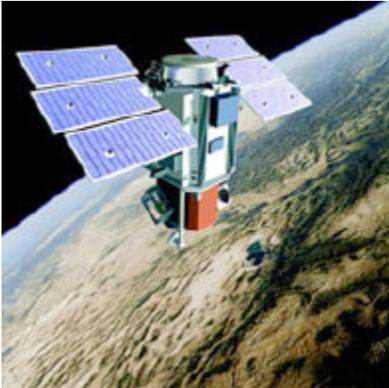
Andy Mullins, chief executive officer of DataPath, said the company's custom satellite earth terminal and network solutions enable customers to implement a battle-tested communications infrastructure in order to meet their unique mission requirements.

DigitalGlobe Plans 2 More Imaging Satellites, WorldView I and WorldView II

LONGMONT, Colo. — DigitalGlobe announced on October 4 details of the company's next generation of imaging systems, WorldView I and WorldView II. DigitalGlobe said it has been building both imaging systems concurrently.

According to DigitalGlobe, WorldView I, combined with QuickBird, will enable DigitalGlobe to have the two highest

INDUSTRY NEWS



DigitalGlobe's QuickBird high-resolution remote sensing satellite. Two more imaging satellite are being planned by DigitalGlobe.

resolution commercial imaging satellites on-orbit for at least a year before any comparable system is launched. By 2008, DigitalGlobe's constellation of high-resolution satellites will be unprecedented in the commercial satellite imaging industry, enabling commercial and government customers around the globe to access a broad selection of geospatial information products from a single source.

WorldView I, scheduled to launch no later than 2006, will be the most agile satellite ever flown commercially. The high-capacity, panchromatic imaging system features half-meter resolution imagery. With an average revisit time of 1.7 days and a swath width of 16 kilometers, WorldView I will be capable of collecting up to 500,000 square kilometers (200,000 sq. mi.) per day of half-meter imagery. WorldView I will also be capable of directly downlinking imagery to customer locations. The satellite will be equipped with state-of-the-art geo-location accuracy capability and will exhibit stunning agility with rapid targeting and efficient in-track stereo collection.

WorldView II is planned to launch no later than 2008. Operating at an altitude of 770 kilometers, WorldView II will enable DigitalGlobe to offer half-meter panchromatic resolution and 1.8-meter multispectral resolution. The WorldView II system will allow DigitalGlobe to substantially expand its imagery product offerings to both commercial and international customers with a more commercially desirable, higher performance product.

DirecTV Makes Available 72 XM Channels

EL SEGUNDO, Calif. and WASHINGTON — Beginning Nov. 15, 2005, 72 channels of XM's quality music, children's, and talk programming will be available via DirecTV, nearly doubling DirecTV's current audio programming lineup.

DirecTV said the agreement will benefit more than 14.6 million DirecTV customers nationwide who will not pay additional cost

for the service.

In addition to music channels and children's programming, XM will provide XM's Major League Baseball "Home Plate" talk radio channel, and its High Voltage channel, featuring talk radio stars Opie and Anthony.

"DirecTV is making a major commitment in the world of music, and this alliance with XM Satellite Radio will leave a lasting imprint on not only our more than 14.6 million customers nationwide, but on the pay television industry as a whole," said

Dan Fawcett, executive vice president, Programming Acquisitions, of DirecTV said by partnering with fellow satellite innovator XM to deliver an unrivaled lineup of quality audio channels, DirecTV will continue to provide our customers with more entertainment choices, more value and the best service available.

EADS Astrium Completes Integration of World's Largest Space Telescope

PARIS, — After four years work, EADS Astrium revealed it has successfully completed mechanical tests on the world's largest space telescope made of silicon carbide. EADS said the Herschel telescope is now on the way to the "Centre Spatial de Liège" (Belgium) for final thermal tests.

With a primary mirror diameter of 3.5m, Herschel is the largest space telescope ever constructed compared to Hubble's, which only has 2.4m wide primary mirror. The huge scale of the telescope is a direct result of scientists wanting the best possible images - in simple terms, the larger the mirror's diameter, the greater the amount of light that is collected and the higher the resolution of the images. The size of the Herschel telescope is in fact limited by the launcher fairing - at a maximum 3.5m, EADS said.

Following polishing of the primary mirror by Opteon (Finland), coating was carried out at the Calar-Alto Observatory (Spain), and the mirror was delivered for integration in June.

Integration consisted of accurately aligning the primary and secondary mirrors to achieve perfect optical quality. The precision adjustments required an accuracy greater than 5 microns. This accuracy was obtained using a seismic block, and an original auto-collimation method based on liquid mirrors. This was achieved towards the end of the summer, enabling excellent optical performance in line with the original objectives.

INDUSTRY NEWS

EADS Astrium Selects Arianespace to Launch Spirale

PARIS — EADS Astrium has chosen Arianespace to launch the two “Spirale” micro satellites, technology demonstrators for a spaceborne optical early warning system.

The two Spirale satellites will be injected into geostationary transfer orbit by an Ariane 5 launched from the Guiana Space Center. They will be carried as auxiliary passengers on an Ariane 5 mission in 2008, using the ASAP 5 structure.

EADS Astrium is the prime contractor for the Spirale demonstration program, acting on behalf of French defence procurement agency DGA. It will involve the construction of about 130-kg micro satellites each, using the Myriade platform developed by

CNES.

The Spirale demonstration program is designed to collect and analyze images in the infrared band against a land background, in order to detect ballistic missiles during their boost phase. The Spirale program heralds a future early warning system that will be a strategic component in a ballistic missile defence system.

It is the second time this year that EADS Astrium has chosen Arianespace to launch a military satellite after the selection of Ariane 5 for the British Ministry of Defence’s Skynet 5A and Skynet 5B military communications satellites.



**5-7 December 2005, Sofitel
Wentworth, Sydney, Australia**



Out of this world

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INDUSTRY NEWS

JSAT Awards Lockheed Martin Contract for Third A2100 Satellite

NEWTOWN, Pa. — JSAT Corp. (JSAT) of Japan has awarded Lockheed Martin a contract to build its next geostationary telecommunications satellite, designated JCSAT-11.

JCSAT-11 will be reserved entirely in orbit as a back up satellite for other JCSAT satellites following its scheduled launch in 2007. Financial terms were not disclosed.

Based on Lockheed’s A2100AX platform, JCSAT-11 will be a hybrid satellite featuring Ku-band high-power and C-band medium power transponders. LMCSS is currently building JCSAT-9 and JCSAT-10, both based on the A2100AX satellite platform. JCSAT-9 and JCSAT-10 will serve Asia and Japan following planned launches in 2006.

“We are extremely pleased to be awarded JCSAT-11, the third consecutive satellite order that JSAT has contracted to Lockheed Martin in the last two years,” said Ted Gavrilis, president of Lockheed Martin Commercial Space Systems (LMCSS).

Lockheed said JCSAT-11 is the fourth satellite award for the company this year based on signed manufacturing contracts. In January, Nordic Satellite AB (NSAB) awarded Lockheed a contract to build its next geostationary direct broadcast satellite, designated SIRIUS 4. Earlier this year, SES Americom and the Broadcast Satellite System Corp. of Japan awarded Lockheed Martin contracts to build AMC-18 and BSAT-3a respectively, both small-class satellites based on the A2100A platform. **SM**

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EXECUTIVE MOVES

Northrop Grumman-Boeing CEV Team Names Deputy Program Manager

WASHINGTON D.C. — The Northrop Grumman Corp. and Boeing Company Crew Exploration Vehicle (CEV) team has named Leonard Nicholson, a former International Space Station executive for Boeing, as its new deputy program manager.

Doug Young, vice president of space systems for Northrop Grumman's Integrated Systems sector and program manager for the Northrop Grumman-Boeing CEV team, said Leonard's broad operational experience in the U.S. space program, from Apollo to the space shuttle and International Space Station programs, will reinforce the team's ability to help NASA design and build an innovative.

Earlier this year, NASA awarded a \$28 million Phase 1 contract to the Northrop Grumman-Boeing team to perform trade studies for the development of a human-rated spacecraft. The CEV, a successor to the space shuttle, is expected to carry astronauts to the moon, Mars and beyond in coming decades. NASA plans to award a Phase 2 contract to design and build the CEV to a single contractor team in spring 2006.

Nicholson, a Boeing employee, will be responsible for coordinating the team's activities required to implement the overall CEV program. Keith Reiley, who had been acting deputy program manager, will now devote full attention to managing the team's spacecraft design activity and will serve as the lead for the Phase 1 contract effort.

Nicholson retired from NASA in 2000 and joined Boeing as a special assistant to the company's International Space Station program manager. In 2002, he was named International Space Station deputy program manager.

Northrop Assigns 4 Executives to New Leadership Positions in Space Technology

REDONDO BEACH, Calif. — Northrop Grumman Corp. has assigned four executives to new leadership positions at its Space Technology sector to further strengthen program and operating performance.

Frederick L. Ricker has been named sector vice president and deputy, Programs; David L. Ryan has been named sector vice president and National Polar-orbiting Operational Environmental



Frederick L. Ricker

Satellite System (NPOESS) program director; James M. Myers has been named sector vice president, Sensors and Payloads; and Stuart T. Linsky has been promoted to vice president, Satellite Communications.

As sector vice president and deputy, Programs, Ricker assumes a new position with responsibility for the management, development, deployment and operation of space systems and other deliverables produced.



David Ryan

Ryan assumes the position as sector vice president and NPOESS program director, with the responsibility for continuing the development of this satellite system. Ryan joined Northrop Grumman this year as vice president, Sensors and Payloads, and is keenly aware of the importance of subcontractor performance to the overall success of NPOESS. He served as president of Boeing Satellite Systems International and prior to joining Boeing, Ryan spent 13 years designing and operating satellite systems for TRW.



James Myers

Myers assumes Ryan's position as sector vice president, Payloads and Sensors. In this role, he has responsibility for the development and implementation of sensor and payload strategy, as well as leading all subcontracting activities for the sector. Space Technology currently manages more than 250 active subcontractors for sensors, payloads and other work, several of which are subcontracts in excess of \$1 billion. Myers previously served as vice president, Satellite

Communications.



Stuart Linsky

Completing the realignment, Linsky has been appointed vice president, Satellite Communications, succeeding Myers. Linsky has broad responsibility for the sector's Satellite Communications business including areas such as strategy development, new business capture and sustainment, management and allocation of resources. Linsky previously led Space Technology's Transformational Communication Systems initiative.

EXECUTIVES MOVES

Sirius Names Martin Lee Senior VP of Marketing

NEW YORK — Sirius Satellite Radio has appointed Martin Lee as senior vice president of Marketing. Lee will be responsible for all aspects of Sirius brand marketing and will report directly to Scott Greenstein, president of Entertainment and Sports, who will continue to oversee all marketing efforts.

Lee, who was recently selected as 2005 Marketer of the Next Generation by Brandweek magazine, brings a wealth of national and international experience in product and brand marketing to Sirius, including eight years in consumer electronics.

Most recently Lee was VP of Marketing at Olympus, where he directed product management, branding, advertising, sponsorships, interactive, trade shows and market research for the

company's consumer products (including the launch of its digital music players). In this position, he successfully introduced over 100 products into the market place including the Stylus Digital camera. At Olympus, Lee pioneered brand extension with sponsorships and built cross-branded partnerships that enhanced the company's visibility.

Greenstein said Lee's passion, energy and experience will help Sirius, which will continue to push to be the most innovative content provider in all of radio and have a brand that conveys and reinforces that mission.

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EXECUTIVES MOVES

DigitalGlobe Names New Senior Director, U.S. Defense Business Development

LONGMONT, Colo. — DigitalGlobe has named Thomas A. Hennig senior director of U.S. Defense Business Development. In this position, Hennig will interact with senior Department of Defense and intelligence community leaders to ensure that DigitalGlobe meets the needs of U.S. government organizations. Hennig's office will be located in the Washington, D.C. area.

Hennig will also work closely with DigitalGlobe's industry partners in the Washington, D.C. area to achieve mutually beneficial cooperative strategies. These initiatives will leverage technologies and partnerships to deliver new information products and solutions to both the government and commercial sectors.

From 2002 until he joined DigitalGlobe, Hennig served as the first liaison between the National Geospatial-Intelligence Agency (NGA) and the National Aeronautics and Space Administration (NASA). In that role he was responsible for facilitating agency-to-agency relationships and identifying, defining and coordinating the geospatial and Earth mapping needs of both agencies.

From 1996 to 2002, Hennig worked for the National Imagery and Mapping Agency (which became NGA in 2003) in several management positions, the most recent being director of the Commercial Imagery Program. Earlier positions at NIMA included program manager for the Shuttle Radar Topography Mission, and deputy chief of Systems Engineering and Program Integration in the Systems and Technology Directorate. Prior to working for NGA, Hennig held key technical and management positions for the Defense Mapping Agency, the U.S. Army Topographic Command and the U.S. Army Map Service.

EMS Satellite Appoints Michael Pollack Federal Sales Director

ATLANTA — EMS Satellite Networks (SatNet), a division of EMS Technologies, Inc. (NASDAQ: ELMG), has appointed Michael Pollack as director of federal sales.

Pollack will work closely with William Hafner and the rest of the EMS Satellite sales team, and be supported by Zelinger Associates Inc., which was hired last May as EMS SatNet's sales and marketing agent to the U.S. Government.



Michael Pollack

Pollack has more than 15 years of professional sales and marketing experience in the satellite communications equipment and services market and extensive knowledge in satellite network architecture and related technologies. Prior to this appointment, Pollack was director at Hughes Network Systems, responsible for business development, sales, and technical marketing activities for U.S. Government and Global activities worldwide in regions such as the Middle East, South America, and Russia and the Former Soviet Republics.

In his most recent assignments, Pollack has been heavily involved in the provision of satellite terminals and services to Department of Defense organizations such as the U.S. Army and to numerous U.S. Government contractors and integrators.

USN Hires Kenneth D. Riley to Oversee DoD Programs

NEWPORT BEACH, Calif. — Officials from Universal Space Network, Inc. (USN) has named Kenneth D. Riley as vice president and general manager of Department of Defense (DoD) Programs. He will be responsible for business development efforts and leading all USN contracts supporting the DoD.

Riley, who prior to his USN appointment held the position of director of Lifecycle Solutions for Lockheed Martin Technical Operations, also served as a career officer in the United States Air Force. During his 26 years of active duty service, he commanded various military space operations around the United States.

In his previous private sector position, Riley spent nine years at Lockheed Martin providing satellite operations support for the Air Force Satellite Control Network and NASA's Deep Space Network. While serving as an officer in the United States Air Force, he commanded various space operations units at Onizuka AFB in Sunnyvale, California and Offutt AFB in Omaha, Nebraska.

USN is engaged in space operations for telemetry, tracking and control (TT&C) services. Offering responsive, reliable and cost-effective solutions to the global government and commercial space community, USN provides unparalleled coverage through a

EXECUTIVES MOVES

seamless network of worldwide satellite tracking and communications assets.

Robert Lainé is EADS Space's New Chief Technical Officer

PARIS — Robert Lainé has recently been appointed EADS Space's new chief technical officer. The new post of CTO, reporting directly to CEO François Auque, is at the heart of organization developments. EADS said as CTO, Lainé will develop synergies between the Satellites and Space Transportation branches as well as R&D strategy at EADS Space level. EADS said Lainé will have an essential role in preparing the company for the future.

Lainé, of French nationality, has been in the space business since 1970. He has held a variety of senior positions in technical and program management within industry and at the European Space Agency (ESA), where he led scientific exploration programs such as the Giotto comet probe and the XMM-Newton space telescope, and spaceflight projects, notably the ATV (automated transfer vehicle) program for the European cargo vessel that will serve the ISS. Recently, as head of ESA's Launcher Division, he has been a key player in the Ariane 5 return-to-flight program.

Robert Lainé holds a degree in engineering from the Ecole Nationale Supérieure d'Electricité Appliquée, Paris.

L-3 Communications Names Peter Cohen to Board of Directors

NEW YORK — L-3 Communications has announced that Peter Cohen has been elected to the L-3 Communications Board of Directors which now consist of nine members.

In 1994, Cohen founded Ramius Capital Group, LLC, an investment advisory firm with over \$7.5 billion of assets under management. He is currently a managing member of the firm and senior member of the firm's Executive Committee.

Cohen has extensive experience in the private sector, serving as the COO of Shearson Lehman Brothers in 1981, its president in 1984 and its chairman and CEO in 1984. In 1991, he formed Republic New York Securities and Republic Asset Management for Republic National Bank of New York, while simultaneously creating Ramius Capital Group.

Presently, Mr. Cohen is a Director of The Mount Sinai-NYU Medical Center & Health System, as well as the Scientific Games Corporation. Over his career, he has served on a number of corporate, industry and philanthropic boards including The New York Stock Exchange, The Federal Reserve International Capital Market Advisory Committee, The Depository Trust Company, The Ohio State University Foundation, The New York City Opera, The American Express Company, GRC International, Olivetti SpA, Societe Generale de Belgique, Telecom Italia SpA, Presidential Life Corporation, The Titan Corporation and Kroll, Inc.

Cohen holds a Bachelor of Science degree from Ohio State University and an MBA from Columbia University.

Hannover Fairs USA Names David Bross Director of Business Development and Vice Chairman of ISCe Conference & Expo



David Bross

LOS ANGELES, Ca — Hannover Fairs USA, Inc. (HFUSA) has announced the addition of David Bross as director of business development and vice-chairman of ISCe.

Bross will be responsible for program development and exhibit and sponsorship sales for ISCe as well as business development related to other global events organized by HFUSA.

Before joining HFUSA, Bross was responsible for advertising sales at *Space News*, a leading space industry publication, and prior to that he was conference chairman for the Satellite Conference in Washington, D.C.

ISCe is an annual satellite and communications event that focuses on satellite and hybrid network solutions for the business, retail, entertainment, government and military sectors. ISCe 2006 will take place June 13–15 at the San Diego Hilton Resort at Mission Bay in San Diego, California.

EXECUTIVES MOVES

Fox TV Group Names Dennis Swanson President of Station Operations

NEW YORK — Dennis Swanson has been named President of Station Operations, FoX Television Stations Group. Jack Abernethy, CEO of Fox Television Stations Group said Swanson will assume his new role on October 10.

Swanson, who will report to Abernethy, will help manage the 35 FOX owned-and-operated stations across the country, including WNYW-TV and WWOR-TV in New York; KTTV-TV and KCOP-TV in Los Angeles; WFLD-TV and WPWR-TV in Chicago; WTXF-TV in Philadelphia; WFXT-TV in Boston; and WTTG-TV in Washington, D.C.

Before joining Fox Television Stations Group, Swanson was Executive Vice President and Chief Operating Officer, Viacom Television Stations Group, where he oversaw operations of the division's television stations. Swanson previously served as president and general manager of WNBC-TV in New York, and was president of ABC Sports from 1986-1996.

He was also president of ABC Daytime and ABC Children's Programming from 1991-1993. Prior to joining ABC Sports, Swanson was the president of ABC-owned television stations from 1985-1986, and earlier served as vice president and general manager of WLS-TV, the ABC owned-and-operated station in Chicago where he gave Oprah Winfrey her first daytime talk show.

Radha Subramanyam Named VP, Research and Planning, Nickelodeon Digital Television

NEW YORK — Radha Subramanyam has been named Vice President, Research and Planning, Nickelodeon Digital Television. Formerly senior director of research, Nickelodeon Digital Television, Subramanyam will continue to oversee ratings, primary and online research for NOGGIN, The N, Nicktoons & Nickelodeon Games and Sports (GAS). In her new position, she will now also oversee Ad Sales research for The N.

Most recently Subramanyam served as senior director of Research for Nickelodeon Digital Television and started the research department in March 2004. She joined the Viacom family in 2002 as a Research Director for Comedy Central. Previously,

she spent several years at NBC's cable properties in research and strategic planning roles.

Before moving over to the network side, she served on the faculty of the Tisch School of the Arts at New York University and Vassar College. Subramanyam graduated from Northwestern University where she earned a Master's and PhD in Radio, Television, and Film.

Tim Sabean Named Programming Director for Howard Stern Channels on Sirius

NEW YORK — Sirius Satellite Radio announced on October 11 that radio programming veteran Tim Sabean has been named programming director of Howard Stern's two Sirius channels. Stern is expected to start on Sirius in January 2006. Sabean will report to Scott Greenstein, Sirius president of Entertainment and Sports.

Howard Stern and the launch of his channels are highly anticipated by Stern's massive audience, and Sabean, as program director, will oversee the development of the Stern channels. For more than a dozen years, Sabean programmed many of the stations that carried The Howard Stern Show. Stern will launch the next phase of his extraordinary broadcasting career on Sirius in January, and channels 100 and 101 have been designated as the new home for Howard Stern.

ESPN STAR Sports Promotes Manu Sawhney to Executive Vice-President

SINGAPORE— ESPN STAR Sports Asia has just promoted Manu Sawhney to the newly-created position of executive vice-president, programming and marketing. Sawhney was previously senior vice-president, programming and event mgt.

Sawhney will be based in Singapore and will have region-wide responsibility for all programming matters related to ESPN STAR Sportsnetworks across Asia as well as the event management group which manages and promotes premier Asian sporting events such as the Asian X Games and San Miguel 9 Ball Tour .

EXECUTIVES MOVES

Before his move to ESPN's Asia Headquarters in Singapore, Swahney was managing director of ESPN Software India.

He In his new role, Swahney will have two additional portfolios: Network Presentation and Marketing Communications. ESPN said the integration of the programming, event management, network presentation and marketing communications functions will be key to the network's strategy of redefining its viewing proposition to fans as well as trade clients all over Asia.

Courtney to Resign From TiVo in Early 2006

ALVISO, Calif. — TiVo Inc. has announced that David H. Courtney will resign from his management roles at the company effective in early 2006. He will continue at the company in a transition role through April 15, 2006 as TiVo seeks to identify and recruit replacements for his various executive roles.

Courtney joined TiVo in early 1999 as CFO and held various operating and administrative positions during his tenure at the company.

“In light of the company’s recent accelerated achievement of its profitability target, its very strong financial position, and the successful transition in CEO leadership, I feel that this is the right time for me to turn my attention to new and different pursuits,” Courtney said. **SM**

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NEW PRODUCTS

Tiger Telematics' Gizmondo Offers Satellite Navigation Packages

LOS ANGELES — Tiger Telematics Inc. has announced details of its satellite navigation options and pricing for the Gizmondo handheld multi-entertainment device launching in North America.

Tiger Telematics said the six entertainment-based core functions of the Gizmondo make it a powerful GPS navigation aid. Its features include next-gen games, DVD-quality movies, awesome MP3 playback, a razor-sharp digital camera, picture and text messaging, email and location-based services. The Gizmondo is also an accomplished piece of GPS hardware.

Tiger Telematics said not only can the user enjoy the maximum entertainment on the move, with the additional of Gizmondo Navigator 2006, the Gizmondo becomes a fully fledged and portable satellite navigation handheld.

Developed with ALK Technologies, a developer of navigation and mapping solutions, the Gizmondo Navigator 2006 will be available separately in four individual regions (East Coast, Mid-West, West Coast, and South West).

Gizmondo Navigator 2006 powered by CoPilot is supplied by region on SD (Secure Digital) card provides the user with powerful trip calculation and extremely detailed street maps, allowing satellite navigation to a specific house number, Zip code, street or one of thousands of points of interest in fantastic 3D or 2D, complete with turn-by-turn voice instructions.

TransCore Unveils Design Innovations to GlobalWave Satellite's Tracking Technology



BOSTON — Following a multimillion dollar research and development (R&D) effort,

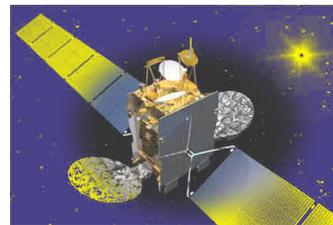
TransCore has introduced a smaller, faster, more power efficient, and compelling value proposition for satellite-based asset tracking technology to expand opportunities within the trucking, rail, security and marine markets.

At the heart of these innovations is a new core modem that reduces the size of the terminals and extends battery life from the usual three years up to seven years, doubling battery life of

trailer tracking products on the market, TransCore said. By eliminating the need for frequent battery replacement or using unreliable and expensive rechargeable batteries, the company said it resolves a long-standing impairment to widespread adoption of un-tethered tracking applications.

Through this technical advancement, TransCore has introduced two new GlobalWave satellite data communication terminals; one for basic tracking applications and one that enables both tracking and monitoring with a full suite of sensors. Both enable two-way, all-satellite, nationwide communication between fleet operators and assets.

GlobeCast Launches Planeta Sport On Hot Bird in Europe



PARIS — GlobeCast announced on October 11 an agreement to deliver Russian-language channel Planeta Sport to audiences in Europe via the Hot Bird satellite.

GlobeCast WorldTV, America's international direct-to-home satellite television provider, also announced that it has added RTR-Planeta and Planeta Sport to its channel line-up in the United States.

GlobeCast's Hot Bird platform at 13°East delivers to more than 98 million television homes across Europe, North Africa and the Middle East and 99% of cable operators in the region. In addition to Planeta Sport, other leading channels on the satellite include MTV, BBC, CNN, EuroNews, Bloomberg, TV Romania and TPS, among many others.

Planeta Sport provides premiere coverage of a wide range of international sports including the top Russian teams and athletes. From the Russian Premier League in football, ice hockey, basketball and volleyball, to the National Championships in billiards and rugby to gymnastics, figure skating and bowling, Planeta Sport includes everything for Russian sports enthusiasts.

Hughes Introduces New Ultra-fast Satellite Broadband Router

SALVADOR, Brazil — Hughes Networks Systems Americas (HNSA), a wholly owned subsidiary of Hughes Network Sys-

NEW PRODUCTS

tems, LLC (HNS), has announced the introduction of the DW7000 family of next-generation satellite broadband routers as the platform for its broadband enterprise services in Brazil.

Delio Morais, president of HNSA, said with the industry's most powerful satellite broadband router and speeds up to six times faster than previous generations, the capabilities of DW7000 family are truly unprecedented. He said with the DW7000 platform, they will not only experience superior performance, but will unlock the true value of satellite broadband.

New service packages are being designed with throughputs of up to 4 Mbps download and 2 Mbps upload, including both asymmetrical and symmetrical capabilities. Through this combination of flexible service plans and the high-performance DW7000 product family, HNSA and its value-added resellers will further their industry leadership in delivering the most cost-effective satellite broadband solutions across a wide range of applications and market sectors—from enterprise, to government, to consumer/small office customers.

Spacenet Offers New Satellite Broadband Services

MCLEAN, VA — Spacenet Inc. announced on October 4 that it has upgraded its StarBand satellite broadband service offerings with enhanced professional-grade capabilities and reduced pricing. Spacenet said all new StarBand services now feature on-board acceleration technology, advanced networking capabilities and full Mac and PC compatibility.

Customers can now get StarBand's pro-quality 481 Residential service for the same monthly pricing as the discontinued Model 360 system. In addition, prices have been reduced on StarBand's 481 Telecommuter service, which is an ideal solution for those working from home who want high-speed Internet access at an affordable

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price. StarBand also offers the StarBand 484 Small Office, aimed at SOHO and residential power users.

Spacenet added as part of the upgraded offering, customers that sign new service contracts now get free value-added features.

TalkSwitch, RAMTelecom Team to Deliver Satellite-based VoIP to Remote Businesses

OTTAWA — TalkSwitch, a company specializing in the design and manufacture of innovative telephone systems for small and multi-location businesses, said it has teamed with RAMTelecom

to provide a fully-featured, satellite-based VoIP solution to businesses in remote locations.

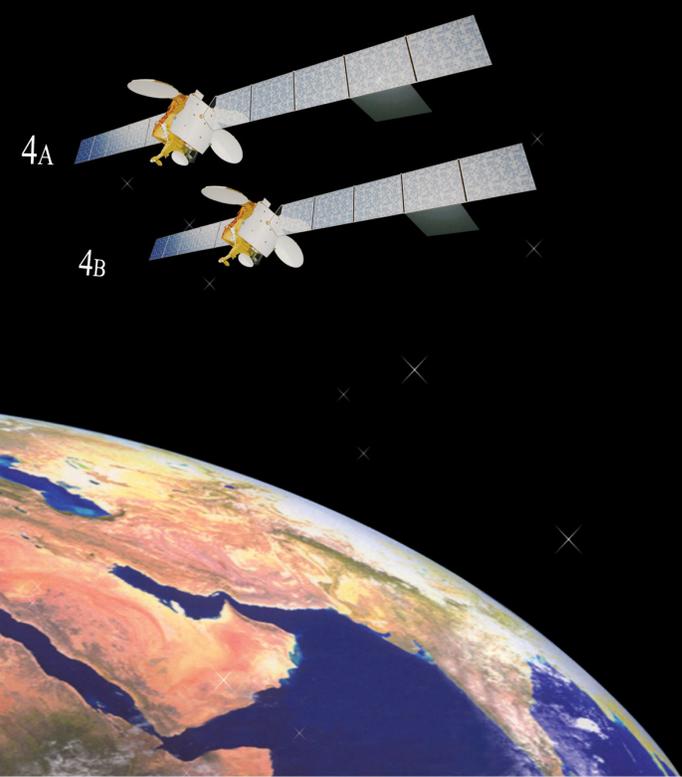
Remote businesses, like mining operations, have struggled to find ways to keep connected to the outside world while keeping communications costs reasonable. TalkSwitch and RAMTelecom said they have teamed up to provide that solution.

Customer's deploying RAMTelecom's satellite-based telecommunications service can now integrate a TalkSwitch IP PBX as part of their solution. The TalkSwitch gives the customer advanced call handling and control capabilities, and it gives it to them at the jobsite, meaning they don't have to incur expensive long distance charges for routine tasks like checking voicemail. **SM**

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COVER STORY

Emergency Preparedness – If Not Now, Then When?

by **Bruce Elbert**

President, Application Technology Strategy, Inc.



The past 12 months have made clear to all who care to observe that satellite communications are the lynch pin of urgent need – whether we are speaking of disaster response or remote operations under dangerous conditions. The old saw, “It wasn’t raining when Noah started building the Ark,” definitely applies to this field. When disaster strikes, order gives way to confusion and even chaos and many plans go out the window. Time and again it is proven that communications are the key to overcoming the infamous “fog of war” as well as the disruption of vital emergency services.

There are many vehicles to providing

communications during a domestic emergency, including high frequency and VHF radios provided by the various safety services, often augmented by volunteers who are radio amateurs (“hams”). In recent years, those who engage in emergency and remote operations have come to expect the same means of communications that they have in the office and at home. Broadband applications that include high-speed computer data and video must now be addressed so that a wider array of services can be delivered in the field. For this reason, broadband L- and Ku-band links from GEO satellites are at the forefront.

Lessons learned from recent disaster situations and military operations overseas make clear that better planning and pre-purchase of satellite communications assets must be addressed. The challenge is that there are a limited number of GEO satellites that adequately cover a specified area of operation. In particular, satellite capacity was subject to overbooking in areas where a multitude of users needed to go. These included emergency response teams at the state and federal level, US military who were enlisted to deal with devastation and rescue and recovery operations, the news media that viewers expected to be on the scene immediately and to remain through all of the action, and crews engaged in the restoration of failed landlines, cellular services, utilities and critical commercial resources (e.g., oil refineries and drilling platforms

in the Gulf). Demand for transportable and mobile earth stations and small terminals exceeded supply, resulting in delays and gaps in service.

At the full-day workshop on disaster response held on October 25th, 2005, in New York City by the Global VSAT Forum, presenters from every corner of this question spoke about their experiences during Hurricane Katrina, the Asian Tsunami and other recent situations. The competition for satellite bandwidth was a well known consequence of the demand; less known were the steps that satellite operators like NewSkies, JSAT and PanAmSat took to accelerate the process

COVER STORY



of delivering critical bandwidth and power to remote users. Similarly, Cap Rock and Lyman Brothers rapidly added inventory of trailer-mounted VSATs that were rolled off the production line and fielded in the Gulf states and Florida. All the while, Inmarsat, supported highly-portable means of telephone and medium speed data services.

My experience in the US Army Signal Corps taught me many lessons in communications preparedness. Something as simple as keeping your bag packed allowed me to jump onto a helicopter and make it to the front lines of HF/VHF/UHF radio communications. The beauty of how we operated in Vietnam is that our communications trucks were ready to roll at all times, because the US government had made the investment and Signal lieutenants like me were responsible (operationally and financially) for the equipment and operators. Good preparedness today amounts to much the same thing.

The obvious solution is to arrange ahead of time for the required bandwidth

and equipment, as well as the people to employ them. This means that the user must have a good handle on communications requirements before committing to these expensive resources. The market for transportable earth terminals offers many options: vehicles with mounted antennas, trailer and skid mounted VSATs, portable stations that can be carried on the back or

into a commercial aircraft, and light-weight “lap-top” and handheld devices that offer the greatest convenience. The quantity and variety of these options will likely increase in the future.

Companies like Cap Rock, Lyman Brothers, Intelsat General, GlobeCast and Inmarsat have already made the necessary

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COVER STORY

financial commitments to offer these services, but users must quantify what they need and where it may have to go. Also, it's not enough to define the needs at the remote site; there is the question of what's at the other end of the link. Users should pre-arrange for interconnection to centers for management and coordination (i.e., emergency operations centers) along with the people, plans and procedures that go along with it.

Another important ingredient is practice, which includes the process of conducting drills and tests. There is nothing more useless than resources that were purchased ahead of time which fail to deliver at the time of need. The only proven way to know that your disaster response communications will be there is to exercise it on a regular basis. This is something that ham volunteers do weekly in Ventura County, CA, as part of the Radio Amateur Civil Emergency Service. This allowed us to jump into immediate action when the county was affected by fast-moving brush fires and mud slides of the recent past.

To close this discussion, I would like to cover some technical issues for which those engaged in satellite communications always need a watchful eye. Broadband satellite communications from Ku-band satellites employ dual polarization from orbit positions two degrees apart. The issue of adjacent satellite and cross-polarization interference requires as much or more attention during a disaster than in normal day-to-day operation. Incidents of interference are perhaps more devastating when a critical activity is underway and communications become impeded. For this reason, operators of remote sites need to adhere to standard practices of the satellite operator, including using certified equipment and properly aligning their uplinks. Automatic control of user terminals, such as currently employed in



L-band mobile satellite communications, is a viable alternative for assuring service quality in such dynamic environments.

We must be prepared for the difficulties that exist at a disaster scene. Hurricanes obviously produce high winds and intense rain, which threaten ground antennas and electronics. Therefore, communications may not be feasible until the storm has departed. Satellite phones that use L and S band LEO constellations are not affected by rain attenuation, but using one of these devices outside in a torrent is probably not an option. Small portable terminals that employ GEO satellites from Inmarsat, Thuraya, and ACeS can be used inside during the storm

as long as they have a line-of-sight through a window, for example. Again, the independence that satellite technology affords is its strategic and tactical advantage.

All of this is feasible and some groups have already taken appropriate steps for true disaster preparedness through satellite communications. Addressing the cost of arranging for equipment, satellite capacity and operators well in advance of the need is the challenge we all face. Another saw is worth remembering, "You don't get a second change to prepare for a disaster."

SM

Bruce Elbert has over 30 years of experience in satellite communications and is the President of Application Technology Strategy, Inc., which assists satellite operators, network providers and users in the public and private sectors. He is an author and educator in these fields, having produced seven titles and conducted technical and business training around the world. During 25 years with Hughes Electronics, he directed major technical projects and led business activities in the U.S. and overseas. He is the author of *The Satellite Communication Applications Handbook*, second edition (Artech House, 2004). Web site: www.applicationstrategy.com / Email: bruce@applicationstrategy.com



FEATURES

Eutelsat's next move – and satellite's long-term prospects

by Chris Forrester

There's rarely a dull moment in the satellite business, but currently two topics are occupying the minds of European industry observers. Topic 1, undoubtedly, is the prospects for high-definition TV over the next year or two, and we'll examine these expectations in greater detail in a moment. Topic 2, and no less important, is the question over what Eutelsat will do with its fresh pile of cash.

Eutelsat mounted its long-awaited Initial Public Offering (IPO) in October, following the trend set over the past months by Intelsat, Inmarsat and PanAmSat. Now seemed as good a time as ever, with an optimistic market able to take a more reasoned view of the satellite sector having put behind it the hard lessons of a few years ago and losing more than a few shirts on the whole LEO/Iridium/ICO/Globalstar nightmare. In other words satellite is not just respectable again, its investment possibilities are fully recognised, and blessed by the toughest of all bodies the private equity funds. The old Wall Street saying, of "Follow the Money" has never been truer. Of course, 'following the money' also means that someone is there before you, but we'll ignore that for the time being.

The Private Equity firms recognised that with their long-term contracts in highly-valuable video service contracts, satellite operators were up for sale at highly attractive prices. Eutelsat, helped by a thumping \$1bn fresh contract from Sky Italia, now has more than \$4bn of forward sales, equivalent to about 5.5 years of guaranteed revenue. Indeed, this strong cash generation is part of the



Manlio Cruciatti



David Hill

appeal of Eutelsat's \$1bn+ IPO, that will put at least \$860m into its bank account. Eutelsat also offers a predicted dividend yield for their next financial year of 4-4.5 per cent. Eutelsat's indicative IPO price range of \$15.25-\$17.75 is not unreasonable, based on Eutelsat's own projections for capital expenditure and guidance of at least 4% annual revenue growth in 2007-09. Wall Street analysts will have examined Eutelsat's average cost of capital of 8%, built into its numbers, as well as an anticipated 2.6% growth more or less in perpetuity, which gives them the all-important discounted cash flow valuation at the bottom end of the offering range.

However, at every industry conference, certainly for the past five years, the primary theme of debate has been 'Who will be the next pair to merge?'. But now that Intelsat and PanAmSat have tied the knot, so to speak, where does this leave Eutelsat, which incidentally now cheekily describes itself as the world's third-largest

satellite operator. CEO Giuliano Berretta admits that the fresh cash launches Eutelsat onto its next phase of development. "We remain as excited as ever about the outlook in our sector, and are convinced that the IPO will enable us to fully realise our potential," he said recently.

But what exactly is Eutelsat's potential? It's no secret that PanAmSat itself attempted a marriage proposal to Eutelsat, and while Intelsat+PanAmSat makes a big meal for the two players to swallow, no doubt a year or so from now they'll be hungry again, and Eutelsat would still supply some highly-attractive slices of market capacity over Europe, the Middle East/Asia and Africa. SES Global's president Romain Bausch, speaking at a Paris conference in September, is of the opinion that Intelsat+PAS still fancies Eutelsat. Eutelsat's primary appeal is its high-margin video traffic (68% of overall revenue), not least its 'Hot Bird' fleet, which pumps more than 1000 TV channels

FEATURES

to viewers throughout greater Europe. Of course, the real consolidation value would come if SES Global mopped up Eutelsat, but European monopoly anxieties would almost certainly rule that out.

Eutelsat's anticipated growth is, however, much less than SES Global's. Eutelsat also has to fund some hefty dividend expectations that might put a strain on its longer-term ability to move quickly. Eutelsat, even after paying down some debt, and with its Private Equity owners perhaps monetising some of their remaining stakes, would still be in an excellent position to finance a few meals of its own. "We don't exclude external

“Soon, we’ll be able to deliver [content] on a unicast basis initially [via Broadband], and very shortly on a multicast basis, where the economics trounce the normal broadcasting economics of satellite.”
ViaSat

growth,” said Jean-Paul Brillaud, deputy CEO, talking to the Financial Times. “If opportunities present themselves we will examine them.” Brillaud’s words echo similar statements from every operator.

The problem for all operators is that the low-hanging fruit has been picked. There are plenty of individual cherries still on the tree, not least a dozen or so smaller operators in the Asian region. But most of these are seen as being government-owned or backed, and seen as national flag-carriers where consolidation is the furthest thing from their minds. Mopping

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FEATURES



up these players is seen as being especially challenging, and perhaps not worth the effort. A similar argument might be made for the world's other regional players, not least Latino operators, or Canada's Anik. They're not going to fall easily to consolidation. But never say never.

Earlier in this piece I used the phrase 'in perpetuity'. The trouble is that in today's broadband-driven world, 'in perpetuity' might be equated to a grave niche in an Italian cemetery, where 'in perpetuity' means about 6 years. Which coincidentally is not so different from satellite operators' backlogs. But what if, say in the next 10 years, we are all high-speed broadband (or ADSL2+) equipped? Take this fact: Sweden, a sparsely populated (9m population) Nordic country, still manages to connect 85% of its population by high-speed broadband (measured at speeds of half a megabit or more). "Big deal", you might say. The difference is, like South Korea, Sweden is looking to supply speeds of more than 8 Mbps – and looking to take fibre to the home (not to a nearby node or even the kerb, but into the

home) at least in its cities and towns, and already frequently supplying 100 Mbps. This led Andrew Barron, CTO at European pay-TV platform ViaSat to say "Soon, we'll be able to deliver [content] on a unicast basis initially [via Broadband], and very shortly on a multicast basis, where the economics trounce the normal broadcasting economics of satellite."

Barron says that his enthusiasm for broadband spreads to the rest of Europe. "There are an estimated 300,000 expat Swedes living in London. Why can't they enjoy our programming?" he asks. Barron said that for the past 40 years the entire content industry had grown up with a geographic entity in mind. "When we do reality shows we do them for an eight o'clock slot on a channel in Sweden. [Our focus] is all-geographic, and the way the industry is managed stations, platforms, companies, it's all geographic". He added: "the whole industry is based on a model which from a technological point of view is now irrelevant and as we arrive in our markets to a state where there's ubiquitous Internet access, including fairly shortly mobile access, we're left with

digital rights management as the definition of footprint rather than reach or regulation or programming concept."

While there are plenty of homes with sub-1Mb speeds, for whom satellite and cable delivery is the only option, the moment you start delivering 4Mb+ into homes then the balance of power might start shifting, from mass-market packagers of content (DirecTV, BSKyB, Canal Plus, or ViaSat) towards specialist packagers. And the iPod video device makes that more likely than not.

But thank goodness for HDTV. High-def is bandwidth hungry, and satellite operators love HDTV. And Europe has gone HD crazy. As this is written Europe has just one full-time HD channel (HD1, from Belgium's Euro1080). By Christmas there will be at least 7 full-time channels (see table). The twin-channel free-to-air HD satellite offerings from Munich-based Pro7-Sat1 started on October 26, while Premiere's 3-channel HDTV pay-TV service goes live on November 19. This means that by year-end, including Euro1080/HD1, Europe will have at least 7 live HDTV channels, plus another handful of promotional barker channels, with BSKyB, Canal Plus and Sky Italia's high-def channels all promised by mid-2006, and between them taking the total to about 20 HD channels.

This is good news. The bad news is that no public broadcaster has yet confirmed any sort of transmission plan for HD. Germany's two channels (Pro7/Sat1) are commercial networks that initially will simulcast largely SD material that's been upconverted, plus some HD movies. Over time its 'pure' HD output will increase. But Germany's publicly-funded networks are most reluctant to get involved in HD, and

FEATURES

HDTV in Europe: current status*

Region	Provider	Start date
Pan-European	Euro1080/HD1	Jan-04
Pan-European	Euro1080/HD2-HD5	Now live
Scandinavia	C-More	Live Sept 2005
France-Demo	HD Forum	Now live
France-Demo	Canal Plus	Demo Live ("early 2006" for full service)
France	TPS	(No formal date yet)
Germany	Premiere	Demo Live (full service Nov 19)
Germany	Sat 1	Live October 26
Germany	Pro 7	Live October 26
Italy	Sky Italia	"mid-2006"
UK	BSkyB	Now testing. 6+ ch's expected Feb 2006

*Inside Satellite

assorted sources suggest there'll be no HD action from them until 2008, despite the promise of next year's soccer World Cup being hosted by Germany. Commercial network RTL, market-leader in Germany, might move much sooner if only to face the challenge from Pro7/Sat1.

However, this is a somewhat bizarre turn of events, where it is a couple of commercial networks that are leading the push towards high-def. In the UK most observers expect the BBC to make a move in the next year (they've already a test channel on satellite). There is absolutely no enthusiasm from the UK's commercial stations (other than pay-TV broadcaster BSkyB, of course). Same with Sweden where SVT is apparently enthusiastic, and Italy where RAI have been experimenting for years.

But Italy's huge commercial broadcaster Mediaset with a handful of networks (that used to be controlled by Silvio Berlusconi) is not at all interested in HD. Manlio Cruciatto, CTO at Mediaset, derided the "image purists" who cited HDTV's quality yet ignored the excellent images available within SD. Using a very Anglo-Saxon expression, he said in his

"At News Corp., we firmly believe people WILL buy HD sets, ergo, they'll want to watch HD programmes on these sets."

*David Hill,
chairman Fox Sports*

view Europe's approach towards HDTV was "a complete ball-up". He asked where the terrestrial frequencies were, for example. "We've been buying switchable HD cameras for the past 3 years, like everyone else. But we have 5 production centres and 30 studios. It cannot happen over night. But we're on the same bus as everyone else."

London-based **Chris Forrester**, a well-known broadcasting journalist is the Editor for Europe, Middle East and Africa for SATMAGAZINE. He reports on all aspects of the industry with special emphasis on content, the business of television and emerging technologies. He has a unique knowledge of the Middle East broadcasting scene, having interviewed at length the operational heads of each of the main channels and pay-TV platforms. He can be reached at chrisforrester@compuserve.com



But the last word on HDTV, at least for this month, has to go to Fox Sports (and president of DirecTV's entertainment group) David Hill, who in a marvelous keynote at the recent IBC convention in Amsterdam covered the reasons for Fox's switch from SD to (initially) 480p and now 720p images. "By 2007 we'll be delivering some 1500 local channels in HD, and at least 150 network channels, to almost every home in the US. At News Corp., we firmly believe people WILL buy HD sets, ergo, they'll want to

watch HD programmes on these sets," he argued. He said that anyone with a history in television had seen constant progress over the years, whether via the introduction of colour, or surround sound, or digital TV. "It is important that these developments are mostly transparent to viewers. What they want is news, sports, movies and good entertainment. They didn't care how the show was shot. The last time viewers got excited by TV was when colour came in. Then they went out and bought new sets in droves. They are doing the same today because of HDTV."

Hill is right. But the satellite world can only hope that DirecTV's commitment towards HDTV is permanent – and not just for an Italian version of 'in perpetuity'. **SM**

CASE STUDY

Voom HDNews Accelerates HD Editing Process

Voom HDNews Accelerates the HD Video Editing Process with a Shared Digital Storage Solution



Voom HD Networks is one of the nation's leading high-definition entertainment divisions, its programming operations includes 10 original high-definition channels.

Business Results:

- Increased staff work-flow editing efficiency
- Simplified storage management
- Enhanced data consolidation
- Reduced cost of overall storage

The Challenge:

When Voom embarked on the creation of a new high-definition (HD) 24-hour news channel, the company determined it needed an advanced video editing and storage solution. This solution needed to have the bandwidth and performance to allow editors at the new channel— Voom HDNews —to quickly retrieve and store large, uncompressed video files in the 1080i high definition digital TV (HDTV) format.

HDNews needed a digital content storage solution that would allow multiple editors to access and share the same video content at the same time. This capability would simplify workflows and accelerate the production of news clips and promotional content.

The Solution:

After evaluating the features, functionality, costs and availability of the market's off-the-shelf solutions, HDNews determined it could find efficiencies and get more of the functionality it needed by building its own editing and storage solution out of leading-edge component products.

They turned to Sanbolic, Inc., a StorageTek and Cisco Systems partner, providing software tools and services to enable high bandwidth-shared access to data. Sanbolic designed and implemented a robust Fibre Channel storage area network (SAN) to support the company's digital editing and storage needs.

Sanbolic brought these diverse components together to form "a very elegant and state-of-the-art solution for SAN editing," said Milan Krainchich, Director of Operations for the HDNews operation. "While every product speaks for itself and has its own strong points in terms of performance and quality, it's Sanbolic that glued all of it together, and made the solution seamless."

CASE STUDY

Voom HDNews Accelerates the HD Video Editing Process with a Shared Digital Storage Solution Case Study

Solution Components Included:

- Melio FS, an advanced symmetrical cluster file system, and LaScala, a symmetrical cluster volume manager, from Sanbolic.
- D-Series disk storage systems (now called FlexLine) from StorageTek
- MDS 9216 storage switches from Cisco Systems
- Video editing workstations from 1Beyond with Adobe Premier editing software and Bluefish capture cards

Business Benefits:

The use of a SAN-based shared video storage has enhanced the workflow process, according to Krainchich. Staff members can work in any editing room, have access to the same pool of data, and make their edited program material available in any other room.

"This type of system helps staff keep pace with the tight deadlines of the news programs," Krainchich said. "For instance, while editors work on news clips, promotions personnel can put together promos for the same stories."

Among other benefits, the solution offers built-in redundancy. If one editing room goes down because of technical problems, staff can move to another editing room and continue working with the same content, which remains available via the SAN.

On the SAN's back-end, StorageTek's D-Series disk systems deliver the high reliability that HDNews needs for its around-the-clock operations. "We have found the D-Series systems to be very robust," Krainchich said. "They are on 24x7. They are in almost constant use. Over the past year and a half, in general, the systems have been very reliable."

Financial Benefits:

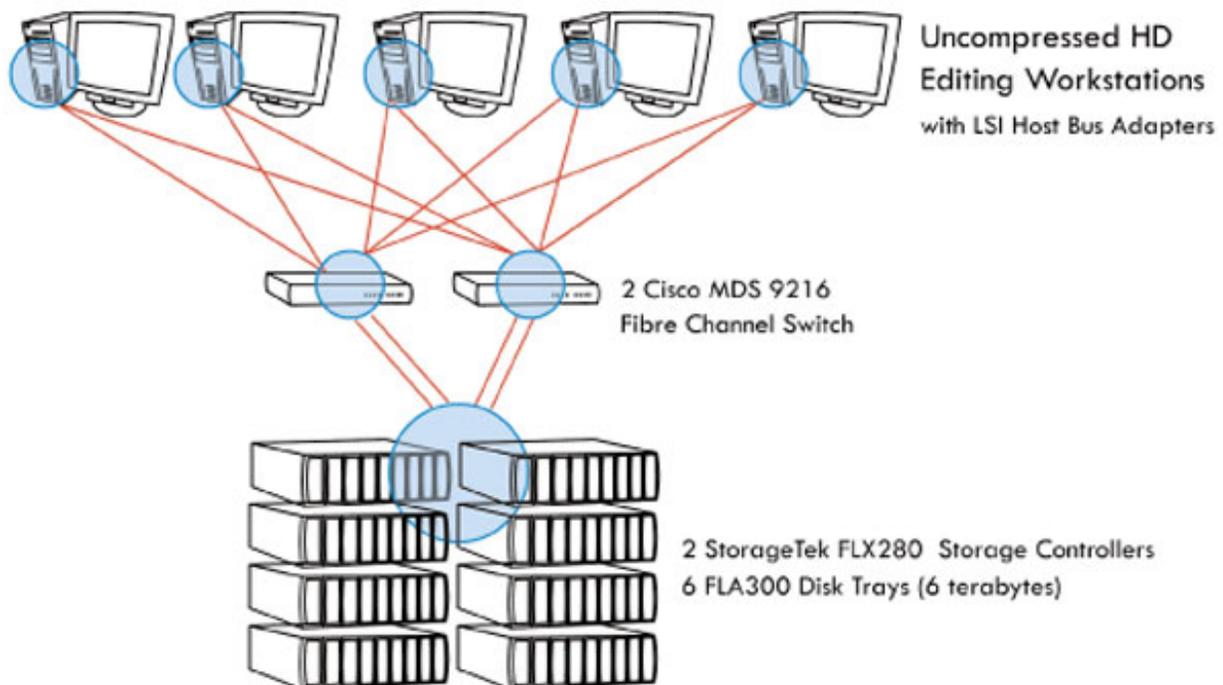
The solution is helping increase staff productivity. The speed of the Fibre Channel SAN and D-Series disk systems allows editors to move uncompressed HDTV files in and out of the storage quickly and easily.

The solution is also increasing system management productivity. The use of a shared, SAN-based storage allows the operations team to manage a single pool of data and a single disk system, rather than multiple smaller storage pools and multiple disk drives. LaScala volume manager simplifies centralized creation and management of storage volumes, improving workflow management.

CASE STUDY

Voom HDNews Accelerates the HD Video Editing Process with a Shared Digital Storage Solution Case Study

"The whole process is simpler and more straightforward," Krainchich said. "While the SAN requires management time, for the increased flexibility, it has far fewer requirements vs. stand-alone storage distributed throughout the facility. That equates to fewer man hours expended."



Technology Benefits:

With the components from StorageTek, Cisco and Sanbolic, the SAN-based storage solution delivers the high throughput performance required for work with uncompressed 1080i HD video files. Sanbolic's Mellio FS clustered file system and LaScala Volume Manager allows multiple edit stations to have concurrent read and write access with guaranteed bandwidth of better than 165 MB/sec. In aggregate, the solution built on high performance StorageTek disk arrays provides more than 1 gigabyte per second of bandwidth into the network from the shared storage pool.

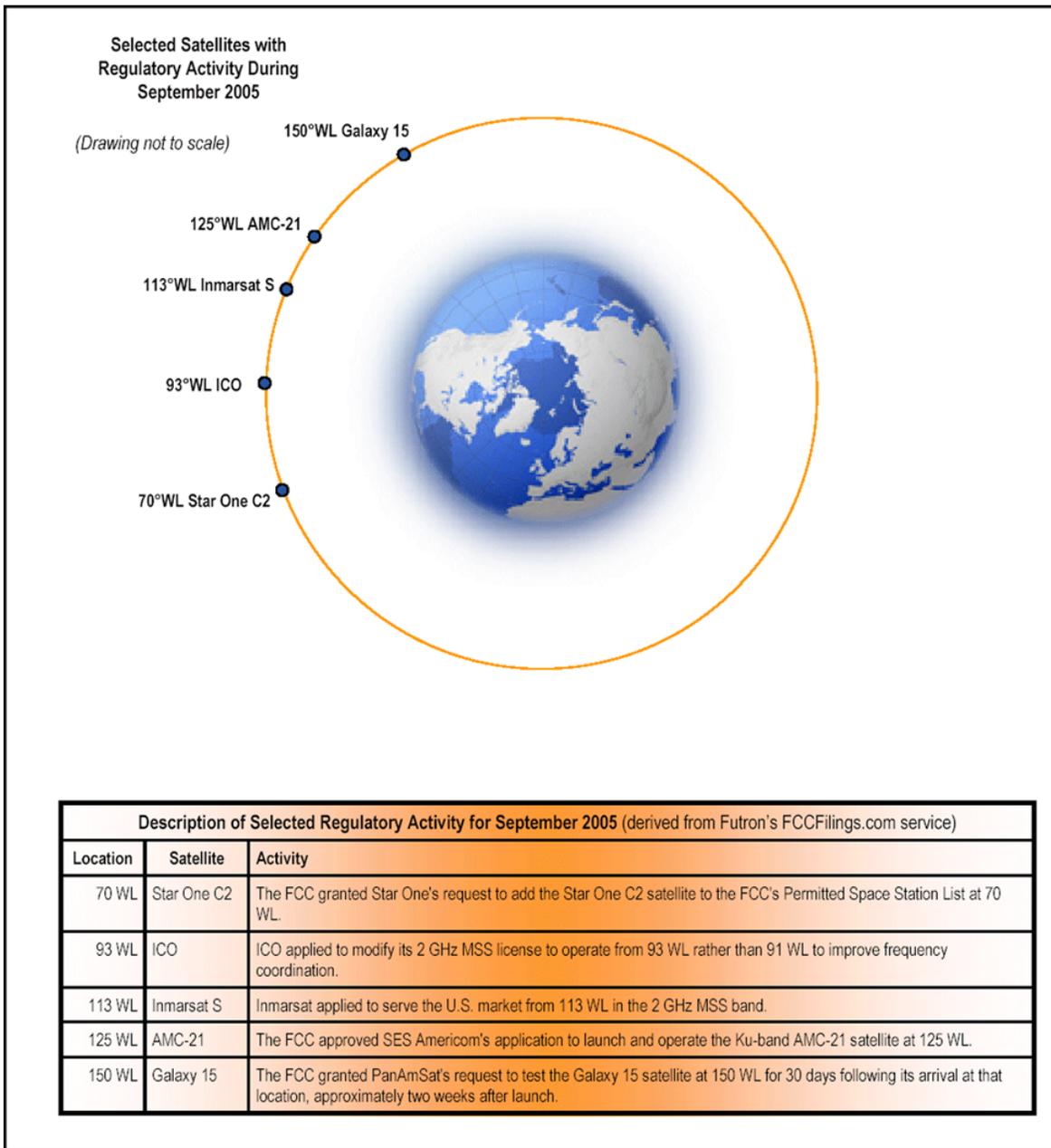
"In high definition 1080i, the files are very large," Krainchich said. "The speed of the Fibre Channel SAN makes moving large files very quick and very easy. The throughput is there." What's more, the system can "sustain the data playback rate simultaneously on multiple systems without causing video stutter or a system crash."

The 1Beyond workstations support high-definition editing in the studio and low-resolution proxy editing in the field. This enables the HDNews operation to gain the simplicity that comes with using the same editing software in the studio and in the field.

VITAL STATISTICS

A snapshots of vital indicators on the satellite industry

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MARKET INTELLIGENCE



Satellite Communication End-Users to Reveal All: Redefining West Africa's Product and Service Demands?

By Martin Jarrold

Chief, International Programme Development

In the previous report for this column, entitled “Open and Closed Skies: Satellite Access in Africa”... One Year on Toward NewCom WAFSAT I dealt with the now widely established recognition that access to information and knowledge through affordable communications represents a significant opportunity for social and economic development, for regional cooperation and integration, and for increasing the participation of people in the emerging global information society. And also that, addressing deficiencies in access to low-cost communication services is now regarded as an urgent imperative for not only improving the quality of life in African communities, but for significantly enhancing the mission-critical, productivity capabilities of a range of African industries.

With around one month to go to the **West African Satellite Communications Conference (NewCom WAFSAT)** in Abuja, Nigeria – an event endorsed by the West African Telecommunications Regulators Assembly (WATRA) and Nigerian Communication Commission (NCC) – it is now clearer than ever the extent to which key sectors of African industry are already heavily reliant on satellite-based communications to overcome the considerable deficiencies in the availability, functionality, reliability and cost-effectiveness of competing communications technologies.

The program for **NewCom WAFSAT** (please go to www.gvf.org and click on the WAFSAT link for more information) at the



Meridien Hotel, 23-24 November, not only features Keynote Addresses from such key regional telecommunications figures as Ernest Ndukwe, Chief Executive of the NCC, and Daniel Seck, Chairman of WATRA, but also a wealth of speakers from the satellite end-user community. From CEOs to Sales Directors, from information technology managers and system designers to directors of telecommunications services, all are represented within a growing body of conference panelists eager to address the question of how their industries, and individual businesses, can only fully flourish with the fullest possible access to the continuing development of satellite-based applications and technology, together with the continued evolution and development of more favorable national – and,

increasingly – regional regulatory environments.

Just as West Africa is taking centre stage in the telecoms arena with advanced plans for a regional satellite to service the now unprecedented levels of private sector demand for satellite-based voice, data and video solutions, the GVF and its organizing partners have succeeded in attracting to this key regional gathering not only the providers of satellite-based communication products and services but a broad existing, and potential, customer base from such industries as: oil & gas exploration and extraction; petroleum (gasoline) retail; manufacturing distribution; financial services; and, the ISP and e-commerce sectors.

As was also noted in last month's column, a growing number of African Administrations have begun to implement policies and regulations that seek to open telecommunication markets to varying degrees of competition. Studies of various African telecommunications marketplaces clearly show that different countries across the Continent occupy a range of different positions on what has been coined as the “ICT Development Curve”, with those countries that can demonstrate the most advanced markets being those with the most effective policy and regulatory environments, particularly in the satellite communications field. In Nigeria, where **NewCom WAFSAT** will take place, national success is largely attributable to how much further it has progressed in liberalizing and deregulating

MARKET INTELLIGENCE

its telecoms market, resulting very largely from the effectiveness of the regulator, the NCC. And now, of course, it is welcome news indeed that other countries in the West African region have made significant recent moves to evolve a broader, regional, approach to telecoms regulation.

Representatives of a number of other West African national regulators will also feature in the program at **NewCom WAFSAT**, providing an exciting opportunity to explore in more detail the recent landmark agreement among the regulators of 15 nations across the region on developing a common regulatory framework for their national ICT markets. The new harmonized regional framework for West Africa was agreed as recently as this September and covers interconnection, licensing, numbering, spectrum management, universal access and ICT policy and legislation. It was formally approved by the 3rd Ordinary General Meeting (OGM) of WATRA, which was chaired by Daniel Seck, the Director General of Senegal's Agence de Régulation des Télécommunications (ART), as well as being Chairman of WATRA. These new guidelines are designed to spur investment and development in the West African ICT sector. Once widely adopted, it is hoped that they will prove instrumental in helping propel some of the world's poorest nations into the Information Society.

The encouragement, evolution and development of such regional regulatory harmonization initiatives is fully part of the GVF's global program agenda, specifically in terms of its successful development of its abilities to deliver – on a worldwide, rather than only an African, basis – its suite of **Regulatory & Policy Capacity-Building** tools. In addition to these tools, GVF has also developed a range of **Courseware for Sustainable Network Deployment**, which includes the *VSAT Installer* and *Satellite Sustainability* training courses which are to be offered by GVF at **NewCom WAFSAT** on 25 November, the day after the conclusion of the Conference. **SM**

Further information on all aspects of **NewCom WAFSAT** can be obtained from Martin Jarrold at the GVF, telephone + 44 1727 884 513 or martin.jarrold@gvf.org. The **NewCom WAFSAT** web pages can be consulted by clicking on the **WAFSAT** link at www.gvf.org

For more information about the GVF's suite of **Regulatory & Policy Capacity-Building** tools, please see this column in the next issue of *SatMagazine.com*, and for full details of the GVF's **Courseware for Sustainable Network Deployment**, please visit the homepage at www.gvf.org and click on the Training button.

Martin Jarrold is the Director, International Programs of the Global VSAT Forum. He can be reached at martin.jarrold@gvf.org. For more information on the GVF go to www.gvf.org

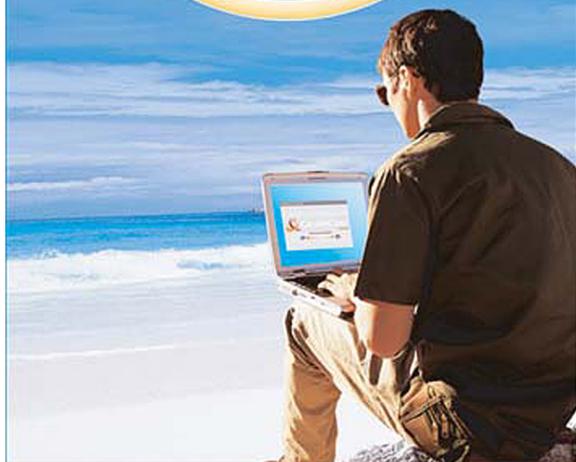


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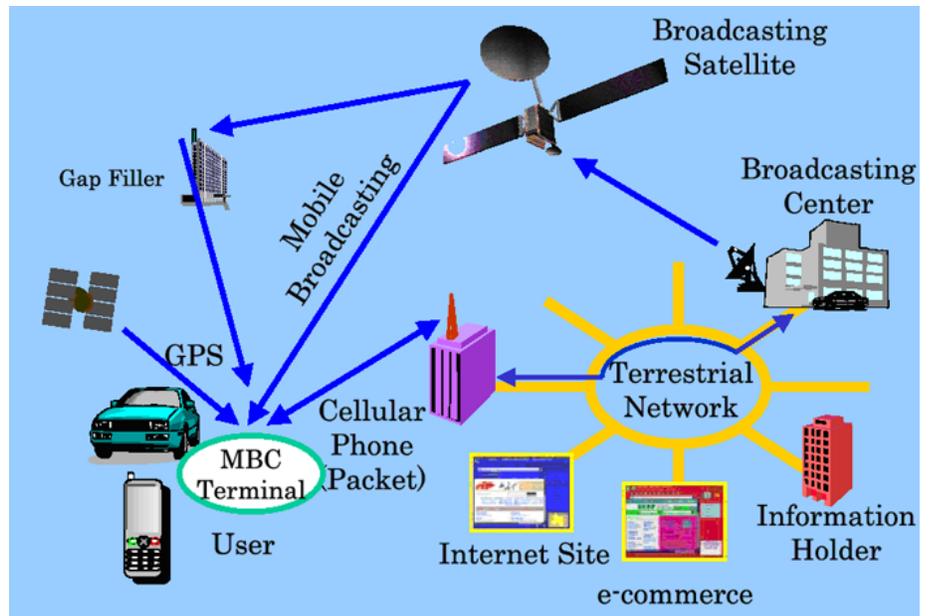
By Bernardo Schneidermann

During the Asia Pacific Satellite Communications Council (APSCC) conference held in Singapore last September one of the highlights of the show were the new services that was introduced in the Asian region recently by Mobile Satellite Corporation.

The "Satellite Digital Multimedia Broadcasting Service or S-DMB" was introduced by Japan-based Mobile Satellite Corporation. Toshiba is the main shareholder of Mobile Satellite Corporation and with other key shareholders as: SK Telecom, Sharp Corp., Toyota Motor Co., Yokogawa Electric Co., Matsushita Electric Industrial Co., and NTT Data Corp.

Satellite Digital Multimedia Broadcasting Service (SDMB) is known in the Japanese market as Mobile Broadcasting service (MobaHO) provided by Mobile Broadcasting Corporation. MobaHO is providing around 40 channels of programming; the service is the world's first satellite digital multimedia broadcasting service for mobile use outdoors, indoors and on the go. It provides 30 audio channels, including overseas FM radio stations and genre-specific music programming; eight video channels, including news, sports, and entertainment programming; and approximately 60 data-service titles. Since MobaHO! is a satellite broadcasting service, users enjoy the same programming throughout Japan and Korea.

The operator Mobile Broadcasting Corporation (MBC) was established in May 1998 and the satellite was launched



Interactive Mobile Broadcasting Service Concept (Source: Mobile Satellite Corporation)

in March 2004 and become operational October 2004 (see slide 5 and 4 to include here). During March 2005 the number of shareholder companies reach 90 (including Electronics and Auto Manufacturer, Telecom Carriers, Broadcasting and Radio Operators, Postproduction and Ad Agencies) and the total capital funded reach US\$ 360 million.

Just as personal computers that once could be used only on the desktop are now available in laptop form and telephones that once required fixed lines are now available as mobile phones, multi-channel satellite broadcasting, which until now has been accessible only in the home using parabolic antennas, can now be enjoyed using hand-held receivers, in moving vehicles, or on laptop computers in Japan.

Mobile users throughout Japan can now enjoy digital broadcasting anywhere the signals broadcast from the sky can be received, which is at roughly 45 degree elevation, using Mobile Broadcasting-capable receivers (such as mobile television sets, mobile terminals, car receivers, and PC card tuners).

MBC provides the world's first nationwide digital satellite broadcasting services enabling users to enjoy audio, video, and data broadcasting services even while on the go. In particular, since its audio programming consists of approximately 30 channels, users can select, with a single button, the channel music they feel like listening to. With Mobile Broadcasting, users can have access to a massive CD library, without having to carry MDs or CDs around. What's more, Mobile Broadcasting's

REGIONAL UPDATES



Reception of the MoBaHo device in commuter trains (photo courtesy of Mobile Satellite Corporation)

overseas FM services let listeners in Japan enjoy live broadcasts from five FM broadcasters on the U.S. West Coast and one from Seoul, South Korea. Other channels include the BBC World Service, an educational English conversation channel, and a market news channel. Video channels include MTV.

News is available at any time from Mobile.n, which carries NHK and BBC programs, Nikkei CNBC, which specializes in business news, and nonstop 24-hour news channel NNN24. Channel One, TBS Channel, MTV, and a specialized horseracing channel, Green Channel, provide entertainment programmings. Live sports broadcasts including professional baseball and J-League soccer are available on Mobile.n, Channel One, and the TBS Channel. Mobile Broadcasting is also useful for people studying English and other languages. In addition to English-language programming, its broad-ranging lineup includes Korean-language broadcasting and programs for learning various other languages. The lineup also includes CNNi, which specializes in news from around the world. Mobile Broadcasting's data broadcasting services let users access approximately 60 items, including news and weather, while they listen to music.

Mobile Broadcasting's digital satellite broadcasting services began services last October 20, 2004. Since then, the number of users signing up for the service from across Japan has increased

steadily. The whole Mobile Broadcasting team is dedicated to maintaining a consistently high level of service quality, and is currently working on increasing reception for commuters travel by rail in the Tokyo and Osaka areas, so that even more people will be able to enjoy Mobile Broadcasting services. High service quality refers to the overall level of service quality as experienced by Mobile Broadcasting's users, including both

programming quality and reception quality. Mobile Broadcasting's initial programming lineup consists of approximately 40 channels. Plans call for adding a further 10 to 20 channels in the future, in accordance with requests from customers.

Today, users can receive Mobile Broadcasting's services using special-purpose receivers, car receivers, and PC-card tuners that are already on the market.

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In order to provide users with choices that suit their lifestyles, Mobile Broadcasting plans to introduce, in the nearest possible future, miniature Mobile Broadcasting receivers embedded into or attachable to a wide range of digital devices see picture 3.

MBC aims not just to provide programming as a broadcaster, but also to create services for the community including development and provision of services that exceed the boundaries of traditional broadcasting services. It also seeks to become a type of media that will make major contributions to the development of industry and society, in the related service and content fields and in hardware fields centered on receivers.

Among the main areas of application for this service are:

- **Rural Areas**
- **Small Ship in Oceans**
- **High Speed Moving transportation (trains, Airplanes, Autos and Buses)**
- **Disaster Prevention and Recovery**

MBC is planning to extend the same services now outside of Japan and Korea in Asia and potentially the same concept could be expanded in other regions of the world as the business become more mature. **SM**



Bernardo Schneiderman has over 30 years of experience in the Satellite & Telecom Industry. He is the Business Development and Technical Director of Space & Telecom Division for Futron Corp based in Irvine, CA. USA and is responsible for the West Coast and the International Market. He has global experience in Marketing and Eng. Consulting, Sat and Telecom Carriers, VSAT and Telecom Manufacturers. Mr Schneiderman has been writing for the industry during the last 12 years and can be contacted at bschneiderman@futron.com

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ASIA SATELLITE TELECOMMUNICATIONS (ASIASAT)	SAT	17.15	16.60 - 20.55
BALL CORP	BLL	39.27	35.06 - 46.45
BOEING CO	BA	65.33	49.52 - 68.98
BRITISH SKY ADS	BSY	36.86	35.88 - 44.99
CALAMP CORP	CAMP	11.39	5.23 - 11.50
COM DEV INTL LTD	CDV.TO	2.04	1.95 - 3.25
COMTECH TELECOM CORP	CMTL	38.17	17.8733 - 43.36
THE DIRECTV GROUP	DTV	14.14	13.81 - 17.57
ECHOSTAR COMMUNICATIONS	DISH	26.77	26.50 - 34.38
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GILAT SATELLITE NETWORKS	GILTF	6.07	5.25 - 7.62
GLOBECOMM SYSTEMS INC	GCOM	7.271	5.09 - 8.44
HARRIS CORP	HRS	40.99	26.94 - 42.48
HONEYWELL INTL	HON	34.52	32.68 - 39.50
INTEGRAL SYSTEMS	ISYS	21.74	17.25 - 24.70
KVH INDS INC	KVHI	9.25	8.30 - 13.23
L-3 COMM HLDGS	LLL	77.74	64.66 - 84.84
LOCKHEED MARTIN CORP	LMT	60.42	52.54 - 65.46
NEWS CORP	NWS	15.10	14.76 - 19.41
NORSAT INTL INC	NSATF.OB	0.90	0.43 - 1.51
NTL INC	NTLI	60.82	59.32 - 73.79
ORBITAL SCIENCES	ORB	11.67	8.84 - 13.10
QUALCOMM INC	QCOM	39.47	32.08 - 46.28
RADYNE CORPORATION	RADN	11.66	6.92 - 12.71
SCIENTIFIC ATLANTA	SFA	35.15	26.73 - 39.89
SIRIUS SATELLITE	SIRI	6.451	3.72 - 9.43XM
SATELLITE RADIO	XMSR	28.04	26.16 - 40.89

AAE SYSTEMS www.aaesys.com	18
ARABSAT www.arabsat.com	19
COMTECH EF DATA www.comtechefdata.com	10
CPI SATCOM www.cpii.com/satcom	16
GLOBECAST www.globecast.com	32
ILC www.ilc.com	35
L-3 NARDA SATELLITE NETWORKS www.lnr.com	34
MITEQ www.miteq.com	12
PANAMSAT www.panamsat.com	21
Satcom Australia 2005 www.terrapinn.com	9
SES GLOBAL www.ses-global.com	24