

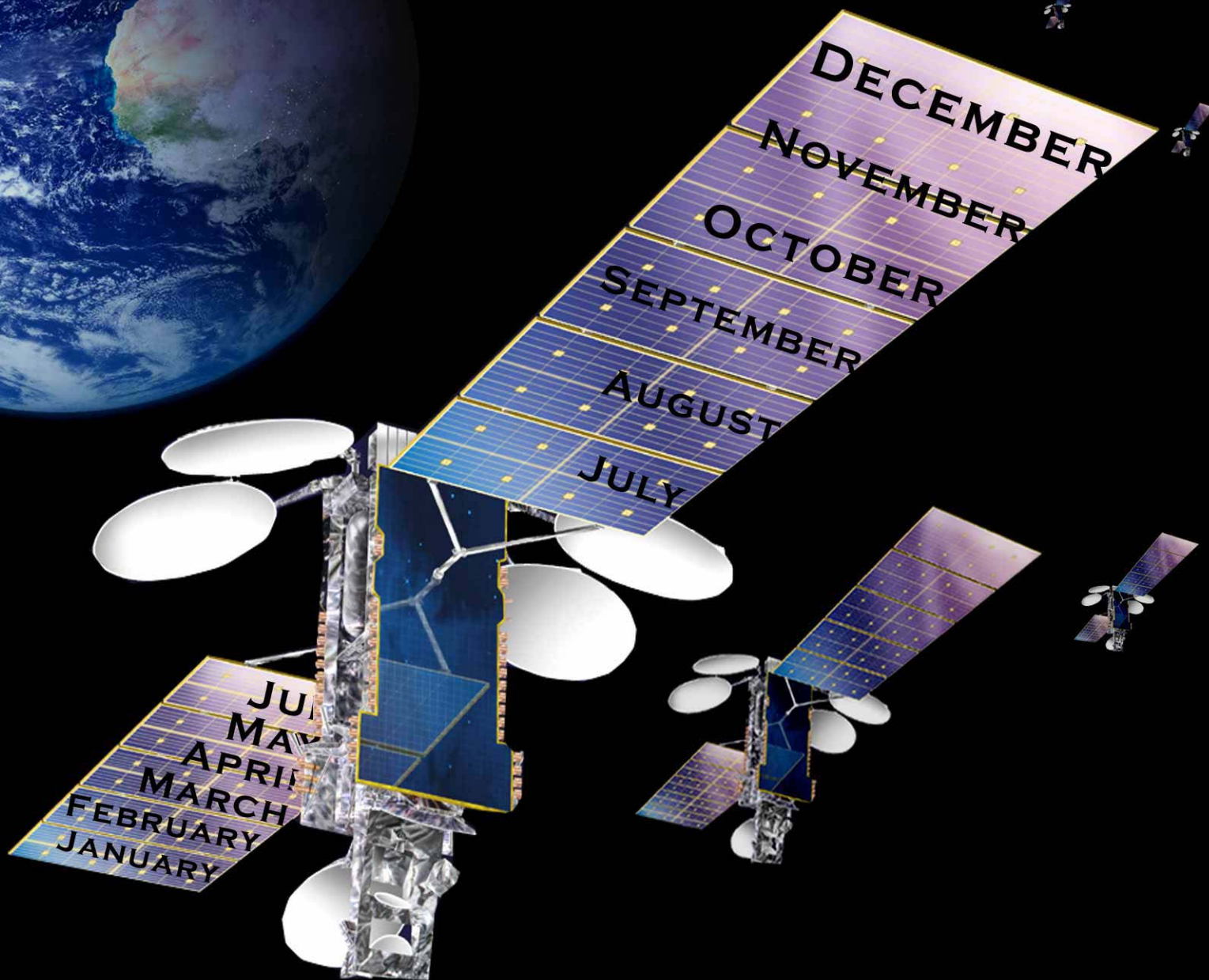


SATMAGAZINE.COM

December 2004

Worldwide Satellite Magazine

Vol. 2 No. 8



2004 A YEAR IN REVIEW

Your Satellite Connection to the World

SES GLOBAL

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NOTE FROM THE EDITOR

Goodbye 2004... Welcome 2005



The year 2004 started appropriately enough with the launch of the first two HTDV channels in Europe on New Year's Day. HDTV has since proven to be the new "killer app" that could save the industry. With its high bandwidth requirements, HDTV, can fill up a lot of dormant transponders.

Government and military demand for satellite capacity and services also continued to grow in 2004, providing another stable revenue stream for the industry (see my article on page 5).

The first successful commercial flight into space this year, also heralds the opening of yet another market for the industry.

Perhaps the development that has the most impact on the industry in 2004 is the series of events that led to the purchase by private equity firms of three of the four largest satellite operators--Intelsat, PanAmSat and New Skies. As of pres time, the trend continues as British Telecom sold off its shares of European satellite operator, Eutelsat, to private equity firms for over \$ 700 million.

We are already seeing the impact of the sale of the largest satellite operators to private equity firms in terms of a more conservative fiscal approach in these companies. As some analysts pointed out, private equity firms are more reluctant to invest in new ventures and would rather see a quick return on their investment. This seems to run counter to the past tendency of satellite firms to go for capital-intensive project with a long recovery timeline.

To assess 2004 and the prospects for 2005, we surveyed the opinions of (pages 25-33) of ten CEOs of the leading companies in the industry. The consensus seems to be that 2004 was a better year than 2003 and that 2005 will be a lot better. Many good things are in the offing for 2005--including the much anticipated takeoff of broadband satellite services.

It's going to be another interesting year.

Virgil Labrador

SATMAGAZINE.COM

Published monthly by
Satnews Publishers
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Cover Design by: Simon Payne

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2004 – 2005 CALENDAR OF EVENTS

November 30-December 3, Strasbourg, France
9th Annual ISU International Symposium on “Civil, Commercial and Security Space” E-mail:
symposium@isu.isunet.edu, www.isunet.edu

December 2-5, World Trade Center, Istanbul, Turkey
Broadcast, Cable & Satellite eurasia 2004 – A CeBIT Event - Fair and Conference
 Hannover-Messe International Istanbul
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 E-mail: ufuk.altintop@hf-turkey.com
 Web: www.cebit-bcs.com

December 7-8, Shangri-La, Pudong, Shanghai, China
Emergency Communications Asia 2004
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 Email: wendy.tay@terrapinn.com
 Website: www.terrapinn.com/2004/eca_CN

2005

January 15, Ko’Olina Golf Club, Kapolei, Oahu, Hawaii, U.S.A.
5th Annual Cornisica Golf Classic (An official PTC event)
 Barbara Coleman, IP Access International, Inc.
 Tel: 949-655-1035, Fax: 949-240-8072
 E-mail: barbara@ipinternational.net
 web: www.cornisica.com/golf/

January 16, Honolulu, Hawaii, U.S.A.
GVF Asia-Pac Satcoms Forum: Network Deployment and the Asia-Pac Sustainability Imperative: ICT Applications and ‘Best Practice’ Satellite Strategies’
 Martin Jarrold, Tel: + 44 1727 884513
 E-mail: martin.jarrold@gvf.org Web: www.gvf.org

January 16-19, Honolulu, Hawaii, U.S.A.
PTC ‘05,
 Debbie Kamealoha
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 Email: debbie@ptc.org
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February 2-3, Le Meridien Etoile, Paris, France
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February 14-18, Johannesburg, South Africa
SatCom Africa 2005
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 E-mail: richelle.sher@terrapinn.co.za
 Tel: +27 11 516 4052 / Fax: +27 11 707 9965
 Website: www.satcomafrika.com

March 15-17, Chelsea Village, London, UK
NewCom Africa 2005
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 Web: www.aitecafrica.com

April 16-21, Las Vegas, Nevada, U.S.A.
NAB 2005
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 E-mail: register@nab.org
 Web: www.nabshow.com



May 31-June 2, Long Beach, CA, U.S.A.
ISCe Conference and Expo
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 Website: www.isce.com

FEATURED EVENT



Continued Demand for Satellite Services by the Military and Government Sectors

by Virgil Labrador

The demand for satellite services by the military and government sectors is expected to grow by 15-20 percent per annum in the next five years, according to government projections. This has been the trend since the first Gulf war and will continue for next few years.

Currently the U.S. government SATCOM market is estimated between US\$ 400-500 million, which over 50 percent is defense related, and the rest is shared by various civilian agencies and programs and the Department of Homeland Security. However, the rising demand, at least from the U.S. military, which is the one of the largest users of commercial satellite services, may not continue in the long-run, as the military develops its own internal capabilities. So, it's imperative to take advantage of this window of opportunity that currently exists in the military and government markets in the immediate term.

The US. Military is now developing four new satellite systems: the a Ka- and X-band system called Wideband Gapfiller constellation to be launched in 2005, the Advanced EHF system to be launched in 2007-; the Mobile User Objective System (MUOS), to be launched in 2010-11 to provide mobile satellite communications services to the military and the T-Sat system, to be launched in 2012.

The U.S. military hopes that they will eventually reduce its dependence on commercial services from the current 80% of to about 50% of its requirements by the year 2010.

Despite these new initiatives by the U.S. military, demand for satellite services will remain strong in the long-term. So there is indeed a long-term opportunity in the government market. Worldwide the military and government market generated an estimated \$927 million in revenues in 2003 for the satellite industry, and the market is expected to reach \$1.7 billion by 2008, according to Northern Sky Research.

Revenue growth is driven largely by U.S. military demand as its bandwidth needs have increased over 10-fold from the first Gulf war. The U.S. government has also issued a new policy that will boost the U.S. remote sensing industry as it directed the National Imaging and Mapping Agency (NIMA) to use U.S.



Admiral James O. Ellis, Jr. retired commander of USSTRATCOM, stated that the commercial SATCOM industry and the DoD must "work together to meet the changing realities of warfare in a new post 9/11 era" during his keynote address at the ISCe 2004 Awards Dinner.

commercial satellite imagery as the primary source of data used for government mapping.

“These developments in the United States will impact the industry in many profound ways. Specifically, a trend is already occurring where business units are being spun-off to target the government sector more deliberately and more aggressively. The growing competition for the government and military’s business should favor governments over time, including a reduction of equipment and service costs as longer term contracts begin to replace purchases in the short-term or spot market,” said Jose del Rosario, senior analyst of Northern Sky Research and author of the report “Government and Military Demand on Commercial Satellites (released February 2004).”

In terms of global (non-U.S.) demand, revenue streams are expected to be healthy as well. However, non-military use, specifically initiatives in satellite communications services to bridge the Digital Divide, will be the main source of revenue streams, which is the reverse of U.S. market trends. In the area of

FEATURED EVENT

remote sensing, non-military government markets are expected to account for the bulk of revenues as well, according to the report.

“The bread-and-butter of the global (non-U.S.) remote sensing industry remains in the civil sector of government entities, and this trend is expected to continue over the course of the forecast period. Many private remote sensing operators are expected to continue to rely heavily on tapping government civilian programs as commercial markets continue to develop at a slow pace,” said del Rosario.

From a regional comparison, the report forecasts that the United States will continue to dominate the market until 2008. From 78% of all revenues in 2003, the United States is forecasted to account for 72% of overall revenues in 2008 and 76% of cumulative revenues over a six-year period. The relative decline of the U.S. percentage annually will be due largely to the U.S. military’s recognition that it needs to boost its own internal resources and become less reliant on commercial resources in order to more effectively conduct war, peacekeeping efforts and homeland defense initiatives, according to the report. **SM**

Virgil Labrador is the Managing Editor of SatMagazine. He can be reached at virgil@satnews.com



Government Satellite Requirements (GSR) Summit at ISCe 2005

The GSR Summit at ISCe will provide an open dialog between government and industry to better understand the DoD requirements and challenges - and to ensure that the commercial satellite industry continues to provide assured and reliable communication systems for the warfighter.

The day-long GSR Summit will take place on Thursday, June 2nd and will feature an open dialog on the following topics:

- Combatant Commander's requirements
- DoD C4ISR requirements and solutions
- DoD Joint Members Operations, Intelligence & Logistics Integration
- The GIG: Future of MILSATCOM Systems - WGS, AEHF, MUOS and TSAT
- Mobile satellite services and solutions for the government
- SATCOM Solutions for Network Centric Warfare

Comprehensive Pre-Conference Sessions to Kick-Off ISCe 2005

At the 4th Annual **International Satellite & Communications Conference and Expo (ISCe 2005)**, Tuesday, May 31 – Thursday, June 2, 2005, conference attendees will gather with their peers to discuss new ideas, discover leading-edge products, hear about business opportunities at NASA, and learn about corporate and business strategies, regulatory issues, and more.

ISCe 2005 will be the place to be to stay on top of business trends and satellite and communications technologies that will affect your bottom line. This premier satellite and communications event highlights satellite-based services, technologies, and solutions, and is a must-attend event for anyone interested in high-level, intensive strategies and leading-edge technology for the satellite industry.

Diverse Workshops and Sessions Kick-Off Conference on Tuesday

Several new sessions and events kick off ISCe 2005 during an intensive day of pre-conference business and technical Workshops and Sessions designed to lay the foundation for attendees hoping to make the most of their ISCe experience.

One of the new sessions is a half-day workshop on teleports, co-hosted by the World Teleport Association. This session will explore the technology and business challenges and solutions experienced by the teleport industry.

The GVF will conduct a day-long training course, which will focus on the business aspects of both commercial and government sectors of the satellite industry. *Business Strategies* is a new business session that will cover business strategies and planning, business development, market access and positioning. Back again is the *Corporate Growth & Exit Strategy Workshop*, which will focus on mergers and acquisitions that continue to be pervasive throughout the satellite and communications industries.

Also returning is the highly successful workshop, *Satellite for Beginners* course. Co-sponsored by the SBCA and SIA, *Satellite for Beginners* is an entry-level training session for anyone wanting to learn about the basics of the satellite communications industry – or brush up on the latest changes and developments.

FEATURED EVENT

The *Space Enterprise & Communications* track is returning in 2005 with new presentations on *NASA's Technology Transfer Program* and NASA's planned *Space Communications Project*, both sponsored jointly by NASA, the NASA Far West Regional Technology Transfer Center, and the California Space Authority (CSA). Additionally, Frost & Sullivan will provide a *Broadband Tutorial*, which will explore the continuing evolution of the convergence between the broadband and satellite industries.

For media and industry analysts, ISCe will hold two events. First on the agenda, *Private Investments within the Satellite Industry* will address industry concerns over the paradigm shift that is taking place as investors continue to acquire satellite operators. In the afternoon, media and analysts will be treated to ISCe's premier *Product Demonstration Program*, which will feature companies selected to demonstrate their new and innovative products or services.

Finally, another inaugural event for 2005 is the Harbor Cruise Welcome Reception that will provide attendees and presenters an opportunity to meet and network in a relaxing sunset cruise through the beautiful Long Beach Marina and Harbor.

ISCe conference sessions will be of great interest to attendees from the **commercial, consumer, civil, and military** industries. Tracks include Satellite Entertainment/DBS, Military/Defense and Security Systems, Commercial & Enterprise Services, and Government/DoD Requirements.

In this fast-changing satellite and communications industry, there's only one event next year that has the tools to help you develop tomorrow's solutions, today – ISCe 2005. **SM**

Sponsorships and Exhibiting Options at ISCe 2005

Promote your product or services to a senior-level audience of key decision-makers from the commercial, government and military sectors by securing one of the available sponsorship packages or exhibiting options at ISCe. For additional information, please contact Gina Lerma at (310) 410-9191 or GLerma@hfusa.com.



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 - Commercial Enterprise Solutions
 - Space Enterprise & Communications
 - MSS and FSS Applications
 - Financial Overview / Private Investment
- ✦ **10th Annual Satellite Entertainment / DBS: "The 5 Burning Questions" Forum**
 - HDTV, DVRs, VOD, Broadband and iTV
 - Financial, Regulatory and Legal Issues
 - DBS Applications in FSS and other markets
 - Satellite Radio
- ✦ **Government Satellite Requirements (GSR) Summit**
- ✦ **SIA "State of the Industry" Report**
- ✦ **Product Demos / Gallery of Innovation Program**
- ✦ **Exhibit Center**







For sponsorship opportunities, *Gallery of Innovation* Program details, exhibit sales or conference program information, please visit www.isce.com or contact Gina Lerma at glerma@hfusa.com or (310) 410-9191.

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FEATURED EVENT



Advance Projects International and IP Access to Host 5th Annual Cornisica Classic Invitational Golf Tournament

Saturday, January 15, 2005
Best-ball Four-Person Scramble Format
Ko'Olina Golf Club, Kapolei, Oahu, Hawaii

As a prelude to the Pacific Telecommunications Council's 2005 Conference (PTC2005), Advanced Projects International and IP Access International are teaming up to bring you an unprecedented opportunity to golf at one of Hawaii's premier and picturesque golf courses and indulge in an intimate post-tournament reception amongst your industry's peers - catered by Roy's: Renown Euro-Asian 5-star restaurant. Home of celebrated chef Roy Yamaguchi.

The tournament is free to all invited and includes luxury charter coach transportation to and from Ko'Olina Golf

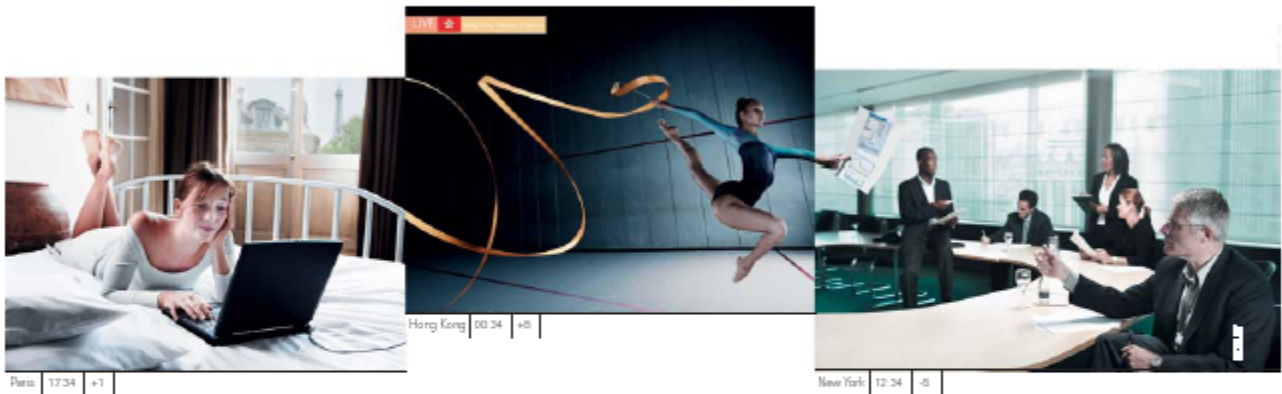
Club, golf bag handling, use of lockers and locker room facilities, tee prizes, box lunch, range balls, golf cart, "no cash necessary" beverages and cocktails during play, a post-play buffet dinner and cocktail mixer. If you choose not to travel with your golf clubs, rentals will be available for a nominal fee.



Special contests include men's and ladies longest drive, closest-to-the-hole, four hole-in-one opportunities and a putting contest. Prizes include top brand drivers, wedges, putters and balls. The winning foursome will receive a \$1,000 cash prize.

The tournament will be held the day before the official PTC launch. One cannot think of a better way to segue into PTC than this fun-filled and unique networking opportunity. **SM**

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We make connections in the most unexpected places. Satellite services create the links that help people to do the most ordinary - and sometimes the most extraordinary - things. We really are part of the fabric of life.

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SES GLOBAL is the leading satellite service provider worldwide and is a byword for technical excellence and quality of service. We operate through a network of regional satellite operators: SES ASTRA, SES AMERICOM, NSAR, AsiaSat, Star One, NukuelSat, and WORLDSAT, each a leader in their respective markets, and together reaching out to 95% of the world's population via the world's largest combined satellite fleet. They are the providers of choice for satellite capacity and transmission solutions for audio-visual broadcasting, data transmission and communication networks, serving both commercial and government customers worldwide. Together we offer local expertise as well as global reach.

INDUSTRY NEWS

'Space Council' Paves the Way for a European Space Program



The first ever European 'Space Council' was held in Brussels last Nov. 25 offering ministers representing 27 European Union (EU) and European Space Agency (ESA) Member States the first opportunity to jointly discuss the development of a coherent overall European space program.

During the meeting, ministers recognized that it is essential to utilize the available resources in an efficient and effective way so that the supply of space-based services and infrastructures can meet the demand from users for the benefit of all European citizens. The ministers also agreed that the unique nature of the space sector requires the development of an appropriate industrial policy and public authorities close attention.

German Minister for Education and Research Edelgard Bulmahn, current chair of the ESA council at ministerial level, said the meeting was a great step forward for Europe's ambitions in space.

"Europe must federate its space efforts in order to better exploit the potential of space technologies for the well-being of its citizens. The European Space Program will significantly strengthen Europe's role in this area of great economic and political importance," he said.

Dutch Minister for Economic Affairs Laurens-Jan Brinkhorst, current chair of the EU Competitiveness Council said the first EU-ESA Space Council Europe made a major step in the direction of a strong and coherent European Space Program.

"Space technologies and applications will help Europe to reach its common goals in the field of i.e. competitiveness, environment and security. I am confident that our joint efforts will contribute to a strong and independent position for Europe in the global arena," he said.

A European space program, to be defined in concept by the end of 2005, will constitute a common, inclusive and flexible platform encompassing all activities and measures to be undertaken by the EC, ESA and other stakeholders (e.g. national organizations) in order to achieve the objectives set in the overall European space policy.

To achieve this, a second "Space Council" meeting is planned for Spring 2005 to define general governance principles, identify priorities as well as the roles and responsibilities of all stakeholders and establish industrial policy principles.

Arianespace in Final Preparations for Helios IIA Launch; Integrates Six Auxiliary Payloads for Flight 165



Liftoff of Flight 165 is set for December 10 from the Spaceport's ELA-3 launch complex.

Arianespace announced on Nov. 25 that the six auxiliary satellites to be orbited by Flight 165 have also been mounted on a dispenser ring that will be installed with the Ariane 5's primary payload.

These small satellites have varying missions, including communications with remote scientific ground stations, studies of the Earth's climate, and the validation of technologies for a future space-based military electronic intelligence (ELINT) system.

Ariane 5 G vehicle was moved last week from the integration facility to the Final Assembly Building, making a startup of the last major phase of preparations for this upcoming Arianespace launch. With the launcher in the Final Assembly Building, Arianespace said Ariane 5 is ready to receive its primary payload - the French Helios IIA military reconnaissance platform.

The integration operation began last week with the installation of Spain's Nanosat on the Ariane 5 dispenser ring. Nanosat is Spain's first small satellite, and it was built by the country's INTA national space agency (Instituto Nacional de Técnica Aeroespacial). With a weight of less than 20 kg., the spacecraft is designed to demonstrate the feasibility of applying scaled-down components and sensors in mini satellites.

Nanosat carries extremely small magnetic and solar sensors, along with a store-and-forward communications system that will relay information from remote scientific facilities in Antarctica and elsewhere to a central station in Madrid.

The next satellite integrated on the Ariane 5 dispenser ring was Parasol, a small spacecraft from the French CNES National Space

INDUSTRY NEWS

Agency that will study the impact of aerosols and how they interact with clouds. This information is to help scientists better understand the Earth's climate.

Parasol is equipped with a wide-field imaging radiometer/polarimeter called POLDER (Polarization and Directionality of the Earth's Reflectances), designed in partnership with the LOA atmospheric optics laboratory in Lille, France.

During its planned two-year mission, Parasol is to join a so-called "A-Train" of spacecraft with a full complement of instruments to observe clouds and aerosols. Other satellites forming the "A-Train" will be Aqua and Aura (from the U.S. National Aeronautics and Space Administration), Calipso (a NASA/CNES project), CloudSat (a U.S./Canadian partnership involving Colorado State University, NASA, the Canadian Space Agency, the U.S. Air Force and the U.S. Department of Energy), and the Orbiting Carbon Observatory (NASA).

VOOM Satellite Service to Increase Channel Capacity in 2005; Cablevision Orders 5 Satellites Worth \$740 Million from Lockheed

Rainbow Media Enterprises, a subsidiary of Cablevision Systems Corp. (NYSE:CVC), said its year-old VOOM satellite service will dramatically expand in March next year from its current 39 to more than 70 high-definition channels covering the full continental U.S.

Tom Dolan, CEO of Rainbow Media, said the plan is to simultaneously add nearly 200 standard definition channels. To facilitate the expansion, the VOOM service will utilize 16 transponders on the SES Americom AMC-6 satellite, which VOOM refers to as "Rainbow 2," previously leased from SES Americom, a SES Global company.

Dolan explained that all the programming transmitted by both Rainbow 1 and Rainbow 2 will utilize a new encoding system from Harmonic, initially configured to run in MPEG-2 and software upgradeable to MPEG-4.

This is a step forward in our plans to advance VOOM to MPEG-4 later in 2005, Dolan said. "All VOOM customers have been provided with set-top boxes capable of receiving the MPEG-4 signal and we remain committed to offering more than 400 full continental US channels before the end of 2005," he added.

Rainbow Media also disclosed that it filed with the Federal Communications Commission a recently completed contract with Lockheed Martin for the construction of five Ka-band satellites for VOOM. These high power satellites, the first of which is to be completed and launched in approximately 34 months, will enable VOOM to increase its channel capacity to more than 5,000 high definition channels when operating in spot beam

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INDUSTRY NEWS

mode. Subsequent satellites will be completed in three-month increments, according to Lockheed.

This will enable VOOM to have spot beams covering the entire United States including Alaska and Hawaii. With these satellites, VOOM will be operating with virtually no capacity constraints. These satellites will be operated at the company's orbital locations at 62W, 71W, 77W, 119W and 129W.

Rainbow Media said the deal, worth about \$740 million, underscores Cablevision's determination to push ahead with the Voom service in spite of continuing doubts on its costs and future viability.

The work will be overseen by Jefferson County-based Lockheed Martin Space Systems Co. The satellites will be designed and developed in Newtown, Pa., and final integration will be done in Sunnyvale, Calif. Lockheed will also will provide tracking, telemetry and control equipment, satellite equipment, software and training.

VOOM's 39 high-definition channels include ESPN HD, HBO HDTV, Cinemax HDTV and others.

Amazonas Satellite Enters Commercial Operation with Full Service Capability

Hispasat said middle of November the Amazonas satellite launched from Baikonur on August 5, 2004 has been deployed at 61 degrees West on the geostationary orbit and thoroughly tested at this location. The company described the communications performance of its payload operating in C and Ku-bands as "fully satisfactory."

The Amazonas satellite carries 32 Ku-band and 19 C-band operating transponders, which commercially provide a global capacity of 63 equivalent transponders of 36 MHz. The technical configuration of Amazonas covers, with maximum power, the markets of Brazil and the rest of the American continent. The Amazonas also has transatlantic capacity allowing it to extend its coverage to Europe and North Africa, and complement the coverage of the current Hispasat fleet of satellites, including the West coast of the United States.

The Amazonas satellite is the third Eurostar E3000 satellite launched this year to enter commercial service. Antoine Bouvier, CEO of EADS Astrium that built Amazonas said despite an incident detected after launch, Amazonas will be able to provide full capacity for more than ten years.



The Astrium-built telecommunications satellite Amazonas is now providing a broad spectrum of telecommunications services for Brazil and North and South America. (Astrium photo)

According to earlier reports, the Board has concluded that based on analysis and tests, Amazonas will have a useful life that will exceed ten years despite a decrease in pressure of the satellite's two oxidant tanks detected last August 27. The Board said Amazonas will be able to provide commercial service with full guarantees to Hispasat clients.

Amazonas will also be used by Hispasat subsidiaries Hispamar of Brazil and Hispasat Canarias to provide a multitude of communications services at both C- and Ku-band on both sides of the Atlantic Ocean.

India's ISRO and France's CNES to Develop Atmospheric Satellite

The space agencies of India and France signed a Memorandum of Agreement last Nov. 19 to cooperate in launching a satellite that will help make climate predictions more accurate.

Indian Space Research Organization (ISRO) and the French National Space Centre (CNES) agreed to proceed with the development and implementation of the joint atmospheric satellite mission, Megha-Tropiques. The launch is planned by 2008-2009.

Megha-Tropiques (Megha meaning cloud in Sanskrit and Tropiques meaning tropics in French) is meant for investigating the contribution of the water cycle in the tropical atmosphere to climate dynamics. The satellite will carry three scientific instruments: a Multi-frequency Microwave Scanning Radiometer (MADRAS) to be developed jointly by ISRO and CNES for providing information on rain above the oceans, integrated water vapor content in the atmosphere, liquid water in clouds, convective rain over land and sea; a Multi-channel Microwave Instrument (SAPHIR) to be developed by CNES for providing vertical humidity profile in the atmosphere; and a Multi-channel Instrument (SCARAB), also to be developed by CNES, for providing data on the earth's radiation budget. **SM**

EXECUTIVE MOVES

Stevens to Become Lockheed Martin Chairman Upon Coffman Retirement from Board



Lockheed Martin Corp. [NYSE: LMT] has announced that Vance D. Coffman will retire from its board of directors effective April 2005. Replacing Coffman is Robert J. Stevens who is

expected to be elected by the board of directors as chairman on April 2005.

Coffman has served as chairman since 1998 and retired as Lockheed Martin's CEO in August of this year when he announced that he would remain as the board's non-employee chairman until April 2005. Coffman began his career with Lockheed Martin 37 years ago as an aerospace engineer and subsequently served in a series of key corporate leadership positions.

Stevens became president and CEO in August. Prior to August, Stevens served as Lockheed Martin's president and CEO. He has also served as the corporation's chief financial officer, among other key positions.

Lockheed Martin also announced that Norman R. Augustine will retire as a member of the board effective in April 2005. Augustine has served on the Lockheed Martin board since the company was founded in 1995 and served as its chairman from 1997 to 1998 and its CEO from 1996 to 1997.

Lockheed's board also elected James O. Ellis, Jr. as a new member. Ellis most recently served as Commander, U.S.

Strategic Command in Omaha, Neb., before retiring in July 2004 after 35 years of service in the U.S. Navy. As Commander of the Strategic Command, Ellis was responsible for the global command and control of U.S. strategic forces. In his Naval career, Ellis held numerous commands, including Commander, U.S. Allied Forces Southern Europe.

A graduate of the U.S. Naval Academy, Ellis also holds M.S. degrees in Aerospace Engineering from the Georgia Institute of Technology and in Aeronautical Systems from the University of West Florida. He served as a Naval aviator and was a graduate of the U.S. Naval Test Pilot School.

Mel Karmazin Named CEO of Sirius; Joseph P. Clayton to Remain as Chairman



Photo by VIACOM

The Board of Directors of Sirius Satellite Radio (NASDAQ:SIRI) has named Mel Karmazin as Chief Executive Officer. He succeeds Joseph P. Clayton, who will remain at Sirius as chairman of the board of directors.

Clayton said the hiring of Karmazin is the final piece in the turnaround of Sirius that began when he joined the company three years ago. "My contract was ending on December 31, and I advised the board of directors that I was willing to stay on for a transitional period. When Mel left Viacom, we all felt we had a unique opportunity," he said.

Karmazin, who served as president and CEO of Viacom until earlier this year, said

his entry at Sirius is a "perfect opportunity" for him because he wants to lead a growth company that can reshape the landscape of the radio business. "I took Infinity Broadcasting and Westwood One to leadership positions in the industry and am confident that Sirius will become a market leader in short order," he said.

SpaceDev Promotes Richard B. Slansky to President; Becomes Newest Member of the Board of Directors

SpaceDev (OTCBB:SPDV) Board of Directors has appointed Richard B. Slansky as president and granted him a seat on the company's board. Slansky will remain SpaceDev's chief financial officer and corporate secretary, positions he has held since joining the company in February 2003.

Jim Benson, SpaceDev founding chairman and CEO said Richard not only has the right combination of financial and operational experience but also the enthusiasm and drive to contribute substantially to the development of SpaceDev as president.

Prior to joining SpaceDev, Slansky served in various positions, such as president, CFO, corporate secretary and vice president of finance, operations and administration for Path 1 Network Technologies, Inc., a U.S. publicly held company, and Nautronix Inc., an Australian publicly held company. In addition to his current responsibilities at SpaceDev, Slansky serves on the board of directors of two privately held high technology companies, one closely held private real estate company and the not-for-profit board of the Girl Scouts, San Diego-Imperial Council.

Executives Moves

Slansky earned a bachelor's degree in economics and science from the University of Pennsylvania's Wharton School of Business and a master's degree in business administration in finance and accounting from the University of Arizona.

Eagle Broadband Appoints David Micek as Chief Operating Officer

Eagle Broadband, Inc. (AMEX:EAG) has appointed David Micek, formerly with Texas Instruments, Borland and Ashton-Tate, as chief operating officer, effective immediately.

Micek brings more than 25 years of senior-level product development, sales, marketing, operations and general management experience with Fortune 500, start-up companies and corporate turnarounds to Eagle Broadband. With a proven track record of developing, launching and growing new products into market leaders, Micek has an established reputation for achieving dominant market share positions for some of the most well-known technology brands including Ashton-Tate's dBASE and Borland's PARADOX. In this new role at Eagle, Micek will be responsible for directing key operations of the company with a special focus on new product development to speed time to market for strategic product offerings that will fully meet customer needs and further drive revenue growth.

Most recently, Micek had several turn-around assignments including president at Internet search company AltaVista Software where he led a restructuring, reduced costs and directed the successful sale of the company's enterprise software business. Before AltaVista, he was president and CEO of wireless networking company Zeus Wireless where he refocused the company on high growth

markets, signed major new customers and negotiated the successful sale of the company.

Micek was also president & CEO of broadband video software tools company iKnowledge, where he restructured the company, raised new financing and implemented a new business plan focused on achieving aggressive revenue growth targets.

Prior to iKnowledge, he was vice president & general manager at Texas Instruments' software business unit where he managed P&L activities including product strategy, product management and development, marketing, indirect sales and operations and helped achieve market leadership positions for two separate product lines. Before Texas Instruments, Micek was also director & general manager at software maker Borland where he managed P&L functions including product strategy, product management and marketing and he successfully grew the company's Paradox PC database product to become a market-leader.

Alexander Gersh to Join NDS as Chief Financial Officer

NDS Group plc, a News Corp. company, and a provider of technology solutions for digital pay-TV, has announced that Alexander Gersh will join NDS as Chief Financial Officer.

Gersh will take up his NDS role at the beginning of January 2005. He will join NDS from his current responsibilities as CFO with Flag Telecom Ltd. Prior to its amalgamation with Reliance Gateway, Flag Telecom had an OTC listing (OTC: FTGLF.PK).

Alexander Gersh has been with Flag Telecom, a global network services

provider since 2003. He has been instrumental in the company's post Chapter 11 restructuring. Prior to this, Gersh was Executive Vice President and CFO at NextiraOne LLC in the US. He has held senior international financial roles with British Telecommunications, and Motorola.

Gersh graduated with honors from City University of New York and is a Certified Public Accountant.

Eagle Broadband Names Eric I. Blachno as New Chief Financial Officer

Eagle Broadband, Inc. (AMEX:EAG) has appointed Eric I. Blachno as chief financial officer effective immediately. Blachno, formerly with IBM, Bear Stearns and Luminent, assumes the position from current chief financial officer Richard Royall who is resigning to pursue other interests.

Blachno brings almost two decades of financial and management leadership and Wall Street, technology and telecommunications industry experience with both Fortune 500 and emerging growth companies. Most recently he served as vice president of finance and chief financial officer at Cascade Microtech, a manufacturer of semiconductor equipment, where he helped lead the company to profitability while managing the financial, accounting and treasury functions.

Prior to Cascade Microtech, Blachno served as vice president of finance and chief financial officer at Luminent, Inc., a leading provider of fiber optic components where he was responsible for corporate strategy as well as all financial, accounting, treasury and investor relations functions. While at Luminent he took the company public with a \$144

Executives Moves

relations functions. While at Luminent he took the company public with a \$144 million IPO and profitably scaled the business from \$60 million to a \$200 million revenue run rate within two years until the company's merger with MRV Communications.

Prior to his senior financial management positions at Cascade Microtech and Luminent, Blachno served as managing director at technology and healthcare investment banking firm PMG Capital Corporation, where he led the company's technology group and communications equipment equity research. Prior to PMG, he was managing director and senior communications equipment equity analyst for Bear Stearns & Co., Inc. Before his Wall Street career, Blachno worked for nearly a decade at IBM where he held a variety of management positions in finance, sales, marketing, corporate strategy and software development. He holds an MBA in finance from the Wharton School, University of Pennsylvania, an MS in Telecommunications from Pace University, and a BS in Computer Science from the University of Florida.

Dave Weisman, CEO of Eagle Broadband said Eric brings a unique combination of financial, telecommunications and technology industry experience, with a well-respected reputation on Wall Street.

"I am confident Eric can provide Eagle with strong financial leadership and help drive the next phase of the company's growth while enhancing our communications with shareholders and maximizing visibility for the company within the investment community," he said.

Luke Chen Li Chien Joins NDS China

NDS Group plc, a News Corporation company and a leading provider of technology solutions for digital pay TV has named Luke Chen Li Chien as Chief



**Luke
Chen Li
Chien**

Operating Officer of NDS China effective immediately.

As COO, Chen assumes responsibility for NDS China operations including account management, support, delivery and marketing. Chen reports to

Gary Zhou Yi Gang, General Manager of NDS China, and a member of the NDS Asia Pacific senior management.

Sue Taylor, Vice President and General Manager of NDS Asia Pacific said, Chen's first priority will be to support the growing number of NDS China customers. "Mr. Chen has extensive experience in digital TV delivery and account support in China. He brings the expertise and professionalism of a Fortune 500 company to NDS China," she said.

Chen's career spans three decades of hardware and software testing, engineering and customer support. Chen is an authority on integrated circuit testing and engineering. Recent positions that he has held include Chief Representative of Texas Instruments China in Beijing, and General Manager of Digivision Technology in Shanghai.



Jim Banke

Space Foundation Names New Vice president and Directors

The Space Foundation has named a new vice president and selected four new directors to fill newly created and expanded positions. Jim Banke was promoted to vice president of Florida operations in addition to retaining responsibility as director of the Coalition

for Space Exploration. Banke will support the Space Foundation's mission and customers on Florida's Space Coast and throughout the region. As director of the Coalition for Space Exploration, Banke is responsible for the Space Foundation's support of a collaborative industry effort whose mission is to ensure the United States will remain a leader in space, science and technology through promotion of the Vision for Space Exploration.

Chris DeGrant was named director of events and plans. She is the principal logistics and plans manager for Space Foundation major events, including the National Space Symposium held each spring in Colorado Springs, Colo., and the Strategic Space Symposium held each fall in Omaha, Neb. DeGrant's experience includes managing high visibility and media events such as nationally televised competitions and the final championship for the Professional Bull Riders. She also was general manager for the Resistol Relief Fund, a nonprofit division of the Bull Riders, where she developed and ran many fund raising events.

Mary Ann Bobko joins the Space Foundation as director of marketing. She is responsible for marketing strategy, including targeted marketing programs, advertising and promotions, and overall brand management. Bobko brings broad marketing experience to the Space Foundation, gained during 17 years in the high-tech industry working for software startups to large international corporations. Her background includes developing and managing marketing strategy, building integrated marketing campaigns to drive new business, and creating innovative programs for partners and customers.

Niki Moore has been named director of education development. Her responsibilities include researching and developing relationships with business and government and writing grants and securing additional funds. **SM**

New Products

Omneon Spectrum Media Server System Deployed for Playout to Japan's Mobaho!

Omneon Video Networks said its Omneon Spectrum media server system is being used by Tokyo-based NHK Technical Services (NTS) to operate Mobile.n channel programming on Mobaho!, which it claims to be the world's first multi-channel satellite service broadcasting to mobile viewing terminals.

Mobaho!, a fee-based service from Japan's Mobile Broadcasting Corp. (MBCO), was launched Oct. 20, providing individual subscribers with almost 40 channels (seven video channels and 30 audio channels), plus 60 data services. Mobile.n is the all-around video channel delivering programs in a variety of genres. Programming includes NHK's eight-hours-a-day offering of general news programs from Japan and overseas, sports, and documentaries, as well as the service's own programs. MBCO has given NTS responsibility for the Mobile.n channel transmission system design and operation. Mobile.n's content is being ingested and played out via NTS's six-channel Omneon server and distributed to viewers through MBCO's MBSAT satellite.

Kenzo Muroi, director of digital technologies development for NTS's Business Development Center said their Omneon system can be expanded in many ways without interrupting server operation and they plan to take advantage of this capability in the future as the service grows.

He said the Omneon Spectrum media server system is a good fit for their on-air transmission system and since actual on-air operation started Oct. 20, the system has lived up to expectations and provided the best infrastructure for our efficient workflow.

Mobile Phones Taking Flight as ARINC and Telenor Demonstrate New Cellular System



ARINC Incorporated and Telenor on Thursday gave leading UK and European journalists a demonstration of the technology that will make in-flight mobile phone service a reality. ARINC/Telenor Mobile Connectivity—the GSM mobile phone solution for airlines that uses Inmarsat aeronautical services—was deployed inside Inmarsat's London headquarters for

use by an invited list of aviation and aerospace writers and editors.

Attendees took a 'virtual flight' from the comfort of Inmarsat's London headquarters to experience how the new onboard GSM mobile phone network works, enabling voice calls and SMS messages at 30,000 feet. They placed and received calls on their personal mobile phones to test the new service, which is being marketed to the world's airlines.

"ARINC, Telenor, and Inmarsat want you to experience one of the first live demonstrations of this service, to find out what it will mean for travellers, airlines and the communications industry," stated Graham Lake, ARINC Vice President and Managing Director, Europe, Middle East & Africa.

The system works through a small 'picocell' installed on the aircraft to create a mini mobile cell in the passenger cabin, linked to the ground via a satellite connection.

Stratos Offers "Come Sail Away" Savings on Inmarsat Fleet Hardware

Stratos Global Corp. (TSX: SGB), a distributor of Inmarsat satellite services, announced Wednesday the opportunity for fishing vessel operators and other maritime customers to "Come Sail Away" with savings of up to US\$2000 on Inmarsat Fleet F33 and F55 maritime satellite terminals.



While supplies last, Stratos and its participating distribution partners are offering immediate discounts of US\$1,500 on selected Fleet F33 and US\$2,000 on selected Fleet F55 maritime satellite terminals.

Both Fleet F33 and F55 solutions from Stratos provide global digital voice connectivity and an integrated data service option that is ideal for fax and batched data transmission, including file transfers. The integrated data service option, available within Inmarsat's spot beam coverage areas, provides fax service at 9.6 kbps, as well as effective dial-up data transmission speeds of up to 40 kbps using optional V40/V42 compression.

In addition, Inmarsat Fleet F33 and F55 offer a mobile packet data solution (MPDS) option that provides persistent connectivity at speeds up to 64 kbps incoming from the satellite and up to 28 kbps outgoing from the terminal. This always-on, higher-speed option is particularly suited to IP-based data applications, such as Web surfing, intranet access and e-mail. MPDS connectivity is available within Inmarsat's spot beam

NEW PRODUCTS

coverage areas and users pay only for the amount of data sent and received, rather than the amount of time they are connected.

Telenor Offers Holiday Satellite Calling Rates at Sea

Telenor Satellite Services is offering worldwide reduced calling rates for sailors at sea this holiday season.

In conjunction with satellite operator Inmarsat, Telenor is extending low-cost Super Quiet Time (SQT) hours around-the-clock beginning 20:00 Greenwich Mean Time (GMT) Christmas Eve 2004 and running until 6:00 GMT January 3, 2005.

Telenor's Super Quiet Time (SQT) Program features substantially reduced prices, less than a dollar a minute, for prepaid voice calls over maritime Inmarsat-B, -M, Mini-M, and all Fleet services.

"Holidays are a time for sharing with family and friends. So, for those who are at sea and cannot be with their loved ones, Telenor wants to make it as easy and affordable as possible for them to connect, even though they may be far away from home," said Tore Hilde, CEO of Telenor Satellite Services.

XATA Releases Multi-Mode Communications Platform

XATA Corp. (NASDAQ:XATA) has released an integrated digital cellular and satellite communications platform that delivers both high-speed data download and ubiquitous coverage, eliminating the traditional bandwidth and gap limitations facing fleets trying to efficiently operate in real-time.

The combination of third-generation digital cellular and satellite networks, according to XATA, creates a speed and coverage advantage allowing fleets to optimize resources in real-time, while reducing on-going wireless communication and software management costs.

XATA MobileSync (patent pending) over-the-air application management instantly makes new features available and reduces the cost of updating software in the vehicle, allowing fleets to select and implement additional applications "on the fly" and overcoming the traditional implementation bottlenecks associated with onboard technology.

"The challenges for today's fleet operators are to improve productivity and reduce costs real-time," said Peter Thayer, chief technical officer for XATA. "Our new digital cellular and satellite

offering delivers the best of both worlds — high-speed data transfer coupled with ubiquitous coverage to help fleets move faster and operate smarter in the field," he said.

Cincinnati Bell, DirecTV to Offer Bundled Suite of Services

Cincinnati Bell and DirecTV, Inc. announced Monday a new strategic marketing alliance that will enable Cincinnati Bell to offer its residential customers DirecTV service as part of one of the most comprehensive suites of entertainment and communication services in the marketplace.

Consumers throughout the Cincinnati Bell service area, which includes Ohio, Kentucky and Indiana, can now purchase a variety of calling and Internet services from Cincinnati Bell along with DirecTV service. In addition to the DirecTV Total Choice Plus with Local Channels package which offers more than 135 digital-quality channels, customers will have access to the widest selection of DirecTV entertainment and sports programming like the DirecTV exclusive NFL SUNDAY TICKET, DirecTV digital video recording (DVR) technology, high-definition programming and DirecTV-delivered local channels.



"The addition of DirecTV's satellite television service offering to our product line-up enables us to close the gap on providing customers with the only all-inclusive bundled suite of services that is unmatched by our competition," said Paul McAleese, chief marketing officer for Cincinnati Bell.

Gilat's Spacenet Subsidiary Offers Hybrid VSAT/DSL Services

Gilat Satellite Networks, Ltd. (Nasdaq:GILTF) said its U.S. subsidiary, Spacenet Inc., has added commercial-grade, hybrid VSAT/DSL services to its Connexstar family of broadband connectivity solutions.

Spacenet President and CEO Bill Gerety said the DSL service is being integrated into the VSAT-based WAN solutions that the company provides to its customers.

Gerety added Spacenet has enjoyed growth over the past five years as a result of our tight focus on meeting the needs of large

NEW PRODUCTS

multi-site enterprises, primarily in the retail, hospitality and government sectors.

“We remain convinced that for most of these businesses, VSAT-based networks are the most effective way to maximize value and network-wide efficiency. For some customer locations, however, DSL may provide a better fit. For those sites, we now offer DSL services. Since Connexstar DSL utilizes much of the network infrastructure used by our enterprise-grade Connexstar VSAT service, our customers are assured of extremely high levels of security, performance and manageability,” he said.

CPI Introduces 110 W Tri-Band Outdoor TWTA

Communications & Power Industries (CPI) Satcom Division, a supplier of uplink amplifiers for ground-based satellite communications, has introduced a Tri-Band traveling wave tube amplifier

(TWTA) which covers the C, X and Ku-Band uplink frequencies in a single weatherized package.

CPI said the amplifier provides up to 110 watts of power, weighs only 35 pounds and operates at temperatures up to 60°C, including solar loading. It also features an integral redundant switch control, an SSIPA with linearizer, and increased output power of up to 140 watts are available as options.

“The amplifier’s digital serial interface, local control and event log capabilities enhance the feature-sets available for military communications,” said Mark Yount, recently appointed Director of Global Milsatcom Business Development. “With unsurpassed thermal management, local LED indicators and compact size, we feel that this HPA will be highly competitive.” **SM**

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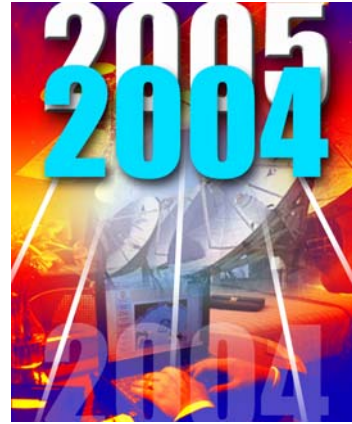
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COVER STORY

2004 - Oh, What a Year!

Bruce Elbert
President

Application Technology
Strategy, Inc.



Our industry has had its ups and downs over the decades, often following some familiar patterns. But, to my way of thinking, 2004 was more of a watershed than any I've experienced in the past. What happened and what does this mean for years to come? Let me take us through this step by step.

2004 – The Year That Was

This was a year of consolidation and reorganization of the big players – like we've never seen before. Major satellite operators like Intelsat and PanAmSat are now owned by investment bankers looking to make money. It is possible that this could strengthen these operators as their new financially-oriented owners pay close attention to cash flow as opposed to EBITA. With the closed acquisition of Hughes Electronics by News Corp, the final chapter ends on a great Los Angeles-based company that over 100,000 of us once worked for. But, the DBS TV model that Hughes created is, well, huge, giving cable TV owners something to really worry about, and mobile satellite radio is moving to the next plateau of acceptability.

Another development was the eminence of audio and video channel formats that address specific interests which, along with Internet Web logs (Blogs), represent the “new media” that will shape how we are entertained and informed in years to come. I, for one, spend more time reading web pages and listening to talk radio over the air and on XM Satellite Radio than I do watching TV. We see retirements of the old hands in

network news and greater interest in topics of personal interest that are served through specialty cable TV networks like Food TV, HGTV, and BBC America. Shopping channel QVC has so affected the habits of buyers that reportedly it is the second largest retailer in the US.

More new satellites were purchased this year than last, and orbital capacity is on the increase with new launches underway. Thus, GEO FSS capacity is tending upward while usage, while substantial, remains flat. Like the early 1980s, the overhang of capacity is causing transponder lease rates to drop. This is not welcome to satellite operators as well as the aerospace companies that manufacture spacecraft and launch vehicles.

New applications to exploit this opportunity appear in digital content distribution and interactive data. However, the cost of entry for potential customers still presents a bit of a hurdle. The problem is more acute in the industrial countries where terrestrial services are more readily available. But developing markets, particularly in Africa, the Middle East and South Asia, are ready to give a boost. I was encouraged to receive an enquiry from an engineer in Iraq who is in the process of developing a broadband service using currently available VSATs.

The first commercial GEO Ka band payload is operational in North America from Telesat Canada. This is a proving ground for the greater bandwidth and enhanced performance of multiple spot beams geared for the interactive market.

ViaSat will introduce DOCSIS-based equipment to allow WildBlue to offer Internet access services in competition with the Ku band operators, and a renewed business model will be tested.

In 2005, What?

It might be comforting to know that we satellite types are not the only ones asking this question. I attended the 3G World Congress, held by IIR in Hong Kong during November 15-17. The broad melt down in telecom came in part from over exuberance over 3G wireless technology, largely for data. Cellular operators were supposed to either buy into 3G or face extinction. At the pre-conference workshop I attended, noted expert on wireless economics, Hershel Shosteck of the Shosteck Group, stated that adoption of a new technology takes longer than anticipated while older services hang on longer – and make more money than expected. He suggests that the cycle for new approaches will require 10 years to get going. The current status of 3G, still in the demonstration phase, bears witness to Dr. Shosteck's observations.

Applying this concept to our industry, we easily see that the foundation of our systems will likely continue unabated. How else will cable TV networks distribute programming and add new services? The DBS operators also continue to expand and they, too, have no other means to reach their very-loyal customers. The developing world is developing, aided by technology of every sort sold in a buyers market. The Internet is making any educated person wiser and

VIEWPOINT

more effective in literally every line of business and work.

HDTV is one technology that seems to have met the 10 year threshold. It's suffered from a "chicken or egg" problem – providers of HDTV programs weren't successful because affordable sets were not available, and set manufacturers couldn't sell enough sets because of a lack of programming. 2005 does offer the prospect of giving us both chicken and egg at the same time. I, for one, will get a Sony plasma HDTV screen for Christmas and a DIRECTV triple LNB for HDTV



programming. And just recently, VOOM announced an agreement with Lockheed Martin for the start of construction of as many as

five satellites for its fledgling HDTV service.

Dr. Shosteck also points out that rising incomes in industrial and developing economies make all forms of communications affordable to larger and larger portions of the populace. Like the analogy of a rising tide that lifts all boats, improving incomes give more citizens the means to purchase PCs, cell phones and satellite dishes. Some significant portion of three billion people are thus within the grasp of this forcing function.

I will leave it to you, the reader, to consider how these phenomena could increase interest and ultimately demand for satellite capacity and services. Those who "keep their powder dry" and stay focused will more likely succeed than others who readily seek an off-ramp. For good or for bad, satellite investments are long term; so patience and creativity are paramount. **SM**

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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).
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FEATURE



EMEA: Eager for 2005 Growth

By Chris Forrester

Salah Hamza, CEO of NileSat viewing its many channel offerings.

Europe is in good shape. The major satellite operators have weathered the worst of the capacity downturn and have high-hopes for a HDTV-rich future. Local merger and acquisition activity has also completed its first stages, although SES Global is still seemingly looking for expansion-by-acquisition. Pay-TV broadcasters are also doing well. A study by Screen Digest (*“European pay-TV digital platforms”*) states that growth prospects for Europe’s pay-TV platforms are today more positive and represent more sustainable opportunities than for some years. “Growth in the number of European pay TV subscribers has seen a steady decline since the launch of Europe’s first digital TV platforms between 1996 and 1998. For the first time since then there has been a rapid acceleration in growth - the industry is on course for 2.6m net additions in 2004, compared with 1.3m in 2003,” says the report.

Break the figures out and it’s clear that DTH growth (albeit from a modest base) has, at 139% over the past 5 years, been spectacular. Screen Digest is concentrating on the pay-TV side of the equation, consequently Digital Terrestrial, with two

catastrophic bankruptcies under its belt (in the UK and Spain) has gone into negative growth territory. If (non-pay) terrestrial set-top box ownership were examined then this number would be substantially positive, helped by Freeview’s success in the UK.

Nevertheless, by 2008, there will be 94.4m pay TV households in Europe, compared to 82.4m at the end of 2003 – a rise of 13%. Also helping sales is the continued drop in the cost of set-top boxes. “Digital homes are due to grow from just under one third of the pay TV total at the end of 2003 to 58% in 2008. Much of this growth will be driven by the cable sector – currently just 6% of Europe’s cable homes are digital but 36% will have been converted by 2008.”

The report says that the DTH consolidation process is over in Spain and Digital Plus should start delivering growth from the end of 2004. Sky Italia in 2004 passed the previous subscriber

FEATURE



peak reached by its legacy platforms. In France, Canal Plus group has disposed of its foreign units and cleaned up its balance sheet, the result being the first increases in four years in its premium

subscriber count in the first half of 2004. Amsterdam cable company UGC (via its Denver-based parent) has bought Canal Plus' cable activities in the Netherlands, while Airbridge Investments and Greenfield Capital Partners, two Dutch investment groups, will retain CanalDigitaal, the DTH satellite TV platform serving the Dutch language market, and will continue to offer the Canal+ channels on this platform as part of a new long-term wholesale distribution agreement.

In other words the past year or so has seen Italy, Germany, Spain, the Netherlands and important emerging countries like Poland, all have new, unified ownership for their local DTH platforms. In November, David Chance, chairman of Modern Times Group, one of the two rival DTH players still slugging it out over the (fairly) small Scandinavian region, said he favoured a merger between the two players. If this were to happen – and it doesn't seem on the horizon just yet – then only France would be left with competing DTH pay-TV operations, Canalsatellite from Canal Plus, and Television Par Satellite (TPS).

European Pay-TV (by distribution technology)* (000's)			
	1998	2003	% growth
Cable	51.049	59.172	16%
DTH	8.250	19.715	139%
Terrestrial	5.682	3.547	38%

*Data: Screen Digest

But Europe is also at a crossroads. While North America (and Japan, South Korea and Australia) is beginning to see very real progress in take-up of high-definition services, leading to a visible increase in satellite capacity, Europe still has just one HDTV channel, on SES Astra. During 2005 this will change, with a cluster of services promised

by Premiere World in Germany, TPS Star and Canal Plus in France, and a handful of channels from B SkyB next winter. Europe is to get a major push from Luxembourg, which during 2005 holds the European Union's revolving presidency. Luxembourg will host a major conference during the summer to draw

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FEATURE

A recent look at Europe’s potential HD market from Datamonitor (‘High-definition TV in Europe: the upgrade cycle begins’) suggests that there will be 4.6m HDTV households in Europe by 2008. The study says Germany, the UK and France will lead the European rollout, and Italy a distant fourth. “Momentum for HDTV is now building,” suggested Datamonitor’s James Healey, senior media and broadcasting technologies analyst. “Broadcasters have announced definite deployment plans. The consumer electronics (CE) industry is a-buzz over this new (and profitable) market.” Recognising that broadcasters will adopt either MPEG4 or Microsoft’s WM9/VC9 codecs, Healey firmly comes down on the side of the European developed MPEG4, which he says will win a 70% market share.

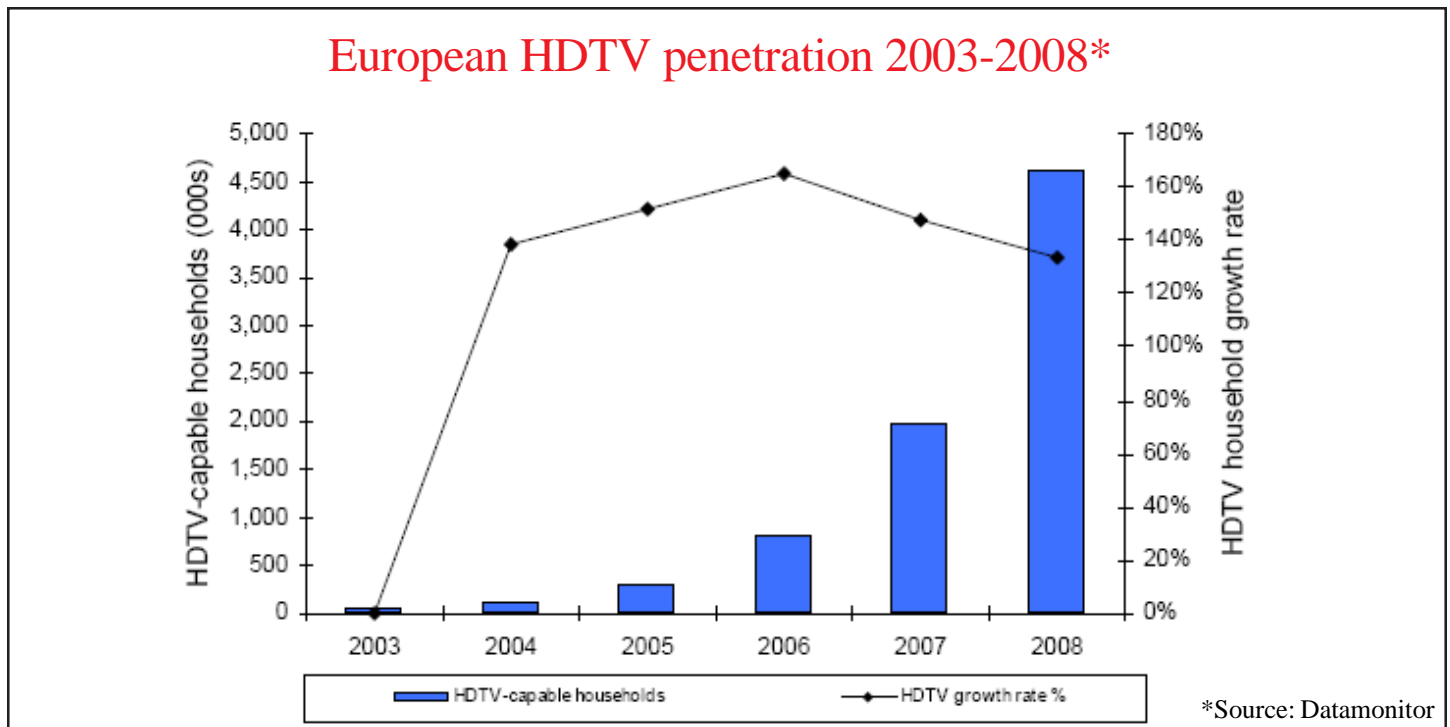
Datamonitor expects western European satellite TV operators to be the first to deploy HDTV services. Satellite operators will be determined to maintain their technology leadership, while cable operators are more likely to be focused on services such as video-on-demand. Cable operators are expected to be 12-18 months behind the satellite operators, principally due to this different focus, but also due to the greater financial/time investments required to apply new technology in a cable network.

Datamonitor suggests that HDTV is developing into a serious issue for broadcasters today because:

- Consumer electronics manufacturers have spotted a massive opportunity to make consumers upgrade their televisions to HDTVs, and prices are now falling to relatively affordable levels.
- There is a library of content being created by producers around the world, much of which is already being broadcast on HD channels in other markets.
- The cable industry has returned to financial good-health. The increasing competition for pay-TV subscribers is encouraging the deployment of new technologies, such as HDTV.

Undoubtedly, this is all good news for satellite operators like SES and Eutelsat. Both players suggest they’ll have to establish fresh capacity for any major HDTV expansion, given that its current hot-spots are more or less fully commercialized.

However, there’s plenty of growth left in ‘ordinary’ standard digital broadcasting. For example, this coming February sees MTV Networks launch its 100th television channel, ‘MTV Base in Africa’. MTV say the launch would represent breaching Africa’s “final frontier” as far as MTV Networks was concerned. The new channel, MTV Base in Africa, will be “a localized version of MTV Base (although



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run out of London), which is already viewed over much of Europe. The channel will broadcast via satellite to 48 countries in sub-Saharan Africa, and should have an immediate audience of some 1.3m homes. While MTVN has exported its European channels to African markets since 1995, this is the first service created specifically for African audiences," said the broadcaster. Currently over 400,000 subscribers outside of South Africa are previewing the UK version of MTV Base. MTV Base UK will continue to be available to viewers outside of South Africa via various emerging pay-TV platforms in Nigeria and elsewhere.

MTV Networks International is also to launch two new channels on the Sky Italia DTH platform. Nickelodeon went on air in November while Paramount Comedy launched on 1 December.

If Africa is seeing investment, there's no doubt that India and the Middle East is booming, in television terms. After something of a long wait, India's public broadcaster Prasar Bharati/Doordashan's in November finally kicked off its \$111m DTH venture and roping in a near-instant 200,000 subscribers, according to CEO Mr K S Sarma. The pub-caster is India's second DTH operator following the Zee-backed Dish TV, which has managed to sign up around 150,000 over the past year. Sarma said Doordashan's DTH would telecast only free-to-air channels, also airing All India Radio (AIR) channels as an add-on.

"So far, we have 17 Doordashan channels on the platform and 12 other channels, which include BBC World, Aaj Tak, Headlines Today, Zee Cinema, Zee Music, Splash TV, Aakash Bangla, Sun TV, Kairali," he said. Equipment is being sold at about Rs 2,500-3,500 [\$55-\$80 dollars] for a dish and STB. Doordashan's CEO said their service will be initially targeted at non-cable and non-television coverage areas. About 900 private dealers in about 130 cities are marketing the service.

Finally, the Middle East, best summed up by the words of Salah Hamza, CEO at NileSat, who has supervised NileSat's steady revenue growth over the past few years from \$36.2m in 2000 to an anticipated \$55.8 this year, and more than \$60m in 2005.

NileSat's two satellites (at 7 deg West) are almost full, and Hamza says his top priority is pushing hard for extra capacity to be in position by the end of 2005. He says NileSat is by far the most watched provider in the region, with more than 10m homes tuning in to some 240 channels.

Hamza is also a firm supporter of HDTV: "By the time of the World Cup in 2006, and soccer is terribly important throughout this region, I'd expect the World Cup to be available on NileSat. Technically, the best way to view the World Cup is in HD, so whether on an experimental basis or as part of a service, I'd be surprised if it wasn't available here."

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FEATURE

9% of SES changes hands

Mid-November saw two significant sales take place of Luxembourg-based SES Global stock (in the form of Fiduciary Depositary Receipts / FDR's). First up was Deutsche Telekom which sold 42.5m shares (some 7.3% of SES stock, worth some €450m). DT back in May sold about 5.9% of SES, at the time saying its holdings were no longer considered core. Institutional interest in picking up the stock (sold at about €8.10, a modest discount compared to November 17 market price of about €8.30) was evidently "considerable" which encouraged Dresdner Bank to step in and sell its 10m shares at similar rates.

Additionally, a further 2m shares changed hands on Nov 18 on the Paris EuroNext market. In all, the movements represent about 9% of SES stock. SES insiders say they are delighted with the increased liquidity in SES Global stock. The trades mean that about 40.5% of SES is now in free float, compared to barely 23% a year ago. SES has also seen the benefits of a steady rise in its stock valuation, today hovering around the €8.20 mark (although it has been as high as €9 a share) and a significant improvement on the € position back this time two years ago.

SES is also in an intensive launch phase, with the past months having seen AMC-10 and 11 launched and commercialised for HDTV, AMC-15 sent up back in October and AMC-16 due for launch on Dec 16 from Florida aboard an Atlas V. However, it seems SES Global has one or two reservations about the launch of WorldSat 2 (the former AMC-12) originally scheduled for a Baikonur launch this week (November 27). It has slipped to February, first because SES want to be 100% sure that all is well (according to SES) with the craft, and second because of launch availability through the mid-winter holiday season in Russia/Kazakhstan.



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NileSat has benefited hugely from what Hamza describes as a new broadcast "fever" affecting the Mid-East, not least in music channels.

"There are now 12 of them on NileSat, and all depend on SMS and other interactive applications. I can tell you that all of them, all of them are making very good money. The fever continues beyond even new investors who we congratulate for their innovation. But existing channels also have new plans for additional capacity." **SM**



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

Executive Spotlights

CEO's Share their Views on 2004 and Prospect for 2005

For our annual Year in Review issue, we asked the views of CEOs of leading companies in the industry on how they saw 2004 and what prospects are there for 2005. Excerpts:



**Romain Bausch,
CEO, SES GLOBAL**

Key industry events in 2004 were certainly the changes in ownership at our main competi-

tors, be it Intelsat, PanAmSat, New Skies or Eutelsat. When we did our secondary offering at Euronext Paris in May, our objective was to position SES GLOBAL as *the* reference stock for the fixed satellite services sector. In the meantime Panamsat and New Skies are no longer listed; and Eutelsat, Intelsat and Inmarsat no longer seek a listing. SES GLOBAL today is the *only* public global

satellite operator. And we believe these changes in ownership will have profound repercussions on the strategy of our competitors going forward. Venture capitalist usually have an investment horizon of 3 to 5 years. After that they will want to cash out on their investment. Satellite operators however need to be able to plan long-term. And while SES will

be able to use its free cash flow to invest in business growth opportunities, our competitors under their new ownerships will be pressured to deliver short-term returns on investments and pay-back debt leveraged upon them by these new owners.

Our guidance to the investor community and analysts for 2004 remains unchanged, i.e. stable revenues, at constant exchange rates, and looking at recurring revenues i.e. eliminating exceptional elements. We are indeed confident that we can deliver on our outlook of double-digit growth in 2005 and 2006. And I would like to stress that this outlook is based on the positive developments in our core business, meaning video broadcasting. It's not about assumptions regarding the accep-

tance of new services or new satellite products. It is based on existing or signed contracts. That means it is reflected in our contract backlog

number, which continuously increased over the last 12 month to an industry record of EUR 6.9 Billion.

The challenges in 2005 in my opinion will center around three main services: HDTV, Interactivity and satellite broadband. While HDTV is already a reality in the US and parts of Asia, Europe

is lacking behind, and our challenge, notably at SES ASTRA, is to make it happen in Europe too. With first customers like BSkyB in the UK and Premiere in Germany now committed to HD, we are confident this can be achieved. Second: Interactivity. We believe in more and more interactivity via the television set and our ambition is to make satellite truly interactive. That is why we developed SatMode, a low-cost, narrow-band satellite return channel system, together with the European Space Agency ESA and industry partners. SatMode should see its market introduction during 2005. Last but not least: satellite broadband. We anticipate that 2005 will be the year when consumer premise equipment for interactive satellite broadband applications will first become available for end-consumers, starting with the US. We believe there is considerable demand for satellite broadband outside of the coverage areas of terrestrial systems and although it will always stay a niche market, we consider it an important sector to cover, notably due to satellites obvious advantages in ubiquity as a means to bridge the 'digital divide'.

This year's changes in ownership at our competitors may turn out to have only been the prelude for the much touted industry consolidation that numerous industry observers have been anticipating for several years now. If it is already going to happen in 2005, I don't know. But I do believe that the pressure to

“The challenges in 2005 will center around three main services: HDTV, Interactivity and satellite broadband”

Executive Spotlights

merge and rationalize the use of satellite assets will be increasing, and the only true consolidation that has happened so far remains SES' acquisition of GE AMERICOM in 2001.



**Conny Kullman,
CEO,
INTELSAT**

In terms of the overall telecom market, 2004 has been a stronger year than

“We believe that 2005 will be the year that the satellite broadband market gets a boosts.”

2003. There was an improvement over the previous year in that the market seemed to stabilize a bit. As it relates to services, this year was positive for gaining some traction in the satellite broadband market in certain regions around the world. Additionally, HD programming really began to take off in North America.

We did very well by executing on the strategy we set forth. Our strategy

has been to shift Intelsat's business more toward the video, enterprise and government markets and expand our customer base, in part through geographic expansion into North America and in part through the development and enhancement of an end-to-end service portfolio that we believe is important in these key areas. We have done all of these things and are very pleased with the evolution of our business.

Since the acquisition of Intelsat by Zeus is not yet final we can't project what impact the transaction will have. How-



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ever, Intelsat's focus, to best serve customers and the marketplace, will remain our primary interest. Zeus' interest in Intelsat comes from a number of different fronts, including our strong cash flow, leadership position in the industry and our flexibility to adapt to evolving market demands – both from the perspective of our network & assets and the flexibility, professionalism, commercialism and technical excellence of our staff.

We expect 2005 to be a good year with the growth of some technologies and development of new applications. We believe that 2005 will be the year that the satellite broadband market gets a boost. Our overall strategic direction is not changing in the coming year; we will continue to focus on North America, Africa and other regions. We will also continue to focus on growing and further developing our managed solutions and GlobalConnexSM, Intelsat's portfolio of hybrid, end-to-end services which is very popular with our customers.

Unfortunately for the whole industry, this year saw some satellite and launch failures which have increased insurance rates industry-wide. This will continue to impact operators in the coming year.

Also, there has obviously been industry consolidation and ownership change during 2004. Continuing with this trend, we believe that 2005 will see an increase in partnerships and joint venture type relationships between the large operators and the smaller, regional players as they approach satellite replacement cycles.



**Mark Dankberg,
Chairman
and CEO of
ViaSat**

2004 has been a significant year. There have been

several important events:

a) Successful launch of Telesat's ANIK F2 satellite, and subsequently SES Americom's AMC-15 mean that there are now 2 Ka band spot beam satellites in orbit over North America.

This finally provides a critical element to test whether lower bandwidth costs and increased speeds will help grow the 2-way satellite broadband data market. We believe this will begin to become evident during 2005.

b) Private equity investors made separate deals to acquire Panamsat, New Skies, and Intelsat – changing the landscape in FSS. Private equity funds have also acquired Inmarsat and Globalstar in the MSS sector. It almost certainly means we've hit the bottom in terms of capital access for satellite operators & can anticipate improvements going forward. It also will probably mean these firms will focus more on generating cash flow and less on top line revenue/market growth.

c) Satellite radio in the US continued meaningful subscriber growth, and made noteworthy deals for content to stimulate further expansion. This is positive for the satellite sector as evidence it's still possible to create new offerings that compete with terrestrial services under the right conditions.

d) US satellite TV operators continued to take subscribers from cable at impressive rates. DirecTV re-purposed the HNS Spaceway system for video, signal-

ing the opening of Ka band for consumer service in a major way – while also reaffirming that entertainment is still more valuable, & offers more growth, than broadband data.

e) Connexion by Boeing entered service with Lufthansa airlines in the spring, others following. This established FSS Ku band capacity, coupled with small flat antennas and sophisticated CDMA waveforms, as a player in the mobile services market. It helps indicate the value of bandwidth cost reduction in creating and growing broadband services.

2004 was a fantastic year for ViaSat. We set new records for revenue, earnings,

The most significant challenge (and opportunity) is for our industry to re-invent itself in a world where our historic value proposition of “reach” is being marginalized by ever-expanding wireless and wired networks.)

and backlog. We've had record growth in both our commercial and defense businesses. Our VSAT business is growing nicely. Our Linkstar broadband VSAT systems have been very successful – with over 30,000 DVB-RCS capable terminals delivered to customers worldwide. We have also grown our Immeon broadband VSAT services business in the US.

We see 2005 as another record growth year for ViaSat – in both commercial and government markets. There are several clear challenges:

a) ViaSat, along with WildBlue Communications & Telesat Canada intend to show that low cost Ka band spot beam service, coupled with the open network DOCSIS standard, finally begins to fulfill the promise of a competitive satellite broadband service.

b) The US DBS operators seem determined to demonstrate they can

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sustain their growth vs. cable by emphasizing High Definition, expanding into more local markets, and offering PVR capable set tops. They'll need to ward off the cable "triple play" bundle of video, data and voice – probably through alliances with telco's and/or satellite broadband service providers such as WildBlue.

c) There are fundamental growth opportunities for satellite service providers driven by ever-increasing needs for more bandwidth in the enterprise and government sectors.

The most significant challenge (and opportunity) is for our industry to re-invent itself in a world where our historic value proposition of "reach" is being marginalized by ever-expanding wireless and wired networks. Satellite services need to augment their current value proposition in terms of bandwidth capacity and pricing. There are a lot of tools available to do this, but there's a need for vision, capital, and new technology – coupled with tolerance for prudent risks. It will be interesting to see if the large investments by private equity companies in the industry are a catalyst for change or clear the decks for a new generation of upstarts.



**Robert McCollum,
President,
Comtech EF
Data**

Demand increased in 2004 for VSAT equipment in both commercial and government sectors compared to 2003. Most organizations continued to focus on methods for reducing operating expenses, driving the need for satellite modems with bandwidth and power efficient forward error correction and modulation.

“We believe that satellite-based services will continue to compete with terrestrial and fiber solutions.”

Another factor that supported VSAT growth was continued expansion of cellular subscribers in rural areas. Bandwidth efficient satellite-based solutions are enabling GSM operators to provide instant infrastructure and increase coverage in remote and inaccessible locations where they previously could not realize return on investment.

Comtech EF Data's parent company, Comtech Telecommunications Corp., posted significant sales growth driven by strong demand for our products, particularly in the telecommunications transmission and mobile data communications segments, accompanied by dramatic operating efficiencies. We believe Comtech is positioned to do even better in 2005. We will continue to focus on delivering broad-based growth driven by our adherence to a strategy that emphasizes product and technology leadership, entrepreneurial management and a balanced customer base. In addition, we expect to continue our disciplined approach of identifying, assessing and integrating acquisitions.

The rollout of HDTV services will require deployment of new bandwidth efficient satellite modem solutions and better video compression technologies for both Broadcast and DSNG applications. We anticipate the result will be greater demand for new, efficient VSAT equipment. Additionally, a large portion of the U.S. government's deployment of a new network-centric communications infrastructure is satellite-based. We expect this will yield positive impact for satellite equipment manufacturers.

We believe that satellite-based services will continue to compete with terrestrial and fiber solutions. Therefore, it is critical that equipment vendors enhance bandwidth efficiency options that enable improvement of monthly recurring operational costs for users of satellite communications.

Investment firms now control the majority of commercial satellite fleets. We expect the focus will be on optimizing operations and achieving maximum profits versus committing capital and resources to new satellites and service offerings. This could have a negative impact on the deployment of new infrastructure and equipment.



**Karl Classen,
CEO, ND
SATCOM**

The uptake of the western economies positively influenced our business in 2004. This has led to more business in Europe compared to 2003. We see the market picking up for Broadband VSAT solutions based on the DVB-RCS standard to accelerate growth in the European and Middle Eastern regions.

We will be closing 2004 with sales growing more than 15 % to a level close to 100 Mio USD. Our backlog in orders consist of a healthy portfolio of business segments globally. For 2005 we expect to continue our growth in the North American, Asian, Middle Eastern and Eastern European markets with our broadband and broadcast solutions.

Our strategy to focus on key market segments and to expand our sales and support organization in the respective regions is well appreciated by our

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“The demand for commercial data and video services will continue to grow driven by globalization and regional economic growth.”

customers. This strategy has led us to win large accounts in the different regions. We will go ahead to strengthen our local organizations worldwide to support a continuous improvement of our presence and services globally.

Over the next year, I expect the satellite industry’s main business driver to remain the same, with defence and government solutions and services continuing to sustain the market in the quest for national security and disaster response.

The demand for commercial data and video services will continue to grow driven by globalization and regional economic growth.

Furthermore I expect that the increasing influence of the equity markets on our industry will continue the consolidation process in the satellite communication industry.



**Shlomo Rodav,
CEO, Gilat**

I believe that overall, 2004 can be seen as a better year for the industry than 2003. Specifically, Gilat had a better

success year in 2004, which we attain is partially attributed to improved market conditions during the year. We recognized further opportunities in the market, particularly from our existing customer

December 2004

base that wished to expand their networks. In addition, we were presented with new customer opportunities, mainly from smaller networks seeking larger quantities as well as several new very large networks.

The first fruits of the company’s actions implemented in 2003 began to be visible as of the beginning of 2004. Among the positive indicators, the company had an ever increasing positive EBITDA in each of the quarters of 2004 and positive cash flow, for the first time in many quarters. The company’s financial situation is very stable and improving which allows for future growth and far more flexibility in our decision-making.

In addition, in early 2004, Gilat launched its new SkyEdge family of products. This revolutionary VSAT system clearly places Gilat at the front of technological leadership within the industry. Being the first to market with new innovations, the Company has proven to be a technology leader for most of its history. The market has enthusiastically accepted this new product launch and appreciates the values and concept for which the SkyEdge delivers. In the last two quarters, we have sold several SkyEdge networks, purchased by customers in Australia, Asia, Africa and the US. We clearly see this product family as one of the more important aspects of the Company’s strategy looking forward.

We have also launched new solutions. Examples of such are the GLoLight - a portable man pack for homeland security and defense applications and the Sky-Abis - a GSM backhaul connectivity solution that enables GSM operator to deploy cellular infrastructure in remote locations.

In terms of 2005, Gilat’s business stands on two legs - technology sales

and networks operation. Looking forward, we will continue to strengthen both of these areas. In the

networks operation area, we will be focusing on Enterprise, SOHO/SME vertical markets, and on new channels. We have established ourselves as the clear market leader in rural networks and we plan to continue to expand this business.

Governmental projects focusing on education and telecommunication infrastructure is another market we are aiming for. Gilat has the demonstrated ability to do large-scale turnkey projects, from A-Z, in very short periods of time. Just recently we were able to deploy twice over 3,000 VSATs and a hub in six weeks and three weeks respectively for the Venezuelan Presidential referendum and local elections, an unprecedented deployment pace. Gilat can be viewed today as a complete satellite-network-system-house, capable of providing end-to-end satellite-based solutions for almost any application on a national, regional or a global basis.

In recent years, Gilat has moved from being a vendor of satellite access to being a vendor of satellite network solutions, in which VSATs may serve as only part of the overall solution. We believe that 2005 will be another major milestone in this direction. We have been able to add to our VSAT networks hybrid

“The major changes for which the industry is faced with concerns the new ownerships of FSS players and that of Hughes Network Systems.”

solutions that include, for example, DSL, wireless and other technologies. In addition, we will be focusing more and more on non-fixed applications such as portable, transportable and in-motion solutions.

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We have received an excellent reception for our SkyEdge product family and our

sales funnel continues to show more and more SkyEdge prospects, surpassing that of our traditional legacy products. In the coming year, we will introduce additional phases of the SkyEdge system that include among other aspects, the DVB-RCS platform and compatible DVB-RCS hub. Within this area, this will be the year that Satlabs will be ready for the first time for its DVB-RCS compliance certification tests. Gilat's SkyEdge DVB-RCS platform is planned to complete its Satlabs certification process during quarter three of 2005.

Other industry challenges deal with the acceptance issues of new programs that are planned to be launched, such as the Ka Broadband offering in the US and the IPStar new service in Asia.

The major changes for which the industry is faced with concerns the new ownerships of FSS players and that of Hughes Network Systems.

We can also foresee an emphasis being displayed on marketing and technology development efforts towards better solutions for small networks. We believe we will also see a continued strong demand for an efficient bundled offering of data and telephony solutions. In addition, there will be the need for new applications and solutions using satellite communication, such as, a mobile satellite offering.

Paul Cox, President, Andrew Corporation's Satellite and Communications Group

The optimism of 2003 began to bear some fruit in 2004 as new enterprise services aligned themselves more closely to the needs of the market. This effort boosted demand for equipment and



services that was slightly ahead of what was seen in 2003. In addition, the increased use of commercial space segment by the government and military for homeland security and defense has proven to be a growth area in our industry for 2004.

A key event for 2004 was the launch of Anik F2 and the anticipation of offering broadband services via satellite in North America for the first time at Ka-band. The impact that this new satellite technology will have on our industry is yet to be realized, however it is expected that Ka-band will deliver lower operating costs and services at competitive prices.

Andrew Corporation's overall company revenues were a record \$1.84 billion for fiscal 2004, supported by nearly \$210 million in sales from satellite communications. That was an increase of nearly 150 percent in satellite communications sales from the previous year, fueled by a combination of strong organic growth and the acquisition of Channel Master. Andrew has sharpened its focus on this market in 2005 with the reorganization of its major product groups to create a new Satellite Communications Group. This will enable us to devote even more attention to the needs of customers in this market and contribute to greater momentum throughout 2005 as new products and value-added services are introduced.

For the fixed satellite service market, 2005 is expected to bring closer attention to bottom line performance than in previous years. With the increased ownership of the satellite industry's core businesses by private equity firms, new disciplines are likely to emerge in the areas of capital spending and payback periods. The challenge across the industry will be to carefully balance the need for future growth in the industry and equity performance for its owners. At Andrew, our challenge is to evolve our solutions to address the financial demands faced by customers and others in the industry.

In the DTH market, HDTV and interactive television services will gain traction as desirable products for the consumer. This bandwidth hungry segment will produce many technical and

"In 2004, the satellite industry, like most business segments, saw continued pressure on costs and a trend toward consolidation and ownership changes."

cost sensitive challenges for equipment providers such as Andrew to deliver hardware that meets the economic business models required by the DTH provider in order to be successful. The use of multi-satellite locations and co-located frequencies will be the near term solution to meet the demand for bandwidth.

In 2004, the satellite industry, like most business segments, saw continued pressure on costs and a trend toward consolidation and ownership changes. In 2005, we foresee this continuing.

Executive Spotlights



**Ted Gavrilis,
President,
Lockheed
Martin
Commercial
Space
Systems
(LMCSS)**

In 2004, the market continued its slow recovery from the low point of 2002. New orders *consisted primarily of replacement satellites*, with some providing expanded capacity and coverage areas. Lockheed Martin was selected for the first competitive order in 2004, tendered by JSAT Corporation of Japan for JCSAT-10. We have also been selected for two additional commercial orders this year, which will be announced in the near future.

Certainly, a defining event for LMCSS in 2004, and for the United States Government, was the September award of the Mobile User Objective System (MUOS) to a team led by Lockheed Martin. MUOS, the next-generation tactical satellite communications system for the U.S. Navy, will dramatically increase real-time military communications voice, data, and video services to our armed forces. LMCSS is responsible for the space segment of MUOS, and our award-winning A2100 design will serve as the spacecraft platform.

In early April we were awarded JCSAT-10, the first competitive procurement of the year, plus two additional orders in November, and we are pursuing several opportunities currently in the evaluation phase.

We successfully launched AMC-10 in February, AMC-11 in May, and AMC-15 in October. All three satellites were for SES AMERICOM. AMC-16 is scheduled

“LMCSS foresees High Definition Television (HDTV) driving requirements for *new capacity*. “

for launch in mid-December, also for SES AMERICOM.

Also of note, our A2100 received an industry award for reliability for the second consecutive year. Frost & Sullivan’s 2004 Satellite Reliability Award was given to LMCSS for excellence in the production of flexible and reliable communications satellites.

Looking toward 2005, LMCSS will continue to introduce performance improvements using a low risk, evolutionary approach. We are currently implementing an Agile Payload System that will offer operators enormous flexibility in orbit and we will continue to work closely with our customers to develop and offer solutions to their future needs.

LMCSS foresees High Definition Television (HDTV) driving requirements for *new capacity*. The major Direct-To-Home providers in the U.S., EchoStar and DirecTV, have ordered spacecraft to meet these new requirements. This is a very positive development that we expect will continue in the U.S. and will follow in Europe and Asia, as evidenced by increased interest from smaller operators.

As an example, we foresee *Ka-band payloads* implemented in large systems in the next few years by companies such as Rainbow (Cablevision), primarily to meet the consumer demand for HDTV.

The market will remain extremely competitive as the same number of manufacturers competes for a limited number of procurements in a slowly growing market. We will continue the strategy we have implemented over the

past four years of pursuing new business aggressively and credibly. Our focus remains laser sharp on the key factors of controlling cost, executing programs for Mission Success, and increasing the reliability of all our products for both our commercial and government customers.

I think it is fair to say that in the past four years since the market contracted, there have been only few significant changes. Of note, the entry of Private Equity in the operator domain has been received with mixed emotions and expectations, ranging from major shakeup to welcomed infusion of new money. The emergence of full-service Ka-band satellites is a welcome sign that perhaps marks the beginning of steady growth in the marketplace. In 2005 I believe we will see 12 to 15 new orders, some additional rationalization of in-orbit assets and possible further attempts at industry consolidation overall. As for LMCSS, we will continue to pursue our strategy, which has served our customers well and allowed us to increase our market share.



**Gary Hatch,
CEO, ATCi**

Reflecting on the satellite industry from the past year, we have seen a marked improvement in Military DOD

sectors, continued application of Internet Protocol throughout the satellite industry, High Definition Television, improved compression algorithms as well as all forms of digital video. The implementation of the increased 200 billion dollar DOD and military budget was a key event in this upswing, as well as the FCC’s determination to implement digital video and high definition television pointing towards the 2006 timeframe.

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“Over the next few years we will continue to see a broader array of government and defense communications services via satellite.”)

2004 was a much better year for ATCi and the industry as a whole, we saw notable improvement in our teleport services as well as the military and DOD markets.

ATCi sees new opportunities to supply high definition and other digital services to the broadcast and cable markets.

As far as challenges facing the industry and ATCi, we feel that everything we do is contingent upon reasonable transponder paradigms, if these paradigms are changed or adjusted, we could greatly improve upon and provide more efficient broadband and video services to customers worldwide.

Over the next few years we will continue to see a broader array of government and defense communications services via satellite while the commercial focus will be centered around secure content delivery. Additionally, Ka-band technologies will continue to create profitable broadband ventures over satellite. It is important to further empower the profitable utilization of point-to-multipoint technology. We will also continue to see cost model paradigms.



Patrick Brant, President, Loral Skynet,

2004 has been a better year for the industry over

2003, which was a challenging year for operators dealing with overcapacity and stagnant, if not shrinking, revenues.

In 2004, industry players have taken stock of the evolving satellite landscape and are implementing changes necessary to respond to the challenges.

For example, perhaps the most challenging event has been the industry’s leadership ‘technocracy,’ adjusting its emphasis from technology concepts to bottom line business issues. Today, the major satellite players are moving away from the tech (build it and they will come) model toward a more customer-driven and solutions-oriented focus. It’s also forcing most industry players to provide more end-to-end services –something Skynet has been doing for more than 10 years,

“Perhaps the most challenging event has been the industry’s leadership ‘technocracy,’ adjusting its emphasis from technology concepts to bottom line business issues”

that is: providing seamless global communications networking solutions up to and including the last mile.

2004 has been both rewarding and challenging, offering Loral Skynet the financial stability needed to capitalize on an improving industry environment and expanding our leadership role in the satellite services industry. We will emerge

from chapter 11 with a healthy balance sheet going forward, long term service contracts with great customers, and little debt.

As we have evolved as a company, we have strengthened our focus on our core competency: fixed satellite services (FSS). To that end, we’ve launched two new satellites this year—Telstar 14/ Estrela do Sul over Brazil and Telstar 18 over Asia—that enhance and strengthen our global coverage. These new additions to Skynet’s fleet ensure that we have the capacity in space and the infrastructure on the ground to deliver video and data applications to customers around the globe. Going forward, we will continue to focus on FSS, increasing our transponder utilization rates, reducing costs, and, as always, delivering the highest levels of customer service in the industry.

For the industry as a whole, I expect that high-growth and underserved markets, particularly Asia and Latin America, will continue to grow in importance. Following the infrastructure building boom of the late 1990s, mature markets, like North America and Western Europe, have been suffering from too much supply of alternative communica-

tions platforms and too little demand. As a result, infrastructure has gone underutilized, prices have fallen, and profit margins have been squeezed.

Today, these mature markets are, thankfully, on the mend due to new applications and global expansion. Nonetheless, more attractive returns on

Executive Spotlights

investment can be found in underserved markets. In Asia, particularly India and China, we are seeing strong economic growth that will likely continue for some time. New television channels are being launched literally every week in these countries.

In Latin America, the market is beginning to show signs of coming back and all indicators are pointing in the right direction, so we see this as another opportunity.

Both regions are also privatizing their telecom and media sectors, which should open up more opportunities for the satellite industry. Loral Skynet's new Telstar 14/Estrela do Sul and Telstar 18 satellites are ideally located and we expect to benefit from the increased demand for satellite services in these regions.

Of course, simply increasing capacity isn't enough. That's why we're rolling out new, innovative services to help drive demand for capacity, such as SkyReachSM, our two way IP services solution.

We've seen a lot of changes in the last year or so, including:

- Migration to IP-based communications platforms
- Private equity ownership
- Meeting the needs of military markets
- Development of broadband satellite services and the advent of satellite multi-beam technology

The migration to IP-based communications platforms that are more cost effective is an important trend, not just among telcos, but also with governments, enterprises and media/entertainment organizations. 2005 should be the year that all the promise associated with IP's evolution will actually start to really solidify and become truly apparent. And

it's not just happening on a regional basis—this is a trend that's happening globally.

Fortunately, we made an early decision to be a front-runner in this market with the introduction of SkyReach, which we now offer in both open standards-based and proprietary platforms. We are also offering our customers the reassurance and redundancy of SCPC-based IP services using our Digital Link product.

On a broad, global level the industry has also had to—and will continue to—juggle meeting the communications needs of its civilian and military customers. Commercial satellite communications are critical to military and government information dominance. Right now, our government revenues are about 15 percent of our business and with demand that is greater than ever, we expect this business to grow. We offer flexible, redundant C and Ku-band services in every region of the world. Plus, Loral has a key position in forming the world's first commercial X-band system: XTAR. Looking at all these options, we feel we're positioned to meet the demands of governments on a variety of levels.

One of the most important technical changes in the industry has been the development of broadband satellite



services and the advent of satellite multi-beam technology that can make these services more cost-effective for customers. Broadband satellite services include everything from data services and private video distribution, such as IP-based business television and high-definition television (HDTV). Satellite multi-beam technology, currently used by our Telstar 14/Estrela do Sul satellite, will help broaden coverage and, perhaps of equal importance, will go some way toward addressing price point issues many customers have about satellite broadband.

SM

REGIONAL PROFILE

Year in Review – Latin America 2004

by Bernardo Schneiderman



Latin America as with most of the regions of the world had a good overall satellite business year during 2004 and will start 2005 with more potential for new projects and investments in the satellite arena as it closes this year with a very positive outlook.

Satellite Operators and New Satellites

Two satellites were launched in 2004 for Latin America markets and of new satellites for Brazil and Argentina were announced..

The first satellite launched was Telstar 14/Estrela do Sul owned by Loral Skynet do Brasil a subsidiary of US-based operator, Loral Skynet. The satellite was successfully launched in mid-January by Sea Launch. After the launch the satellite fully deployed its south solar array but only partially deployed its North solar array. Space Systems/Loral, the manufacturer of the satellite, launched the satellite to its geostationary orbit and declared that the satellite was generating enough power to operate a minimum of 17 Ku-band transponders (the original plan was for 54 transponders). The satellite started operation mid March meeting immediate customer requirements, as well as Brazilian government requirements and providing services in the Brazil, North America and North Atlantic coverage area.

The second satellite launched in the region was the Amazonas satellite in early August. Amazonas is owned by Hispamar, a Joint -venture between Spanish satellite operator Hispasat and Telemar. After the launch, a pressure loss was detected in one of its oxidation tanks, caused by a

gas micro-leak, but after some evaluation a press release announced that the effective lifetime of the satellite was estimated to be more than 10 years. Commercial operation started early October. The Amazonas satellite is based on the Eurostar 3.000 platform, and it is equipped with 32 transponders in Ku band and 19 in C band. Amazonas will provide telecommunication services (television, radio, telephony, wideband IP services, corporate networks, etc.) with pan- American and transatlantic coverage.

With regards to new satellites in the region, Satmex VI that was planned to be launched this year still does not have a new launch date due to the financial situation of the Mexican satellite operator, Satmex. Brazil announced that it is in the planning stage to build two new satellites focussing in Military and Aeronautical Application with L and X-Band to be contracted during 2005. Argentina late November had some expectation to review with China a potential to launch their second Domestic Satellite. This scenario will depend of how the economics of Argentina will develop during 2005.

DTH

In the DTH - Direct to home satellite business in Latin America News Corp sold its stake in Sky Latin America to its partly owned DirecTV Group to ensure the long-term success of DirecTV Latin America. The long-awaited deal effectively merged the two satellite PAY-TV operations in Latin America. Under the complex deal, DirecTV Brasil (Brazil) and Sky Brasil will merge, DirecTV Brasil customers will migrate to Sky Brasil and DirecTV will buy Liberty Media Corp's and News Corp's stake in Sky Brasil.

DirecTV affiliate Galaxy Mexico will close its operations and sell its subscriber list to Sky Mexico, while DirecTV acquires the interest of News Corp. It will also acquire jointly with Televisa, the interest of Liberty Media in Sky Mexico. The group will also acquire the interests of Globo, Televisa, News Corp and Liberty Media in Sky Multi-Country Partners, which has DTH platforms in Colombia and Chile. The Sky customers in Colombia and Chile migrated to DirecTV. DirecTV is 34 per cent owned by Fox Entertainment Group, which are about 82 per cent owned by News Corp.

The DirecTV is confident it can add at least 5 million new DTH customers in the Latin American region over the next three to four years with the agreements it reached to consolidate the operations of DirecTV Latin America and Sky Latin America DTH services in each country in the region. As a result, residents in some countries will receive service using Sky equipment, while customers in others use DirecTV equipment. There will be only one service in each country at the end of the consolidation of the operations.

Satellite Services and System Integrators

Latin America during 2004 received investments and new technologies from suppliers and service providers in the following paragraphs are the highlights of some major announcements in the region.

One of new technologies implemented in the regions was DVB-RCS supplied by Nera (European Org.) was announced by Hispasat/Hispamar early 2004. The plan was to provide Internet services with the new platform in Latin

REGIONAL PROFILE

America for both Hispasat and Hispamar Satellites. Later this year another Satellite Carrier enters this market providing DVB-RCS was Loral Skynet.

From the VSAT Supplier's side Gilat expanded their operation in Brazil with Star One, Embratel and GSAC (Internet for government and schools) and major project for the retailer Boticario with 2,000 sites. Gilat announced early 2004 an agreement with Telecomunicaciones de México for its telecom's public services. The agreement was for a deployment of a hub and up to 2,000 remote sites. In the initial phases, completed in Q4 of 2003, Gilat provided a hub and 733 VSATs to expand and replace existing satellite-based technology. Gilat anticipates providing an additional 1,267 VSATs during the course of 2004. Gilat had already deployed 3,000 satellite-based rural telephony sites for the SCT, using its DialAw@y IP VSAT platform. In addition, Gilat's large customer base in Mexico includes among others, companies such as Telmex, Elektra, GlobalSat and Comsat. Gilat was among several companies chosen to partake in a large-scale project for identifying voters and keeping track of voter registry in the referendum for the continuation of the term of Venezuelan President Hugo Chavez, last August. The network, based on Gilat's Skystar 360E platform, included a hub in Caracas and 5,000 remote terminals at polling stations throughout the country.

ViaSat in Latin America supplied a LinkStar® broadband satellite communications system to Motorola's Commercial, Government and Industrial Solutions Sector in Latin America for a distance learning network in Honduras. The system is to supply a distance learning network for Consejo Hondureno de Ciencia y Técnica Licitación Pública Internacional (COHCIT), an institution created by the Honduran government in 1993 to promote development of science and technology. Another project in the region was "The eMexico project was a

first large scale roll-out in Latin America. ViaSat Inc. supplied a LinkStar® broadband satellite communications system for Velconet S.A., a privately owned Argentine company. Velconet will use the LinkStar networking platform to expand the reach of broadband services in Argentina. In this first stage, installation of LinkStar remote subscriber terminals is underway. Velconet was already an established customer of ViaSat, complementing its mesh architecture LINKWAY® multi-service VSAT system with the new hub-based LinkStar system.

A new player that joined the VSAT business in Latin America was iDirect that provided solution for the Puerto Rico Department of Education (PRDE) that selected iDirect Technologies to support a contract to provide high-speed internet connectivity to 1,539 school locations throughout Puerto Rico. Mobile Universe, a provider of mobile and wireless communication solutions will be acting as the prime contractor to the Puerto Rico Department of Education. iDirect provided the technology, program management and deployment expertise for the project. iDirect provided for a Service Provider in Venezuela another System during 2004.

Hughes Network Systems with its Hub Services in Brazil expanded their operation with new clients in Brazil and at the same time provided VSAT networks for new clients in the financial sector (Bradesco and Prodemge).

Another main project in Latin America in the satellite arena was in Colombia where the government agency,

Compartel selected in a bid two consortia (Comsat Colombia and Internet por Colombia) to provide broadband Internet access for more than 3700 sites (schools, hospitals and government agencies) using satellite and WI-Max. Compartel is developing a new project for 2005 to provide to 15,000 Government sites in Colombia with broadband Access where satellite will be a key role.

Chile is in the process to select a bidder until the end of 2004 to provide broadband Internet for more than 600 schools. Brazil has several projects that satellite will be playing a key to provide broadband for schools and government organizations and 2005 will be a hot time for this region. Besides Brazil, Peru and Argentina are developing major projects to provide Internet broadband access for education in the region and E-GOV Projects are being studied and implemented from Mexico to Argentina covering Central America, Caribbean Islands and South America.

With regards to the Service Providers we saw more consolidation in the region where Chilesat merged with Telmex in Chile and Comsat International finalize the acquisition of Vicom in Brazil.

Overall the general consensus among providers, enterprises and other players in the region is that Latin America will be having another positive growth year in 2005 for companies that are looking to establish the a long term businesses in the region. **SM**

Bernardo Schneiderman has over 20 years of experience in Satellite communications and is the President of Telematics Business consultants based in Irvine, CA. He has been working in Business Development, Sales and Marketing for Satellite Carriers, VSAT Equipment Manufacturer and Consulting Companies in the USA, Latin America, Brazil and Africa developing business for the Telecom, Broadcast and the Enterprise Market Segment. He was the editor of the Publication Brazil Telematics Newsletter during 1995-2003. He has a MBA from University of San Francisco with Major in Telecom and International Marketing and BSEE from UFRJ in Brazil. He can be contacted at bbc-telematics@com.net



Case Study

Government and Industry Partnership in X-band Communications

"D" D'Ambrosio
Vice President, Government Services
XTAR, LCC

With military operations in multiple theaters and an increased emphasis on homeland security, government demand for communications infrastructure has never been greater.

Government and industry satellite communications partnerships are a model dominated primarily by traditional defense contractors and governed by a few limited contracts between government and industry. Overlooked in this partnership model is another approach that costs taxpayers nothing and will provide significant benefits to war-fighters facing a critical communications need: commercial technology that benefits government or military needs for services, and satisfies communications shortfalls related to the country's war-fighting ability.

In a novel approach that combines the benefits of commercial and government satellite communications, Loral Space and Communications is leading a joint venture with Spain's HISDESAT that will offer communications services in the X-band frequency exclusively to government users. As part of its unique partnership, XTAR will operate XTAR-EUR, and will lease capacity on a second bird, XTAR-LANT (SPAINSAT), operated by HISDESAT primarily for the Spanish military.

In 2003, the Defense Information Systems Agency (DISA), the procurement

agent for all communications for the Department of Defense (DOD), spent approximately \$273M for commercial fixed satellite services in the C- and Ku-band frequencies to augment its military satellite systems (MILSATCOM). DISA spent another \$181M that same year on equipment to access the commercial networks, since the government does not have terminals operating in commercial bands.

High-powered Satellite Coverage Wherever and Whenever It's Needed

Demand for satellite bandwidth will continue to exceed government-owned capacity for the foreseeable future. XTAR addresses that need by providing high-powered X-band capacity and flexible, defense- and security-specific services at the right place and at the right time. This is done without the government users having to invest critical capital into the development of the satellite and related terrestrial infrastructure. Troops and other users can move their steerable XTAR spot beam coverage any distance required, in real time. Whether for deployment of troops, vehicles or vessels, XTAR's X-band spot beams can be dynamically moved in real time to support long-haul communications,



logistics and infrastructure requirements and mission critical needs.

Commercial satellite communications are critical to military and government information dominance, and serve a significant role in support of the Global Information Grid (GIG). The XTAR system is designed specifically to provide customized, defense-specific communications services to U.S. and Allied government agencies and military services to support military, diplomatic and security communications requirements.

Between XTAR-EUR and XTAR-LANT (SPAINSAT), XTAR will cover a region stretching from Singapore west across Asia, the Middle East and Europe, to Denver, Colorado. Initial XTAR operations are planned for early 2005 on

Case Study

XTAR-EUR, which will be located in geostationary orbit at 29 degrees East longitude. Additional capacity will become available by the end of 2005 when XTAR-LANT (SPAINSAT) is launched to 30 degrees West longitude.

Through its unique partnership with HISDESAT, XTAR was able to secure satellite slots that will not interfere with the U.S. Government's Defense Systems Communications Satellites (DSCS) or Wideband Gapfiller Satellites (WGS). Another key benefit of XTAR is the compatibility of its capacity with the same X-band terminals currently operated by government users to access the DSCS satellites and, eventually, WGS. This allows DISA to save its customers significant additional investment costs in both terminals and infrastructure.

Large Transponders, Steerable Spot Beams

XTAR offers a unique capability to U.S. and Allied government customers that is not available over current military satellites - large 72Mhz transponders, powerful 100 watt TWTs and multiple steerable spot beams. These features allow users to put multiple transponders into any steerable spot beam, which can then be moved over any area of interest that is in the satellites' view. In addition, XTAR's steerable spot beams can be stacked over the same given area.

The benefit of these features to government customers is that any of the satellites' capability can be shifted to a specific geographic region (assuming a single customer had secured the transponders and the appropriate steerable spot beams). In military terms, this would target the communications power of this space-based asset on a particular region, delivering overwhelming communications capability. This type of capacity and flexibility to move bandwidth as required to support operations is critical in the

execution of an information dominance strategy.

One of the major reasons government users prefer X-band over commercial bands is that the frequency is exclusive to government customers. With its X-band satellites, XTAR has dedicated its entire capacity to U.S. and Allied government users. In addition to its government-only usage, another key advantage of X-band is that the band is covered under Status of Forces Agreements. This means the U.S. government is not burdened with negotiating Host Nation Agreements (HNAs), generally required for all commercial capacity landing in a given country.

Unlike other government/industry partnerships, XTAR developed its satellites without the benefit of any U.S. government funding or commitment. Financed privately, construction contracts for the two satellites, XTAR-EUR and XTAR-LANT (SPAINSAT), were awarded to Space Systems/Loral (SS/L).

XTAR has applied a number of techniques and technologies that have been proven onboard a variety of commercial communications satellites to provide its government customers with services currently unavailable on existing DSCS. The two-satellite system is based on SS/L's 1300 satellite platform, which has a record of reliable operation (there are 47 SS/L-built geostationary satellites currently on orbit). These satellites will allow XTAR to offer the government user market a reliable platform from which it can provide significant service improvements in bandwidth over existing X-band satellites. The two satellites went from design to operational status faster than expected and within budget.

XTAR worked with the U.S. Government and invested in National Security Agency (NSA) approved encryption for its command links. Through its Spanish partner, XTAR negotiated to install its primary XTAR-EUR TT&C antennas on Spanish government facilities, while the TT&C facilities for XTAR-LANT (SPAINSAT) are located at a facility operated through cooperation with HISDESAT. The additional security provided by these TT&C locations was a critical factor for XTAR to be considered as an augmentation system for Government-owned and operated capacity. The additional level of security mirrors those of government users and allows them to employ and integrate XTAR's X-band capacity in a manner that is transparent to their own networks.

XTAR alone cannot satisfy the U.S. Government's SATCOM requirements, but it will significantly augment bandwidth in the government's critical communication frequency, X-band. Through its unique partnership, XTAR provides a new model of government/industry partnership that can have a considerable impact on the communications costs, capability and responsiveness of our U.S. and Allied troops and security personnel. **SM**



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STOCK MONITOR

ADVERTISER'S INDEX

Company	Symbol	Price (Dec. 1)	52-week Range
APT SATELLITE	ATS	1.44	1.32 - 3.50
ANDREW CORP	ANDW	14.92	9.30 - 21.67
ASIA SATELLI ADR	SAT	19.34	15.20 - 22.80
BALL CORP	BLL	44.60	27.75 - 44.87
BOEING CO	BA	54.32	37.60 - 55.48
BRITISH SKY BROAD	BSY	43.50	33.22 - 59.24
CALAMP	CAMP	9.61	5.12 - 17.20
C-COM SATELLITE S	CMI.V	0.45	0.38 - 0.60
COM DEV INTL LTD	CDV.TO	2.45	2.15 - 3.80
COMTECH TELCOM	CMTL	32.53	14.93 - 39.52
DIRECTV	DTV	16.05	14.70 - 18.81
ECHOSTAR COMMA	DISH	34.25	26.95 - 40.10
FREQUENCY ELEC	FEI	14.99	10.22 - 17.13
GILAT SATELLITE	GILTF	5.99	3.95 - 9.86
GLOBECOMM SYS	GCOM	6.21	4.36 - 7.58
HARRIS CORP	HRS	66.39	36.81 - 69.15
HONEYWELL INTL	HON	36.11	29.20 - 38.46
INTEGRAL SYSTEM	ISYS	20.03	15.35 - 22.12
KVH INDS	KVHI	10.21	6.61 - 33.72
L-3 COMMS HLDGS	LLL	74.60	46.80 - 75.28
LOCKHEED MARTIN	LMT	61.32	43.10 - 60.87
NEWS CORP B	NWS	18.32	15.305 - 19.87
NORSAT INTRNTL	NSATF.OB	0.50	0.38 - 0.95
NTL INC	NTLI	69.59	46.65 - 73.81
ORBITAL SCIENCES	ORB	13.05	8.99 - 14.19
QUALCOMM INC	QCOM	43.17	22.065 - 44.41
RADYNE COMSTRM	RADN	7.429	6.26 - 13.426
SCIENTIFIC ATL	SFA	30.21	24.61 - 38.59
SIRIUS SAT RADI	SIRI	6.77	1.98 - 6.95
SES GLOBAL	SDSFa.F	8.60	6.30 - 8.85
TRIMBLE NAV	TRMB	31.68	19.3733 - 32.73
VIASAT INC	VSAT	21.39	16.79 - 28.91
XM SATELLITE	XMSR	36.59	20.35 - 38.31

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