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Mobile

Satellite

Services

Your Satellite Connection to the World

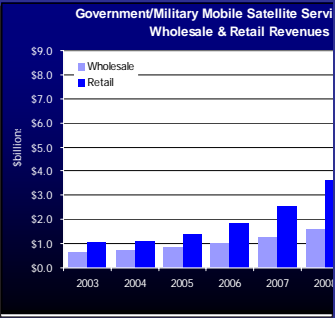
SES GLOBAL

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NOTE FROM THE EDITOR

2006 Could be the Year of Mobile Satellite Services

According to the Chinese Lunar New Year, 2006 is the year of the Dog. However, for the satellite industry, it could be the year when mobile satellite services (MSS) might finally take off. It was only a few years ago, when the spectacular failure resulting in bankruptcy of global satellite operators Iridium and Globalstar as well as other planned satellite broadband systems such as Astrolink sparked the downturn in the satellite industry from which it has only recently recovered. Last year Inmarsat launched two high-powered satellites of its Inmarsat 4 series and launched a more user-friendly and compact Broadband Global Area Network (BGAN) service. BGAN, when its second satellite becomes operational in the second quarter of this year, will cover most of the earth and 98 percent of its population, enabling IP broadband connections and telephony with use of a laptop size unit (for more info on this service, see my interview with Inmarsat's Frank August on page 38).

Meanwhile, Iridium has long since emerged from bankruptcy and is now cash-flow positive according to its CEO Carmen Lloyd. Its 66 constellation of satellites cover the world and with a little help from a \$72 million contract with the US Department of Defense, business is looking good. Northern Sky Research's Jose del Rosario in our cover story on page 22, takes great pains to illustrate the fact that the MSS market is alive and well, and will continue to be so till the end of the decade. NSR is estimating that revenues in the MSS industry can reach almost \$9 Billion by 2010, with government and military use one the main segments driving demand.

One factor that could drive more demand for MSS is lower costs per call and per megabyte. Current prices average 75 cents per call on a satellite phone and between \$8-\$12 per megabyte of IP access. For a small business this could easily pile up to thousands of dollars a month. At current prices, only those who really need to be connected such as the military or business in remote locations such as the oil and gas industry can afford to use these services.

Given the large investment required by MSS operators, it's understandable that costs have to be passed on to users. However, for the MSS industry to be competitive and reach the growth potential that they need to make the business model viable in the long-term, prices should come down at some point.

Virgil Labrador

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CALENDAR OF EVENTS 2006

FEBRUARY

February 6-9, Washington, D.C.

Satellite 2006

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February 14-17, Mexico City, Mexico

Expo Comm Mexico 2006

Beth Harrington

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Website: <http://expocomm.com/mexico>

February 16, London, England

3rd European HDTV Summit

Julian Clover

Tel: +44 1223 464359 / Fax: +44 20 7691 9779

Website: www.tvconferences.com/

February 20-24, Johannesburg, South Africa

Satcom Africa 2006

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MARCH

March 7-9, Dubai, United Arab Emirates

CABSAT 2006

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Fax: +971 4 332 2866 / 331 8034

Email: david.lim@dwtc.com

Website: www.cabsat.com

March 7-10, São Paulo - Brazil

TELEXPO 2006

Morgan Moore

Tel: 310-313-1808 / Fax: 815.361.1808

Email: morgan.moore@questex.com

Website: www.telexpo.com.br/2006

March 21-23, New Delhi, India

Convergence India 2006

Tel.: 91 - 11 - 5279 5000 / Fax.: 91 - 11- 5279 5098/99

E-mail: exhibitionsindia@vsnl.com

Website: www.convergenceindia.org

APRIL

April 9-11, Atlanta, GA

NCTA The National Show

Tel: 202-775-3669 / Fax: 202-775-3692

Email: thenationalshow@ncta.com

Website: www.thenationalshow.com

April 11 - 14, Istanbul, Turkey

5th International Caspian Telecoms Conference

Maggie Cheung

Tel : + 44 20 7596 5221 / 5000

Fax : + 44 20 7596 5208 / 5117

Email: Maggie.Cheung@ite-exhibitions.com

Website: www.caspiantelecoms.com/en/2006

April 18 - 20, Washington, DC

Military Satellites 2006

Tel: 800 882 8684 or +973 256 0211

Fax: + 973 256 0205 / Email: info@idga.org

Website: www.idga.org/na-2298-02



April 22-27, Las Vegas, Nevada

NAB 2006

Tel: +45 3815 3332 / 202-429-5300

Fax: 202-429-4199 / Email: nab@nab.org

Website: <http://www.nabshow.com/>

MAY

May 4-5, Copenhagen Business School, Copenhagen, Denmark

European Satellite Cultures Conference

Julie Uldam

Tel: +45 3815 3332 / Email: esc@cbs.dk

Website: www.cbs.dk/esc

JUNE

June 13-15, San Diego Hilton Resort at Mission Bay, San Diego, CA, USA

ISCe Conference and Expo

Hannover Fairs USA

Phone: +1 310 410 9191

Fax: +1 310 410 9396

Email: info@isce.com / Website: www.isce.com



June 19-23, Singapore

BroadcastAsia 2006

Tel: +65 6738 6776 / Fax: +65 6732 6776

Email: events@sesallworld.com

Website: www.broadcast-asia.com/index2.htm

FEATURED EVENT

ISCe 2006 to Focus on Key Customers and End Users



ISCe Conference and Expo 2006

June 13-15, 2006, San Diego Hilton Resort at Mission Bay, California

ISCe 2006 will be focusing on Satellite and Hybrid Solutions for the **enterprise, entertainment and media, and government/military markets**. The conference will emphasize the value and cost-effective solutions that satellite and hybrid networks (cable, telcos and utilities) provide to the end users. "Whether a company does business in the wireless, terrestrial fiber optic or satellite markets, ISCe 2006 will be the West Coast gathering place of record," said David Bross, ISCe 2006 chairman.



Now in its fifth year, ISCe, will be jointly holding the 5th Annual ISCe Conference and Expo with the 23rd American Institute of Aeronautics and Astronautics (AIAA) International

Communications Satellite Systems Conference (ICSSC) from June 13-15 at the San Diego Hilton Resort in San Diego, California.



David Bross

The theme of this year's show is "*Satellite and Hybrid Network Solutions for the Entertainment, Enterprise & Military/Government Markets.*" "All of our session tracks are designed with this theme as our touchstone and will feature speakers not only from companies that provide hybrid telecom services but also speakers from companies representing users of satellite services," said Bross.

The partnership with AIAA will bring together two major international satellite conferences in one venue. The joint conference bring many synergies between the two programs in terms of content, speakers and a larger pool of attendees from all sectors of the industry. The partnership with AIAA is the latest addition to ISCe's growing program lineup that includes joint programs with the Carmel Group's Cable, Satellite and Telco Entertainment Forum, the World Teleport Association (WTA)'s Translating the Trends Workshop, and the Global VSAT Forum's Wireless Workshop. ISCe is also supported by the

Washington D.C.-based Satellite Industry Association (SIA), whose Executive Director, David Cavossa will be presenting its annual "State of the Industry" report at ISCe.

Those attendees with full conference registrations to the ISCe conference will be permitted to attend the Monday sessions of the ICSSC conference at no charge. Additionally, ICSSC attendees who have purchased a full conference registration to the AIAA show will be permitted free access to the Wednesday sessions (June 14) at the ISCe conference.

As in its previous successful conferences, ISCe 2006 will feature leading industry speakers in a comprehensive conference program that includes the following key components:

- **GVF Wireless Workshop**
- **Space & Security Forum**
- **WTA Translating the Trends Workshop**
- **Carmel Group's Cable, Satellite & Telco Entertainment Forum**
- **Digital Content & Mobile Forum**
- **Military & Government Requirements Forum**
- **Retail Enterprise & Business Forum**
- **Global Business & Financial Outlook Forum**

This year, ISCe is hosting a brand new exhibitor pavilion which will host a number of special networking events, live product demonstrations, conference breaks, workshops and receptions. Several outdoor exhibit slots are still available as are only a handful of 10 x 10 booths in the exhibition. Also, back by popular demand is the ISCe Product Demonstration Program "Live" product demonstrations that provide an excellent opportunity to showcase a company's new or unique product or service to ISCe/ICSSC attendees, media and industry analysts.



FEATURED EVENT

In addition to the exhibitor pavilion and sessions addressing the business concerns of executives, ISCe is offering a number of special networking events including an SSPI Beach Blast & Welcome Reception. Attendees are invited to attend this wonderful evening of food, drinks and entertainment. The Society of Satellite Professionals International (SSPI) will hold this social event with ISCe on Tuesday, June 13 on the beach

located behind the San Diego Hilton Resort. "The casual affair (think Aloha attire) promises to be a great time and will definitely evolve into an annual event," according to Bross.

For more information on ISCe 2006 go to www.isce.com or call +1-310-410-9191 or e-mail: info@isce.com **SM**

ISCe 2006 Supporting Organizations

The Asia-Pacific Satellite Communications Council (APSCC)



As a non-profit, international regional association representing all sectors of satellite and space-related industries, APSCC aims to promote satellite communications and broadcasting for the betterment of the Asia-Pacific region. To achieve this objective, APSCC provides forums to exchange views and ideas on policies, technologies, systems, services and outer-space activities that have the potential to benefit the region, to accelerate the introduction of services via satellite, and to develop and broaden the national and regional satellite communication and broadcasting services of the Asia-Pacific countries. www.apsc.or.kr

California Space Authority



Governed by a statewide board of directors, The California Space Authority (CSA) is a nonprofit corporation representing the interests of California's diverse enterprise community in all three domains: commercial, civil and national security. Designated as the official Spaceport Authority for the State of California, (CSA) is a member-based "enterprise" association. Working closely with industry, government, workforce entities and academia, CSA strives to retain growth and create CSA statewide space

enterprise. Through advocacy, infrastructure and technology development, space education/workforce support and other programs, CSA provides voice, visibility and competitive edge to California's statewide space enterprise community.

www.californiaspaceauthority.org

The Carmel Group



The Carmel Group is a world-renowned consulting and market research firm, offering clients around the world the best intelligence and strategic guidance, allowing each to enhance its position and profitability within its industry segment (or within new industry segments). The Carmel Group's expertise includes cable, satellite, telephony, broadcasting, set-top boxes, programming, digital video recorders, video-on-demand, broadband, video games and other advanced media, telecommunications and computer services. Located in Carmel-by-the-Sea, California, The Carmel Group also organizes and hosts premiere annual telecommunications events and publishes in-depth data books, white papers and other customized studies.

www.carmelgroup.com

Euroconsult



Established in 1973 as a research group, Euroconsult became an employee-owned company in 1983. Since its creation, the company has become a worldwide reference for research and advice at each

step of the value chain in the satellite industry including satellite manufacturers, satellite operators, satellite service providers, launch and services equipment, space agencies, TV platforms & channels as well as bankers, investors and insurers. With over 500 clients in 48 countries, Euroconsult is a world leader with an expertise in digital broadcasting and satellite applications for innovative & high-technology companies.

www.euroconsult-ec.com

Global VSAT Forum (GVF)



The Global VSAT Forum is an association of key companies involved in the business of delivering advanced digital fixed satellite systems and services to consumers, and commercial and government enterprises worldwide. www.gvf.org

National Rural Telecommunications Cooperative (NRTC)



The National Rural Telecommunications Cooperative (NRTC) represents the advanced telecommunications and information technology interests of more than 1,200 rural utilities and affiliates in 47 states. We help rural electric and telephone utilities strengthen their businesses with solutions uniquely suited to the needs of rural consumers. www.nrtc.coop/us/main/index

FEATURED EVENT

ISCE Conference Program At-a-Glance

	Tuesday, June 13, 2006				Wednesday, June 14, 2006		Thursday, June 15, 2006	
	G/V Wireless Workshop	WTA "Translating the Trends" Workshop	Space & Security Forum	Cable, Satellite & Telco Entertainment Forum	Digital Content & Mobile Forum	Military & Government Requirements Forum	Retail & Business Enterprise Forum	Global Business, Policy & Financial Outlook Forum
7:00am					VIP Breakfast (by Invitation Only) (7:30 am - 8:30 am)		VIP Breakfast (by Invitation Only) (8:00 am - 9:00 am)	
8:00am					SIA "State of the Industry" Report (8:30 - 8:45 am)			
9:00am	Welcome: SPAWAR Commander Keynote: Maj. Gen. James Armor, Director - NSSO			Content Innovation: Looking Beyond (Mod: J. Schaeffler)	Joint Plenary Session - with AIAA (8:45 am - 10:15 am) (Mod: L. Rains)		CTO/CIO Plenary Session (9:00 am - 10:30 am) (Mod: D. Bross)	
10:00am	Coffee Break in Exhibit Hall (10:00 - 10:30am)				Coffee Break in Exhibit Hall (10:15 - 10:45am)		Coffee Break in Exhibit Hall (10:30 am - 11:00 am)	
11:00am	Hybrid Wireless: Convergence Cash Cow?	ISCe Product Demo Program	Transforming Space & Integrating the Battlefield (Mod: G. Tattini)	IPTV Strategies for Success! (Mod: J. Schaeffler)	Satellite Mobile Entertainment and Data (Mod: M. Dankberg)	DoD Network-centric Operations & Integration (Mod: D. Karp)	End-to-End Network Solutions for the Retail Enterprise Market (Mod: Chain Store Age)	Global Satellite Finance: A Forecast (Mod: R. Villain)
12:00pm	AIAA Awards/ISCe Welcome Luncheon Invited Keynote Speaker: Dr. Charles Elachi, Director NASA JPL (12:00 pm - 1:30 pm)				Leadership Luncheon (12:00 pm - 1:30 pm)		Luncheon in Exhibitor Pavilion (12:30 pm - 1:30 pm)	
1:00pm								
2:00pm	Cellular, WiFi, WiMAX, or Whatever	WTA: The Top 10 Trends You Need to Watch	Space Systems and Hybrid Networks for First Responders (Mod: D. Sachdev)	Broadband: Top 10 Drivers for 2007 (Mod: J. Schaeffler)	Content for the Mobile Platform (Mod: G. Hatch)	Future MILSATCOM Systems: A Progress Report (Mod: R. Scurry)	Optimizing Retailer's Connectivity and Increasing Efficiencies (Mod: Chain Store Age)	DC Beat: A Legislative, Regulatory & Policy Update (Mod: J. Ordway)
3:00pm	Satellite-Based WiFi: Killer App?	WTA: Responding to Changing Markets		Advanced Services: Shaking Out the Hype (Mod: J. Schaeffler)	Refreshment Break in Exhibit Hall (2:45 - 3:15 pm)			
	Refreshment Break in Exhibit Hall (3:30 - 4:00 pm)				Digital Content for Hollywood! (Mod: R. Bell)	Distributed Connectivity to the Warfighter (Mod: L. Bien)	Satellite Networks for Retailers: Improving the Value Proposition (Mod: B. Elbert)	Trends in the European, Latin American and Asia-Pacific Markets (Mod: R. Villain)
4:00pm	IP and the "New" Bottom Line	WTA: Technologies That Grow the Market	The Next Horizon: New and Evolving Comm'l Space Markets (Mod: M. Farrell)	CEOs: Breaking the Rules & Making it Happen (Mod: J. Schaeffler)	Mobile Applications for the Commercial and Government Sectors (S. Chase)			
5:00pm								
6:00pm	SSPI Beach Blast & Welcome Reception (5:30 pm - 7:00 pm)				ISCe Reception and Awards Dinner (6:00 pm - 10:00 pm at Sea World)			
7:00pm								
8:00pm	Exhibitor Pavilion Open 10:00 am - 5:30 pm				Exhibitor Pavilion Open (10:00 am - 5:30 pm)		Exhibitor Pavilion Open (10:30 am - 2:00 pm)	
9:00pm								


ISCe 2006 Supporting Organizations

Northern Sky Research (NSR)

 Northern Sky Research is an international market research and consulting firm specializing in telecommunications technology and applications. Northern Sky Research primary areas of expertise include satellite networks, cable and wireless technology, and content/new media markets.

www.northernskyresearch.com


Pacific Telecommunications Council

 Pacific Telecommunications Council (PTC) and its


international community of members promote the development and use of telecommunications and ICT to enhance communications in the Pacific Hemisphere. PTC's programs and trade exhibitions provide real and virtual gathering points for communications professionals to provide and seek solutions; to do business together; and to share the latest knowledge about communications technology, systems,

and best practices. PTC's annual conference and exhibition in Honolulu, Hawaii every January is the pre-eminent mid-Pacific meeting place for ICT professionals, government representatives, educators, regulators, and researchers. www.ptc.org


Satellite Industry Association (SIA)

 The Satellite Industry Association (SIA) is a U.S.-based trade association providing worldwide representation of the leading operators, service providers, manufacturers, launch service providers, remote sensing operators, and ground equipment suppliers. The SIA represents the unified voice for the commercial satellite industry on policy issues of common concern. SIA actively identifies, analyzes, and monitors critical policy issues affecting the satellite industry. The association represents the common interests of its members to domestic and international government officials, the press, the public, and to other industries.. www.sia.org

Society of Satellite Professionals International (SSPI)

 The Society of Satellite Professionals International is a nonprofit member-benefit society that serves satellite professionals throughout their careers. www.sspi.org

World Teleport Association (WTA)

 World Teleport Association (WTA) is a nonprofit trade association of teleports, satellite and terrestrial carriers, technology providers, investment houses and consultants in 20 nations around the world. For teleports, WTA is the global body dedicated to building their businesses by educating them on issues, researching their markets, and connecting them to sales opportunities and strategic allies. For any organization that delivers broadband via satellite — or provides the technologies that make it possible — WTA is their gateway to international opportunity. www.worldteleport.org

ISCe 2006 INDUSTRY SPONSORS

(as of January 30, 2006)



Boeing Space and Intelligence Systems (S&IS), headquartered in Seal Beach, Calif., delivers space and intelligence systems and innovative system

solutions for national security and space applications. With more than 9,000 employees in eight major locations across the country, S&IS is a market leader in large-scale systems integration, intelligence, surveillance and reconnaissance systems, communications systems, network systems, and protection and security systems for the U.S. military and numerous government agencies.

with its first satellite circuit for the U.S. Department of Defense, the company currently operates a fleet of 18 spacecraft in orbital positions predominantly providing service throughout the Americas. As a member of the SES GLOBAL family, SES AMERICOM is able to provide end-to-end telecommunications solutions to any region in the world. In 2001, the company established AMERICOM GOVERNMENT SERVICES, a wholly owned subsidiary dedicated to providing satellite-based communications solutions to both civilian and defense agencies of the U.S. government. With its combined operations, SES AMERICOM serves broadcasters, cable programmers, aeronautical and maritime communications integrators, Internet service providers, mobile communications networks, government agencies, educational institutions, carriers and secure global data networks with efficient communication and content distribution solutions.



The largest supplier of satellite services in the U.S., SES AMERICOM, Inc. is recognized as a pioneer of

global satellite communications services. Established in 1973

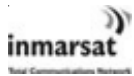
ISCe 2006 INDUSTRY SPONSORS



Futron is a technology management, consulting firm enhancing our clients' abilities to make complex decisions. Using our proprietary analytic methods, models, and in-depth data repositories, Futron transforms data and information into valuable intelligence. In a world of risk and uncertainty, our results help clients make higher quality business and technical decisions. Our aerospace consulting services include market and industry analyses, safety and risk management, and communications and information management.



G2 Satellite Solutions, a subsidiary of PanAmSat, is a leading provider of global satellite and related telecommunications services for U.S. federal, state and local government agencies, the U.S. Department of Defense, foreign military organizations, system integrators and end users. We utilize proven, cost-effective commercial resources in space and on the ground to create comprehensive, customer-focused solutions that are tailored to meet specific requirements.



Inmarsat is the pioneer of global mobile satellite communications. Today, it stands at the forefront of 3G wireless telephony, capitalizing on almost a quarter of a century's experience to deliver broadband communications solutions to enterprise, maritime and aeronautical users around the globe. Inmarsat's next-generation mobile satellite service – BGAN (Broadband Global Area Network) – will combine broadband data (up to half a megabit per second) and voice telephony with seamless coverage, coast to coast, across all the world's major landmasses.



The IOT Systems, LLC approach is based on our heritage from COMSAT over 40 years of experience with In-Orbit Test systems and service and 30 years of automated in-orbit system design. These methods have been used to deliver systems to EUTELSAT, Hughes, INTELSAT, GTE, SBS and NASA among others. These systems have been recently used to test all DirecTV™, Ku-Galaxy, SBS, Sirius Satellite Radio, HotBird, EUTELSAT II satellites, AMSC and AceS mobile satellites.



Lockheed Martin Commercial Space Systems (LMCSS) is an operating unit of Lockheed Martin Space Systems Company, one of the core business areas of the Lockheed Martin Corporation. Lockheed Martin has a 45-year heritage of building reliable spacecraft, having launched more than 875 spacecraft and clocking over 1,600 years of on-orbit performance experience. Headquartered in Bethesda, MD., Lockheed Martin employs about 130,000 people

worldwide and is principally engaged in the research, design, development, manufacture, and integration of advanced technology systems, products and services.



Mobile Satellite Ventures is North America's premier provider of mobile satellite communications. Delivering service since 1996, MSV offers customers a wide choice of wireless data, voice, fax and dispatch radio services via its two MSAT satellites. MSV provides superior capacity and reliability for customers across North and Central America, northern South America, the Caribbean, Hawaii and in coastal waters.



Space Systems/Loral (SS/L) is a premier designer, manufacturer, and integrator of powerful satellites and satellite systems. SS/L also provides a range of related services that include mission control operations and procurement of launch services. Based in Palo Alto, CA, the company has an international base of commercial and governmental customers whose applications include broadband digital communications, direct-to-home broadcast, mobile satellite services, defense communications, environmental monitoring, and air traffic control.



WiNetworks solutions allow one-way broadcast operators to extend their existing infrastructures and offer a complete bundle of attractive "Triple Play" services including Internet access, telephony, Video on Demand, interactive TV services and future mobile support. WiNetworks solutions allow broadcast operators to dramatically increase their customer base and reduce customer churn rates, while instantly increasing Average Revenue per Unit (ARPU) figures. WiNetworks solutions bring unique and cost-effective applications for WiMAX networks, while adding a new revenue sources for broadband Operators. WiNetworks has filed multiple patents on its unique technology and is a member of the WiMAX forum promoting the compatibility and inter-operability of broadband wireless access. The WiNetworks solutions have been employed successfully with leading operators in Europe and the USA. The Company is supporting worldwide projects through regional offices in United States, Europe and Asia.

Sponsorship Opportunities

For additional information regarding speaking, exhibiting or sponsorship opportunities at ISCe 2006, please contact the Conference Chairman, David Bross at +1-301-916-2236 or e-mail at: dbross@hfusa.com
For information on the event, visit: www.isce.com.

INDUSTRY NEWS

Lockheed Wins \$491.2-M Contract for Third AEHF Satellite



The Advanced Extremely High Frequency (AEHF) satellite communications system is designed to provide secure, survivable communications to U.S. warfighters during all levels of conflict.

SUNNYVALE, Calif. — The U.S. Department of Defense has awarded Lockheed Martin Corp. Space Systems Co. a \$491.2 million contract for the third satellite in the Advanced Extremely High Frequency (AEHF) program.

DoD said the contract award is a modification of the original contract to add satellite vehicle number 3 (SV3) as envisioned and permitted by a clause in the AEHF contract. The contract also includes the procurement of SV3 and introduces the option for Launch and Operations support.

The Launch and Operations Support option is planned to be exercised beginning in 2009 to support a 2010

launch. The DoD said the acquisition of SV3 will complete the AEHF program.

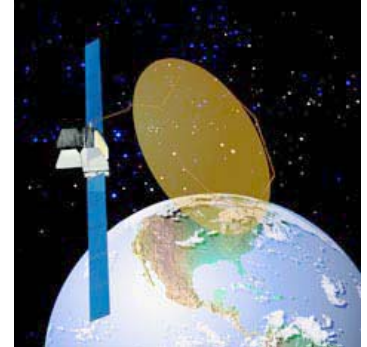
The AEHF Satellite Communications System provides secure, survivable communications to U.S. warfighters in its global fight against terrorism. The AEHF program is expected to be completed in May 2011. DoD said some \$438,783,920 has already been obligated for the program.

In addition, Lockheed was also awarded a separate \$48,700,000 contract modification for the Spacecraft Integration and Test (SIT) contract for Defense Meteorological Satellite Program (DMSP) F17, F18, F19, and F20 launches.

MSV Awards Boeing Contract for Three L-band Satellites

RESTON, Va. — Mobile Satellite Ventures (MSV) has contracted Boeing for the construction and delivery of three next generation L-band satellites to be launched beginning 2009.

MSV said the network will be based on the company's patented Ancillary Terrestrial Component (ATC) technology, which combines the best of satellite and cellular technology. It will deliver reliable, advanced and ubiquitous voice and data coverage throughout North and South America.



Boeing will build three high-powered Geo-Mobile satellites for Mobile Satellite Ventures that will create the world's first commercial wireless communications service using both space and terrestrial elements.
(Boeing photo)

“The agreement with Boeing solidifies our commitment to building a ubiquitous network that provides seamless coverage to our end users in North and South America. We are excited at the prospect of completing this paradigm-shifting project ahead of schedule and to provide improved service in both rural and urban areas, eliminating the telecommunications divide,” said Alexander H. Good, vice chairman and CEO of MSV.

Howard Chambers, vice president of Boeing Space & Intelligence Systems, said in addition to providing mobile service to users in the most remote regions, Boeing technology deployed by MSV will keep lines of communication open for first responders in times of natural disasters. “Our focus on building powerful and highly complex satellites will deliver instantaneous access and mobility anywhere on the continent,” he said. According to Boeing, the satellites will be among the largest and most powerful commercial satellites ever built. Each satellite's primary antenna will be almost 75 feet across, about twice as large as any previous commercial satellite. In addition to covering the Americas with hundreds of spot beams, the satellites will use MSV's patented ATC technology to deliver service to wireless devices that are virtually identical to cell phone handsets in terms of aesthetics, cost and functionality. MSV said the satellites will work in tandem with terrestrial based stations that provide coverage and capacity in urban areas where satellite signals are frequently blocked.

Galileo Takes Off with Signature of Test Phase Contract

BERLIN— European Union's independent satellite navigation

INDUSTRY NEWS

system became more and more a reality with the signing on Jan. 19 of the Galileo system's contract for the in-orbit validation phase paving the way for the deployment of four of the constellation's satellites by 2008.

The contract was signed at Germany's Ministry of Transport by Giuseppe Viriglio, director of EU and industrial programs at European Space Agency (ESA) and Gunter Stamerjohanns, CEO of Galileo Industries, in the presence of Wolfgang Tiefensee, German minister of transport; Serge Tchuruk, chairman and CEO of Alcatel, and the leaders of the other Galileo Industries shareholders as well as representatives of the European and national space agencies.

Galileo Industries is a joint company of Alcatel Alenia Space, EADS Astrium GmbH and EADS Astrium Ltd, Thales and Galileo Sistemas y Servicios (GSS), a consortium of seven Spanish companies.

The \$1.148 billion (• 950 million) contract will be paid in equal shares by the European Space Agency and the European Commission.

The contract signing followed the successful launch of the GIOVE-A satellite on December 28, 2005 and the reception of the first "Galileo" signal on January 12, 2006. The contract marks the development and in-orbit validation of the constellation's first four satellites, which are due to be in orbit by 2008.

Digital Radio Unit Shipments to Top 22-M by 2009 Reports In-Stat

SCOTTSDALE, Ariz. — Worldwide, the combined market of both digital satellite and terrestrial radio will grow from approximately 5 million unit shipments in 2004 to 22 million unit shipments in 2009, predicts In-Stat.

The primary drivers for this growth will be new and compelling content, data services, price erosion for digital radio receivers, and digital radio provider partnerships with new car manufacturers, the high-tech market research firm said.

"In the U.S., satellite radio is driving the digital radio market," said Stephanie Guza, In-Stat analyst. "In other markets, most notably in the U.K., terrestrial digital audio broadcasting is driving it. The launch of Digital Multimedia Broadcast (DMB) services in Japan and Korea, along with increased promotional activity in Singapore, Australia and Taiwan over the next year, will drive digital radio shipments in Asia."

According to a recent report, In-Stat also found the following:

- Roughly 600 U.S. AM and FM stations will broadcast in HD Radio technology by the end of 2005.
- The two U.S. satellite radio providers have reported significant subscriber numbers; XM is on track to report over 6 million subscribers by the end of 2005, while Sirius will reach over 3 million subscribers.
- Commercial-free radio ranks as the top reason for purchasing a satellite radio, with 54 percent of surveyed satellite radio owners citing it.

EADS Astrium Selects Arianespace to Launch Skynet 5C



Another Ariane 5 ECA begins its assembly process at the Arianespace's Spaceport in Kourou, French Guiana. (Arianespace/ESA/CNES photo)

2007 and 5C in 2008. The launch contract was signed at the end of December 2005.

LONDON — EADS Astrium has selected Arianespace's Ariane 5 for the launch of the third of the UK Ministry of Defence's (MoD) next-generation secure military telecommunications satellite, Skynet 5C.

EADS Astrium said its in-orbit delivery contract follows Paradigm Secure Communications' recent amendment to the existing Skynet 5 Private Finance Initiative (PFI) contract with the UK MoD.

Arianespace was previously selected in 2004 for the launch of the first two Skynet 5 satellites - Skynet 5A and Skynet 5B. The launch of Skynet 5A is scheduled for the second half of 2006 with 5B in

Skynet 5A and 5B will replace the existing Skynet 4 satellites, also built by EADS Astrium, which are already owned and operated by Paradigm Secure Communications.

Last month, Paradigm signed an amendment to the Skynet 5 contract to provide increased value for money to the UK MoD. A key feature of the amendment was to mitigate the effect of

INDUSTRY NEWS

changes in the insurance market through the order and launch of a third satellite, Skynet 5C, and associated increased concession period until 2020. Paradigm Secure Communications, part of EADS Space Services, signed a \$4.38 billion (£2.5 billion) PFI contract with the MoD UK in October 2003 for the provision of military satellite communications services.

Globalstar Acquires Satellite Gateway Operator in Central America

MILPITAS, Calif. — Globalstar announced on Jan. 5 it has signed a definitive agreement to acquire 100 percent of the stock of Globalstar Americas Telecommunications, Ltd., Globalstar Americas Holdings Ltd., and Astral Technologies Investments, Ltd.

Globalstar said the three companies are currently privately held

and are authorized by Globalstar to provide Globalstar service throughout Central America, including Belize, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and Costa Rica. They also own and operate the Globalstar satellite gateway ground station located near Managua, Nicaragua. The gateway provides Globalstar satellite customers with access to the local public telephone system throughout the region.

The transaction is expected to close in mid-January 2006 and upon closing will be effective for financial purposes at the close of business on December 31, 2005.

“This is part of our ongoing commitment to improve Globalstar service for both our international customers working in the region, as well as domestic users throughout much of Central America,” said Steven Bell, senior vice president of International Sales, Marketing and Customer Operations for Globalstar LLC.

High-Speed MIL-STD-188-165A Satellite Modem

Data Rates Up to 200+ Mbps

Comtech EF Data's new SLM-5650 Satellite Modem was designed to comply with the DSCS requirements defined in MIL-STD-188-165A, modem types A, B, D, E, and F.

Available in a variety of configurations for maximizing bandwidth and satellite transponder utilization, the SLM-5650 is suitable for virtually any government and military application. Available options include:

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Bell added Globalstar will now look at various ways of improving service for its satellite customers in the Central America region by evaluating the potential introduction of various product solutions and roaming pricing alternatives already in place in North America and other regions around the world. The company is also expected to evaluate potential service realignment options to improve service for the region.

FCC Authorizes WorldSpace Subsidiary to Launch AfriStar-2 Satellite

SILVER SPRING, Md. — The Federal Communications Commission has granted an authorization to WorldSpace Satellite Radio satellite operating subsidiary, AfriSpace, to launch and operate the AfriStar-2 satellite.

WorldSpace said the AfriStar-2 satellite is already constructed and is currently in storage in Toulouse, France. When launched, AfriStar-2 will be inserted into geosynchronous orbit at 21 degrees East Longitude. The satellite will be co-located with AfriStar-1, which has sufficient capacity to serve at least one linguistic market in Western Europe, according to WorldSpace.

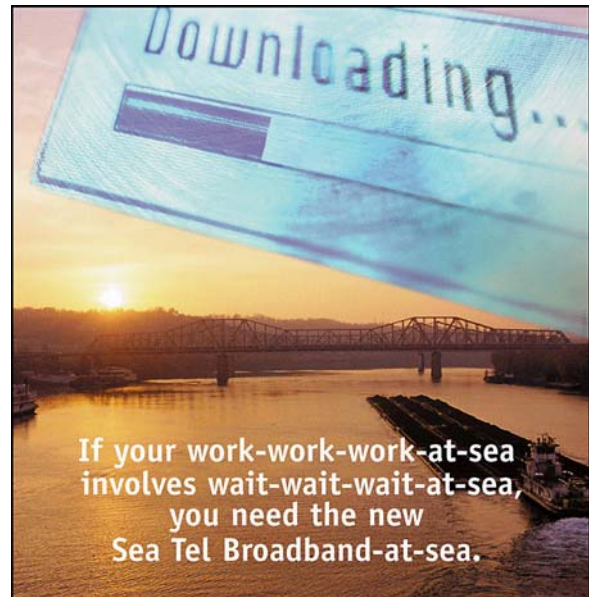
AfriStar-2 will allow WorldSpace to expand its digital satellite radio services into Western Europe. It is also intended to serve as a replacement with respect to certain areas currently covered by AfriStar-1 when that satellite reaches the end of its operational life.

Noah Samara, chairman and CEO of WorldSpace, said FCC’s authorization is great news as it removes any uncertainty about having a license to operate AfriStar-2 and allows the company to implement our European launch plan. “This will give us expanded capacity to provide a focused satellite radio service to European markets in line with the company’s execution plans,” he said.

Lockheed Reports Major Milestone on New Missile Warning System

SUNNYVALE, Calif. — The Space-Based Infrared System (SBIRS) team led by Lockheed Martin has successfully completed engineering thermal vacuum testing of the payload for the first geosynchronous orbit (GEO) satellite. SBIRS will provide early warning of missile launches and support other missions simultaneously including missile defense, technical intelligence and battlespace characterization.

Payloads for SBIRS GEO satellites are produced by Northrop Grumman and consist of two advanced sensors: a scanning sensor designed for continuous observation and surveillance of traditional intercontinental ballistic missile threats, and a staring sensor designed to detect very low signature, short-burn-duration theatre missiles. **SM**



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1 GB file download	256 min	2,080 min	2,080 min
Cost/MB	*1	†18.53 (non-secs) ‡36.00 (secs)	†18.60 ‡19.00/min
Cost/GB	*1,000	†18,640 (non-secs) ‡36,000 (secs)	†18,720

4.15.03. ¹Source: KIVI website. ²Source: Delta Communications website.

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EXECUTIVE MOVES

Intelsat Appoints Key Executives



Joe Wright

David McGlade

WASHINGTON, D.C. — Intelsat, Ltd. has announced key executive appointments that will be effective following the closing of Intelsat's planned acquisition of PanAmSat Holding Corporation.

At the time that the acquisition was announced in August 2005, the companies stated that David McGlade, Intelsat's current CEO, would be the CEO of the company, and that Joe Wright, PanAmSat's current CEO, would be chairman of Intelsat's board, after the transaction closes.

McGlade said he intends to appoint James Frownfelter, currently chief operating officer of PanAmSat, as COO of Intelsat upon the closing. Frownfelter will replace current Intelsat COO Ramu Potarazu and Intelsat Global Service Corporation president Kevin Mulloy, who have submitted their resignations from Intelsat effective Feb. 9 and Jan. 27, 2006, respectively.

As COO Frownfelter will have responsibility for sales and marketing functions, engineering and operations, and major program procurement. During his tenure at PanAmSat, he directed 16 successful satellite launches and instituted a renewed focus on core competencies, resulting in significant improvement in PanAmSat's network reliability. Since becoming an officer of the company in 2001, Frownfelter has led the transformation of PanAmSat from a satellite operator to a well-managed, higher quality, and more profitable communications company with expanded services for global distribution applications.

McGlade also announced that Phillip Spector will continue in his current role as general counsel of Intelsat following the closing of the PanAmSat acquisition. He will retain responsibility for all legal and regulatory matters, as well as human resources, facilities, and security. Spector joined Intelsat in February 2005 from the international law firm of Paul, Weiss, Rifkind, Wharton & Garrison LLP, where he was managing partner of the Washington office and Chairman of the firm's

Communications & Technology Group. He has over 20 years of legal experience in the satellite and telecommunications industries, and earlier in his career clerked at the Supreme Court and served in White House.

Acting Intelsat chief financial officer Robert Medlin will continue in that role at Intelsat until a permanent CFO is named. Current PanAmSat General Counsel James Cuminale and CFO Michael Inglese will stay with PanAmSat until the transaction closes, Intelsat said.

Richard Covey Named Chief Operating Officer of United Space Alliance



Richard O. "Dick" Covey

HOUSTON, Texas — Veteran Shuttle astronaut and space industry executive Richard O. "Dick" Covey has been named to replace Brewster Shaw as executive vice president and chief operating officer of United Space Alliance. Brewster has returned to Boeing as VP and general manager of Boeing NASA Systems.

Effective February 17, Covey joins USA from Boeing Company where he served as president of Boeing Service Company in Colorado Springs, Colorado, providing system engineering, facility/system maintenance and operations, spacecraft operations support, and logistics support to Department of Defense, other US government, and commercial businesses at over 20 locations worldwide.

Before moving to Boeing Service Company, he was vice president of Boeing Houston Operations responsible for business development, program management and support for Boeing programs in Houston. Covey joined Boeing as division director for McDonnell Douglas' Houston Operations in 1996.

Morten Tengs Appointed New CEO of Telenor Satellite Services

FORNEBU — The board of Telenor Satellite Services AS (TSS) has appointed Morten Tengs as new chief executive officer of TSS effective February 1, 2006. Tengs replaces Tore Hilde who will be leaving the company at the end of January.

EXECUTIVE MOVES



Morten Tengs

Morten Tengs joined Telenor Global Services AS in 1995 and has held the position as the company's CEO since 1999. His education comprises both technical engineering studies from Agder Ingeniør og Distriktshøyskole as well as a Master of Business Administration from BI Norwegian School of Management.

Bjarne Aamodt, chairman of TSS, said Morten has demonstrated excellent qualifications managing the successful development of Telenor Global Services under very difficult market conditions the last few years. "With these proven qualifications and his experience I feel confident that he is the right person to lead TSS in the next phase of its development."

Brewster Shaw Named as Boeing NASA Systems Leader



Brewster Shaw

ST. LOUIS — Brewster Shaw has been selected as vice president and general manager of the Boeing NASA Systems business unit. Shaw replaces Mike Mott who passed away in November 2005.

Jim Albaugh, president and chief executive of Boeing Integrated Defense Systems, said he selected Shaw for the position because of his extensive experience and success in managing large, complex human spaceflight programs.

Shaw was chief operating officer of United Space Alliance (USA) just prior to this assignment and had primary responsibility for the operations and overall management of USA, the prime contractor for the Space Shuttle Program. Shaw was named to this position in 2003.

Shaw previously served as vice president and deputy general manager for Boeing NASA Systems. Prior to that, he was Boeing ISS vice president, responsible for leading an industry team in designing, developing, testing, launching, and operating NASA's international orbiting laboratory. Shaw has held multiple management and executive roles since he joined

Rockwell in 1996 after 27 years with the U.S. Air Force and NASA. Shaw retired from the Air Force as a colonel.

Radyne Appoints Myron Wagner as COO

PHOENIX — Carl Myron Wagner will join Radyne Corporation as president and chief operating officer on Jan. 30, 2006. In addition, Wagner will become a candidate for the title of CEO.

Wagner, 50, most recently was employed with General Dynamics where he served as vice president and director of Engineering for the Space and National Systems Division since 2004. Prior to joining General Dynamics, Wagner served as the vice president and general manager of Motorola's Instant Communications Strategic Business Unit where he was responsible for the launch of Motorola's "Push to Talk" cellular products. Previously, Wagner was responsible for the development of cellular interoperability, fixed wireless, and broadband satellite systems.

Brian Duggan, who has served as Radyne's president and COO, will assume new responsibilities as the president and general manager of the rapidly growing Tiernan HDTV business. Radyne has also announced that Bob Fitting has agreed to a one-year extension of his contract to December 31, 2006.

Moog Elects Two New Officers

EAST AURORA, N.Y. — Moog Inc. board of directors has elected two new vice presidents of the corporation. Sasidhar Eranki joined Moog in 1979 after completing a master's degree in Mechanical Engineering at University of Buffalo. Throughout his career at Moog, Sasidhar has been involved in the design and production of a variety of control systems for industrial and aircraft applications. He has worked in Engineering, International Business Development, Product Line Management, and is currently deputy general manager of the Aircraft Group, and director of engineering. In his current role, he is responsible for developing and deploying the engineering talent of the Aircraft Group.

In addition to his master's in Mechanical Engineering from SUNY Buffalo, Sasidhar holds a BSME from the Indian Institute of Technology in Madras, India.

John Scannell joined Moog in 1990 as an engineering manager of Moog in Cork, Ireland. In 1994, John moved to Germany to become operations manager of Moog GmbH. In 1997, John took

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a leave of absence to pursue an MBA at Harvard. He returned to Moog in 1999 as the general manager of Moog Ireland and the general manager of the Electric Drives Product Line.

XTAR Names Larry D. Haughey as VP-Gov't Markets

ROCKVILLE, MD.— XTAR, LLC has named Larry D. Haughey vice president for government markets responsible for the sales and marketing of XTAR's unique X-band services to the U.S. government's commercial and military sectors, including the Departments of Defense, State and Homeland Security.

He will report to Denis Curtin, chief operating officer of XTAR. XTAR is a joint venture between Loral Space & Communications and HISDESAT. Haughey was previously executive sales branch manager for MCI where he was responsible for sales of voice, data, IP, and other specialized services to the Defense Information Systems Agency (DISA), the Office of the Secretary of Defense (OSD), Joint Programs and DoD International Services. Before joining MCI, Haughey was director of RBOC services at Teleglobe

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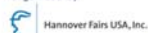
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EXECUTIVE MOVES

International, where he was responsible for sales to the regional bell operating companies (RBOC) and independent telephone companies. Haughey also served in similar roles at IDB, Contel ASC and COMSAT. Haughey began his career in the government communications field in 1981 at the Defense Communications Agency (DCA), now known as DISA.

Ascent Media Names Paul Wilkins Chief Solution Architect for EMEA

LONDON, UK — Paul Wilkins has joined Ascent Media Systems & Technology Services as chief solution architect, EMEA (Europe, Middle East, Africa).

Senior vice president Richard Scott, to whom Wilkins will report, said Wilkins will be responsible for the full range of systems



Paul Wilkins

design, from assessment of client requirements to project engineering management.

Wilkins has over 25 years experience in the systems integration business, initially with BBC SCPD; followed by 18 years with Sony Broadcast and Professional Europe; five with Pinnacle Systems, and most recently AVID

Technology Europe. His experience spans project engineering, project management (including Seoul '88 and Lillehammer '94 Olympics), proposals management and product management for server and tapeless production technologies. **SM**

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NEW PRODUCTS

Hughes to Deliver Comprehensive Digital Signage Service for Retailers

NEW YORK — Hughes Network Systems, LLC launched on Jan. 16 its Managed Digital Signage Service, the first of several new services planned in 2006 under the company's Digital Media Services umbrella.

Hughes said the offering will facilitate the trend in the retail industry towards increased use of electronic in-store branding and promotion.

With its Managed Digital Signage service, Hughes is making it easier for retailers to capitalize on this market opportunity and stay competitive through "on-the-fly," targeted customer communications. The service enables retailers to change content based on anything from time of day to weather conditions.

Hughes added the service allows different content to be automatically displayed at different times of the day in order to send a more precise message to the target audience. For example, if a retailer has a different demographic in the morning than in the late afternoon, messages can be customized to address distinct buying traits and to showcase products appropriate for each audience, thereby increasing likelihood of purchase.

"Hughes' Managed Digital Signage service gives retailers the power of their own television network at their fingertips," said Ken Cohen, assistant vice president of marketing. "Our offering gives them the flexibility to customize their message at every site, at every moment. And because of Hughes' deep retail technology experience, our team can quickly assess a retail operation and recommend the right technology to maximize brand investments and expedite ROI," she added.

Sirius Adds World Soccer Daily Radio Program to Sports Lineup

NEW YORK — Sirius Satellite Radio launched on Jan. 16 World Soccer Daily broadcasting the play-by-play of more than 350 pro and college teams daily talk program.

The daily talk program hosted by Steven Cohen and Nick Geber will air weekdays from 1-3 pm ET on Sirius' channel 126. The English-language daily national radio program devoted to the world's game provides an in-depth look at the best leagues

around the globe, with news, expert analysis and interviews with the biggest names in the game.

World Soccer Daily started out as a weekly program on local radio in Los Angeles, CA, hitting the airwaves just before the 2002 World Cup. The show quickly developed a passionate fan base and in 2003 began broadcasting to a national audience on Sports Byline USA.

Dish Network Launches Oxygen Network

ENGLEWOOD, Colo. — EchoStar Communications Corp. launched on Jan. 16 Oxygen Media, the only woman-owned and -operated TV network. Oxygen and Dish Network entered into a multi-year agreement and will provide 12 million Dish Network viewers with a free preview of Oxygen immediately.

Oxygen is a 24-hour television network on a mission to bring women (and the men who love them) the most innovative entertainment on television. From "Mo'Nique's Fat Chance," which takes America's average beauty competition and repackages it for America's average-size women, to Oxygen's newest hit, "Campus Ladies," Oxygen brings brave, original programming to women every day.

With this agreement, Oxygen now reaches a total of 65 million homes. The network has enjoyed double-digit ratings growth and has the second-highest concentration of women 18-49 on cable and satellite television.

Stratos Introduces StratosGateway Online Tools for Mobile Satellite Users

BETHESDA, MD — Stratos Global Corp. announced on Jan. 17 the launch of StratosGateway, a sophisticated web-based portal that provides easier and more efficient access to account management and product and service information for Inmarsat and Iridium mobile satellite users.

With StratosGateway, Stratos said its resellers and customers can easily view, download and monitor call data records, perform traffic analysis, and commission, bar and unbar individual satellite terminals via the Internet, without the need to speak with a customer service representative or fax a paper form.

NEW PRODUCTS

StratosGateway provides single-sign-on access to a comprehensive, updated library of important product and service fact sheets and information, which is easy to navigate and fully searchable using a sophisticated search tool. It also includes the latest in secure web-based technology (SSL 128-bit encryption), ensuring optimum security for all operations.

StratosGateway supports Iridium and Inmarsat digital satellite services, including Inmarsat-B/-M/mini-M/Fleet/GAN/Swift64 and BGAN (Broadband Global Area Network). BGAN is the latest and most advanced mobile satellite technology featuring simultaneous voice and broadband data connectivity using an affordable, lightweight satellite terminal about the size of a standard laptop PC.

EchoStar Expands Voom HD Channels

LAS VEGAS — EchoStar Communications Corp. and Rainbow Media Holdings announced on Jan. 5 that EchoStar's Dish Network will expand its offering of Rainbow's Voom HD Networks from 10 to 15 channels.

Voom HD Networks said the announcement reinforces its commitment to fill the HD content void and to create programming that maximizes the HD experience.

As part of its strategy to be the nation's leading provider of HD programming, Dish Network started distributing an initial lineup of 10 Voom HD Networks in the spring of 2005. Telecast in 1080i with Dolby 5.1 surround sound, Voom HD Networks provide 24 hours of high-definition, commercial-free, programming. The new suite of 15 Voom HD channels will be available to consumers on February 1, as part of Dish Network's new DishHD package, which was also introduced today at the 2006 International Consumer Electronics Show.

Since its launch in early 2005, Voom has gone on to produce compelling original HD content for a wide variety of consumer interests including: the largest collection of HD horror films; a live auction of one-of-a-kind memorabilia; animation for kids of all ages and action-adventure sporting events.

The five newly added Voom HD channels will be available to Dish Network customers who obtain Dish Network's new MPEG4 satellite receivers capable of receiving the new HD channels. Customers with MPEG2 equipment can view the current 10 Voom HD channels as well as other previously offered Dish Network HD programming.

Telenor Reduces Calling Rates on Chinese and Lunar New Year

OSLO, Norway — Telenor Satellite Services announced on Jan. 18 it is offering worldwide reduced calling rates to help celebrate the Chinese and Lunar New Year.

Telenor, in conjunction with satellite operator Inmarsat, is extending low-cost Super Quiet Time (SQT) hours around-the-clock beginning 20:00 Greenwich Mean Time (GMT) on Friday January 27 and running until 6:00 GMT Monday February 6, 2006.

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.

"Telenor continues to make it simple and affordable for mariners to share some time with family and friends, even though they may be far away from home," said Anders Kallerud, vice president of Telenor Satellite Services.

Globalstar Launches Static IP/VPN Service for Enterprise Data Customers

MILPITAS, Calif. — Globalstar has launched Static IP (Internet Protocol) address and virtual private network or VPN capability for its satellite data customers throughout the United States, Canada, and the Caribbean.

Globalstar said the new services are possible due to enhancements at various gateway ground stations located throughout North America.

Once Static IP is set-up, a single IP address is assigned to a customer's Globalstar modem, delivering a constant address and affording greater communication possibilities through the Globalstar network, the company said. With the introduction of the Static IP service and associated data modems, Globalstar customers will now be able to initiate the transmission of data information or poll their various fixed and mobile assets located throughout North America, even when those assets are located in remote areas, well beyond standard terrestrial wireless or wireline coverage.

The Globalstar Static IP address modems will communicate to specific IP addresses using the new VPN service and the

NEW PRODUCTS

introduction of the VPN service will provide Globalstar customers with an enhanced level of security when making use of the Internet.

Connexion by Boeing Offers New Pricing Scheme, Services for High-Speed In-Flight Internet Service

SEATTLE — Connexion by Boeing has announced evolutions in its pricing and service enhancements for its real-time high-speed Internet and entertainment services to airline passengers in flight.

Connexion by Boeing said the service enhancements include an expanded delivery of four channels of live global television to airlines that offer the service and implementation of Yahoo! as the exclusive search engine on the service's portal used by

passengers on flights to access the Internet and email.

Pricing for the award-winning service will be simplified, giving passengers more flexibility with four choices based on the amount of time they want to be connected, Boeing said. The new pricing, effective January 31, will be based on extensive customer research conducted individually, and in conjunction with, leading airlines in Europe, Asia and the U.S.

Beginning on January 23, all airlines equipped with the Connexion by Boeing service may begin offering their passengers four channels of live global TV from their laptops. Live global TV programming is part of the Internet and data access service and is provided at no additional cost to passengers purchasing the Connexion by Boeing service. The Yahoo! Search Engine feature, available on the Connexion by Boeing air portal, will also be accessible by passengers beginning January 15.

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XM to be Standard Equipment on the 2006 Scion

DETROIT — XM Satellite Radio has announced that Scion of Toyota Motor Sales (TMS), U.S.A., Inc., will include XM Satellite Radio as standard equipment on its new 2006 Scion xB Release Series 3.0.

The xB Release Series 3.0 is making its debut at the 2006 North American International Auto Show (NAIAS) in Detroit, and is the first vehicle from TMS to offer XM as a standard feature.

Buyers of the limited-edition Scion xB Release Series 3.0 will also enjoy three months of complimentary XM service and a waived activation fee.

In late 2004, XM became Toyota Motor Sales' exclusive partner for factory-installed satellite radio entertainment and information services. Today, XM Satellite Radio is available in 15 Scion, Lexus and Toyota models as an option through port or dealer accessory programs. XM's satellite radio receivers are also the sole Genuine Toyota Accessories authorized by TMS to bring satellite radio entertainment to these models.

Glowlink Unveils New Version of Model 1000 Spectrum Monitoring System

LOSALTOS, Ca. — Glowlink has released a new version of its Model 1000 Satellite Spectrum Monitoring and Interference Detection System that packs state-of-the-art hardware enhancement with the newly improved and expanded Version 2.8.1 software.

“Version 2.8.1 software offers much improved user interface, system robustness, and processing algorithms,” said Robert Estus, Glowlink VP of Operations. “With this new version of software, customers will see markedly improved performance with their currently installed Model 1000 systems.”

Glowlink said customers who are on software maintenance will receive the new version of software as part of their on-going system upgrade process. Customers on hardware maintenance will receive the hardware upgrade on request. **SM**

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COVER STORY

Is the MSS Industry Beleaguered After All?

by Jose del Rosario

The mobile satellite services (MSS) industry has regained attention in many parts of the globe, as next-generation implementations of new and forward-looking programs that inherently pose renewed risks are once again entering the marketplace. In recent years news reports continue to remind the MSS industry of its less than stellar performance in the late-1990s, and analysts and skeptics have proposed that the MSS industry as a whole is beleaguered. Moreover, the controversial decision by the U.S. Federal Communications Commission (FCC) to grant a large amount of spectrum for the development of ancillary terrestrial component (ATC) services has been met by strong opposition. Companies opposed to ATC argue simply that satellite-based mobile services do not have a compelling proposition, and a large spectrum allocation that allows mobile satellite services to complement its offerings with terrestrial capabilities is unjustified to revive the industry.

In the wake of the FCC's 2003 decision to allocate spectrum to MSV for ATC, an array of negative statements circulated in the press:

"To even say the MSS industry is a beleaguered one is an understatement with the slew of bankruptcies that began in the late 1990s with Iridium." (The Economic Times, March 27, 2003)

"I look at it as a stay of execution," said John Byrne, wireless analyst with Kagan World Media. "The ability to have a terrestrial connection helps, but it doesn't ensure survival. They still have to attract people. To try and tap into new or old market

segments is a tough sell." MRT, March 1, 2003

MSS Market Prospects

Northern Sky Research (NSR) utilized a bottom-up approach in its latest MSS forecast model, whereby 12 distinct market sectors were analyzed. NSR believes these segments are the primary opportunities that mobile satellite broadband services can target. The analysis of 12 market sectors in determining market

demand includes the segments in the chart below.

In answering the most important and key question of whether the MSS industry will remain viable and sustainable within the next several years, given the checkered history of many mobile programs, NSR projects healthy growth in in-service

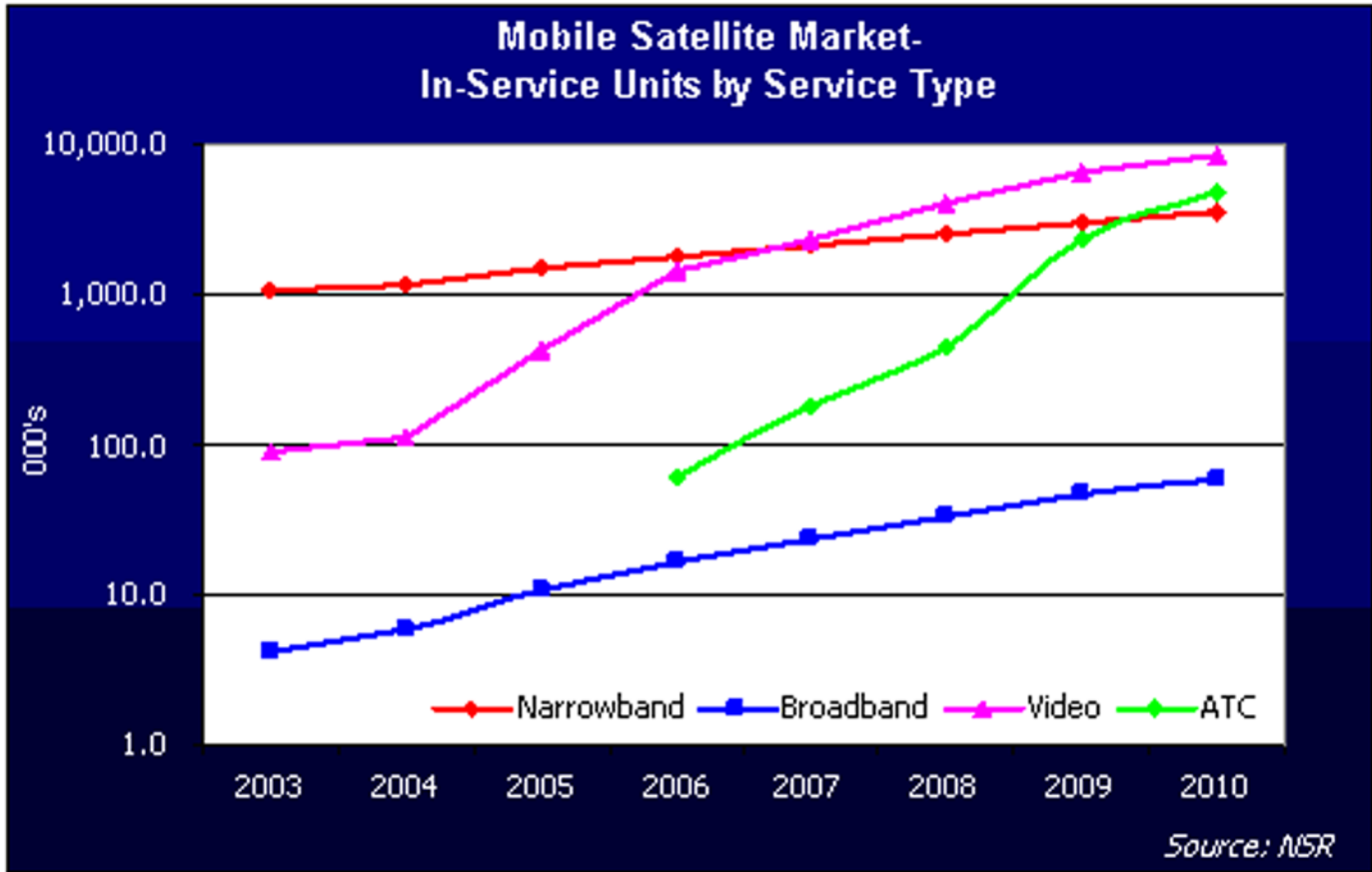
units driven by a variety of applications for current and next-generation programs. The large driver for terminal or equipment growth lies in handheld units for video services.

Recent years have shown the MSS industry to be invaluable in supporting disaster preparedness & recovery activities, military applications, and other critical civil requirements that require rapidly deployable, reliable and ubiqui-

Handhelds	Commercial Airlines	Commercial Shipping	Oil & Gas
Land-based Vehicular	Business Jets	Cruise Ships	<ul style="list-style-type: none"> Government / Military Handheldso Land-based Vehicularo UAVso Maritime
Media & Broadcast Organizations	Small Private Aircraft	Ferry Market	Other Enterprise Demand

Source: NSR

COVER STORY



tous communications services. The government/military sector in particular has boosted demand for services and equipment that support the most challenging logistical activities around the globe. The government/military is using the most basic satellite solutions to carry voice and narrowband data, as well as highly refined and sophisticated mobile broadband and video units such as the UAV for various applications that require large bandwidth and highly secure connections. Developments in this sector are also benefiting the commercial market as manufacturers begin to leverage military R&D and apply this knowledge base towards the development of commercial-grade products. For ATC specifically, the wake of Hurricane Katrina has shown the need to implement and complement the government’s (local and national) communications network in

order to better coordinate and implement relief efforts. An MSS/ATC capability should ensure better capability in terms of robustness, reliability and ubiquity compared to current government systems that rely on land mobile radios (LMRs).

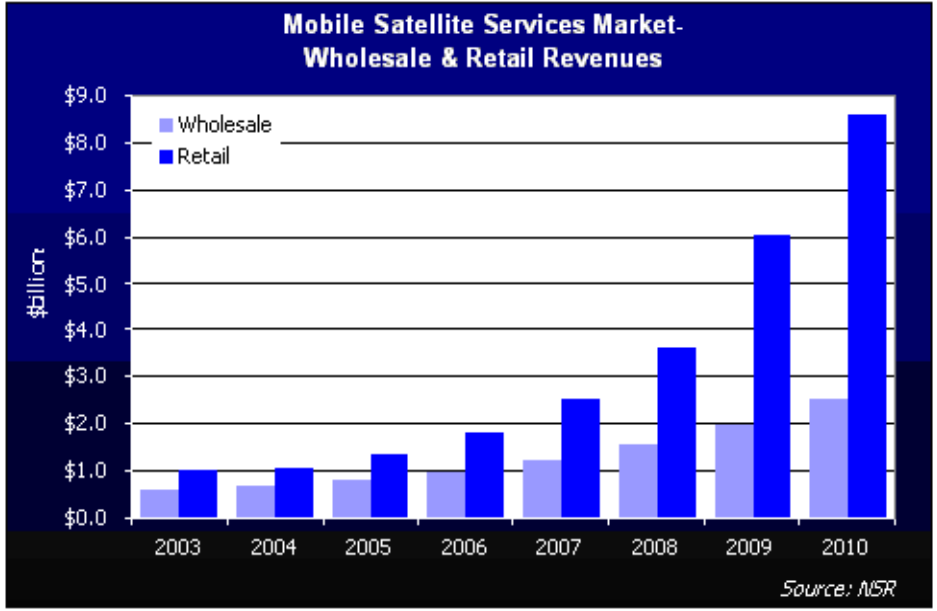
In the commercial market, the increasing assimilation of the Internet in both professional and personal communications, as well as the growing mobility of the global workforce, has led to the natural evolution of the mobile web. Mobile networks that throughput narrowband, broadband and video traffic are presenting new opportunities for the MSS industry. New programs such as Inmarsat’s I4 fleet, *Connexion by Boeing* aimed at tapping high-speed Internet access and video services on

commercial aircraft, and other “true” mobile or “On-the-Move” services have been launched that aim to improve the market proposition and revenue base of satellite services in its role as a niche offering.

In the Korean market, satellite-based digital multimedia broadcasting (S-DMB) has produced impressive results within 8 months of introduction, starting in May 2005. Other countries are beginning to seriously consider replicating S-DMB services within their borders, as the encouraging results in South Korea could lead to tremendous market opportunities over time.

NSR believes the MSS market will be driven largely by two new services in terms of the increase of customers. The

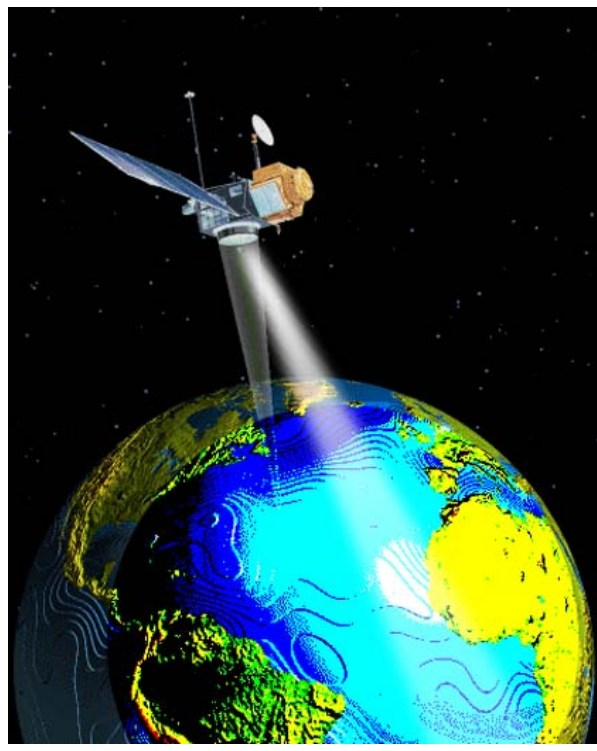
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first service has already begun with S-DMB, and based on its short market history, it is poised for continued success until at least 2010.

The second and more controversial proposition is the MSS/ATC offering. NSR believes that an inflection point in the entire MSS industry will take place in 2009 when the MSS/ATC deployment has been completed in the United States. Prior to 2009, the value proposition of MSS/ATC rests with the ability to communicate in preparation of, during and after emergency situations. The market is expected to be fully supported by U.S. Government agencies given the lack of adequate communications capability in the wake of Hurricane Katrina. In 2009, when network deployments and partnership agreements have been established, regular citizens who are preparing for such adverse circumstances will begin to adopt MSS/ATC. This trend is truly the beginning of the consumer market where MSS/ATC becomes a cellular service, not a satellite service. The selling point is that the end user will always be connected since there is a satellite component acting as a back-

up and redundant capability in case the terrestrial network is bogged down or destroyed. The satellite mode is therefore an insurance policy in cases or situations such as 9/11 and Hurricane Katrina.



Moreover, there have been projections and programs to increase cellular penetration levels in the United States from 68% in end-2005 to over 90% by end-2010. Achieving such high levels of use inevitably requires aggressive rural implementations. Based on current technologies, cellular operators will likely deploy services rather slowly in rural areas due to comparatively low ROI compared to implementing additional value-added services in urban centers. This trend would appear to make an MSS/ATC offering highly compelling either as a standalone service or through a partnership with large cellular operators. Since large cellular players may not find rural implementations as cost-effective and attractive investments, MSS/ATC can address both urban and rural customers with an offering that looks quite similar to a terrestrial cellular service. It would appear such an offering is precisely what the FCC had in mind when it allocated a large amount of spectrum to MSS/ATC.

In terms of revenue generation in the wholesale and retail markets, the market is expected to be healthy once again. Current annual revenue streams are a trickle compared to their potential. Since 2003 the market has grown at a steady pace but is expected to grow at more robust rates during the second half of the decade. This growth will be generated as next-generation programs are implemented, including broadband access via Inmarsat's BGAN, Boeing's Connexion, S-DMB and ATC. The government/military has been the anchor tenant for many companies and sectors in MSS; however, more enterprise and consumer-oriented sectors will drive growth over time.


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Conclusion

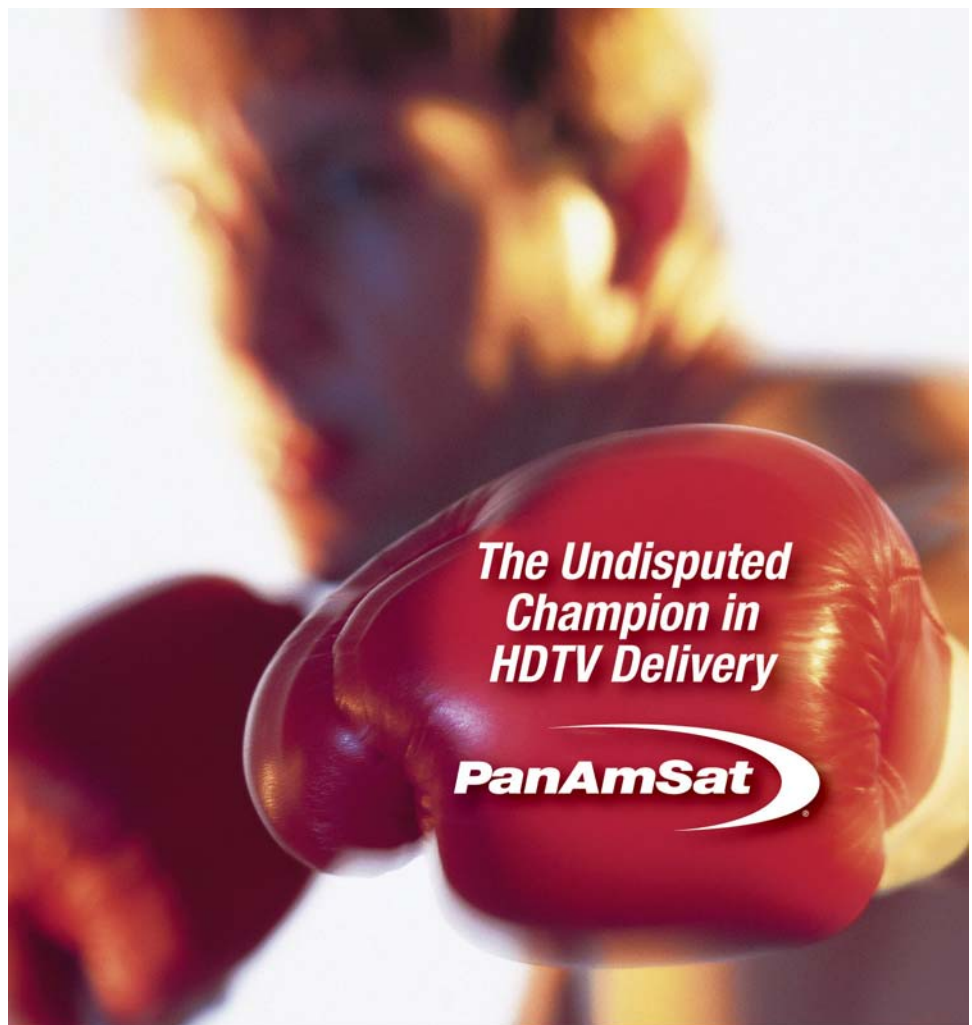
The current environment, which has a mix of frequency bands, legacy and next-generation platforms, as well as evolving business models, is at a crossroad. Although expected to remain a niche market proposition, the MSS industry is poised to achieve high market uptake that could arguably be interpreted as achieving critical mass, similar to the prospects of DTH services in the provision of pay-TV services as it competes with the cable industry. Indeed, DARS and GPS are unique but increasingly being incorporated in many market sectors such as the automobile industry in the United States. Additionally, other services that have and will be developed within the next few years are expected to penetrate customer segments at high rates, including video-to-handsets and ATC services.

NSR believes that MSS services will be viable, sustainable and will thrive within a relatively short period of time. Why? MSS services will success simply because satellite communications are necessary in addressing situations such as the War in Iraq, 9/11 and Hurricane Katrina. Satellite applications such as TV and Internet access in maritime vessels, commercial airlines and the land vehicles are helpful. In addition, S-DMB is flashy and full of potential. Contrary to the analysis or diagnosis that MSS is beleaguered, MSS is healthy and will indeed remain niche, but its market proposition will drastically improve by the end of the decade.

This article is an excerpt from a new NSR report entitled: **Mobile Satellite Services, 2nd Edition.**

Complete information can be found at www.northernskyresearch.com/reports/MSS2/index.html 

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FEATURE

2006: The Year for European Sat-radio?

By Chris Forrester



Delphi sat-radio

Washington-based sat-radio operator Worldspace is moving rapidly ahead to build on its recent subscriber successes in India, with action targeted on China, Europe and the Middle East. It signed a last minute cooperation agreement with China Satellite Communications (China Satcom) on Dec 20, which runs to 2010. On January 3rd Worldspace received formal permission to build and launch a second craft, AfriStar 2, to 21 deg East, which when in position will boost its coverage over Europe. As Worldspace reported in its pre-holiday FCC filing, the Chinese deal “consolidates and updates the provisions of five earlier separate agreements” between Worldspace and its sole agent China Satcom, which were all due to expire on Dec 31. China Satcom gets a 10% ‘agency fee’ from any capacity leases signed up for the North-East beam on AsiaStar, the operator’s 105 deg East craft.

Worldspace (WS) has the responsibility to build an Earth Station (at Dongbeiwang Village, Haidian District, Beijing) while China Satcom will “pro-

mote” channel leasing jointly with WS. China Satcom is “responsible” for obtaining and maintaining the official Chinese licences for L-band uplinking and transmission, and for after-sales services on receivers. More importantly, perhaps, is the obligation for China Satcom to build out the

supplementary terrestrial repeaters needed for widespread reception. China Satcom, as part of its agreement with WS, has warranted that it has “obtained the requisite government licenses and/or approvals from the relevant departments of the Chinese government”.

Coincidentally, the Chinese news helped with a Dec 22 major report on WS from investment bank Bear Stearns, which cited the business “peer perform” although suggesting the company was running an “obstacle course” of challenges ahead. December saw some useful upward progress in Worldspace’s share price, as it moved from \$11 to \$14.72, helped by the Chinese deal. Analyst Kunal Madhukar writes that Bear Stearns is “constructive” about WS, generally citing the company’s long-term prospects and “significant untapped market opportunity”.

However, Madhukar reminds investors that Worldspace still hasn’t tied up a European carmaker, despite the preliminary discussions with major automakers such as Citroen/Peugeot.

Also worth watching for is

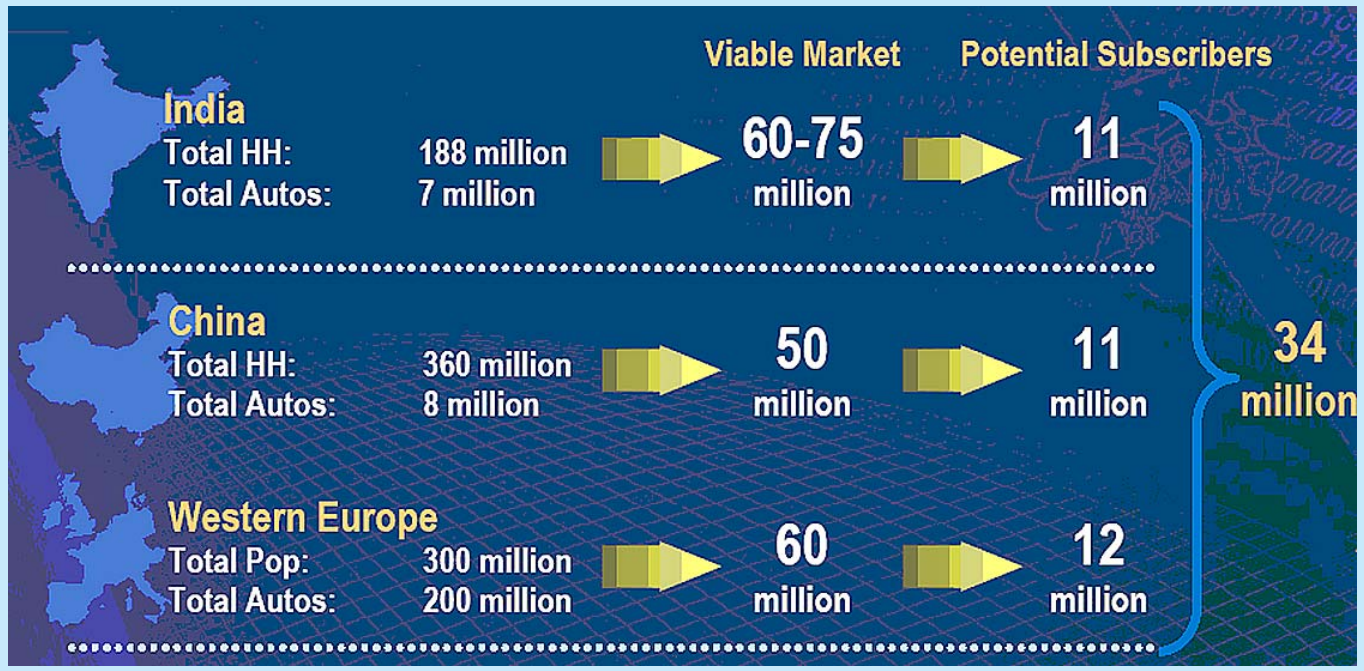


Worldspace’s end-of-year report. Bear Stearns says it is looking for Q4/2005 numbers of 40,000 to be added to the 100,000 already declared, and predicts another 365,000 net additions for 2006. This would put mean a core 500,000 subscribers could be in place by the end of 2006. Bear Stearns projects 72,000 subs in India at 2005 year-end, 322,000 by the end of 2006, and 2.84m subscribers by 2014. “Based on our projections, we estimate free cash flow from India would turn positive in 2011. The net present value of the investments is estimated at about \$25 million for the country less the amounts already spent by 2006 year-end that is already included in our cash estimate. Using the real options valuation model, we value the business in India at an equity value of about \$45 million or about \$1 per share.”

Bear Stearns highlights the obvious potential of India – and of course China, and provides a detailed look at Europe where it says it assumes WS is able to commence commercial operations in 2007 with France and Italy being its favoured markets. “We are projecting 4.7m subs in Europe by 2014. Based on our projections, we estimate free cash flow from Western

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Worldspace's plans for International sat-radio



Data: IDC, Gallup, China Media Monitor, Worldspace estimates

Europe would turn positive in 2011,” says the bank’s report, helping take Worldspace’s global total to 15m subs, when India, China and the Rest of the World are included. “We expect the company to turn net income positive in 2012, and earnings could reach \$200 million in 2014, or around \$3 per share,” says the bank. “We estimate WorldSpace could begin generating positive free cash flows (FCF) in 2011, though FCF fruition would also depend, to a large extent, on the number of months the average subscriber prepays, which has been significant for the two satellite radio operators in the U.S. Based on the timing of the FCF breakeven and incremental

satellite related capital expenditures whether to replace, expand capacity, or build a spare, we think the company may need to access the financial markets. Our model suggests the company may need to borrow/raise an additional \$450-\$500 million beginning in 2008 before it starts to repay the obligations beginning in 2011.”

WorldSpace is to be congratulated for its activity in India, but the India government is not standing idly by and in December 2005 approved the funding of Insat-4E to be built by Indian Space Research Org. (ISRO), which broadcasting minister Priyaranjan Dasmunshi describes will be a “state of the art” craft with S-

DMB services as its core mission. Insat-4E is slated to be launched in “early 2008”.

- Worldspace key metrics for 2006**
- 365,000 net new additions
 - Further expansion in India
 - Grant of further India repeater licences
 - Progress in China
 - Europe, launch in at least one country
 - Decision on launch of 3rd satellite

But WorldSpace is not alone in international satellite radio. Luxembourg-based Europa-Max Participations, and Madrid-based Ondas Media – and maybe others are each looking to translate the success of XM and Sirius in the USA into Europe. Ondas has already announced a major link (“strategic investor and technology supplier”) with sat-radio specialists Delphi Corp, and said it is planning to launch its 150-channel service

Worldspace – Europe forecasts (000, and \$000 Revenues)

	2007	2008	2009	2010	2011	2012	2013	2014
Subscribers	43	162	391	768	1,335	2,141	3,240	4,697
Revenues	2,186	9,434	24,825	52,144	95,962	162,108	257,777	392,059

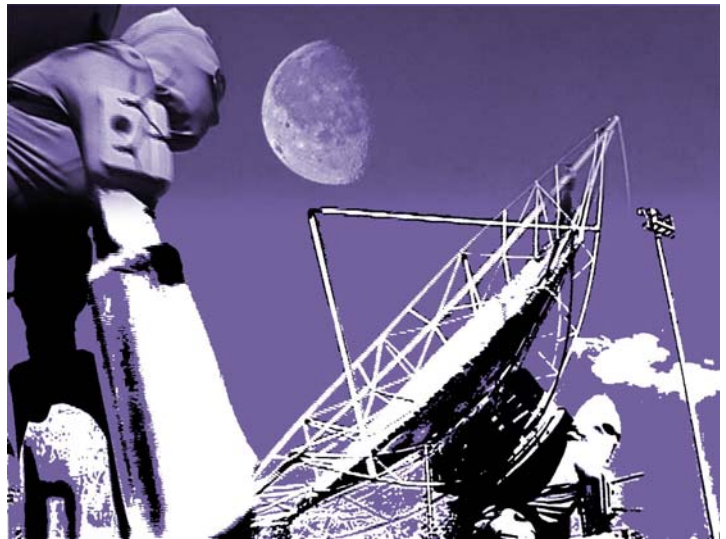
Data: Bear Stearns

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Celso Azevedo, CEO, Ondas

However, let's look a little more closely at Ondas. It is now reasonably well funded, although recognises that significant fresh capital will have to be raised. Currently Delphi is the only named investor in Ondas, although Azevedo's previous industry links (DirecTV from 1995-1997, SES Astra 1986-1995) give him good contacts. Azevedo's team includes at least one previous player from the failed Global Radio operation in Luxembourg (as does Europa-Max). Initial seed investment for Ondas came from Hans Peter Peters and Klaus Otto Rehnig, both described as serial entrepreneurs.



in 2009. Delphi will establish a European satellite radio innovation centre in Germany this year to develop these new products. Celso Azevedo, CEO, Ondas, says: "As Europe continues to be marked by a shortage of digital capacity, Ondas is in the pole position to bring European customers the unparalleled depth and breadth of media content they have never been able to enjoy."

"We are certainly excited to help introduce satellite radio to Europe," said Bob Schumacher, general director of advanced product development and business strategy at Delphi Electronics & Safety. "We believe satellite radio will revolutionize the European audio broadcast industry across the continent by offering consumers a lot more choices that are aligned with today's lifestyles." Delphi is currently in the middle of a Chapter 11 bankruptcy reorganisation, with – it says – the emphasis very much on reorganisation.

Worldspace is also doing business with Delphi, having signed a MOU with Delphi to have mobile receivers ready "in the 1st half of 2006".

Ondas promises....

- 150 channels of satellite radio
- Vehicle management
- Driver & Passenger info
- Emergency calls and signals
- In-car video/entertainment
- Enhanced data applications

Data: Ondas Media, Jan 2006

Ondas says initial (Aug 2005) market research from a Focus Group indicates "very positive demand", and it will follow this up with a more comprehensive study in Q1/06. Azevedo rightly stresses that Ondas (and potentially any rival that manages to make headway) will benefit from the hard work already done by XM and Sirius, and their radio suppliers. "Delphi have gone through all the problems encountered from the beginning of the project, so they are practically doing this for the third time, which for us is a reduction of the risk for both the

technology and the schedule," Azevedo says. He explained that the arrangement would not be exclusive because the various car manufacturers would want to use their own favoured audio suppliers. Delphi would however be able to supply a reference design that would be made available to other manufacturers. "We are in the third round of financing, and we still have a lot of financing to do, but we have four or five years in which to find the financing," said Azevedo.

But as we have mentioned Ondas is far from alone. Luxembourg-registered Europa-Max is still seeking next-round financing, and there may be an announcement shortly.

The Inmarsat/Globalstar and MSV projects do not initially include Europe, but you can see what might be possible further down the line. *However, the fundamental question is whether Europe might support more than one satellite operator in the DARS space given DARS spectrum constraints in Europe? We asked a well-placed European insider whether a WorldSpace 1.4GHz GEO satellite AND a 1.4 GHz HEO system from Ondas could both be viably accommo-*

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dated in 12.5 MHz of spectrum already earmarked for S-DAB (=S-DARS) use by Europe's spectrum regulators? The answer: "Most unlikely, given that the business plans of XM and Sirius rely on each operator having access to 12.5 MHz of spectrum as licensed by the FCC; so dividing the available European S-DAB/S-DARS bandwidth by two and giving Ondas and WorldSpace each 6.25 MHz of spectrum is unlikely to sustain a viable business plan for both these two companies." In other words both WorldSpace and Ondas are fighting it out for the same bandwidth in the 1.4 GHz S-DAB/S-DARS range in Europe.

Ondas Media's main rival in the launch of a European service is Worldspace. Azevedo is not happy: "We think it's a mistake to ask the FCC to file for a system like this over Europe. It's like asking France to authorise a system over the United States." Ondas is making its

own filing under the Spanish flag, which is making the necessary requests through the ITU. **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



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FEATURE

China's space industry is alive and zooming

By Peter I. Galace

China's commercial satellite industry is moving into the Big Time—big time.

The sale of a communications satellite (Nigcomsat-1) to Nigeria and the more recent sale of another satellite (Venesat-1) to Venezuela are historic firsts for China's commercial satellite industry and a space program that will celebrate its 50th anniversary on October 8.

The date marks the founding of China's first rocket research institution, the 5th Academy of the Ministry of National Defense, and is recognized as the beginning of China's space program.

There is little doubt Beijing will pull out all the stops to honor a program that has made China a respected player in the world satellite industry, and only the third country to send humans into space.

The Year of the Fire Dog also marks the 30th anniversary of formal relations between China and the European Union (EU). The close business and scientific ties between China and the EU are underscored by their cooperation in the "Galileo Project," EU's equivalent of the US global positioning system (GPS).

China is the first country outside Europe to join the Galileo satellite-navigation system. Its investment of \$245 million (200 million Euros) in Galileo and its constellation of 30 satellites counts among the over 400 cooperation programs in science and technology between China and the EU over the past three decades.



These business coups illustrate China's renewed focus on the commercial satellite industry after deliberately concentrating first on the development of new generation carrier rockets.

Its successful bid for Nigeria's first satellite signals a China that has learned the ropes and is using its knowledge to outmuscle the Big Boys. The Nigerian deal is China's first ever sale of a made-in-China satellite to any country.

China closed the deal in December 2005 and beat 21 companies from the United States, France, Britain, Italy and Israel, among others. Before the satellite sale to Nigeria, China only manufactured satellite components for other countries, but never an entire satellite.

Chinese quality was a major reason

for Nigeria's selection of China as the provider of its first satellite. Nigeria said China had submitted a "superlative proposal" and its technical capability and expertise had met stringent performance requirements. Nigcomsat-1 will be launched in 2007.

China Great Wall Industry Corporation (CGWIC) described the Nigerian sale as a breakthrough in China's international commercial space program since China asserted its capability as a manufacturer and launcher of satellites for foreign customers.

CGWIC is the sole commercial organization authorized by the Chinese government to provide international commercial launch services, in-orbit satellite delivery and international space technology cooperation.

FEATURES

On the other hand, the Venezuelan satellite is China's first sale to Venezuela and to any South American country. China and Venezuela signed the deal last November in Caracas with Venezuelan President Hugo Chavez at the signing ceremony.

Venesat-1 will be launched from China in 2008. The satellite will make Venezuela self-sufficient in telecommunications and will cover sparsely populated areas not yet reached by commercial telecommunications.

China will also turn over satellite technologies to Venezuela in a effort to help the latter build its own satellites. Venesat-1 is also called the "Simon Bolivar Satellite" after the South American independence fighter.

Nigcomsat-1 and Venesat-1 are based on the DFH-4 (Dongfanghong or "The East is Red"), China's latest satellite platform. DFH-4s provide telephony, broadcasting, DTH TV, Internet and other services. Both the Nigerian and Venezuelan packages include launch services using Long March rockets.

China's position as the smart new kid on the Big Boy block isn't only because it products and services are cheaper than those from the US, the EU or Russia. Chinese quality has come a long way from the humiliation of 1996 when China's Long March 3B failed in its first launch and destroyed the Intelsat 708 satellite.

China began to offer the Long March launch vehicles for international commercial satellite launch services in 1985. In November 1988, CGWIC signed its first contract to launch a foreign communications satellite, AsiaSat-1, on a Long March rocket. The launch was successfully carried out in April 1990.

From 1990 to 2004, CGWIC conducted 24 international commercial launch missions for 30 satellites and six piggy-back payloads. CGWIC has grown from a single rocket supplier to a package service provider that offers satellite,



carrier rockets and ground system facilities.

DTH: rocket fuel for growth

China's continuing forays into space are fueling the growth of its satellite industry that has also profited from the recovery of the world commercial satellite industry thanks to massive US military spending.

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satellites and is majority shareholder in Hong Kong-based APT Satellite Holdings Limited, which has four Apstar satellites in space including the new Apstar-6. There is also the SinoSat-1 satellite operated by state-owned Sino Satellite Communications.

SinoSat-2, China's first direct broadcast satellite and its largest to date, is scheduled for launch this year on a Long March 3B, China's most powerful launch vehicle.

Such a small telecom fleet for the most populous country on earth underlines China's insistence of doing things in-house and outsourcing whenever appropriate. China says it currently has 16 in-orbit satellites including telecommunications, remote sensing and meteorological units. Even the Chinese admit this number is way short of the urgent needs created by China's rapid economic growth and national defense needs.

But China will soon need more satellites with the explosive growth of its economy (averaging 9 percent annually for the past 10 years) and the recovery of the world satellite industry.

The Satellite Industry Association (SIA) is confident enough to predict that consumer focused satellite services (the key growth driver in 2003 and 2004) will continue until the recovery solidifies in a few more years. US government satellite spending is expected to remain at a high clip until 2020.

SIA noted that while the satellite industry is still fighting its way out of the telecom downturn, companies from every major region and across each sector (such as operators, manufacturers, value-added resellers and carriers) are reporting improved business.

SIA is in no doubt as to the main

driver of this recovery. It said 53 percent of all global launches in 2004 were U.S. government related while 47 percent were commercial.

It said other key engines of this growth were strong consumer demand for video services, and the deployment of new user applications and equipment in both markets.

While falling prices and profit margins exist in most sectors, current trends indicate growth over the next few years. The increase in satellite services should lead to a revival of the manufacturing and launch sectors, which then will lead to more satellites being ordered and launched.

SIA noted that satellite services were leading the industry's ongoing recovery from the telecom crash of 2000-2003, accounting for 63 percent of industry revenues totaling \$97 billion in 2004. It said direct-to-home (DTH) satellite television services made up 81 percent of satellite service revenues.

China's announced intent to begin DTH satellite broadcasting in 2006 opens the door to further strengthening the satellite industry's recovery while opening China's huge DTH market to major satellite industry giants such as Intelsat and SES Global and to regional players such as AsiaSat and Apstar.

Research firm IMS Research said



Under an agreement signed in November 2005, the China Great Wall Industry Corp was contracted to manufacture and launch Venesat-1 for Venezuela. The satellite, designed with a mission life of 15 years, will be constructed by the China Academy of Space Technology, based on the country's DFH-4 Bus, China's new-generation telecommunications satellite platform.

China had over 25 million digital satellite TV households in 2004, almost similar in number to the US.

IMS projects the number of digital satellite TV households in China to grow over the next five years and could reach 60 million by 2010 if China launches DTH this year as expected.

China's huge DTH numbers dwarf those in the rest of Asia. In 2004, the leading DTH markets were Japan (3.3 million subscribers), South Korea (1.6 million), Malaysia (1.5 million), Australia (890,000) and New Zealand (490,000).

On the other hand, the Cable and Satellite Broadcasting Association of Asia (CASBAA) estimates that Asia has 190 million multi-channel households (or those that receive satellite or cable services).

China's telecommunications industry is estimated to have posted revenues of

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\$72 billion in 2005, up 10 percent from 2004. China's economy is expected to have grown from 9.5 to 10.3 percent in 2005 to hit \$2 trillion. It is growing five times faster than Europe's leading economies.

The launch of ChinaSat-9, a direct broadcasting satellite, in late 2007 is intended to exploit the coming boom in China DTH. ChinaSat-9, an Alcatel Alenia Space Spacebus 4000 C1 platform, will be fitted with 22 active Ku-band transponders for broadcast satellite services (BSS), including 18 36-MHz and four 54-MHz channels. A Chinese Long March rocket will be the launch vehicle.

SinoSat-2, ChinaSat-9 and Apstar-6 will lead China's push into DTH. Apstar-6 will provide advanced broadband multimedia, new digital TV services and traditional telecommunications services to telecom and TV operators in Asia Pacific.

It will cover China with a dedicated high power Ku-band beam for broadband multimedia services. It will be the first civilian Chinese satellite equipped with an anti-jamming system to thwart attacks by Chinese government foes such as Falungong.

AsiaSat is forging ahead with its own DTH pay-TV service in Hong Kong, Taiwan and Macau. By moving into DTH, AsiaSat aims to increase its transponder

utilization rate that in 2004 stood at 41 percent for AsiaSat-2; 74 percent for AsiaSat-3S satellite and 18 percent for its new AsiaSat-4.



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Yang Liwei, China's first astronaut, waves to the people after his safe landing in north China's Inner Mongolia and stepping out of the re-entry capsule of Shenzhou 5 on Oct. 16, 2003. Yang's craft touched down after 21 hours in orbit. Beijing's mission control declared the country's landmark debut flight "a success." (Xinhua, Wang Jianmin, photo)

The Ku-band payload in AsiaSat-4 offers spot beams for selected areas in either the BSS or the Fixed Satellite Service frequency band.

Peter Jackson, chief executive officer of AsiaSat, hopes that Chinese customers eventually will take up a large portion of the capacity aboard AsiaSat-4.

Enter the Big Boys

China began using foreign satellites for TV broadcasting in 1985. Since then, however, China's promise of spectacular satellite service growth has been held in check by the government's reluctance to

open China to full-fledged foreign competition.

The conventional wisdom says China will remain more of a long-term player than a source of short-term growth. In recent years, however, China has loosened its tight regulatory grip, but remains less liberal than neighboring India.

Rupert Murdoch's Star TV has been a conspicuous beneficiary of whatever liberalization Chinese telecoms has had. Despite this seeming advantage, Star remains on the look out for small online properties in China and aims to develop these assets into successful businesses in the long term, a strategy in line with the conventional wisdom about how to do business in Chinese telecoms.

Star said its consolidated operations in China during 2005 were close to breakeven. Its major growth driver was advertising revenues at Xing Kong, Star's general entertainment channel. Star owns the world's largest library of Chinese films.

Star said China's present regulatory framework for broadcasting casts a cloud of uncertainty. It felt pay TV lags behind the development of most other media while DTH and IPTV may be the means to boost development.

Because China continues to drag its feet on deregulation, non-Chinese satellite operators will have to partner with Chinese companies such as ChinaSat if they want to do business in China. AsiaSat has also complained about China's restrictive policies.

This situation notwithstanding, formidable satellite operators such as Intelsat/PanAmSat and SES Global/Astra/Americom/New Skies Satellites stand poised to serve China's needs for DTH and other digital services. Between them,

both giants have 20 satellites serving Asia Pacific, including China. Intelsat operates 16 of these satellites.

These satellite operators still take the lion's share of China and Asia's satellite business. And they're in Asia because of the region's explosive growth in consumer satellite services. They're also partnering with regional players to maximize their competitive strengths.

In December 2005, Intelsat and APT Satellite—the world's leading and Asia's leading satellite companies—signed a strategic cooperation agreement in which they agreed to market each other's satellite capacity and ground resources, and to provide broadcast and telecommunications services to China and the Asia Pacific.

This strategic move allows Intelsat and its media and corporate data customers to access the Asia Pacific market through APT's Apstar-5 and Apstar-6 satellites. On the other hand, APT will have access to Intelsat's capacity in other regions of the world via Intelsat's fleet of 28 satellites. This will expand APT's reach and enable it to seamlessly carry traffic to wherever its customers need it.

Ni Yifeng, Executive Director and President of APT, said the agreement will significantly strengthen APT's sales and marketing functions and allow it to provide more comprehensive services to its customers.

Intelsat said the agreement positions it to take advantage of any new business initiatives or opportunities that arise in the Asia Pacific region, including China, over the near and longer term.

Intelsat CEO David McGlade believes that entering into this agreement creates value at the company and customer levels. It also enables Intelsat to

FEATURES



A Long March 3B rocket lifts off from a launch pad in Xichang in Southwest China's Sichuan Province successfully orbiting AsiaSat-6 of Hong Kong-based company Apstar Satellite Ltd in April 2005. The AsiaSat-6, which has 50 transponders, was launched to replace AsiaSat-1 A. The Long March rocket, which has the biggest carrying capacity of any commercial launch vehicle, is capable of carrying any satellite with a maximum weight of 5,100 kilograms into orbit.

expand its service offerings in the region while creating a new avenue for customers of both companies to seamlessly take their traffic into or out of the region.

Intelsat has close ties with China, which historically is one of its top 10 customers. Twice in 2001, Intelsat came to China's rescue when accidents knocked out China's undersea cables, depriving up to 20 million users of Internet access. Intelsat used its satellites to restore Internet service to the affected users.

The 2008 Olympic Games in Beijing will present Intelsat and other satcos with the opportunity to dramatically grow their business. Intelsat, however, took 70 percent of the TV broadcasting business during the 2000 Olympic Games in Sydney.

The Net in China

Today, however, commercial satellite services such as DMB (Digital Multimedia Broadcasting) services via satellite and broadband via satellite hold the brightest promise for China's satellite companies.

Satellite broadband looks especially promising and Northern Sky estimates \$4 billion in revenues for this service by 2009. Driving satellite broadband growth will be broadband Internet access via satellite. Satellite Internet access might well become the satellite industry's first truly mass-market service capable of competing against DSL on price.

Although China still limits Internet use and occasionally censors what it calls dangerous content, there is no stopping the growth of the Internet in China. The need for speed will be vital as China's Internet users continue to rise, from an estimated 94 million in 2004 to 103 million in 2005. China had 22.5 million Internet users in 2000. The number of Internet users in China increases by 800,000 every week.

Private industry groups reported 43 million broadband subscribers in 2004 from 31 million in 2003.

PCs sold in China reached 22 million in 2003 (second after the US). There were

150 million cell phones sold in 2003 (1st in the world) while 1.7 billion text messages were sent from these mobiles.

These huge numbers make China the place to be for satellite service companies despite the tough regulatory environment.

The Chinese in Space

Two successful manned spaceflights in two years are enough to make any nation proud. China achieved this feat with its first manned spaceflight in 2003 and a second similarly successful mission by a two-man crew in 2005.

The success of the Shenzhou 5 and 6 missions is also a huge success for China's launch industry. China's participation in the Galileo Project is also being hailed as a triumph for its space program.

Next in line for China's space program is a lunar fly-by mission. China has announced that the program's monitoring system; launching field and ground application system have entered system integration and joint test. The first lunar satellite, called "Chang'e-I," will be launched in 2007.

A space station is to follow suit but the crowning glory of China's space program will be a moon landing, probably by the next decade. And that's no starry eyed pipe dream. **SM**

Peter I. Galace is editorial director of Satnews Publishers. He has written extensively on the telecommunications developments in Asia for numerous publications. Currently he is associate editor of Satnews Daily and Weekly editions, and art and production editor of the International Satellite Directory and the monthly e-zine, Satmagazine. He can be reached at peter@satnews.com.



FEATURES

Space Tourism a New Reality?

by Bernardo Schneiderman



Photos courtesy of
by Space Tourism Society

Space Tourism has been a dream of space entrepreneurs for the last forty years since astronauts Yuri Gagarin from Russia and Alan Sheppard from USA began sub orbital flights in 1961. During this decade the space travel is coming to the general public.

During the last quarter of 2005 the dream became closer to reality when Virgin Galactic (www.virgingalactic.com), the world's first commercial space tourism business, announced that it will locate its world headquarters and Mission Control in New Mexico. The agreement between the State of New Mexico and Virgin Galactic calls for New Mexico to build a US\$ 200 million spaceport in the southern part of the state, on 27-square miles of state land.

New Mexico's spaceport, will offer fledgling astronauts an experience that will be truly out of this world. Virgin Galactic also plans to create a five-star destination experience in New Mexico to accommodate customers, their families, and space enthusiasts.

Funding for construction of the spaceport is expected to come from a

combination of state capital outlay, federal appropriations, and a local-option gross receipts tax that will be proposed to voters of southern New Mexico counties that stand to benefit from the spaceport and the resulting job growth.

The agreement between New Mexico and Virgin says the state will build and then lease to Virgin Galactic customized hangar and training facilities, and the company will pay user fees for use of the spaceport, as is customary in the aerospace industry. Virgin Galactic will sign a 20-year lease.

Sir Richard Branson's interest in space began when he witnessed the Apollo moon landings as a teenager. The name Virgin Galactic was first registered in March 1999 as Virgin began discussions with several fledgling private space ventures with a view to investment in the sector.

However, it was to be another three years before circumstances brought Virgin closer to SpaceShipOne and the X-Prize. Scaled Composites were in the process of constructing the Virgin Atlantic Global Flyer. This was an aircraft successfully piloted non-stop around the world by

Steve Fossett in March 2005. Virgin saw Spaceship One under construction and forged an agreement with the visionary, Paul Allen, to license the technology should the craft successfully win the X-Prize.

A design for Spaceship Two is now in its final planning stages and construction of the commercial prototype is expected to commence in 2006 and be flying by 2008. It is expected that five Spaceship Two's and two White Knight Two carrier aircrafts will be built, in order to allow 50,000 customers to experience personal space flight over a ten year period up to 2019. Currently, Virgin has 40,000 registrations from individuals from 120 countries.

New Mexico's spaceport has been in the planning stages for 15 years. The spaceport, located in Sierra County, about 45 miles northeast of Las Cruces, and 25 miles southeast of Truth or Consequence is approximately 27 square miles of open, generally level, rangeland with an average elevation of 4700 feet.

October 4, 2004 - A team led by famous aerospace designer Burt Rutan and financed by Paul Allen won the \$10 million Ansari X-Prize. Their rocket powered craft, Spaceship One, flew into space 100 kilometers (about 60 miles) above the Earth twice in a two-week period to win the prize. The rules required that both flights be piloted and carry two passengers or an equivalent weight.

Among the main organizations that are covering the Space Tourism, Space Tourism Society (STS) founded by Mr. John Spencer in 1996 was the first

Not-for-profit society specifically focused on space tourism. STS

FEATURES

(www.spacetourismsociety.org) is one of the key catalysts of the growing Space Tourism Movement. STS Defines Space Tourism as:

- In-Earth orbit experiences;
- Beyond Earth orbit (such as lunar and Mars) experiences;
- Earth-based simulations, tours and entertainment experiences; and
- Cyber space tourism experiences.

STS believes that space tourism is the most logical endeavor for private enterprise to pursue towards the goal of expanding humankind into space.

For more information on space tourism, Futron, the Aerospace and



Photo by Samuel Coniglio

Telecom consulting company (www.futron.com) issued a report called Space Tourism Market Study covering

both orbital Space travel & destination forecast for a period of 20 years that has been one of the major reference in the Space Tourism Business. The report is available at Futron's website. **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 bernardo@tbc-telematics.com

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EXECUTIVE SPOTLIGHT

Interview with Inmarsat's Regional Director for North America Frank August

Inmarsat recently launched its high-powered Inmarsat 4 series of satellites that has started to provide its Broadband Global Area Network (BGAN) service in December 2005. BGAN is a service that provides IP broadband and voice telephony on a laptop-size unit. To elaborate on the BGAN service and its impact on the mobile satellite services sector of the industry, SatMagazine Managing Editor, Virgil Labrador spoke with Inmarsat's Regional Director for North America Frank August. Excerpts of the interview:

Q. Give us a brief background on your recent launches of your Inmarsat 4 series of satellites and the launch of the BGAN service.

A. We've been in business now for over 25 years and the most recent platform of satellites we've been using have been the Inmarsat 3 series, last year on March 11th we launched the first of the series of Inmarsat 4 satellites, which at least at that time was the most powerful communication satellite to be launched for commercial use. We launched the second of the series of Inmarsat 4 satellites this past November 8th. The first satellite covered a region from Europe over to Africa to Asia and the second satellite which we expect to put in service in the second quarter of 2006 covers the Americas. The satellites are not only the most powerful but also the most technologically capable. Because of this, we are able to make equipment even smaller than that we've operated on with the previous Inmarsat 3 series. I know most people think that satellite equipment has to look something like a dish. The equipment for the Broadband Global Area Network (BGAN) now looks more like IT equipment, we have a laptop size one and a half of a laptop size.

Q. What's the difference between your RBGAN and BGAN services?

The biggest difference is that the RBGAN is IP only and the maximum channel for using it was 144 kbps while BGAN which

launched in December 1st have a voice capability as well as IP. Each of the BGAN products have different capabilities depending on the needs that we saw in the different markets—from one unit that offers speed of 384 downlink and other units that offer 492 kbps uplink and downlink. There are varying speeds of access between a voice call and an IP session. The BGAN unit is capable of doing IP streaming, teleconferencing, file transfer, video and audio broadcasts up to speeds of 256 kbps guaranteed bit rate. Also ISDN is an option in one of the units as well as SMS and messaging and all the things that you associate with 3G networks such as call forwarding and voice mail and the like.

Q. What is the coverage area of your BGAN service?

A. The first two satellites cover about 85 % of the earth's surface and about 98% of the population. We do have a third a satellite that has been constructed and rigged as a spare and we're happy to say that we did not need the spare as the first two satellites

launches were successful. Right now we have the opportunity whether we want to launch that third satellite or not. We're very interested in doing that but we haven't made a financial decision yet but if we do, then that third satellite will allow us to cover more of the world with the Western half of the US, Alaska, the Pacific, East Asia and Australia.

Q. Various companies offer BGAN service such as Telenor, Thrane and Thrane, Nera. How does your distribution system work?

A. Inmarsat has take the strategy of managing the satellite and the ground infrastructure for the Inmarsat 4 BGAN service and we offer the service through certain primary distribution partners companies such as the companies that you mentioned and also service providers around the world such as BT, Stratos, Telenor and SingTel.



Frank August

EXECUTIVE SPOTLIGHT

The way we handle manufacturers is that we provide specifications that defines the interface between the equipment and our satellite just for managing the spectrum that is on demand and managing our system's operations. Once we type-approve the equipment, the manufacturers sell it through their channels, which tend to overlap since they sell both the equipment and the service. Our role in this process is to make sure everything goes smoothly and that the equipments works with our network.

Q. Do you market the product yourself or do you rely on your distributors for that?

A. We do market the product, you may not see a huge advertising campaign globally because we market through our channels and support them in various ways.

Q. What are the rates like for your service?

A. Each of the service providers will have their own service packages, so they vary but they average monthly fees of \$30-\$40 per month, 75 cents per minute for a phone call and \$ 8 per megabyte which is less than roaming GPRS rates.

Q. What segments of the market will be using your product?

A. We think that many different aspects of the government and military markets are very keen on what BGAN can do and how it can complement their existing communication networks. We've also seen as a result of the recent natural disasters an opportunity for providing broadband data access in a disaster area or in an emergency situation.

We also see potential in the enterprise market generally and also with broadcasters as we can provide more mobility to satellite news gathering than has existed in the past. Oil and gas is also a good market as it has a lot of people working remotely.

Q. Who are your direct competitors to this service?

A. Competition is somewhat relative but I suppose if you look at the competitive landscape, we are against the like of the satellite phone operators even though we are not trying to be a satellite phone. One could envision someone using a satellite phone saying "well, look, I really need broadband access and I'm not really walking down the street when I'm communicating anyway so rather than using a satellite phone I'll use BGAN and get the broadband access which I really need and oh yeah, I can still make phone calls, too."

I suppose we also compete with VSATs—but when it comes to mobility, if I'm not fixed very long and I'm going to be in the

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EXECUTIVE SPOTLIGHT

move for a period of time it might be better if I use BGAN because I can carry it in my briefcase and not mounted on a trailer or in multiple suitcases.

The real discriminator for the BGAN solution is the mobility component of it. If the user can make do with an IP broadband connection if its available to them while traveling then many users will probably make do with it, but for those users who really depend upon and really need broadband access to manage the business remotely they are going to find BGAN more appropriate. We are really not trying to compete with urban or suburban services, we really see an opportunity in providing services outside urban and suburban areas where operations and people still need to be connected but just don't have a choice before. So, we're not concentrating on those areas where obviously some of the terrestrial networks can grow from.

Mobility is the key although there will be also some opportunities for some semi-fixed operations for small project teams.



One hot application for BGAN is Satellite News Gathering (SNG). (photo courtesy of Inmarsat)

Q. What other uses are in store for BGAN?

A. We have built a GAN vehicular version (GAN is the Inmarsat 3 version of a terrestrial communication solution). There are also activities now, although not yet type-approved, to provide vehicular version of BGAN. We expect that manufacturers will be announcing vehicular version of BGAN either at the end of this year or early. And after that we are considering some omni solutions. With an omni antenna, it could be much smaller and provide many more vehicular solutions. **SM**

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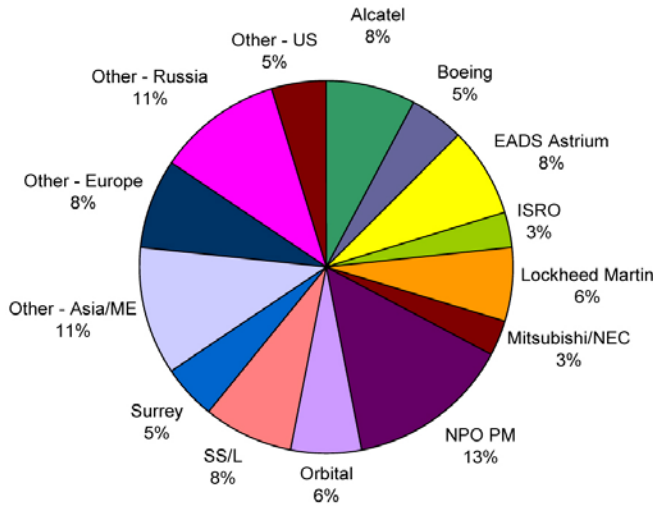


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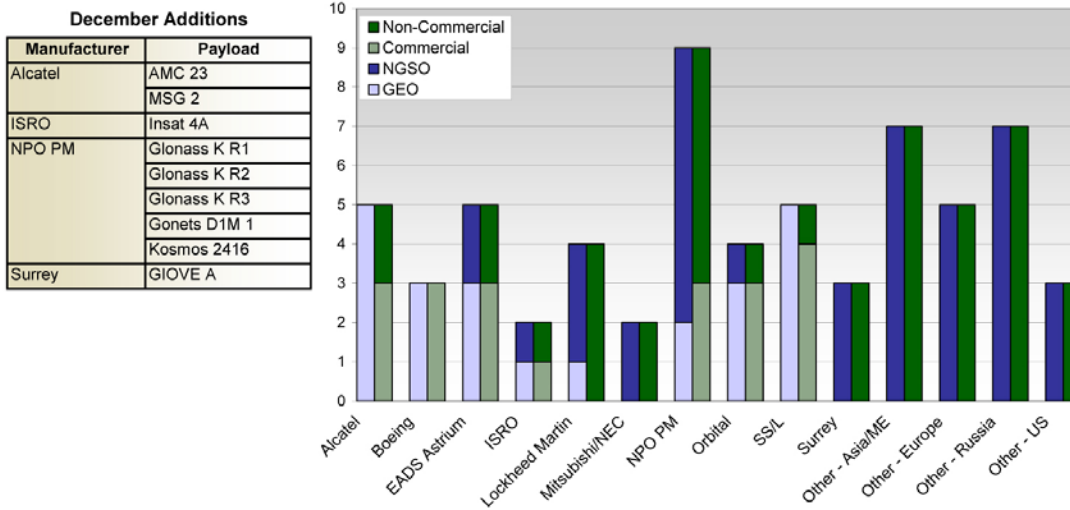


Manufacturer Market Share of Satellites Launched Through December 31, 2005



Manufacturer	Number	Share
Alcatel	5	8%
Boeing	3	5%
EADS Astrium	5	8%
ISRO	2	3%
Lockheed Martin	4	6%
Mitsubishi/NEC	2	3%
NPO PM	9	14%
Orbital	4	6%
SS/L	5	8%
Surrey	3	5%
Other - Asia/ME	7	11%
Other - Europe	5	8%
Other - Russia	7	11%
Other - US	3	5%
Total	64	100%

Manufacturers of Satellites Launched in 2005 by Orbit and Commercial Status



For more information contact: Eileen McGowan, Project Manager • Space & Telecommunications Division
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MARKET INTELLIGENCE

Informing the Middle East Regional Satellite Agenda at CABSAT and Beyond

By Martin Jarrold

Chief, International Program Development, GVF

As we move well into 2006, the GVF Q1-Q2 agenda for the Middle East region will feature at least two major events, the first in Dubai, the second in Cairo.

CABSAT 2006 takes place in Dubai over the period 7-9 March and – as per previous collaboration with the Dubai World Trade Centre – GVF will hold its **Satellite Symposium** in parallel to the CABSAT exhibition, but – this year – with a slight difference. The 8 March GVF Satellite Symposium 2006, “**Growing the Broadband Networking Environment & the Middle East Satellite Imperative**”, is being organised in conjunction with the Middle East Satellite Communications Community, but this year also includes close collaboration with the Asia-Pacific Broadcasting Union and Arab States Broadcasting Union (ABU/ASBU). The Symposium will be preceded by a joint ABU/GVF plenary session within which topics of common interest to the satellite broadcast and satellite communication sectors will be explored. Following the plenary session the ABU and GVF “tracks” will continue in parallel.

The GVF “track” will examine the unprecedented demand for IP-based services that is driving millions of potential end-users towards broadband communications solutions. Large-enterprise, SME, SOHO and residential users alike, continue to clamor for cost-effective access to these interactive solutions,

and to meet this demand, DSL, cable modem, and other delivery systems, including satellite, are rapidly being deployed around the Middle East region. So, one of the fundamental questions is: How are satellite-based broadband solutions competing in this dynamic environment?

The Symposium will go on to consider such questions as:

- What are the advantages of satellite-based broadband solutions?
- What are unique characteristics of satellite broadband?
- How do broadband satellite service providers build their business case?
- How will satellite-based services continue to evolve to match future market and demand dynamics?
- Where are the revenue streams to be achieved and profits to be made?

These and many other questions will be addressed in the following programme on 8 March:

10:00 - 11:30 > [Joint ABU/GVF Plenary](#)

11:30 - 12:00 > [Refreshment Break](#)

12:00 - 12:05 > [Welcome to GVF](#)

GVF *Satellite. Solutions. The World.*



Main Programme

12:05 - 13:05 > [GVF Key Theme 1: Broadband over Satellite - Defining, Enabling & Leveraging Middle Eastern Demand](#)

Lead Speaker + Panel Discussion –
This session will address the key factors that determine and define Middle Eastern demand for broadband communications services, and provide a comprehensive understanding of just exactly how the satellite service provider community is currently leveraging-off regional demand characteristics to focus its offerings towards identified needs. Following a Lead Speaker address, a panel of distinguished industry experts will provide their up-to-the-moment analysis of the current regional situation and the trends ahead.

13:05 - 14:05 > [GVF Key Theme 2: Broadband over Satellite - The Technology as Driver](#)

Lead Speaker + Panel Discussion –

MARKET INTELLIGENCE

With technology agnostics populating the Information and Communications Technology (ICT) purchasing communities, the satellite product and service vendor focus in offering high-value, high-quality solutions, is increasingly channelled through diversified technology portfolios that provide for seamless, end-to-end, solutions. How is this being achieved, and how does the ready availability of highly innovative new satellite technologies drive the sales and revenue-stream successes of the sector? Does the technology close the sale, or is there much more to securing the deal? How are the new satellite standards influencing the equipment market? A Lead Speaker and panel, representing various key industry perspectives, will provide the answers and further stimulate the regional debate.

14:05 - 14:45 > Refreshment Break

14:45 - 15:45 > GVF Key Theme 3: Broadband over Satellite - The Application as Driver

Lead Speaker + Panel Discussion –

With a distinctly applications focused perspective, this session will provide an overall industry view and analysis of the distinct advantages of satellite-based solutions within the broadband networking environment. How are the advanced applications and networking requirements of the large corporate, SME and SOHO end-user being met with the “via satellite” option? How is the satellite industry continuing to evolve to supply state-of-the-art applications? How is the satellite service vendor community translating its offerings into clear competitive advantages for its customer-base? Is “the Application” the most important driver of sales growth and satellite industry success? A combination of Lead Speaker analysis and panellist comment will add to the centrality of this continuing dialogue.

15:45 - 16:00 > Closing Remarks

Further information, and details of remaining speaking slot opportunities, may be obtained from me at martin.jarrold@gvf.org.

In November 2005, in Abuja, GVF held its West African Satellite Communications Conference & Exhibition. During these proceedings it was perfectly apparent that in the Nigerian and wider West African geographical context a number of vertical markets across the region, particularly the oil & gas sector, were becoming ever-more dependent on satellite for the cost-effective delivery of their mission critical communications networking. Now, in order to further build on the GVF’s facilitation of key discussion and networking platforms, within which the subject of the communications imperatives for such key verticals can be fully addressed, the satellite – and wider ICT community – is preparing for a major conference on **Oil & Gas Communications for Africa and the Middle East**.

Scheduled to take place in Cairo, over 15-17 May 2006, the conference will address the following elements:

- Executive Overview Roundtable: New O&G Networking Communications – Evolution of the Application & the Dynamics of Technology Trends – *Panel discussion*
- Bandwidth Dynamics: O&G Industry Demand, Telecoms Industry Supply – The Price & Quality of Service Nexus – *Panel discussion*

- Hybridizing the O&G Communications Solution Offering over Satellite & Terrestrial – *Panel discussion*
- Ensuring the O&G Industry Mission Critical Communications Dynamic: Evolving National/Regional Licensing & Regulatory Environments to Enhance O&G Sector Growth – *Panel Discussion*
- Maintaining the O&G Industry Mission Critical Communications Dynamic: Satellite Links in Surviving through Disaster Situations – *Panel discussion*
- Oil & Gas Communications: Variations in the Regional Bandwidth Supply Dynamic – the Middle East & Africa versus the North Sea
- Oil, Gas & the Environment: Using Information & Communication Technologies to Manage the Resources Exploitation Footprint
- E-Commerce in the Oil & Gas ICT Environment: Procurement, Trading & Customer Contact

and will also feature key case studies. The final day of the event will feature a training programme from the GVF’s suite of **Regulatory & Policy Capacity-Building** tools and its range of **Courseware for Sustainable Network Deployment**.

Further information on Oil & Gas Communications: Africa and the Middle East will be available at www.gvf.org or from martin.jarrold@gvf.org. **SM**



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

STOCK MONITOR

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Company Name	Symbol	Price (Jan. 30)	52-wk Range
APT SATELLITE	ATS	1.60	1.12 - 2.10
ANDREW CORP	ANDW	12.91	10.07 - 14.19
ASIA SATELL TELECOMMUNICATINS (ASIASAT)	SAT	16.70	16.16 - 20.55
BALL CORP	BLL	40.17	35.06 - 46.45
BOEING CO	BA	69.03	49.54 - 72.40
BRITISH SKY ADS	BSY	34.20	33.59 - 44.99
CALAMP CORP	CAMP	10.49	5.23 - 12.59
C-COM SATELLITE SYSTEMS	CMLV	0.30	0.21 - 0.56
COM DEV INTL LTD	CDV.TO	2.26	1.67 - 3.24
COMTECH TELECOM	CMTL	32.07	21.42 - 45.65
THE DIRECTV GROUP	DTV	14.08	13.17 - 16.79
EHOSTAR COMMUNICATIONS	DISH	27.62	24.44 - 32.33
FREQUENCY ELEC- TRONICS	FEI	11.99	9.80 - 15.90
GILAT SATELLITE NETWORKS	GILTF	5.97	5.06 - 7.62
GLOBECOMM SYS INC	GCOM	7.60	5.09 - 8.44
HARRIS CORP	HRS	45.97	27.25 - 47.87
HONEYWELL INTL	HON	38.03	32.68 - 39.50
INTL DATACASTING	IDC.TO	0.19	0.14 - 0.33
INTEGRAL SYSTEMS	ISYS	21.70	18.02 - 24.70
KVH INDS INC	KVHI	11.04	8.54 - 11.64
L-3 COMM HLDGS	LLL	78.81	64.66 - 84.84
LOCKHEED MARTIN	LMT	66.66	55.40 - 67.92
NEWS CORP	NWS	16.59	14.76 - 18.63
NORSAT INTL INC	NSATF.OB	0.85	0.43 - 1.51
NTL INC	NTLI	63.96	55.52 - 70.79
ORBITAL SCIENCES	ORB	12.93	8.84 - 13.55
PT PASIFIK SATELIT	PSNRY.PK	0.05	0.09 - 0.30
QUALCOMM INC	QCOM	48.57	32.08 - 49.45
RADYNE CORPORATION	RADN	13.70	7.15 - 16.33
SCIENTIFIC ATLANTA	SFA	42.77	26.73 - 43.90
SIRIUS SATELLITE RADIO	SIRI	5.86	4.42 - 7.98
SES GLOBAL FDR	SDS.F	12.45	6.70 - 12.47
TRIMBLE NAVIGATION	TRMB	40.21	26.64 - 44.55
WORLDSPACE INC	WRSP	13.17	10.26 - 26.00
VIASAT INC	VSAT	25.51	17.30 - 28.84
XM SATELLITE RADIO	XMSR	26.43	26.16 - 37.31

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